CONFERENCE FULL-PAPER PROCEEDINGS BOOK

2ND INTERNATIONAL CONFERENCE on Applied Economics and Finance (ICOAEF 2016)

5 - 6 December, 2016
Girne American University
North Cyprus

Welcome to ICOAEF 2016

2nd International Conference on Applied Economics and Finance (ICOAEF 2016) is the second event in the series. We are proud to organise and host this event at the Girne American University. ICOAEF 2016 provided an opportunity for all those interested in the Applied Economics and Finance to discuss their research and to exchange ideas. We received papers from all the following fields: Applied Macroeconomics, Applied Microeconomics, Applied International Economics, Applied Energy Economics, Applied Financial Economics, Applied Agricultural Economics, Applied Labour and Demographic Economics, Applied Health Economics, Applied Education Economics, Applied International Trade, Econometrics, Applied Statistics, Capital Markets, Corporate Finance, Quantitative Methods, Mathematical Finance, Operations Research, Risk Management.

This year, we were together with about 140 young and experienced researchers, Ph.D. students, post-doctoral researchers, academicians, and professionals from business, government and non-governmental institutions from 24 different countries and enjoy about 130 presentations. ICOAEF 2016 attracting such a high number of particiapts is a good indicator of the success and means the conference serving its purpose and offer a good opportunity for scholarly exchange and networking.

We thank Girne American University, again, for hosting ICOAEF 2016. We also thank the Central Bank of the Republic of Turkey for their support and contribution to the Conference.

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Halls:

1. Milenium Senato Hall
2. A3.2 Room
3. A3.3 Room
4. A3.4 Room
5. A3.5 Room
6. A3.6 Room

PROGRAM

5th December, Monday

08:00-9:30 REGISTRATION

09.30-11.00 KEYNOTE SPEAKERS SESSION
Room: Milenium Senato Hall, GAU

1. Kutsal Öztürk
2. Asım Vehbi
3. Badi H. Baltagi
4. Talat Ulusever
5. Yakup Asarkaya
6. Alper Özün

11.00 – 11.30 Coffee Break

11.30-13.00 SPECIAL SESSIONS
Turkısh Economy [Room: Milenium Senato Hall, GAU]

13:00-14:00 Lunch

14.00-15.30 SESSIONS
1. Islamic Finance. [Room: A3.2]
2. Uygulamalı Ekonomi ve Finans I. (Dil : Türkçe). [Room: A3.3]
3. Applied Finance. [Room: A3.4]
4. Energy Economics [Room: A3.5]

15.30-16.00 Coffee Break

16.00-17.30 SESSIONS
1. Investment. [Room: A3.2]
2. Uygulamalı Ekonomi ve Finans II. (Dil : Türkçe) [Room A3.3]
3. Economic Development I [Room: A3.4]
4. Monetary Policy [Room: A3.5]
5. Multidisciplinary I [Room: A3.6]

19.30-21.00 Gala Dinner in Le Chateau Lambousa Hotel

6th December, Monday

9.30-11.00 SESSIONS

1. International Trade [Room: A3.2]
2. Multidisciplinary II [Room: A3.3]
3. Applied Microeconomics [Room: A3.4]
4. Applied Econometrics and Statistics [Room: A3.5]

11.00-11.30 Coffee Break

11.30-13.00 SESSIONS

1. Business Economics [Room: A3.2]
2. Uygulamalı Ekonomi ve Finans III. (Dil : Türkçe) [Room: A3.3]
3. Energy Economics II [Room: A3.4]
4. Tourism Economics [Room: A3.5]
5. Health Economics [Room: A3.6]

13.00-14.00 Lunch Break

14.00-15.30 SESSIONS

1. Uygulamalı Ekonomi ve Finans IV. (Dil : Türkçe) [Room: A3.3]
2. Financial Crisis and Stability [Room: A3.2]
3. Educaiton Economics and Labour Market [Room: A3.2]
4. Applied Banking [Room: A3.5]
5. Applied Banking II [Room: A3.6]

15.30-16.00 Coffee Break

16.00-17.30 SESSIONS

1. Multidisciplinary III [Room: A3.2]
2. Uygulamalı Ekonomi ve Finans V. (Dil : Türkçe) [Room: A3.3]
3. Economic Development II [Room: A3.4]
4. Applied Finance II [Room: A3.5]
5. Energy Economics III [Room: A3.6]

SESSIONS

2nd International Conference on Applied Economics and Finance
5-6 December, 2016
Girne American University, North Cyprus

Organized by

Derviş Kırıkkaleli (Girne American University, North Cyprus)
Hasan Murat Ertuğrul (Undersecretariat of Treasury, Turkey)

Program

Keynote Speakers Session

Room: Milenium Senato Hall, GAU
Time: 05.12.2016, 09.30-11.00

Openning Speach: Kutsal Öztürk (Rector, Girne American University, North Cyprus)
Asım Vehbi (Vice Chancellor, Girne American University, North Cyprus)

1) Badi H. Baltagi (Syracuse University, USA)

2) Talat Ulusever (Acting President, Capital Market of Turkey, Turkey)

3) Yakup Asarkaya (Vice President, Banking Regulation and Supervision Agency, Turkey)

4) Alper Özün (Director, HSBC Global, UK)

Moderator: Lazar Stosic (Editor in Chief, IJCRSEE, Serbia)
Guest: Kerim Özdemir (Rector, Balıkesir University, Turkey)

Coffee Break 11.00 – 11.30

Special Session: Turkish Economy

Room: Milenium Senato Hall, GAU
Time: 05.12.2016, 11.30-13.00

1) Ramazan Sarı (Middle East Technical University, Turkey)
   Recent Developments in Energy Markets and Turkey's Energy Outlook

2) Yener Coşkun (Capital Market of Turkey, Turkey)
   Recent Developments in Housing Markets and Housing Market in Turkey

3) Yilmaz Kılıçaslan (Anadolu University, Turkey)
   What's Wrong with Turkish Economy? Growth, Productivity and Industrial Structure

Moderator: Bulent Guloglu (Istanbul Technical University, Turkey)

Lunch 13.00-14.00

Islamic Finance

Room: A3.2 Room, GAU
Time: 05.12.2016, 14.00-15.30

1) Accelerating Risk Sharing Finance via Fintech: Nextgen Islamic Finance
   Alaa Alaabed (INCEIF, Malaysia)
   Siti Muawanah Lajis (The Central Bank Of Malaysia, Malaysia)

2) Gender Effects On Service Quality, Customer Satisfaction And Loyalty In Islamic Banks Of Sudan
   Berna Serener (Near East University, North Cyprus)

3) Lack of Standardization in Sukuk Market
   Ahmet Ulusoy (Karadeniz Techinacal University, Turkey)
   Mehmet Ela (Osmaniye Korkut Ata University, Turkey)

4) Risk-Sharing Banking: Viability and Resilience
   Siti Muawanah Lajis (The Central Bank of Malaysia, Malaysia)
   Abbas Mirakhor (INCEIF,Malaysia)

5) Financial Performance of Islamic Bank vs Conventional Banks: The Case of UAE
   Nesrin Ozatac (Eastern Mediterranean University, North Cyprus)
   Oubayda El Rifai (Eastern Mediterranean University, North Cyprus)
   Chair: Seyed Alireza Athari (Girne American University, North Cyprus)

Uygulamalı Ekonomi ve Finans I. (Dil : Türkçe)

Room: A3.3 Room, GAU
Time: 05.12.2016, 14.00-15.30

1) Küresel Finans Ve “Yüksek Etkileşimli” Şirketler
   Mehmet Şişman (Marmara University, Turkey)
   Deniz Şişman (Gelişim University, Turkey)

2) Türkiye'de Beşeri Sermayenin Yoksullukla Mücadele ve Gelir Dağılımı Üzerindeki Etkileri
   Ferhat Pehlivanoğlu (Kocaeli University, Turkey)
   Sema Yilmaz Genç (Kocaeli University, Turkey)

3) Türkiye’de İç Göçü Etkileyen Faktörler Üzerine Bir Uygulama: Mekânsal Panel Veri Analizi
   Gökçe Manavgat (Ege University, Turkey)
   R. Fatih Saygili (Ege University, Turkey)

4) Thirlwall Kanunu: OECD Ülkeleri Örneği, 1990-2014

Fatih Mangır (Selcuk University, Turkey)
Fatih Ayhan (Selcuk University, Turkey)
Ş.Süreyya Kodaz (Selcuk University, Turkey)
Chair: Mehmet Şişman (Marmara University, Turkey)

Applied Finance I

Room: A3.4 Room, GAU
Time: 05.12.2016, 14.00-15.30

1) Optimal Surrender of Guaranteed Minimum Maturity Benefits under Stochastic Volatility and Interest Rates
   Jonathan Ziveyi (UNSW Business School, Australia)
   Boda Kang (University of York, England)

2) Volatility Transmission among Commodity and Stock Markets: Evidence from Developed and Developing Countries
   Gülin Vardar (Izmir University of Economics, Turkey)
   Yener Coşkun (Capital Markets of Turkey, Turkey)
   Tezer Yelkenci (Izmir University of Economics, Turkey)

3) Private Equity/Venture Capital in High-Technology Sector
   Elżbieta Grzegorczyk (University of Lodz, Poland)

4) Financial Contagion, Flight To Quality And Flight From The Quality Among The Stock Exchange Markets Of Turkey And The Developed And The Developing Countries
   Pinar Kaya(Marmara University, Turkey)
   Bulent Guloglu (Istanbul Technical University, Turkey)

5) Diversification Benefit and Return Performance of REITs Using CAPM and Fama-French: Evidences from Turkey
   Yener Coşkun (Capital Markets of Turkey, Turkey)
   Ayse Sevtap Kestel (Middle East Technical University, Turkey)
   Bilgi Yilmaz(Middle East Technical University, Turkey)

Chair: Bulent Guloglu (Istanbul Technical University, Turkey)

Energy Economics I

Room: A3.5 Room, GAU
Time: 05.12.2016, 14.00-15.30

1) Industrial Production, Co2 Emissions Financial Development; a Case from Thailand
   Dlawar Mahdi Hadi (Eastern Mediterranean University, North Cyprus)

2) The Nexus between CO2 emissions, Economic Growth and Energy Consumption: Empirical Evidence from MINT countries
   Mohammad Rajabi (Eastern Mediterranean University, North Cyprus)

Mohammadreza Allahverdian (Eastern Mediterranean University, North Cyprus)

3) Bubble Detection in US Energy Market: Application of Log Periodic Power Law Models
Andisheh Saliminezhad (Eastern Mediterranean University, North Cyprus)
Pejman Bahramian (Eastern Mediterranean University, North Cyprus)

4) Hedging Oil Price Risk Between Oil Importer And Oil Exporter Countries, a Case Study for Turkey and Mexico
Nadir Eroğlu (Marmara University, Turkey)
İmran Emre Karagözlü (Marmara University, Turkey)
Ahmet Akça (Bahçeşehir University, Turkey)

5) An Investigation of the Effect of Oil Price on Russian Economy
Esra Balli (Cukurova University, Turkey)

Chair: Hüsnü Tekin (Istanbul University, Turkey)

Coffee Break 15.30-16.00

Investment

Room: A3.2 Room, GAU
Time: 05.12.2016, 16.00-17.30

1) The Relationship Between Foreign Direct Investment and Intra Industry Trade: An Empirical Analysis on Turkey and EU (15) Countries
Ebubekir Karacayir (Karamanoğlu Mehmetbey University, Turkey)

2) Determinants of Foreign Direct Investments in the CEECS after EU Accession
Gulcin Guresci Pehlivan (Dokuz Eylül University, Turkey)
Esra Balli (Cukurova University, Turkey)

3) The Relationship between Foreign Direct Investment, Economic Growth and Unemployment In Turkey: An Empirical Analysis for the Period of 2008-2015
Faruk Demirhan (Tax Inspection Board, Turkey)
Mustafa Göktuğ Kaya (Tax Inspection Board, Turkey)
Perihan Hazel Kaya (Selçuk University, Turkey)

4) FDI, Industrial Production and Economic Growth; A case from Egypt
Dlawar Mahdi Hadi (Eastern Mediterranean University, North Cyprus)

5) The Impact of Bilateral Investment Treaties (BITS) as a Political Risk Mitigator on Attracting Foreign Direct Investment (FDI)
Zhiyar Ismael (Girne American University, North Cyprus)

Chair: Dilber Caglar (Girne American University, North Cyprus)

Uygulamalı Ekonomi ve Finans II. (Dil : Türkçe)

Room: A3.3 Room, GAU
Time: 05.12.2016, 16.00-17.30

1) Türkiye'deki Sistemik Öneme Sahip Bankaların Kantil Regresyon Kullanılarak CoVaR (Koşullu Riske Maruz Değer) Yöntemi İle Tespit Edilmesi
Zehra Civan (Yildiz Technical University, Turkey)
Gülhayat Gölbaşi Şimşek (Yildiz Technical University, Turkey)
Ebru Çağlayan Akay (Marmara University, Turkey)

2) Carry Trade (Ara Kazanç) Strateji Ve Belirleyicileri Üzerine Bir Çalişma
Burçhan Sakarya (Banking Regulation and Supervision Agency, Turkey)
Ferhun Ateş (Banking Regulation and Supervision Agency, Turkey)

3) Evaluation of Tourism Efficiency by Malmquist Data Envelopment Analysis: A Case Study of Cities In Turkey
Ayhan Aydin (Adnan Menderes University, Turkey)
Serpil Gümüştekin (Ondokuz Mayıs University, Turkey.)

4) Türkiye'de İstihdamın Kuşaklara Göre Analizi
Fatih Çakmak (Kastamonu University, Turkey)
Mehmet Yunus Çelik (Kastamonu University, Turkey)

Chair: Ferhat Pehlivanoğlu (Kocaeli University, Turkey)

Economic Development I.

Room: A3.4 Room, GAU
Time: 05.12.2016, 16.00-17.30

1) Exploring the Role of the Stages of Development on the Effects of Institutional Quality on Economic Growth.
Seyed Alireza Athari (Girne American University, North Cyprus)

2) Effects of Volatility on Economic Growth: Evidence from the European Union
Gulcin Guresci Pehlivan (Dokuz Eylül University, Turkey)

3) Measuring the Development Level and the Performance of Countries on Achieving Millennium Development Goals
Ergül Halisçelik (Undersecretariat of Treasury, Turkey)

4) Causal Interactions between Economic Growth, Inflation and Stock Market Development: The Case of Turkey
Nigar Taspinar (Eastern Mediterranean University, North Cyprus)
Bezhan Rustamov (Eastern Mediterranean University, North Cyprus)
Barış Eren (Eastern Mediterranean University, North Cyprus)

5) Capital Market-Growth Nexus: Evidence from Turkey
Yener Coşkun (Capital Market of Turkey, Turkey)
Ünal Seven (Central Bank of the Republic of Turkey, Turkey)
Talat Ulusever (Acting President, Capital Market of Turkey, Turkey)
Hasan Murat Ertuğrul (Undersecretariat of Treasury, Turkey)

Chair: Ergül Halisçelik (Undersecretariat of Treasury, Turkey)

Monetary Policy

Room: A3.5 Room, GAU
Time: 05.12.2016, 16.00-17.30

1) Common Currency Unit for Gulf Cooperation Council:
Is it Feasible?
Shekar Shetty (Gulf University for Science & Technology, Kuwait)
Mansour AlShamali (Public Authority for Applied Education and Training, Kuwait)

2) Asymmetries in Monetary Policy Reaction Function and the Role of Uncertainties: The Case of Turkey
Pelin Öge Güneya (Hacettepe University, Turkey)

3) The Relationship Between Exchange Rate and Inflation: The Case of Western Balkans Countries
Besnik Fetai (South East European University, Republic of Macedonia)
Paul Sergius Koku (Florida Atlantic University/South East European University)
Agron Caushi (South East European University, Republic of Macedonia)

Chair: Vedat Yorucu (Eastern Mediterranean University, North Cyprus)

Multidisciplinary I

Room: A3.6 Room, GAU
Time: 05.12.2016, 16.00-17.30

1) Profitability Forecast with Use of Meta Model Approach: the Case of Assessment of Investment Project in Banking
Piotr Miszczynski (University Of Lodz, Poland)

2) Promoting Turkey's Development: The Role Of Islamic Financial Instruments
Hüsnü Tekin (Istanbul University, Turkey)

3) The Performance of Health Care Sector: the Case of OECD Countries
Katarzyna Miszczyńska (University Of Lodz, Poland)

4) Sustainability of Public Deficits and Debt in Turkey
Selim Yildirim (Anadolu University, Turkey)
Fatih Temizel (Anadolu University, Turkey)
Ethem Esen (Anadolu University, Turkey)

S. Fatih Kostakoğlu (Anadolu University, Turkey)
Mehmet Dinç (Anadolu University, Turkey)

5) Employment Relations Challenges in Public Sector: Evidence From European Member States
Ana-Maria BERCU (Alexandru Ioan Cuza University of Iasi, Romania)

Chair: Alla Mostepaniuk (Girne American University, North Cyprus)

Gala Dinner in Le Chateau Lambousa Hotel 19.30 - 21.00

International Trade

Room: A3.2 Room, GAU
Time: 06.12.2016, 9.30-11.00

1) Application of Destination Brand Equity Model as an Economic Development Tool
Çağatan Taşkin (Uludağ University, Turkey)

2) Examining The Relationship Between Inflation Rates And Import: An Example in Turkey
Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)
Emre Dünder (Ondokuz Mayıs University,Turkey)

3) Interactions Between Financial Sector Development and International Trade Openness On The Size Of Underground Economy: Empirical Evidence From European Union Countries
Hatice Imamoglu (Eastern Mediterranean University, North Cyprus)

4) Outward Direct Investments of Turkish Firms
Yılmaz Kiliçaslan (Anadolu University, Turkey)
Zeynep Karal(Anadolu University, Turkey)
Gökhan Önder(Anadolu University, Turkey)
Yeşim Üçdoğruk(Dokuz Eylul University, Turkey)

Chair: Yılmaz Kiliçaslan (Anadolu University, Turkey)

Multidisciplinary II

Room: A3.3 Room, GAU
Time: 06.12.2016, 9.30-11.00

1) British Petroleum‘s Deepwater Horizon Oil Spill: Do Press Releases Provide New Information?
P. Sergius Koku (Florida Atlantic University, Macedonia)

Besnic Fetai (South Eastern European University, Macedonia)
Fitim Deari (South Eastern European University, Macedonia)
Izet Zeqiri (South East European University, Republic of Macedonia)

2) Satisfaction with Democracy in Latin America: Do the Characteristics of the Political System Matter?
Selim Jürgen Ergun (Middle East Technical University, Northern Cyprus Campus)
M. Fernanda Rivas (Middle East Technical University, Northern Cyprus Campus)
Máximo Rossi (University of the Republic, Uruguay)

3) Evolution of Corporate Reporting – The Case of Polish Listed Companies
Dariusz Jedrzejka (University Of Lodz, Poland)

4) Modeling the Nonlinear Dynamics of the Turkish Unemployment Rates
Ismail Onur Baycan (Anadolu University, Turkey)

Chair: Ilhan Bora (Girne American University, North Cyprus)

Applied Microeconomics

Room: A3.4 Room, GAU
Time: 06.12.2016, 9.30-11.00

1) Estimating the Constant Elasticity of Substitution Function of Rice Production. The Case of Vietnam in 2012.
Linh K. Bui (Institute of World Economics and Politics, Vietnam Academy of Social Sciences)
Huyen N. Hoang, (Crawford School of Public Policy, Australia)
Hang T. Bui (Vietnam Centre for Sustainable Rural Development, Vietnam)

2) The Effects of Digital Economy on Productivity: A Dynamic Panel Data Analysis
Esra Kabaklarli (Selçuk University, Turkey)
Burak Sencer Atasoy (Undersecretariat of Treasury, Turkey)

3) Short Term Investment Behavior of Turkish Manufacturing Sector: Evidence from BIST Quoted Firms
Omer Tuğsal Doruk (American University of Cyprus & Kadir Has University, Turkey)

4) Consumption And Income Inequality in Turkey
Egemen İpek (Gumushane University, Turkey)

Chair: Aliya Zhakanova Isiksal (Girne American University, North Cyprus)

Applied Econometrics and Statistics

Room: A3.5 Room, GAU
Time: 06.12.2016, 9.30-11.00

1) A Comparison of MCMC Convergence Diagnostics and Goodness of Fit Index For Diagnostics
   Naci Murat (Ondokuz Mayis University, Turkey)
   Emre Dünder, (Ondokuz Mayis University, Turkey)
   Mehmet Ali Cengiz (Ondokuz Mayis University, Turkey)

2) Financial Performance Investigation with the Help of the Bootstrap Method: Example of the Eredivisie League
   Tolga Zaman (Ondokuz Mayıs University, Turkey)
   Emre Yildirim (Ondokuz Mayıs University, Turkey)

3) Forecasting the Turkish Inflation Rate Using Information Criteria
   Naci Murat (Ondokuz Mayis University, Turkey)
   Emre Dünder (Ondokuz Mayıs University, Turkey)
   Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)

4) A Dynamic Model of Turkish Electricity Prices
   Mehmet Soytas (Ozyegin University, Turkey)

Chair: Emre Atılgan (Trakya University, Turkey)

Coffee Break 11.00-11.30

Business Economics

Room: A3.2 Room, GAU
Time: 06.12.2016, 11.30-13.00

1) Complexity, Competitiveness And Technology:
   Is There A Link?
   Yılmaz Kılıçaslan (Anadolu University, Turkey)
   Uğur Aytun (Anadolu University, Turkey)

2) Employees of Stress Levels, The Effect of Job Satisfaction: A Field Study
   Adnan Çelik (Selcuk University, Turkey)
   Sadife Güngör (Selcuk University, Turkey)

3) An Experimental Approache to Rationality of Consumer Behavior
   Ozlem Sekmen (Gumushane University, Turkey)
   Haydar Akyazi(Gumushane University, Turkey)
   Egemen İpek (Gumushane University, Turkey)

4) The Importance of Effective Socioeconomic Conditions, Government Policies and Procedures Factors for Entrepreneurial Activity using Fuzzy Analytic Hierarchy Process in Eight Developing Countries
   Iman Aghaei (Eastern Mediterranean University, North Cypurs)
   Amin Sokhanvar (Eastern Mediterranean University, North Cypurs)

Mustafa Tümer **(**Eastern Mediterranean University, North Cypurs)

Chair: Yılmaz Kılıçaslan (Anadolu University, Turkey)

Uygulamalı Ekonomi ve Finans III. (Dil : Türkçe)

Room: A3.3 Room, GAU
Time: 06.12.2016, 11.30-13.00

1) Modelling of Dependency Between Industrial Production Indexes and Their Fundamentals Using Stochastic Copula Approach
Emre Yildirim (Ondokuz Mayıs University, Turkey)
Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)

1) The Effect On Macro Economic Indicators Of The Financial Crisis As A Paradox Of Neoliberalism: The Case Of Trnc
Orhan Çoban(Selcuk University, Turkey)
Nihat Doğanalp (Selcuk University, Turkey)

2) Gümrük Birliği ve Helsinki Zirvesi'nin AB Üyelik Sürecinde Türkiye ve KKTC Açisindan Değerlendirilmesi
Behive Çavuşoğlu (Near East University, North Cyprus)

Chair: Sema Yilmaz Genç (Kocaeli University, Turkey)

Energy Economics II

Room: A3.4 Room, GAU
Time: 06.12.2016, 11.30-13.00

1) What Are the Dynamics of Co2 Emissions in Upper – Middle Income Countries? A Case Study For China, Iran And Turkey
Hasan Rüstemoğlu (Cyprus International University, North Cyprus)

2) Environmental Kuznet's Curve for Saudi Arabia: An Endogenous Structural Breaks Based on Cointegration Analysis
Mohammad Asif (Aligarh Muslim University, India)

3) The Effect of Ethical Climate Perception of Teachers to Their Organizational Commitment: A Sample Practice
Adnan Celik (Selçuk University, Turkey)
Emine Et Oltulu (Selçuk University, Turkey)
Beyhan Ozgu Cakir (Karatay University, Turkey)

4) Sectoral Impact of Crude Oil Price Shocks on Stock Returns in Selected Crude Oil Exporting and Importing Emerging Economics.
Isah Wada (Eastern Mediterranean University, North Cyprus)
Gulcay Tuna (Eastern Mediterranean University, North Cyprus)

Chair: Hasan Rüstemoğlu (Cyprus International University, North Cyprus)

Tourism Economics

Room: A3.5 Room, GAU
Time: 06.12.2016, 11.30-13.00

1) An Investigation the Relationship Between the Exchange Rate Volatility and Tourism Income for Turkish Economy
   Fatih Ayhan (Selcuk University, Turkey)
   Fatih Mangır (Selcuk University, Turkey)

2) Implication of The Euro Switch to Tourism Revenue: Evidence from South Cyprus
   Andrew Alola (Eastern Mediterranean University, North Cyprus)
   Kemal Bağzıbağlı (Eastern Mediterranean University, North Cyprus)
   Dlawar Mahdi Hadi (Eastern Mediterranean University, North Cyprus)

3) The Effect of Prosperity on International Tourism Expenditures
   Amin Sokhanvar (Eastern Mediterranean University, North Cyprus)

4) Tourism Development and Economic Growth: A Panel Causality Analysis for Emerging Market Countries.
   Amin Sokhanvar (Eastern Mediterranean University, North Cyprus)

5) Exploring the Perceptions of Tourism Students about Industrial Career: a Perspective from Tourism Economics of Tourism Industry
   Mustafa Daskin (Sinop University, Turkey)

Chair: Fatih Ayhan (Selcuk University, Turkey)

Health Economics

Room: A3.6 Room, GAU
Time: 06.12.2016, 11.30-13.00

1) The Principal-Agent Problem In Health Care Systems: Is It Effected By Performance-Based Supplementary Payment System?
   Emre Atılgan (Trakya University, Turkey)

2) Determinants Of Second hand Smoke Exposure In Turkey: Findings From The Global Adult Tobacco Survey
   Zeynep Elitas (Anadolu University, Turkey)
   Didem Pekkurnaz (Başkent University, Turkey)

3) Why The Turkish PPP Contracts in Healthcare Face Difficulty to Achieve Private Finance
   Uğur Emek (Başkent University, Turkey)

4) Response Time and Heart Rate in a Moral Dilemma
   Olusegun A. Oyediran (University of Castilla-La Mancha, Spain)
   M. Fernanda Rivas (Middle East Technical University, Northern Cyprus Campus)

   Chair: Uğur Emek (Başkent University, Turkey)

Lunch 13.00-14.00

Uygulamalı Ekonomi ve Finans IV. (Dil : Türkçe)

Room: A3.3 Room, GAU
Time: 06.12.2016, 14.00-15.30

1) Dünyadan ve Türkiye'den Finansal Kriz Tecrübeleri: Finansal Kriz Modelleri Ekseninde Bir Karşilaştirma
   Nihat Doğanalp (Selcuk University, Turkey)
   Ayşe Çoban (Selcuk University, Turkey)

2) Comparative Study of Forecasting Methods for Gross National Products in Turkey
   Serpil Gümüştekin (Ondokuz Mayıs University, Turkey.)
   Emre Dünder (Ondokuz Mayıs University, Turkey)
   Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)

3) OECD Ülkelerinin Pisa Puanlari İle Sosyo-Ekonomik Gelişmişliklerinin Karşilaştirmasi
   Hasan Bulut (Ondokuz Mayıs University, Turkey)
   Yüksel Öner(Ondokuz Mayıs University, Turkey)

4) Avrupa Birliğine Üye ve Aday Ülkelerin Bazi Ekonomik Göstergeler Bakimindan Kümelenmesi
   Hasan Bulut (Ondokuz Mayıs University, Turkey)
   Yüksel Öner(Ondokuz Mayıs University, Turkey)

   Chair: Mesut Türkay (Undersecretariat of Treasury, Turkey)

Financial Crisis and Stability

Room: A3.2 Room, GAU
Time: 06.12.2016, 14.00-15.30

1) Why "Global Crisis" Hit Turkish Banking System Less Than Other Countries ?
   Bulent Gunceler (Okan University, Turkey)

2) Central Banking After Global Financial Crisis: Asset Price Bubbles and Financial Stability

Abdullah Erkul (Balıkesir University, Turkey)
Tunç Siper (Balıkesir University, Turkey)

3) What is the Real Reason of the Propogation of Financial Crises and How it can be Stopped?
Dogus Emin (Social Sciences University of Ankara, Turkey)

4) The Effect on Macro Economic Indicators of the Financial Crisis as a Paradox of Neoliberalism: The Case Of TRNC
Orhan Çoban, (Selçuk University, Turkey)
Nihat Doğanalp, (Selçuk University, Turkey)

Chair: Ilhan Bora (Girne American University, North Cyprus)

Education Economics and Labor Markets

Room: A3.4 Room, GAU
Time: 06.12.2016, 14.00-15.30

1) The Relationship Between Education and Economic Growth in Turkey
Behiye Çavuşoğlu (Near East University, North Cyprus)

2) Education Level and Economic Growth: The European Experience
Mohammad Rajabi (Eastern Mediterranean University, North Cyprus)
Mohammadreza Allahverdian (Eastern Mediterranean University, North Cyprus.)
Mohsen Mortazavi (Eastern Mediterranean University, North Cyprus.)

3) Obstacles Immigrants Faced in Integration to Labor Market: The Sample of Syrian Immigrants in Turkey
Sefa Çetin (Kastamonu University Turkey)
Hasan Hüseyin Büyükbayraktar (Selcuk University, Turkey)
Abdullah Yilmaz (Selcuk University, Turkey)

4) Female Labor Force Participation Problems in Turkey: Causes and Policy Implications
Gulcin Guresci Pehlivan (Dokuz Eylül University, Turkey)

5) The Impact of Syrian Refugee Crisis on Turkish Labour Market
Aliya Işıksal (Girne American University, North Cyprus)
Dilber Çağlar (Girne American University, North Cyprus)
Yossi Apeji (Girne American University, North Cyprus)

Chair: Feyza Bhatti (Girne American University, North Cyprus)

Applied Banking

Room: A3.5 Room, GAU
Time: 06.12.2016, 14.00-15.30

1) Catering Incentives and Dividend Policy: Evidence from Turkey
   Sefa Takmaz, (Adnan Menderes University, Turkey)

2) Determinants of Non-Performing Loans in Central and Eastern European Countries
   Ali Özarslan (Middle East Technical University, Turkey)

3) European Banks Financial Strength Ratings: Evidence from a Parsimonious Ordered Logit Model.
   Cem Payaslıoğlu (Eastern Mediterranean University, North Cyprus)
   Blerta XHAFA (Eastern Mediterranean University, North Cyprus)

4) The Equipment Leasing as an Alternate Funding Model
   Murat Gulec (Banking Regulation and Supervision Agency, Turkey)

5) The Determinants of Borrowing Behaviors of Turkish Municipalities
   Hakan Yas (Trakya University, Turkey)
   Emre Atılgan (Trakya University, Turkey)

   Chair: Cem Payaslıoğlu (Eastern Mediterranean University, North Cyprus)

Applied Banking II

Room: A3.6 Room, GAU
Time: 06.12.2016, 14.00-15.30

1) Distinguishing the Effects of Household and Firm Credit on Income Inequality
   Ünal Seven (Central Bank of the Republic of Turkey, Turkey)
   Dilara Kılınç (Izmir University of Economics, Turkey)
   Yener Coşkun (Capital Markets Board of Turkey, Turkey)

2) The Effect of Foreign Bank Entry on the Financial Performance of the Commercial Banks in Turkey
   Ayhan Kapusuzoglu (Yildirim Beyazit University, Turkey)
   Nildag Basak Ceylan (Yildirim Beyazit University, Turkey)

3) Corporate Governance and Financial Constraints
   Erkan Solan (Undersecretariat of Treasury, Turkey)
   Cumhur Çiçekçi (Undersecretariat of Treasury, Turkey)

4) An Analysis of the Non-Performing Loans of Commercial Banks in Kazakhstan
   Hatice Jenkins (Eastern Mediterranean University, North Cyprus)
   Zhaneta Kassymbekova (Eastern Mediterranean University, North Cyprus)

   Chair: Yener Coşkun (Capital Markets of Turkey, Turkey)

Coffee Break 15.30-16.00

Multidisciplinary III

Room: A3.2 Room, GAU
Time: 06.12.2016, 16.00-17.30

1) The Tourism Sector in Montenegro in the Context of European Integration.
   Radosław Dziuba (University Of Lodz, Poland)

2) Impact of Gold Price And Exchange Rate on Immovable Property Index: Empirical Evidence From Turkey
   Dervis Kirikkaleli, (Girne American University, North Cyprus)
   Seyed Alireza Athari, (Girne American University, North Cyprus)
   Ilhan Bora (Girne American University, North Cyprus)
   Hasan Murat Ertugrul (Girne American University, North Cyprus)

3) Effect of Islamic Banking on Employment in Punjab, Pakistan
   Bilal Ashraf (University of Gujrat (Punjab), Pakistan)

4) The Dual Adjustment Approach with Popular Filters
   Mustafa Ismihan (Atilim University, Turkey)
   Mustafa Can Küçüker(Atilim University, Turkey)

5) Does Unemployment Rate Have a Unit Root
   Mustafa Ismihan (Atilim University, Turkey)

Chair: Seyed Alireza Athari, (Girne American University, North Cyprus)

Uygulamalı Ekonomi ve Finans V. (Dil : Türkçe)

Room: A3.3 Room, GAU
Time: 06.12.2016, 16.00-17.30

1) An Application Of Panel Data Analysis For Export In Turkey
   Emre Yildirim (Ondokuz Mayıs University, Turkey)
   Emre Dünder (Ondokuz Mayıs University, Turkey)
   Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)

2) Efficiency Assessment Of The Transportation Services In Turkey
   Serpil Gümüştekin (Ondokuz Mayıs University, Turkey)
   Talat Senel

3) Politika-Ekonomi İlişkileri Üzerine Teorik Yaklaşımlar: Politik Konjonktür Teorileri
   Sema Yilmaz Genç (Kocaeli University, Turkey)
   Duygu Süloğlu (Kocaeli University, Turkey)

4) Yaşayan Efsane Beetle'nin Türkiye Piyasa Fiyatinin Modellenmesi
   Hasan Bulut (Ondokuz Mayıs University, Turkey)

Tolga Zaman (Ondokuz Mayıs University, Turkey)
Ebrucan İslamoğlu (Nevşehir Hacı Bektaş Veli University, Turkey)

5) Türkiye'de Enflasyon Ve Ekonomik Büyüme İlişkisi: Granger Nedensellik Analizi
Bedriye Tunçsiper (Balıkesir University, Turkey)
Hülya Erkul (Balıkesir University, Turkey)

Chair: Hasan Murat Ertugrul (Undersecretariat of Treasury, Turkey)

Economic Development II.

Room: A3.4 Room, GAU
Time: 06.12.2016, 16.00-17.30

1) Examining the Relationships Among the Antecedents of Innovation Performance: A Research on Turkish Manufacturing Industry
Çağatan Taşkin (Uludağ University, Turkey)
Cem Okan Tuncel (Uludağ University, Turkey)

2) The Analysis of Turkey's Real Effective Exchange Rate and Hazelnut Export to Germany via Bounds Test
Yılmaz Toktaş (Amasya University, Turkey)
Eda Bozkurt (Atatürk University, Turkey)

3) The Level of Financial Knowledge among People with Debt
Ewa Nastarowicz (University of Lodz, Poland)

Chair: Ikechukwu Nwaka (Girne American University, North Cyprus)

Applied Finance II

Room: A3.5 Room, GAU
Time: 06.12.2016, 16.00-17.30

1) A Novel Bayesian Approach for Multivariate Conditional Copula Models With Mixed Outcomes
Mehmet Ali Cengiz (Ondokuz Mayıs University, Turkey)

2) A Markov Autoregressive Dynamic Causality Analysis For World Equity Markets In Crisis Period
Mesut Türkay (Undersecretariat of Treasury, Turkey)

3) Convergence in Financial Measures Across The EU-15
Dilara Kılınça (Izmir University of Economics, Turkey)
Ünal Seven (Central Bank of the Republic of Turkey)
Hakan Yetkiner (Izmir University of Economics, Turkey)

4) Measuring the Financial Contagion: Evidence from Dynamic Betas and Similarity Based Network Structure
Burak Sencer Atasoy (Undersecretariat of Treasury, Turkey)
Onur Polat (Illinois State University, USA)
İbrahim Özkan (Hacettepe University, Turkey)

5) The Relationship between Elements of Internal Financial Flexibility in Market Participant`s Decision Making
Parviz Piri (Urmia University, Iran)
Samaneh Barzegari Sadaghiani (Urmia University, Iran)
Fariba Abeli Habashi (Urmia Azad University, Iran)

Chair: Ünal Seven (Central Bank of the Republic of Turkey)

Energy Economics III.

Room: A3.6 Room, GAU
Time: 06.12.2016, 16.00-17.30

1) Causal Effects of Oil Price Volatility on Stock Exchange Rates: Evidence from Emerging and Developed Economies
Bilal Bagis (Bingol University, Turkey)

2) Land Tenure System and Agricultural Productivity: Case of Ukraine
Andriy Popovych (Institute of Agricultural Ecology and Environmental Management,Ukraine)

3) The Green Economy as a Priority Development of Kazakhstan
Shynar Zhakanovna Rakhmetullina (International University of Kyrgyzstan, Kyrgyzstan)
Aliya Zhakanova Isiksal (Girne American University, North Cyprus)
Yossi Apeji (Girne American University, North Cyprus)

4) The Impact of Agriculture on Co2 Emission in China
Nezahat Doğan (Final International University, North Cyprus)

5) Testing Convergence in Research Output in Biotechnology for G7 Countries
Serhat Yaşgül (Marmara University, Turkey)

Chair: Aliya Zhakanova Isiksal (Girne American University, North Cyprus)

CONTRADICTIONS IN PUBLIC-PRIVATE PARTNERSHIP DEVELOPMENT WITHIN TRANSITIONAL ECONOMIES

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Abstract

The paper is devoted to the study of the public-private partnership (PPP) development process within transitional and advanced economies. Based on successful practice of PPP projects in advanced countries, implementation of appropriate practical steps to expand PPP practice in transitional economies was provided. Moreover, the key contradictions of PPP development within transitional economies were identified as well as the methods to solve or minimize them. The main channels of financial investments in infrastructure of transitional economies and the distribution of investments within sectors of infrastructure were analysed. The empirical analysis has shown the impact of economic freedom and the living standards levels on private investments (domestic and foreign) in infrastructure projects within transitional economies.

Keywords*:* Transitional economy, public-private partnership (PPP), PPP projects, contradictions of PPP, infrastructure.

Introduction

Transitional economy is characterized by temporal interrelated changes from traditional inefficient economic system to modern one, for transitional economies in Central and East Europe the movement is from the command state system to the free market economy. Throughout transforming an economy is unstable and sometimes even has chaos features, as elements of previous system are transforming to the new kind; meanwhile the state lowers its power and even can lose the control of some areas of economic system. Besides that the key transitional processes are aimed at specifically institutional and legal reforms that leave out of date objects of infrastructure still existing in transitional economies. Under those conditions the private business is playing its crucial role as a mechanism to stabilize the economic environment in a form of taking or sharing government's social functions in the time of transition, when the pressure on the budget is heavy and there is some uncertainty.

Literature review

Key determinants of PPP development

Kasri and Wibowo (2015) in their study presented the empirical evidences that prove the main determinants of PPP implementation, the first is the market conditions – the higher the demand for public services is the more attractive sector is for private investors, the second is institutional quality and effective government – the better legal and state protection is provided to investors the higher their investments are. At the same time the paper, based on the empirical data, disapproves some determinants such as macroeconomic conditions and budget constraints.

Mozsoro and Gasiorowski (2008) designed the model-based analysis, which showed that PPP projects may provide public services cheaper than a sole private or sole public entity. They underlined that PPP projects are more efficient in 1) stability-oriented government policy countries, where for private sector cheaper financing conditions are available and encouraging by the state; 2) countries with a reliable legal system that provides the instruments to protect the interest of the public partner and the private partner. The key barriers were proven such as: a lack of trust and confidence between the partners, an insufficient legal framework, and the unstable macroeconomic policies, that prevent private partner of cooperation with the state.

PPP in transitional economies

Yang Y. et al. (2013) designed Theoretical Framework of PPP development in transitional economies, which contains tree pillars: Government (government actions), Market (financial environment) and Operating Environment (government and legal regulations). Moreover, based on mentioned Framework and major barriers seven crucial factors that enable PPP development in transition economies were identified, such as: market potential, institutional guarantee, government credibility, financial accessibility, government capacity, consolidated management and corruption control. Based on their research, contradictory conclusions were conducted, meaning, PPPs in transitional economies have some advantages comparing to advanced ones: transitional economies have greater business potential for PPP (more profitable than in advanced countries) and at the same time greater institutional and legal risks; the movement from centralized to market economy simplifies procedures and regulations comparing to advanced economies with highly complex legal regulations on PPP.

Zagozdzon (2013) investigated the specifics of PPP implementation in transition economies based on Polish case; the author described a PPP market in transition countries as “an under construction market” and suggested the following factors as crucial to succeed in PPP: 1) the government’s economic policy regarding privatization and deregulation, 2) the level of financial market development and strict financial policy, 3) the competition in the public procurement market, 4) adapted legal system to the specifies of PPP projects, 5) the government PPP-oriented policy, supporting and promoting partnership projects.

Sharma (2012) provided the first attempt to identify the determinants of PPP in developing countries; this empirical study evidenced the following key determinants: macroeconomic conditions, market size, quality of regulation and governance, at the same time the importance of political factors and budget constraint was not proven.

Urio (2007) in the research paper identified key determinants of PPP projects in transition economies and the crucial dilemma for a government. First of all, talking about determinants of PPP projects the author highlighted the concept that to “copy” current legal rules and regulation on PPP is not the efficient method to develop PPP as it means to use the identical “surface” without required fundamentals. The second significant impact of the paper is on a government’s dilemma as a government generally aims at three goals: to maintain its control on public services sector and to improve the quality of public services and to allocate efficiently available resources, but while using PPP as a mechanism to attract private investments and to improve the quality of public sector without or with lower costs from the budget the state is losing its monopolistic power. According to the authors, the state should follow the PPP principles as long as it faces the risk for autonomous development or national independence.

Benefits and risks in PPP implementations in transitional economies

Kripa (2013) made a research on benefits and risks of PPP projects for each economic actor: a private sector, a government and society. According to the paper a government will use PPP as a mechanism to relocate the budget money, using private investments and their fees where it is possible and saved budget funds, in that case, can be invested in another sector, at the same time, a government will lose its power in previous monopolies; while implementing PPP projects a government will face possibility that a project will be cancelled at all. Business will benefit also in a way that some state monopolies will be available for investing, private sector will obtain the opportunity to improve and innovate their activities, to become more competitive comparing to other firms, of course as a result of PPP contract business will have some restrictions mostly connected to the state's price policy in order to protect consumers and to hold prices at the same affordable level. Finally, society will also benefit because of the new innovative methods of providing public services, better quality and variety of services, but talking about risks, specifically in transitional economies, as consulting processes are not holding "transparently", that's why the society's interests are not always included in the PPP projects, rather business' and government's interests.

Harris and Pratap (2009) studied reasons of cancelling PPP projects and identified the most crucial ones that make higher probability of cancelling the project as following: macroeconomic shocks most probably increase the cost of project financing for a foreign investor (exchange rate depreciation) or through increases in domestic interest rates for a local investors; the presence of a foreign sponsor; the size of the project, the bigger project the higher financial burdens are imposed on the government; the level of government that provides PPP projects, PPPs established by local governments have lower probability to be cancelled than by other levels. Moreover, the study shows that institutional quality has no significant impact on cancellation and control of corruption has significant impact on reducing the probability of cancelling the project.

Andres et al. (2008) provided a study based on developing countries (specifically on Latin American countries) that shows that infrastructure facilities after changing in ownership from public to private started to perform more efficient; first of all it was seen in higher labor productivity, improvement in distribution losses and better quality of services. According to the paper the key deficiencies for private partner are as following: the lack of motivation, the absence of social programs aimed at supporting and protecting PPP projects, the absence of transparency in financial actions, weak legal framework and contract violations.
Corrigan et al. (2005) in their paper "Ten Principles for Successful Public/Private Partnerships" identified key risks and rewards for public and private partners. Public sector within PPP projects is challenged by conflicts of interests, misusing of public funds and resources, a developer failure to implement PPP projects, public opposition, at the same time some rewards will become available for public as: better infrastructure, job creation, an increase in quality of life, greater community wealth, advance city image. The other partner, private business, will face some specific risks: increasing costs of PPP implementation, time-consuming process of PPP, failures to complete projects, a change in key public and/or political leaders, market failures; private sector will obtain some benefits namely: new resources to sustain organization, higher profitability, value/wealth creation, community support, better image, reputation and experience to get next projects.

Latest scientific literature reasonable have defined the key determinants of successful PPP projects implementation and factors that can cause their delaying or sometimes even cancellation both in transitional and advanced economies. As it was mentioned above while implementing PPP projects the conflict of interests occurs, especially because of the opposite motives from the state and business. The issue of public and private motives and benefits needs to be studied better in the context of comparison the PPP principles in advanced and transitional economies.

The purpose of the paper is to provide a comparison analysis of PPP principles in advanced and transitional economies, to determine the characteristics and contradictions of the formation of partnerships between government and business in transition economies, to identify the impact of the developing stage of a country on its values of PPP practice and to develop on this basis practical recommendations for improving the mechanisms of PPP implementation.

The current scientific literature analysis shows that a transition economy is defined as a special phase of economic system development through moving from “old” to “new” economic system (from traditional to modern) following by evolutionary and/or revolutionary qualitative changes. Such changes related to all elements of the economic system, starting from methods of resources allocation, property rights, methods of production, models of labor motivation, objectives and factors of socio-economic development, to institutional environment (Grazhevska, 2008).

In the late twentieth century about thirty former socialist countries abandoned the command-administrative economic system and made deep institutional changes aimed at building a market economy. According to researchers, these countries were trapped into a situation of so-called "triple transition": to the market system, democratic political institutions, as well as integration into the global market. Mentioned above created the new model of "transition state” and intensified the necessity to increase the “role” of the state in order to overcome the weakness of the national business and form civil society (Haggard, 1995; Howard, 2002).

The transformation processes in different countries have certain specific characteristics; however, it’s possible to identify key common features inherent to transition economies:

1. systematic character of changes as all elements of the existing structure have to be replaced;
2. marginal imbalance and instability associated with temporary elements domination (alternative structures and organizations), parallel structural elements;
3. abnormality, crisis and conflicts domination, resulting from public and business interests disparity and leading to social conflicts aggravation, chaotic changes in the normative-value system of society;
4. normative imbalance that occurs as a result of institutional changes when informal interactions replace formal rules, the transition from explicit to implicit contracts, from standardized to customized, sometimes even double standards, local institutions and so on.
5. multi-structure that occurs under coexistence and combating existing and new socio-economic elements and structures;
6. alternative confrontation of old and new forms of economic activity, and their coexistence as a result of economic systems inertia;
7. contradictory and alternatively social-economic and political development (Bazylevych, 2004; Grazhevska, 2007).

Generally, transition economies are characterized by its abnormal and unstable process of development as old elements are “dying” and their roles are putting on completely new elements.

In the purpose of the study its worth to mention about the continuity of socio-economic transformation, that makes it difficult to determine the completion of the transition from the old economy to a new quality. That is why the World Bank defined the ultimate goal of transition for the 28 countries that have transformed towards establishing a market economy in 1996 and suggested the following four criteria for assessing the progress of socio-economic transformation: 1) liberalization of the economy; 2) development of property rights; 3) development of new relevant institutions; 4) social orientation of public policy (Jahan, 2015).

Based on current literature the key contradictions of PPP development in transitional economies are defined as: 1) the growth of social stratification caused by different access to strategic resources; 2) the formation of elitism as the organizing principle of economic activity as parallel with moving from command to market economy old norms are getting weaker and new one is only forming, under such uncertainty the role of elite groups are getting more powerful, meaning that they form the ruling group; 3) the weakening of democratic structures and civil society caused by chaotic features of transitional economy; 4) the emergence of the phenomenon like "digital inequality" and " computer exclusion"; 5) the development of "PR" and the spread of technology "brainwashing"; 6) the aggravation of global issues as the mail goal for transitional economies is to build new economic and legal framework but not do deal with current issues, etc. (Bazylevych, 2004; Grazhevska, 2007; Howard, 2002).

Resolving these contradictions requires strengthening the state’s role and establishing of reliable partnerships between key economic actors (government and business) to reform all public sector elements. General flows of modern-day economic development such as post industrialization and globalization of the economy should be taken into account; mentioned involve a movement from a simple reproductive strategy to innovative, meaning that the government policy is aimed at stimulating innovative economic activities (Figure 1).

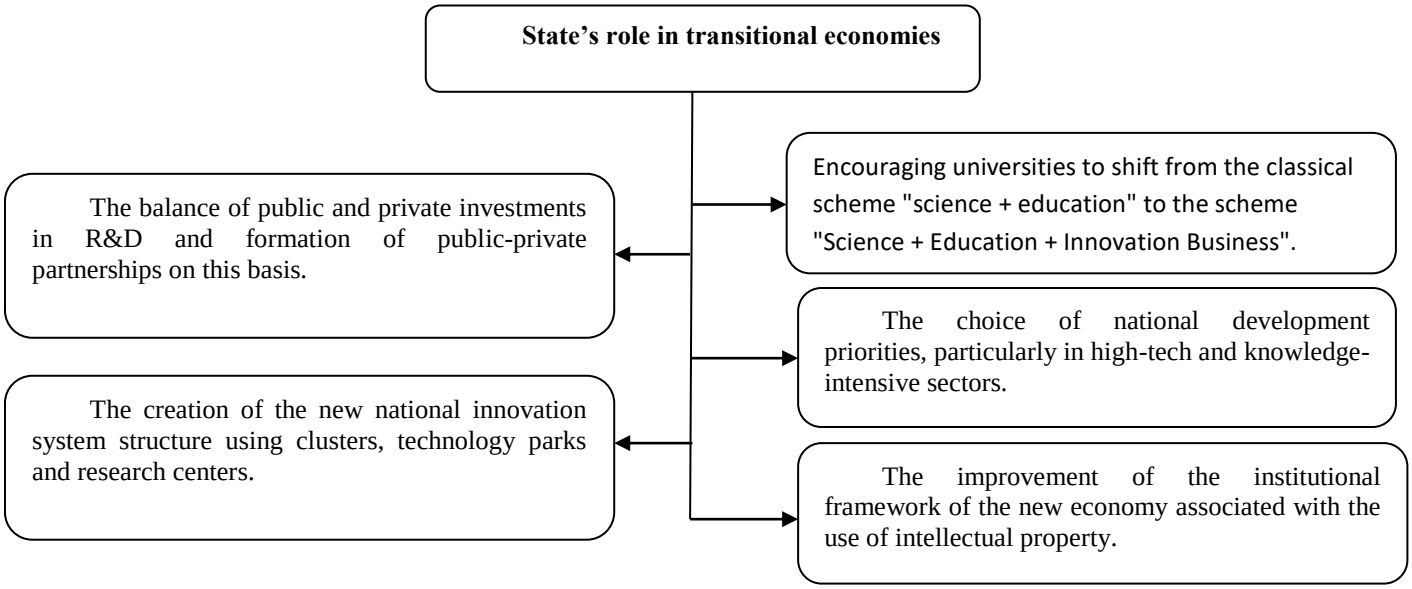


Figure 1. State's role in transition economies.
Source: based on (Bordoev, 2008).

During the process of institutional transformation, moving from old norms to new, their power and reliability declined at the same time instability and uncertainty appeared. Under those conditions public-private partnership became an important mechanism to balance and promote equality between private and state interests. Talking about PPP development in transition economies it needed to be mentioned that contradictions mostly appeared between "privatized" state and society, as "big" business sector privatized state property using "grey" gaps in the law (Heyets, 2009). All characteristics of transition economy have their influence on the practice of PPP projects implementation, distinguishing feature of PPP in market and transition economy are presented in the table 1.

Table 1. Distinguishing features of public-private partnerships in advanced and transitional economies.

	Advanced economies	Transitional economies
.	PPP subjects are business and representatives of the state, isolated from big business	Subjects PPPs are representatives of state and business who have influence on public authorities
.	The ”transparent” procedure of competition to determine the private partner	The “not transparent” competition to determine the private partner
.	Developed regulatory framework regulation of cooperation between state and business	Imperfect legal framework regulating the processes of cooperation between state and business
.	Rational choosing a business partner	Significant influence of future personal benefits on the choice of business partner
.	The interest of private businesses in their own profits and social benefits as a result of improving public sector	The interest of private business exclusively in their own financial gain
.	Encouragement, support and guarantee to business from the government	Lack of motivation of the private sector to cooperate with the state
.	Developed methodologies for public-private partnerships accounting and efficiency evaluation	There are no or only developing methods of accounting and evaluation of public-private partnerships
.	The main purpose of cooperation between the state and business is the improvement of state property at the expense of private investment	The main purpose of cooperation between the state and business is the "capture" of state property by private businesses for further financial gain
.	State and business are equal partners	The state has a greater impact than private business
0.	Trust between government and business supported by current laws	Lack of trust between government and business
1.	The PPP procedures and practiced were developed gradually based on current needs and goals.	The PPP procedures and practiced were “copied” directly from advanced countries without any adjusting them to the country’s current needs and goals.

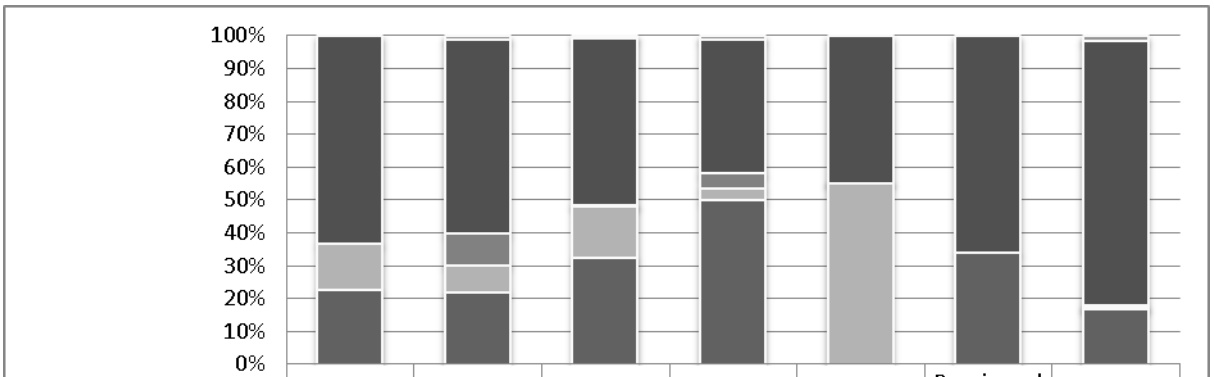
Source: designed by the author

Thus, in the process of economy’s transformation the principles of cooperation between the state and business representatives deformed, that caused by the imperfection of the existing institutional framework, changing the practice of interactions from competing to cooperative, shifting the goals from financially to socially beneficial. The purpose of such a partnership has to be taken into account: in a market economy – the development of PPP is for more complete satisfaction of public needs, in a transition economy – mostly to meet the needs of private business by providing opportunities to obtain regular income.

The potentially more profitable sectors of infrastructure attract higher financial investments, as a private partner has two complement issues to invest rationally and to support the state partner in providing and maintaining the public infrastructure objects. Talking about the financial inflows in infrastructure it has to be mentioned the rest factors that influence on the investments behaviour such as: the general image of a country on the global level, the level of

openness of going business, the level of reliability to the legal system, the level of social acceptance of a business as a provider of public goods, the level of trust between the state and private partner, the level of transparency of competition within a country, the wiliness to adapt new global trends as PPP etc.

The World Bank database on Private Participation in Infrastructure allows us to study the distribution of private incentives on PPP among core sectors: water and sewerage, telecommunication, roads and ports, natural gas, electricity.



	Lithuania	Russian Federation	Romania	Bulgaria	Belarus	Bosnia and Herzegovin a	Ukraine
Water and sewerage	0.00	1877.00	157.00	152.00	0.00	0.00	202.00
Telecom	1919.00	84399.00	12104.00	5501.00	4063.00	1285.00	10822.00
Roads and ports	0.00	13944.00	120.00	618.00	4.00	0.00	130.00
Natural Gas	427.00	11682.00	3737.00	477.00	5000.00	0.00	38.00
Electricity	682.00	31641.00	7719.00	6738.00	0.00	662.00	2262.00

Figure 2. Distribution of PPP projects within public sectors in transitional countries (2000-2015 years, USD million).

Source: Private Participation in Infrastructure Database, 2015.

For the research we use such transitional economies as Lithuania, Russian Federation, Romania, Bulgaria, Belarus, Bosnia and Herzegovina and Ukraine (the figure above), based on the data we can conduct that there is a “common pattern” of PPP projects distribution in infrastructure sectors: the most valued sectors are telecommunication and energy providing sectors as natural gas and electricity for transitional economies. The sectors, were PPP projects were implemented successfully, indicate the spheres where the “importance” and “necessity” to be improved for public were accompanied with the private incentives. To find the projects that will be attractive and profitable for private partner and appreciated by the society and beneficial for the state is the first step to support and develop the PPP practice as a mechanism of reducing financial pressure on the state and at the same time improving the living conditions to society.

Our analysis shows that mostly governmental financial expenditures connected to maintaining the public sphere (particularly infrastructure objects) in transitional economies replaced or shared with private business, more specifically foreign private investors. The data on private investments in infrastructure (the table below) provides the picture on current investment flows in transitional economies, the biggest financial flows are coming from the local businesses (around 70% of total investments in infrastructure), than from Russian

Federation (around 20%), the following countries are advanced countries with small shares such as Germany (about 4%), Norway (1.5%), Sweden (1.5%), Austria (around 1%) etc.

Table 2. The main sources of private investments in infrastructure (2000-2015 years, USD million)

	Lithuania	Russian Federation	Romania	Bulgaria	Belarus	Bosnia and Herzegovina	Ukraine	***Total***
Domestic		63315	532				351710	
Russian Federation	464				3064		108010	***111538***
Germany	209	23246		351		18		***23824***
Norway		7054		1742				***8796***
Sweden	1581	6782			164			***8527***
Austria			354	2595	1581		1095	***5625***
Greece			4652					***4652***
United States				4282				***4282***
France			3792				130	***3922***
United Kingdom	339		2364			662		***3365***
Czech			1619	1449				***3068***
Italy			2323					***2323***
Turkey					1011		882	***1893***
Serbia						789		***789***
Portugal			371					***371***
China				248				***248***
Estonia	130							***130***
Bulgaria	47							***47***
Netherlands					33			***33***
Slovenia						25		***25***
Cyprus					4			***4***

Source: Private Participation in Infrastructure Database, 2015.

Noteworthy to mention the reasons of such distribution: first of all, as it was discussed previously by researchers, the low rates of return on infrastructure projects, that makes them "not attractive" to foreign investors, the second reason is that local business are more motivated to invest in socially beneficial projects rather than foreign companies, the third reason is the lower possibility of projects cancellation when local business invest compared with external sources of financing, the forth reason is the level of economic freedom and the easiness of doing business, the fifth one is the stage of economic development of a particular country. The impact of the last two factors will be discussed later.

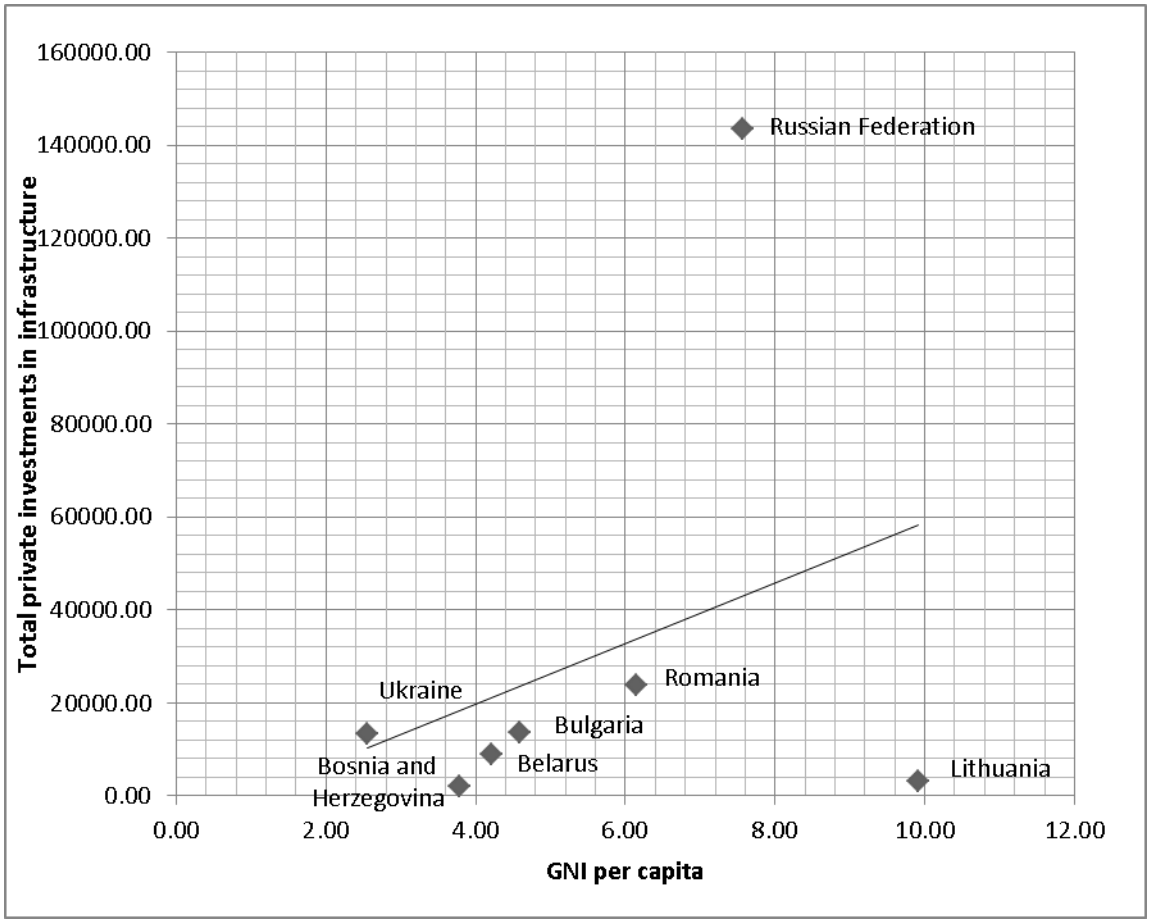


Figure 3. The relationship between total private investments in infrastructure (2000-2015, USD million) and the Gross national income per capita (current USD)
Source: Private Participation in Infrastructure Database, 2015.

The figure above presents the relationship between the total private investments in infrastructure in transitional economies from 2000 to 2015 in USD million and the Gross National Income per capita in current USD; this analysis shows the impact of economic developing meaning improving leaving standards on PPP development measured in total private financial flows to public sector.

There are two hypotheses: 1) with an increase in GNI per capita the living standards will be improved, that means that lower will be the "need" to attract private investments to develop public sectors, which supports the negative correlation; 2) when the GNI per capita increases the county's image becomes more reliable that attracts domestic and foreign private financial inflows, that means that there is a positive correlation. The data and graph above support the second hypotheses and show that there is a positive relationship between GNI per capita and PPP development.

To study the impact of the Index of economic freedom we present the graph below, that proves that as more "transpared" and "open" country is the higher values of domestic and external private investments in infrastructure in transitional economies are, it means that positive correlation exixts.

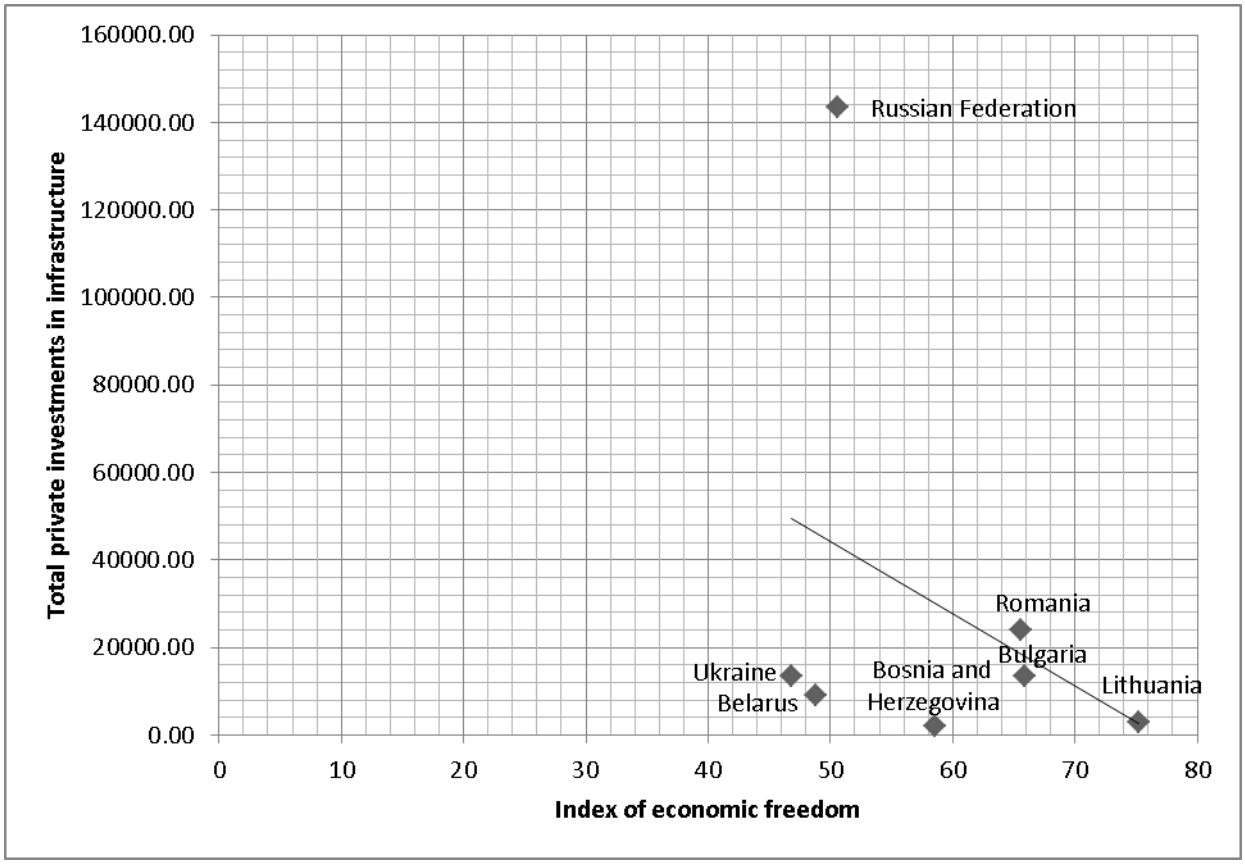


Figure 4. The relationship between total private investments in infrastructure (2000-2015, USD million) and the index of economic freedom (2015).
Source: Private Participation in Infrastructure Database, 2015.

The index of economic freedom shows how the state control or influence on the business activities, this measure is important as the state is the equal partner in PPP that assumes that the state partner will not use its pover agains the private partner or in order to sutisfy only their own interests, that can help to implement mutually beneficial projects of private-public cooperation. The state's power in transitional economies is relativety high comparing to advanced as the system is moving from the command regulation to free market; besides that satate policy is still unstable and unpredictable because of transitional changes, that makes all business activities as separetly and jointly with the state sector risky.

Table 3. Pearson correlation test results (SPSS software used)
Correlations

		TI	ECFR	GNI
Pearson Correlation	TI	1,000	-,346	,324
	ECFR	-,346	1,000	,634
	GNI	,324	,634	1,000

Source: Private Participation in Infrastructure Database, 2015.

Finally, the Pearson corellation test was used to find the significance of the factors impact on total private investments in infrastructure (in transitional economies), the results are presented in the table 3. The first correlation to study was between total private investments in infrastructure (TI) and the Index of economic freedom (ECFR), Pearson colletion test shows

the negative moderate relationship (-0.346), the second is on TI and gross national income per capita (GNI), the test shows the positive moderate relationship (0.324), the third is on ECFR and GNI, the test shows the strong positive relationship (0.634).

Conclusions

1. Distinguishing features of public-private partnerships in advanced and transitional economies are defined, the most significant contradictions of transitional economies are:

-state officials own business that can be seen as a “potential” private partner for implementation the PPP projects and can use their influence on the decisions, it makes impossible to provide “transparent” competition to choice the private partner;

- the main purpose of cooperation between the state and business is the "capture" of state property by private businesses for further financial gain rather than to improve the public sector and to share the government’s financial pressure;

- lack of public trust to government and business caused by previous “personally efficient” but not “socially efficient” projects, practice of using personal channels and connections in rent seeking that decreases the country’s efficiency, causes inefficient allocation of available resources and sometimes even some decrease in the government’s revenue;

- imperfect and sometimes “copied” from the advanced countries legal framework contains “grey gaps”, the weak places in the norms and regulations that allow officials and businesses to use it in order to reach their personal financial goals.

2. The specifics of transformational economy highly modify the social values and procedures of implementation of PPP projects; it is connected with the use of both formal and informal mechanisms, lack of transparency caused by driving competitions, abuse and corruption of the authorities, at the same time, by the unfair competition of private business.

3. Based on such transitional economies as Lithuania, Russian Federation, Romania, Bulgaria, Belarus, Bosnia and Herzegovina and Ukraine we can conduct that there is a “common” pattern of PPP projects distribution in infrastructure sectors: the most valuable sectors are telecommunication and energy providing sectors as natural gas and electricity. The sectors, were PPP projects were implemented successfully, indicate the spheres where the “importance” and “necessity” to be improved for public were accompanied with the private incentives.

4. The data on private investments in infrastructure in transitional economies shows that the biggest financial flows are coming from the local businesses (around 70% of total investments in infrastructure), than from Russian Federation (around 20%), the following countries are advanced countries with small shares such as Germany (about 4%), Norway (1.5%), Sweden (1.5%), Austria (around 1%) etc. Factors that influence are: the low rates of return on infrastructure projects, that makes them “not attractive” to foreign investors; local business are more motivated to invest in socially beneficial projects rather than foreign companies; the lower possibility of projects cancellation when local business invest compared with external sources of financing; the level of economic freedom, the easiness of doing business; the stage of economic development of a particular country.

5. The study supports that when the GNI increases that builds up a county’s image and attracts as domestic as foreign investors, which means that there is a positive correlation exists.

6. To paper proves that as more “transpared” and “open” country is the higher values of domestic and external private investments in infrastructure in transitional economies, it means that positive correlation exixts.

7. Pearson corellation test shows the negative moderate relationship (-0.346) bettwen total private investments in infrastructure and the Index of economic freedom; the positive

moderate relationship (0.324) bettwen total private investments in infrastructure and gross national income per capita; the test shows the strong positive relationship (0.634) between the Index of economic freedom and gross national income per capita.

Recommendations:

The research shows the directions for further PPP development in transitional economies:

1. To buil up and develop an appropriate legal system for suppotring and controlling PPP projects in accordance to the current needs of each particular transitional country.
2. To separate the represantatives of the state and big businesses using legal regulation in order to provide "transparent" procedures of choicing the priorities that are required by the society not by the business only and selecting the private partner that can "objectively" perform better not just becouse of their connections.
3. To provide clear and easy entry of foreign investors in order to support and develop further the PPP practice in transitional economies as investors from advanced countries can share their previous experiences and even prevent some financial risks.
4. To create conditions for attracting highly qualified specialists to develop and implement efficient infrastructure projects based on public-private partnerships in order to build trustful relations between the state, private business and society;
5. To work on factors that support the process of PPP developments as economic stability, social acceptance of PPP practice, state policy orientation on socially efficient projects, government's guarantee to business in PPP projects, smart adoptation of advanced countries policies etc.

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THE EFFECT OF PROSPERITY ON INTERNATIONAL TOURISM EXPENDITURES

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Abstract

This paper implements a 2SLS estimation method with fixed effects specification to study the prosperity-international tourism expenditures nexus. While studies have focused on the impact of income on international tourism expenditures, none consider the effect of prosperity on tourism expenditures. We apply panel regression analysis, using annual panel data for the sample period between 2009-2013 on 98 countries. The estimation results reveal a statistically significant relationship between tourism expenditures of the citizens and prosperity, when prosperity is measured using its sub-indices including Entrepreneurship & Opportunities, Government Efficiency, Education, Health, Safety & Security, Personal Freedom, Social Capital and Economy of the country. Education, Safety & Security, and Health are the most significant factors which affect tourism expenditures of the country of origin. Tourism policy implications are also discussed.

Keywords: Panel Data, Prosperity, Tourism Expenditure, Entrepreneurship, Economy, Safety, Health.

1. Introduction

It is necessary to discover the determinants of tourism expenditures since the revenue obtained from tourism is an important source of income for lots of host countries. Finding those determinants can provide valuable information for tourism marketing.

Providing insight into the tourism economy details is easier by studying tourism expenditures. It plays a significant role in studying the impact of travel on economies of countries. It affects economic development in parallel with changes in consumer expenditures. Economic benefits of tourism to the host and home countries can be analyzed by detailed information provided by international tourism expenditures data.

International tourism plays a rising significant economic role in the world. International tourism expenditures including accommodations, shopping, transportation, food and beverages, entertainment and sightseeing contributes notably to local economies. It has improved GDP growth, promoted economic and social development and created job opportunities. Therefore, researchers have paid a great attention to study tourism expenditures (Yu Shan Wang,2014).

Despite the global economic recession and financial crisis of late 2008 and 2009, the recovery of international tourism has excelled predictions (United Nations World Tourism Organization, UNWTO, 2011): The number of international tourists increased from 681 million in 2000 to 939 million in 2010, and 980 million in 2011 because of the increase in disposable income. International tourism expenditures have also increased in emerging markets like China, India, Russia and Brazil. According to many articles that have been published after business cycle 2006-2010 and economic crisis in 2008, the important role of tourism expenditure in a country's economic growth became noticeable, as we can find a few notable articles in favor of this argument in recent years. While global tourism continues its ascending trend, the benefits of the sector are not the same for all countries with important tourism sector. So we aim to find the most important factors affecting tourism.

The presumption is that a nation's tourism expenditure is not solely affected by macroeconomic indicators such as home country's income, represented by GDP per capita. Non-economic factors may also be effective on tourism expenditures. In fact, it can be affected by not only accumulation of material wealth but also joy of everyday life. Travel participation is also affected by cultural characteristics of the country of origin. That's why we select prosperity index which include both economic and non-economic factors, to study international tourism expenditure. This Index is the only global measurement of prosperity based on both wellbeing and income. It is the definitive gauge of global progress and the most comprehensive indicator of its kind. The Legatum Prosperity Index offers a unique intuition into how prosperity is reforming and changing across the world.

In contrast to most empirical studies on tourism expenditure in which economic factors are analyzed, in this study we analyze non-economic determinants of the international tourism expenditures by exploiting Prosperity Index of the country of origin. In fact, an important contribution of this paper is the definition and design of variables determining tourism expenditures.

The aim of this paper is to try to give an answer to the following questions: Did non-economic factors in the country of origin lead to a change in the tourism industry through changes in tourism expenditures? Which factors have maximum impact on tourism expenditures? This study analyzes if there are relationships between international tourism expenditures and prosperity sub-indices including Entrepreneurship & Opportunities, Government Efficiency, Education, Health, Safety & Security, Personal Freedom, Social Capital and Economy across home countries during 2009-2013. It also estimates the significance and direction of the effects.

Our specifying assumption is that a critical indirect role is played by some non-economic factors on international tourism expenditures through the direct effect of some transmission channels which the literature has identified in Economy and Entrepreneurship (in the country of origin) among the main ones. This assumption allows us to examine the effect of non-economic factors on their natural economic targets and also to check the side effect played on tourism industry and tourism expenditures in particular.

Two of the variables, Economy and Entrepreneurship, may have correlation with some omitted variables like exchange rate and unemployment, and also with the dependent variable. In order to solve this likely endogeneity problem, we use "Two-stage Least Squares" method. It refers to an instrumental variables procedure for estimating regression

models involving functions of exogenous and endogenous parameters. This approach decreases collinearity problems, and hence increases the accuracy of parameter estimations.

This paper finds that, there are relations between prosperity sub-indices and international tourism expenditures across countries. Education and health are the most significant factors which have negative impact on tourism expenditures of the country of origin. They can affect the dependent variable directly and indirectly. In their indirect effect, they affect Economy and Entrepreneurship and then those two affect tourism expenditure. Hopefully the findings of this paper can be useful for policy formulation and tourism management improvement.

The importance of international tourism expenditure in helping countries to grow and prosper has been indicated in the literature of economic development. But the impact of prosperity in the country of origin on international tourism expenditures has not been studied in the tourism literature. To the best of our knowledge, present contribution is believed to be the first trying to fully exploit the hole statistical information of the Legatum prosperity index to examine the specific effect that different non-economic variables had on the extend of tourism expenditures across countries. As Legatum Prosperity Index continues to be more renowned this topic is expected to grow significantly.

The remainder of this paper is structured as follows. Section 2 reviews the literature. Section 3 describes the variables, data and data sources; Section 4 provides specifications of the models to verify how tourism expenditures is affected by eight prosperity sub-indices through regression analysis. Section 5 provides the empirical results; and Finally, Section 6 presents concluding statements and management and policy implications.

2. Literature review

Theoretical and empirical literature has already studied the link between tourism expenditure and economic or non-economic variables and detected positive, negative or no correlation between them. We review them here.

2.1 The effect of economy on tourism

Yu Shan Wang (2014) proved the GDP of the country has different impacts on tourism expenditures of its citizens under different savings regimes. The impact is greater in a low savings regime. Juan et al. (2014) showed during an economic crisis, there is a relationship between tourists' cutback decisions on tourism expenditure and GDP growth. Papatheodorou et al. (2010) argued that Number of out bound tourism in scale of tourism expenditure is negatively correlated with decrease in disposable income and increase in unemployment. Eugenio-Martin & Campos-Soria (2011) used economic and socioeconomic variables for tourism demand modelling. They found tourism demand is income elastic. As income increases, the number of domestic travels remains constant, whereas number of foreign travels increases.

2.2. The effect of Entrepreneurship on tourism

Tourism businesses are usually started by entrepreneurs who play a significant role in modifying the supply of leisure. Entrepreneurship has a significant effect on earlier steps of tourism development, especially in rural communities where international hotel chains and multinational enterprises are less likely to invest because of small size of the potential market

(Chang, 2011). Yusuf (2014) investigated how entrepreneurship boosts Malaysian tourism industry and how the leading role played by entrepreneurs, sustains the economy. He recommends that Malaysian government should support and assist entrepreneurs to promote tourism industry as an alternative source of revenue for the government.

2.3. The effect of Government efficiency on tourism

Qin et al. (2011) focused on the case of Yangshuo, China to examine the influence of governmental involvement on tourism development of the country. The results suggest that because of government attention to tourism and its supportive roles, Yangshuo succeeded in tourism development. Their study illustrates the significant role of government as a stakeholder, power-broker and decision-maker in tourism development.

2.4. The effect of education on tourism

Individual factors, such as education, generational values, travel experience, family structures, health status, and employment influence individual tourism demand (Glover & Prideaux, 2009). Alegre et al. (2013) examined the tourism demand by measuring the effect of labor market on expenditure decision making of Spanish households and discovered that, there is positive relationship between participation and expenditure and the education level of household head. Nicolau & Más (2005) studied determining factors of decision to go on a holiday and tourist expenditure. The results show that there is a positive relationship between education and decision to go on holidays. But they didn't find any relation between education and tourist expenditure. The main purpose of Eugenio-Martin, & Campos-Soria, (2011) article is to detect the importance of income in tourism demand. But they also estimated the role of some other variables. Education level has been identified as a critical element. The people with higher level of education are more interested in travelling.

2.5. The effect of health on tourism

Hung et al. (2012) used OLS and Quantile Regression approach to distinguish the determinants of tourism expenditure. Both regressions show a negative relationship between tourism expenditure and medical and health care expenses in the country of origin. It illustrates the health status as a main constraint for old people to travel. People who need medical care and spend more on health care, have lower tourism expenditures.

2.6. The effect of Safety & Security on tourism

Safety is one of the regional factors which identifies the attractiveness of a destination for a tourist. Studies show that outbound tourism demand crises are correlated with economic crises and shocks to global safety such as September 11th (Araña & León, 2008). Terrorist attacks to United States on September 11 is one of the most crucial cases in examining the impact of safety and security on tourism expenditure. September 11th caused a large amount of tourism downturn. Annual enplanement decreased by 34% for domestic and 23% for international travels (air transport association, 2002). As safety of the people threatened, they tend to reduce tourism expenditures.

2.7. The effect of personal freedom on tourism

Gholipour et al. (2014) applied panel fixed-effects and GMM techniques to study the effect of personal freedom in a country on its outbound tourism. Their results reveal that there is a negative relationship between level of personal freedom and outbound tourism especially for developing countries.

2.8. The effect of other variables

Researchers have also investigated the impact of other non-economic factors on tourism besides our sub-indices:

Bernini & Cracolici (2015) identified that, age as a demographic factor has a positive impact on tourism expenditure but negative on willingness to travel. Cho (2010) believes that in addition to economic factors, demographic factors of country of origin can play an important role in tourism expenditures. Willingness to pay and preferences of the tourists also varies based on different geographical patterns.

Sometimes people who have health problem, travel to enjoy benefits of better climate in the destination. So climate can be associated with our health variable. Agnew and Palutikof (2006) believe that climate is an element than can be either a ‘pull’ factor to encourage the UK resident to spend his holiday in the UK, or as a ‘push’ factor to encourage him to holiday abroad. Alegre & Pou (2004) analyzed the variables involved in the decision for tourism consumption. They found that age, generation effect, income, cultural factors and limitations on free time are the most significant factors in the probability of travel.

3. Variables and data

This paper uses annual data on prosperity sub-indices and international tourism expenditure for different countries. The data set is a panel of 98 countries followed over 5 years (2009–2013). The dimensions of the panel data set are chosen to include all those countries for which data on all variables is obtainable with favorable time length of observations.

According to World Bank, the international tourism, expenditures (% of total imports) are expenditures that a country's outbound residents make in other countries, involving payments for international transportation to foreign carriers. Their percentage of total imports is calculated as the ratio of tourism expenditures to the total imports of goods and services including all transactions between residents of that country and the rest of the world.

According to Legatum Prosperity Index, prosperity sub-indices include:

- Economy: Countries' performance in four key areas: financial sector efficiency, foundations for growth, economic satisfaction and expectations, and macroeconomic policies.
- Entrepreneurship & Opportunity: A country's entrepreneurial environment, its evenness of opportunity and the promotion of innovative activity.
- Governance: Countries' performance in three areas: fair elections and political participation, effective and accountable government, and rule of law.
- Education: Countries' performance in three areas: quality of education, access to education, and human capital.
- Health: Countries' performance in three areas: health infrastructure, basic health outcomes (both objective and subjective), and preventative care.
- Safety & Security: Countries' performance in two respects: personal safety and national security.
- Personal Freedom: The progress and performance of nations in encouraging social tolerance and guaranteeing individual freedom.
- The Social Capital: Countries' performance in two areas: community and family networks, and social cohesion and engagement.

The imperial model of tourism expenditures based on these eight sub-indices will be discussed in detail in next section.

4. Model specification and methodology

4.1. Baseline model

The empirical model we used is identified as a panel model of tourism expenditure. International tourism expenditure (TE) is determined by eight prosperity sub-indices: Economy (EC), Personal Freedom (F), Social Capital (SC), Governance (G), Safety & Security(S), Education(ED), Health (H), and Entrepreneurship & Opportunity (EN).

The empirical models are as follows:

(1) $TE_{it} = C_{it} + \beta_{i1}EN_{it} + \beta_{i2}SC_{it} + \beta_{i3}F_{it} + \beta_{i4}S_{it} + \beta_{i5}H_{it} + \beta_{i6}ED_{it} + \beta_{i7}G_{it} + \varepsilon_{it}$

(2) $TE_{it} = C'_{it} + \beta'_{i1}EC_{it} + \beta'_{i2}SC_{it} + \beta'_{i3}F_{it} + \beta'_{i4}S_{it} + \beta'_{i5}H_{it} + \beta'_{i6}ED_{it} + \beta'_{i7}G_{it} + \varepsilon'_{it}$

Where t denotes the time period (t= 2009… 2013) and i denotes the country (i= 1… 98).

4.2. Methodology

We use Two-stage least squares (2SLS) estimation method to study the impact of above variables on international tourism expenditure. 2SLS is a specific case of instrumental variables regression. Actually, by using this approach we are solving the likely endogeneity problem that may affect Tourism Expenditures and two independent variables, Entrepreneurship & Opportunity and Economy. In fact, these two variables may have a direct effect explaining Tourism Expenditures but, at the same time, Tourism Expenditures may cause Entrepreneurship & Opportunity and Economy rates to decrease or increase. By this "two stages" estimation, we solve the endogeneity problem and identify consistent estimates of the partial effects of Entrepreneurship & Opportunity and also Ecomomy. Through the considering 2SLS analysis, we also trace the effect of the other prosperity sub-indices on Tourism Expenditures.

Another reason to use 2SLS method is solving endogeneity problem between the independent variables, Economy and Entrepreneurship & Opportunity, and error term. Error term includes some omitted variables like Exchange Rate and Unemployment. Apparently Exchange Rate and Economy and also Entrepreneurship and Unemployment in a country are affected by each other. So we apply this approach to decrease collinearity problems, and increase the accuracy of parameter estimates.

There are two separate stages in two-stage least squares. In the 1st stage, we identify the endogenous and exogenous variables. This stage includes estimating an OLS regression of endogenous variable in the model on the set of instruments. The second stage is a regression of the original equation, with endogenous variable replaced by the fitted value from the first-stage regression. The coefficients computed by this regression are the 2SLS estimates (Wooldridge, 2012).

We use "Eviews" to estimate both stages simultaneously using instrumental variables techniques. let X and y be the explanatory and dependent variables, and let Z be the instruments matrix. The linear 2SLS objective function is given by:

(3) $\Psi(\beta) = (y - X\beta)' Z(Z'Z)^{-1} Z'(y - X\beta)$

Then the computed coefficients are given by,

(4) $b_{TSLS} = (X'Z(Z'Z)^{-1}Z'X)^{-1} X'Z(Z'Z)^{-1}Z'y$

and the standard covariance matrix of these coefficients may be estimated using:

(5) $\hat{\Sigma}_{TSLS} = s^2(X'Z(Z'Z)^{-1}Z'X)^{-1}$

Where s^2 is the residual variance (square of the standard error) estimated by regression.

In equation (1) the variable EN is the fitted value of the Entrepreneurship & Opportunity obtained in the two-stage procedure carried out in equation (6) with a panel structure.

(6) $EN_{it} = C_{it}^1 + \gamma_{i2} SC_{it} + \gamma_{i3} F_{it} + \gamma_{i4} S_{it} + \gamma_{i5} H_{it} + \gamma_{i6} ED_{it} + \gamma_{i7} G_{it} + \varepsilon_{it}^1$

We estimate the panel regressions by fixed effects. Equation (6) is inserted as a regressor in the equation (1). This amounts to run a two-stage least square (2SLS) estimation.

In another estimation, we consider the variable EC in equation (2) as fitted value of Economy obtained in the two-stage procedure carried out in equation (7) with a panel structure.

(7) $EC_{it} = C_{it}^2 + \alpha_{i2} SC_{it} + \alpha_{i3} F_{it} + \alpha_{i4} S_{it} + \alpha_{i5} H_{it} + \alpha_{i6} ED_{it} + \alpha_{i7} G_{it} + \varepsilon_{it}^2$

This time, Equation (7) is inserted as a regressor in the equation (2).

5. Empirical results

This section presents and discusses the results of our analyses. Panel estimates with fixed effect specifications for 98 countries' international tourism expenditure are presented in table 1. According to this table, due to five models regressed on prosperity sub-indices, the variables Health, Safety & Security and Education are all crucial determining factors in the measure of international tourism expenditures. This study didn't detect any significant relationship between tourism expenditures and other prosperity sub-indices.

Table 1. Determinants of the International Tourism Expenditure

Dependent Variable		**International tourism expenditures**				
Endogenous Variable		Entrepreneurship		Economy		
Model		1	2	3	4	5
Instruments List		C,G,H,S,ED,F,SC	C,G,H,S,ED,F,SC	C,G,H,S,ED,F,SC	C,G,H,S,ED,F,SC	C,G,H,S,ED,SC
Regressors	**Constant**	4.7874*** (0.000)	4.7753*** (0.000)	5.1551*** (0.000)	5.2831*** (0.000)	5.2843*** (0.000)
	Economy			1.0825 (0.415)	0.7257 (0.018)	0.7233 (0.115)
	Entrepreneurship	2.1294 (0.513)	2.1673 (0.056)			
	Government efficiency	0.0178 (0.932)		-0.2621 (0.284)		
	Health	-0.4942* (0.748)	-0.4965* (0.717)	-0.4127* (0.993)	-0.3892* (0.954)	-0.3889* (0.959)
	Safety & Security	0.4130** (0.229)	0.4132** (0.232)	0.3961** (0.242)	0.3967** (0.167)	0.3967** (0.167)
	Education	-0.5781* (0.847)	-0.5827* (0.745)	-0.4588* (0.904)	-0.3927* (0.954)	-0.3921* (0.981)
Adjusted R-squared		0.9140	0.9134	0.9189	0.9279	0.9280
F-statistic		67.8555	68.67968	67.8499	68.5806	68.5496

*Significant at 10%-level; **significant at 5%-level; ***significant at 1%-level.

P-values reported in the parentheses next to the estimated coefficients. The coefficients of regression are computed using 2SLS method with fixed effects specification.

In all of the models, education and health sub-indices in the country of origin have a negative effect on tourism expenditure. It also implies that in recent years, people have spent more money on travel because of health problems. Probably they travel for treatment, benefiting from better climate conditions or better medical services in other countries. In the other words, the better Health services in the country, the fewer people travel abroad to receive foreign health services. This finding also implies that health tourism could be an important area open to development. This finding is in line with the literature. Negative sign of education indicates that more educated people have spent less in their travels. Educated people usually spend their money wisely. Previous studies show more educated people are more interested in traveling but they don't show more educated people spend more money on their travels.

On the other hand, the variable, Safety & Security, has a positive coefficient. It implies that safer countries experience higher international tourism expenditures. We didn't find any research paper in the literature about the relationship between safety of home country and outbound tourism expenditures of that country, which would be an interesting topic for further research.

In fact, the variables Health, Safety & Security and Education can have direct and indirect effects on tourism expenditures. Their indirect effect is through endogenous variables, Economy and Entrepreneurship. But these two variables are not significant in second stage. So, we ignore the indirect effect in comparison with direct effect.

6. Conclusion and policy implications

According to the findings of this paper, it cannot be concluded that the higher prosperity index directly leads to higher international tourism expenditure of a country. One of its sub-indices, Safety & Security, has positive, and on the other hand, Education and Health have negative impact on international tourism expenditures. Threats to personal safety and national security imperil levels of income and wellbeing. It can diminish tourism expenditures. The estimates imply that a 10% increase in Safety & Security, should increase the tourism expenditures by approximately 4%.

Countries' good performance in preventative care and health infrastructure, increases citizens physical and mental health. So, they don't need to travel to find healthy climate solutions or better medical cares. So, it decreases the tourism expenditures. According to models 1 and 2, a 10% improvement in Health, should decrease the tourism expenditures by approximately 5%. And also 10% improvement in Countries' performance in education, may decrease the tourism expenditures by approximately 6%.

Therefore, in order to decrease the money outflow, policy makers may have plans to improve health infrastructure, and at the same time, increase quality of education and access to education in the country. Tourism policies which do not consider these prosperity sub-indices as explanatory variables may make mistakes in actual tourism expenditures. Tourism industry policies may underestimate their evaluations and forecasts if policy targets do not include the effect of prosperity sub-indices on tourism expenditure.

Acknowledgment

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WHY "GLOBAL CRISIS" HIT TURKISH BANKING SYSTEM LESS THAN OTHER COUNTRIES ?

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Abstract

The global financial crisis can be considered as the worst turbulance that the world has seen since the Great World Depression of the 1930s. For youngsters this Great Depression may not mean anything as the impacts can not be understood or felt after a century. Those who have some interest may look at that happening as some miserable events of those days as distant legend. However, the collapse of some hedge funds and banks starting in summer of 2007 exposed the public to learn the meaning of Global Crisis. The events arising from the subprime mortgage crisis, reintroduced the world an era of bank failures, a credit crunch and mortgage loan defaults.The crisis affected severely almost every part of the world mainly the financial systems. However, Turkey did not face hard-striking economic shocks as the rest of the world was experiencing. The magic behind this outcome was some unique conditions of the country during that period. These conditions can be categorized under 3 headings as : a)Capital increases at banking sector b)Volumes and the types of Derivative Instruments c)Interest Rate Reduction by Central Bank. This paper analyzes the impacts of these reasons and provides information to reader how they prevented Turkish Banking System shaking from global crysis.

Keywords: Global Crisis, World Financial Crisis and Turkey,

For years coming from long-time ago, Turkish Banking System has been living together, with a nightmare of being highly fragile environment because of limited sources and high gap of maturity mismatch. On the other hand, financial system was facing the difficulties from insufficient capital base of banks which was preventing them to take more risks during their operation.

However, during the turbulance that was sweeping the whole world, which started in 2007, "Global Crisis" was expected to hit a terrible blow for the Turkish banking system, as initially thought. BUT IT DID NOT HAPPEN ! The global impacts were easily tolerated and the side effects which are naturally to be the reflections from the great turbulant markets abroad were absorbed.

The only negative effects to Turkish Banking Sector were increasing borrowing cost of international funding, decreasing profit margins for future and shrinking business volumes but not facing the banks to chaotic environments like USA, UK, Portugal, Spain, Italy, Ireland, Iceland etc.

Majority of the banks in Turkish Banking System, at such a whirlwind that affected the world, certainly have felt these negative effects, directly or indirectly; but they are never comparable to the results happened in those countries. When you look at the size of the repercussion of the events, the impacts for Turkey can be considered ignorable for those times.

There was some decline at net profitability in Turkish Banking System but despite of this, some of the banks increased their profits even during the period when the crisis was at its peak. Its also noted that, many of them could sustain their positions and preserved their existing potential from excessive melting.

The total net income of Turkish Banking System including pre- and post-crisis period, is as follows:

Year	Million TL
2011	19.042
2010	21.360
2009	19.497
2008	12.774
2007	14.331
2006	10.981

Source: Banks Association of Turkey, Banking and Industry Information[1]

The reasons of not facing serious shocks

What were the reasons of such an unusual adverse result while the whole world – including the giants – were suffering ?
We can categorize the reasons under 3 major headings :

1. Success of Banking Regulation and Supervision Agency (BRSA / BDDK) for establishing stronger Capital Bases at Banks before the eruption of crisis
2. The types and volume of Derivative Instruments existing in the market
3. Effect of Central Bank's Interest Rate Reduction which created more capital gains on securities portfolio

Reason 1. BRSA Established Stronger Capital Base before the crisis

The new Banking Law nr. 5411 was officially in force by November 2006. There were a lot of new regulations announced by the banking regulator BRSA attached to this law. These regulations were all focusing on compliance to the Basel II directives. Among these, the Capital Adequacy Ratio (CAR) was also the primary requirement as was strongly recommended in Basel Directives.

The banking law and Basel requires CAR to be minimum 8 % however BRSA requested banks to maintain additional reserve ratio 4 % which adds up to aggregate 12 % CAR at the end of 2006..

It appears 4 % to be a small amount but when you consider that CAR is increased from 8 % to 12 %, it means capital base is increased 50 % more. This requirement helped the banking sector to stand stronger while facing the global turbulance with their 50 % increased capital adequacy level.

The strength of the created CAR structure was detailly stated in a presentation of BRSA Officials by following statements :

[1] Banks Association of Turkey, **Banking Statistics**- Various Years, https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59

Current Regulation on the Measurement and Evaluation of Banks Capital Adequacy (dated 2006) is compliant with the Basel-II Provisions related to market risk.[2]

.....

Strong capital base and CAR ratios of the Turkish Banking Sector will differentiate it from the banking sectors of other countries in the long run after the implementation of Basel-III rules.[3]

.....

Turkey is one of the few countries in which no defaults were observed in its banking sector during global the financial crisis. (Even there were no banks in need for government support).[4]

.....

Leverage will not be a constraint for Turkish banks which brings an important advantage over the EU banks.[5]

The confidence coming from high levels of CAR at Turkish Banks were creating a comfortable zone to the regulators while monitoring and supervising the system against market risks.

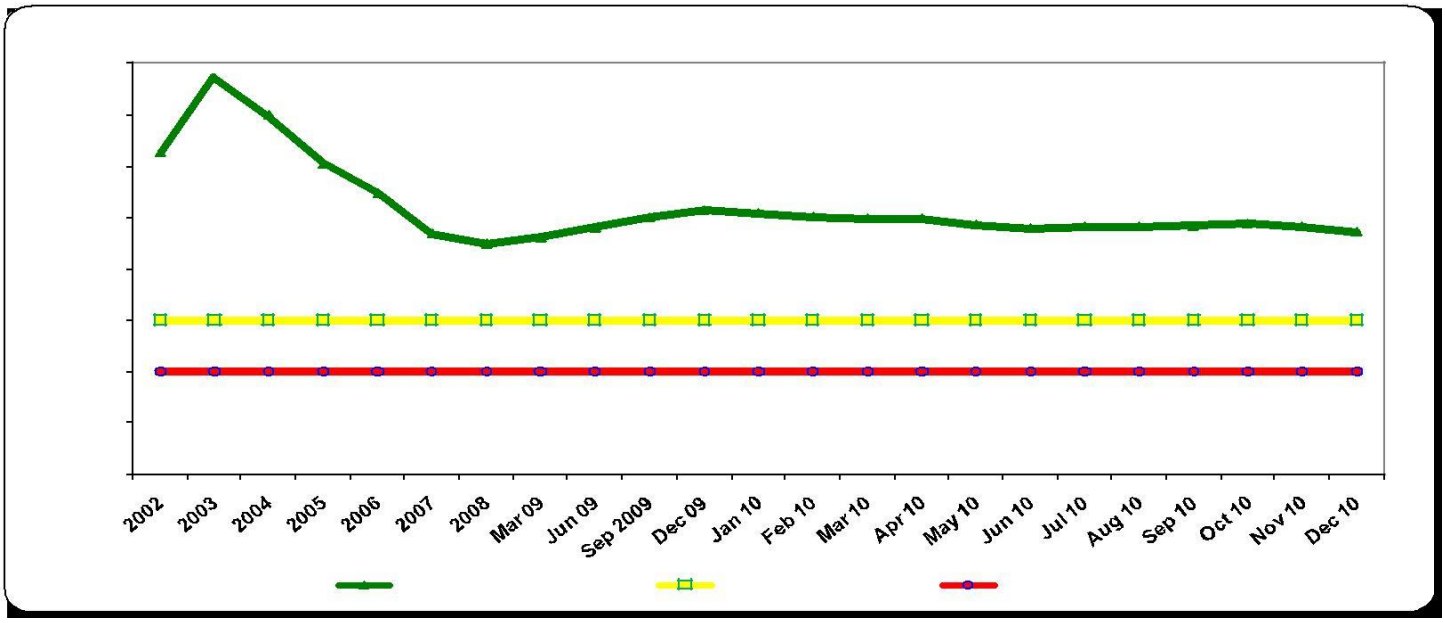

Illustration 1. CAR of the Turkish Banking Sector is at very high levels.[6]

So, The Turkish banking sector has capital adequacy ratios (CAR) above the regulatory limits of BRSA, which was 12% since 2006. Moreover, this additional Turkey's reserve CAR exceeds that of Basel II, which was 8% and Basel III, which will still gradually increase each year and will be set at a total capital ratio of 10.5% by January 2019. That means the range of 2019 was covered more than the targets since 2006.

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[2] Delikanlı, İhsan U., **Road to Basel-III Strategies and Priorities of the BDDK**, https://www.bddk.org.tr/WebSitesi/turkce/Basel/9819iir_ihsandelikanliengfinal.pdf

[3] Same Presentation

[4] Same Presentation

[5] Same Presentation

[6] Delikanlı, İhsan U.

Reason 2. Types and Volumes of Derivative Instruments in the market

When the global markets are reviewed, the findings will show that many derivative instruments are (were) floating in the markets. The reasons of the great turbulance was caused mainly by these financial instruments.

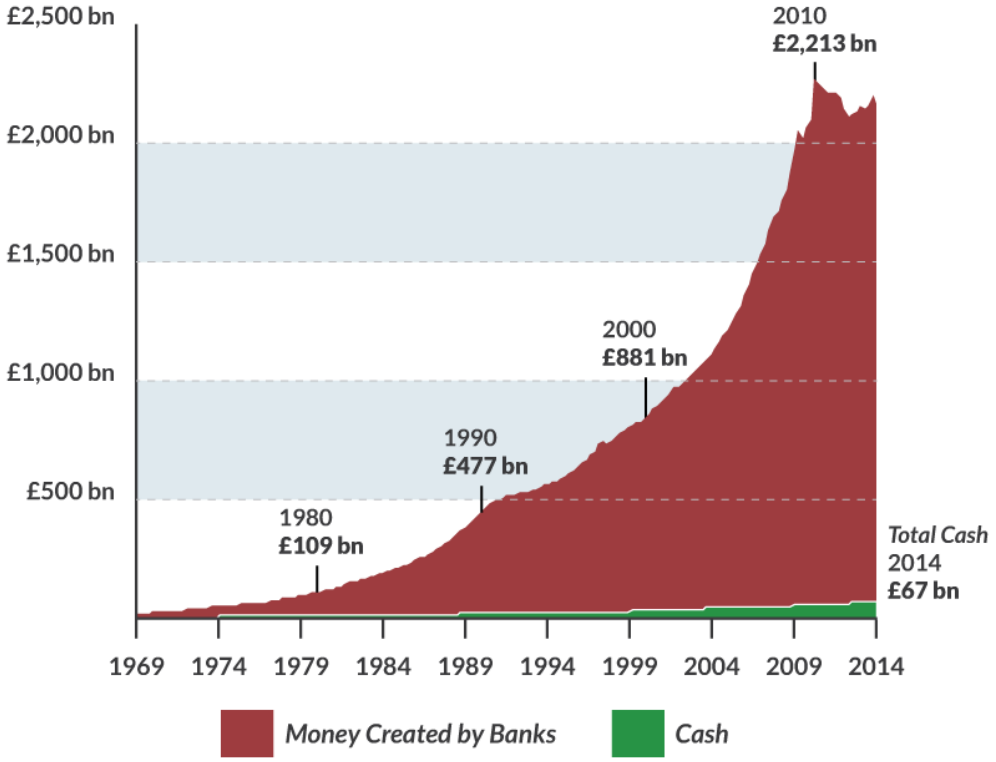
Article - Financial Crisis & Recessions by Positive Money

The financial crisis happened because banks were able to create too much money, too quickly, and used it to push up house prices and speculate on financial markets.

Every time a bank makes a loan, new money is created. In the run up to the financial crisis, banks created huge sums of new money by making loans. In just 7 years, they doubled the amount of money and debt in the economy.

1. Banks created too much money…

Every time a bank makes a loan, new money is created. In the run up to the financial crisis, banks created huge sums of new money by making loans. In just 7 years, they doubled the amount of money and debt in the economy.



2. …and used this money to push up house prices and speculate on financial markets

Very little of the trillion pounds that banks created between 2000-2007 went to businesses outside of the financial sector:

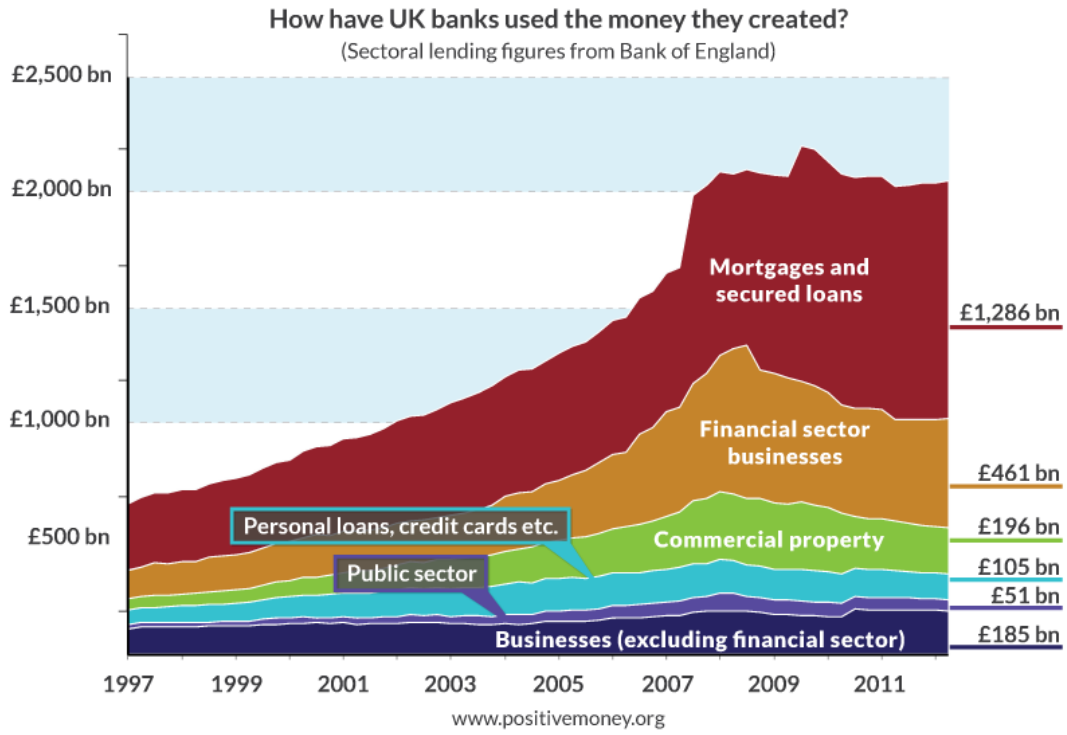
- *Around 31% went to residential property, which pushed up house prices faster than wages.*

- *A further 20% went into commercial real estate (office buildings and other business property)*

- *Around 32% went to the financial sector, and the same financial markets that eventually imploded during the financial crisis.*

- *But **just 8% of all the money that banks created in this time went to businesses** outside the financial sector.*

- *A further 8% went into credit cards and personal loans.*



3. Eventually the debts became unpayable

Lending large sums of money into the property market pushes up the price of houses along with the level of personal debt. Interest has to be paid on all the loans that banks make, and with the debt rising quicker than incomes, eventually some people become unable to keep up with repayments. At this point, they stop repaying their loans, and banks find themselves in danger of going bankrupt.[7]

[7] Positive Money, Article on **Financial Crisis and Recessions**, http://positivemoney.org/issues/recessions-crisis/ 05.10.2016

This eventually reached to an uncontrollable situation. The money generated through loans and derivatives of over-inflated high prices were created all leaning to payment of credits. The "Ponzi Scheme" arising from this chain would go on if the prices (mainly the mortgage) continue with increasing trend in the market. This was the key point of the whole structure.

But the bubble of real estate prices burst and prices fell down dramatically. The borrowers who were enjoying profits of their second or more properties, defaulted paying their mortgage loans. This was the trigger of the disaster. Default credits ended up with high NPLs and loss provisions to the banks, This was not only on the loans but also on the derivative instruments which were backed up by these credits. The chain effect of this situation on whole system incriminated dramatic losses to those who were somehow related in this process.

As the former chairman of the UK's Financial Services Authority, Lord (Adair) Turner stated in February 2013 the following statement :

"**The financial crisis of 2007 to 2008 occurred because we failed to constrain the financial system's creation of private credit and money."**

The crisis at US side was foreseen in general as follows :

The credit crunch

The global financial crisis (GFC) or global economic crisis is commonly believed to have begun in July 2007 with the credit crunch, when a loss of confidence by US investors in the value of sub-prime mortgages caused a liquidity crisis. This, in turn, resulted in the US Federal Bank injecting a large amount of capital into financial markets. By September 2008, the crisis had worsened as stock markets around the globe crashed and became highly volatile. Consumer confidence hit rock bottom as everyone tightened their belts in fear of what could lie ahead.

The sub-prime crisis and housing bubble

The housing market in the United States suffered greatly as many home owners who had taken out sub-prime loans found they were unable to meet their mortgage repayments. As the value of homes plummeted, the borrowers found themselves with negative equity. With a large number of borrowers defaulting on loans, banks were faced with a situation where the repossessed house and land was worth less on today?s market than the bank had loaned out originally. The banks had a liquidity crisis on their hands, and giving and obtaining home loans became increasingly difficult as the fallout from the sub-prime lending bubble burst. This is commonly referred to as the credit crunch.[8]

The Situation in Turkey

During those days, Turkish Banking System were giving out mortgage loans to the people who are buying their first homes. Therefore the probability of "default" was very low.

[8] Davies, Justin, **Global Crisis, What Caused it** 2014, http://www.canstar.com.au/home-loans/global-financial-crisis/ 05.10.2016

Considering the derivative intruments, those financial products were not complicated; as the major instruments were Swaps, Forwards and a few Options and Futures.

What Happened in USA ?

Between 1998 and 2006, the price of the typical American house increased by 124%.

.....

U.S. households and financial institutions became increasingly indebted or overleveraged during the years preceding the crisis This increased their vulnerability to the collapse of the housing bubble and worsened the ensuing economic downturn.

Key statistics include:

Free cash used by consumers *from home equity extraction* ***doubled from $627 billion in 2001 to $1,428 billion in 2005*** *as the housing bubble built, a total of nearly $5 trillion over the period, contributing to economic growth worldwide.*

U.S. home mortgage debt *relative to* ***GDP i****ncreased from an average* ***of 46% during the 1990s to 73% during 2008,*** *reaching $10.5 trillion.*

USA household debt as a percentage of ***annual disposable personal income*** *was 127% at the end of 2007, versus 77% in 1990. In 1981, U.S. private debt was 123% of GDP; by the third quarter of 2008, it was 290%.* [9]

The financial figures of US and other related countries reveal that the volumes of mortgage loans and their respective derivative instruments could be calculated as multi-fold times of their GDP. This was a very serious scenario which happened because of the fast growing bubble.

How about Turkey in 2007

- The whole banking system's asset size was around 90 % of GDP
- Total Volumes of derivative instruments were approx. 30 % of total assets of banks. Big chunk of these volumes were genuine commercial business related transactions (nothing related to housing bubbles)

[9] Wikipedia, Financial Crisis of 2007-2008

TURKISH BANKING SYSTEM

DERIVATIVE FIGURES	**1998** (billion TL)	**%**	**1999** (billion TL)	**%**	**2000** (billion TL)	**%**	**2007** (000 TL)	**%**
Forward Transactions	11.321.969	31%	33.556.910	47%	43.026.160	41%	31.377.000	**20%**
Interest&Currency SWAPS	2.214.376	6%	5.083.976	7%	12.011.367	12%	75.530.000	**47%**
Interest&Currency Options	480.334	1%	1.193.829	2%	2.119.648	2%	42.089.000	**27%**
Currency Futures	501.105	1%	1.070.519	1%	1.542.737	1%	1.113.000	**1%**
Interest Rate Futures	352.832	1%	218.793	0%	199.068	0%	1.317.000	**1%**
Others	317.214	1%	1.197.914	2%	1.336.449	1%	6.491.000	**4%**
TOTAL	**15.187.830**	**41%**	**42.321.941**	**59%**	**60.235.429**	**58%**	**157.917.000 ($/TL 1.18)**	**28%**
ASSET TOTAL OF BANKING SECTOR	**36.827.949**		**72.120.858**		**104.283.106**		**561.171.839**	

(1998 – 1999 – 2000 figures are before removing 6 digits from Turkish Currency)
USD/TL Conversion Rate 313.707 540.098 666.774 1.18
Total Assets in (USD Mio) 117.396 133.533 156.399 475.568

- As mentioned above, majority of the mortgage loans in Turkey were first homes of the borrowers. Therefore, there was a very low probability of putting their living houses in danger by credit defaults. Real estate market in Turkey for individuals was usually a sacred market to walk in a system that has yet to make their first house. This holds the high importance given by the people on payment of their loans.
- On the other hand, Asset Securitization of Mortgage Loans were very insignificant even considered not to be existing in the market.
- Appreciation of real estate values were still increasing because there was a shortage of Real Estate supply in the country.

Reason 3 Central Bank of Turkey (TCMB) Reduction of Interest Rates

By the effect of Central Bank interest rate reductions, banks incurred additional revenues through revaluation of treasury bills portfolio in hand. This provided relief in the balance sheets, by creating more income against funding costs. This brought Banks to be at more comfortable position against the profitability pressures on their income sheet by the help of securities portfolio. Figures can be illustrated by years as follows :

	Securities Income Million TL.
2009	28.140
2008	27.246
2007	24.511
2006	21.630

Source: Banks Association of Turkey

As can easily be seen, income derived from securities portfolio continued increasing trend of rising even in the crisis year.

Conclusion

Looking from an overall perspective, the Turkish Banking System survived because of correctly and on-time launched preventive measures, current social and financial structure of economy and monetary actions of regulatory bodies.

However, this is not a guarantee of the future at all times. There are risks in the balance sheet of the banks inherited many years from past, which is : Maturity Mismatch. This risk is still ongoing and it may arise in any crisis. Therefore, Financial Sector must always keep in mind that, environmental fragility continues to exist as a serious threat to financial system ..

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INDUSTRIAL PRODUCTION, CO2 EMISSIONS AND FINANCIAL DEVELOPMENT; A CASE FROM THAILAND

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Abstract

The present paper examines the empirical relationship between carbon dioxide emissions, industrial production and financial development in Thailand that is among one of the very poor climate protection performance countries (2016). For this matter, annual data covering 1960-2011 time interval and time series techniques are used. The data of the present study are found to be at the similar order at I(1) and the long run equilibrium relationship between the variables is examined by using Johansen co-integration test. Finally, Granger causality test is employed to specify the directions of the causality between the variables. The finding of the present study indicates a long run relationship between carbon dioxide emissions, industrial production and financial development in Thailand. The finding also indicates for the presence of unidirectional causal relationship from industrial production to financial development as well as a bidirectional causal relationship between carbon dioxide emissions and financial development in Thailand.

Keywords: co2; industrial production; financial development; co-integration; Granger Causality; Thailand

Introduction

Thailand economy has a share of around 1% of world's GDP. On the other hand, it's increasing in carbon emission (CO2) over the past years. According to Climate Change performance Index (Burck et al., 2016) Thailand is categorized as a newly industrialized country and ranked 49th among the countries that are responsible for 87.78% of carbon emission in the world, it's located among the poorest climate performance countries. Bank of Thailand (2015) reports that the industrial production has a lion's share in the economy of Thailand, the major industry sectors are; food and beverage, automobile, rubbers and plastics, IC and semiconductor, chemical, textiles and apparels, cement and construction, electricity appliances, petroleum and hard disk drive which are the basic sources of energy consumption and carbon emission (CO2) generation. The annual report of the bank of Thailand (2015) further explores that the private sector's funding costs decreased significantly indicating for a financial development of the country.

The development of industry sector is one of the significant sources that raises the energy consumption, particularly fossil fuels those have detrimental environment power impact and finally growing concerns about negative implications of industrial production on climate (Gokmenoglu et al., 2015).

The association and relationship between financial development and carbon emission (CO2) has been studied by many scholars such as [Al-Mulali and Sab (2012); Shahbaz et al ., (2013); Sadorsky (2010) and Frankel and Romer (1999)], that confirmed the impact of financial development on the increase in the carbon emission. Sadorsky (2010) argues that further financial development makes it easier for business and consumers to access to cheaper borrowing, to increase in their saving and investments. Consequently, consumer purchases

increases of some energy consuming products increases directly such as automobile that powered by petroleum products and houses that need to be cooled and heated by energy products. The case is same for businesses, financial development allow them for easier and cheaper access to financial capitals that can result in new investments in manufacturing and construction sector, both are factors for increase in energy consumption. From alternative point of view Frankel and Romer (1999) point that the ease of borrowing for cheaper assets may attract foreign direct investment, in turn, this increases the level of economic growth, and hence, impacts the dynamics of environmental performance. Moreover, increase in industrialization claims more financial services and leads to financial development, at the same time, industrial growth claims more energy and energy as an significant input of production may improve the productivity and output (Shahbaz,and Lean, 2012).

Jawjit et al., (2010), investigated greenhouse gas emissions from rubber industry in Thailand, the authors indicated that 35% of the latex product in worldwide is from Thailand, they also find that emissions are significantly associated with energy. Alberola et al., (2008) conducted a study by examining carbon prices as a function of industrial production in EU, the reveal that the carbon prices in EU reacts to industrial production in some sectors namely combustion, paper and iron. Investigating the long run association between energy consumption and carbon emission by using the granger causality test, previous studies reported a mix results such as [Soytas et al ., (2007); Menyah and Wolde-Rufael (2010); Zhang and Cheng(2009); Soytas and Sari (2009) and Halicioglu (2009)].

The relationship between financial development and carbon emission has received a considerable attention over the last decade. Boutabba (2014) examined the long-run equilibrium causal relationship to find the effect of some economic and financial variables including financial development on carbon emission in India, findings reports that financial development has long-run positive effect on carbon emission. Sadorsky (2010) carried a study to explorer the impact of financial development on energy consumption in 22 emerging economies by utilizing panel data approach. The study concluded with a positive and statistically significant relationship between financial development and energy consumption which in turn leads to more carbon emission to be emitted. Shahbaz et al., (2012) conducted a sturdy dealing with the question whether financial development decreases CO2 emissions in Malaysia using ARDL approach, they report empirical evidence indicating that financial development reduces the CO2 emissions and they found further bidirectional long-run causal relationship between the financial development and CO2emission implying that the two variables are complementary in case of Malaysia. Ozturk and Acaravci (2013) propose a different argument regarding the relationship between CO2 emission and financial development in Turkey that's financial development has no significant impact on carbon emission in the long-run.

The previous literature broadly contains studies that dealing with the relationship between industrial production and financial development. Shahbaz, and Lean (2012) conducted their study attempting to answer whether financial development increases energy consumptions, and they find a long-run bidirectional causality between energy consumption and financial development. Boutabba (2014) investigated the long-run causal relationship between financial development and energy consumption and as a result reports long-rung unidirectional causality from financial development to energy consumption. Fang and Miller (2014) investigated the impact of the volatility in finance on the industrial growth volatility. The study employed using the data from 47 countries approaching the panel data methodology. They find positive impact of finance volatility on industrial volatility. They argue also

volatility in the banking sector and the stock market positively associated with higher industrial growth volatility.
Examining the financial development, carbon emission and industrial production in Thailand are the subjects that have received very little attention or maybe no attention yet. Although many scholars investigated the relationship between financial developments with other economic variables, this study is the first that examines the association between FD, CO2 and IP in Thailand. The three sectors chosen for the current study are dramatically developing and have a significant Impact on the economy of Thailand. The findings may help policy makers to better understand some of the knotted development that confronts Thailand.

The following sections are structured as; the second section the data and the econometric methodology used in this study is demonstrated. The finding of the empirical tests will be revealed and discussed. Finally the forth section contains the summary and suggestions of the present study.

2. Data and Methodology

2.1. Data

2.1.1. Data

The data used in the current study are (CO_2) measured by carbon emission metric ton per capita, (IP) measured by industry value added percentage of GDP and (FD) domestic credit private sector percentage of GDP for Thailand. The data is obtained from World Bank Development database (2016). Time interval for the data covers 1960 to 2011.

2.1.2. Descriptive Statistics

Table 1 contains a brief statistic description about the data used in the present study. It can be observed that the historical data of IND and FD are normally distributed but the CO_2 is not normally distributed.

Table 1: Descriptive Statistics

	IND	**FD**	**CO_2**
Observations	52	52	52
Mean	31.73535	66.26796	1.726478
Median	32.52915	57.60280	0.936495
Maximum	40.03399	166.5041	4.534492
Minimum	18.51649	10.12182	0.135586
Std. Dev.	6.368605	44.85786	1.433224
Skewness	-0.429969	0.389833	0.596222
Kurtosis	1.888425	1.981211	1.823651
Jarque-Bera	4.279367	3.565922	6.079057
Probability	0.117692	0.168140	0.047857
Sum	1650.238	3445.934	89.77687
Sum Sq. Dev.	2068.516	102623.6	104.7606

2.2. Stationarity

Before applying any econometric techniques, unit root properties of the data should be identified. The Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1981) and Philips-Perron (PP) test conducted to investigate the level of integration and possible co-integration among the variables.

Dickey and Fuller describe the unit root test (stationarity test) by the following equation:

$$y_t = \emptyset y_{t-1} + u_t \quad (1)$$

The null hypothesis in Dickey-Fuller unit root test is $\emptyset = 1$ (unit root) against the alternative hypothesis that the data is stationary$\emptyset < 0$. Meanwhile, the Augmented Dickey Fuller (ADF) test developed to overcome the biasness of (DF) test that considers the autocorrelation in the residuals. The test's hypotheses are the same as (DF) test and it is conducted in the same way of (DF). However the (ADF) test shapes in the following form:

$$\Delta y_t = \emptyset y_{t-1} + \sum_{i=1}^{n} ai \Delta y_{t-i} + u_t$$

(2)

Alternatively the (PP) test is also applied that compute the residual variance which is robust to autocorrelation to test unit roots of the used data in the present study.

2.3. Long-Run Co-Integration Test

Co-integration test investigates the long-run relationship among some variables. Despite the non-stationarity of the series the test is examining whether two or more variables are converging to form a long-run relationship or not. When all the variables are at the dame order I(1) the Johansen co-integration test (Johansen, 1988) and (Johansen and Juselious, 1990) seem to be the appropriate technique to test the possible co-integration among the variables. The model can be expressed in first difference error correction form as following:

$$\Delta y_t = \mu + \Gamma_1 \Delta y_{t-1} + \Gamma_2 y_{t-2} + \ldots + \Gamma_{p-1} \Delta y_{t-p+1} + \Pi y_{t-1} + u_t \quad (3)$$

Where:

$\mathbf{y}_t$ is a $P \times 1$ vectors containing the variables, μ is the $P \times 1$ vector constant term,

$\mathbf{\Gamma}_i = -I + A_1 + A_2 + \ldots + A_i$ (i =1,2. . ., *p–1*) is the $p \times p$ matrix of coefficients,

$\mathbf{\Pi} = I - A1 - A2 - \ldots - A_p$ is the $p \times p$ matrix of coefficients and U_t is the $p \times 1$ vector of the disturbance terms coefficients.

The **Π** matrix transfers information about the long-run relationship between the Y_t variables, and the rank of **Π** is the number of linearly independent and stationary linear combinations of variables studied. Thus, testing for co-integration involves testing for the rank of **Π** matrix *r* by examining whether the eigenvalues of **Π** are significantly different from zero. Johansen (1988) and Johansen and Juselious (1990) suggest two test statistics for testing the number of co-integrating vectors (or the rank of **Π**) in the VAR model. These are the trace (*Tr*) test and the maximum eigenvalue (L-*max*) test. The trace statistic (λ_{trace}) can be computed by the bellow formula:

$$\lambda_{trace} = -T \sum Ln(1 - \lambda_i) \text{ , i=r+1,….., n-1}$$

(4)

The hypotheses to be tested are: [H0: v=0 *against* H1: V ≥1, H0: v ≤1 *against* H1: V ≥ 2 and H0: v ≤ 2 *against* H1: V ≥ 3].

2.4. Granger Causality Test

If there is co-integration between variables, Granger (1988) causality test can be applied in order to detect the directional relationship between those variables. In spite of the fact that Granger causality identifies whether there is a bidirectional, unidirectional or no direction at all, the effect of one variable on another cannot be measured with this test (Gokmenoglu et al ., 2015). The test to be applied is formed in the following equation:

$$x_t = \sum_{j=1}^{n} a_j x_{t-j} + \sum_{j=1}^{n} b_j Y_{t-j} + \varepsilon_t$$

(5)

$$y_t = \sum_{j=1}^{n} c_j x_{t-j} + \sum_{j=1}^{n} d_j Y_{t-j} + \varepsilon_t \quad (6)$$

4. Empirical Results

Table 1: Unit Root Test

At Level						
	(ADF)τ_T	(ADF)τ_μ	(ADF)τ	(PP)τ_T	(PP)τ_μ	(PP)τ
IND	-1.570	-2.235	2.407	-1.570	-2.357	2.424
Lag	(0)	(0)	(0)	(0)	(2)	(2)
CO2	-1.576	1.097	2.665	-1.319	2.0255	4.249
Lag	(1)	(1)	(1)	(0)	(0)	(2)
FD	-2.770	-0931	0.444	-2.066	-0.804	0.687
Lag	(1)	(1)	(1)	(3)	(3)	(3)
At 1st Difference						
	(ADF)τ_T	(ADF)τ_μ	(ADF)τ	(PP)τ_T	(PP)τ_μ	(PP)τ
IND	-8.000*	-7.499*	-6.398*	-7.992*	-7.499*	-6.577*
Lag	(0)	(0)	(0)	(2)	(1)	(4)
CO2	-5.231*	-4.848*	-3.655*	-5.125*	-4.851	-3.6555*
Lag	(0)	(0)	(0)	(4)	(2)	(0)
FD	-3.599**	-3.640*	-3.436*	-3.628**	-3.668*	-3.436*
Lag	(0)	(0)	(0)	(1)	(1)	(0)

*Where Asterisks ** & * represent 5% & 1% significant level. τ_T represents the model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the model without a drift and trend. Optimum lag lengths are selected based on Schwartz Criterion.*

As it can be seen in the table 1, all the variables are integrated at first difference using the (ADF) and (PP) criteria. Hence, Johanesn co-integration test can be applied to investigate the possible long-run relationship or co-integration among the variables.

Table 3. Johansen Test Co-integration Result

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*0.05 Critical Value*	*Prob.***
None *	0.329421	30.48087	29.79707	0.0417
At most 1	0.170608	11.29941	15.49471	0.1937
At most 2	0.047192	2.320415	3.841466	0.1277

*Where * denotes rejection of the hypothesis at the 5% level of significance.*

According to the table 3, the null hypothesis is there is no co-integration is rejected at 5% level of alpha and the long-run equilibrium relationship between the variables is confirmed. The following step is to test the direction of the causal relations among the variables. The granger causality test is applied and the outputs are presented in the table 4.

Table 4. Granger Causality Results

Null Hypothesis:	*F-Statistic*	*Prob.*
FD does not Granger Cause IND	0.44413	0.7759
IND does not Granger Cause FD*	3.17523	0.0237
CO2 does not Granger Cause IND	1.02330	0.4074
IND does not Granger Cause CO2	1.50285	0.2202
CO2 does not Granger Cause FD*	5.81061	0.0009
FD does not Granger Cause CO2**	3.23428	0.0220

Where & ** denote rejection of the hypothesis at the 1% & 5 % level of significance respectively*

The finding of the granger causality test reveals the unidirectional granger causal running from industrial production to the financial development at 5% level of significance implying that development of industrialization demands for more financial services and facilities that consequently leads to financial development.

The further finding of the granger causality test confirms a bidirectional granger causal relationship between financial development and CO2 emission that is they can predict each other. Running causal direction from financial development might be implied that financial development decreases the air pollution [Jalil and Feridun (2011) and Shahbaz et al., (2013)]. On the other implication of this finding can be refer to financial sector encourages technological progress in the energy sector aimed to reduce emissions and conversely, financial development promotes investment and manufacturing that leads to using more energy and consequently increase in CO2 emission. The bidirectional causal relationship between financial development and CO2 emissions propose to the policy makers to consider the financial development when they make the decision with respect to environmental issues and vice versa.

4. Conclusion

The present study investigates the interrelationship between carbon dioxide emissions, industrial production and financial development in Thailand using data of annual figures covering the 1960-2011. The series of this study found to be at the same stationary at the same level [I(1)]. The study finds a long-run equilibrium relationship among the variables. Moreover, the direction of the causal relationship is assessed by Granger Causality approach. It's found that a change in financial development precedes a change in CO2 and vice versa. Further finding points that a change in industrial production precedes a change in financial development, which implies increase in industrialization claims more financial services and leads to financial development.

Based on the research outcomes, it can be observed that financial development is strongly correlated with both industrial production and CO2 emission. Thus, the government of Thailand should introduce more reforms to improve financial system efficiency. Policy makers have to continue to emphasize a strong financial system that has positive effects on CO2 emission and industrial production, the government however, is responsible for any inverse impacts of the financial system on CO2 emissions and industrial production as an outcome of the inefficient financial system. For example, banking system may stimulate investments in energy efficient technology by offering lower interest rate and including carbon related restrictions in their financial products or industrial projects can be funded for

lower interest rate. Hence, a set of practical policies and incentives can promote more low-carbon finance.

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WHAT IS THE REAL REASON OF THE PROPOGATION OF FINANCIAL CRISES AND HOW IT CAN BE STOPPED?

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Abstract

Separation of contagion and interdependence may provide crucial insights for policy makers to implement appropriate policies to prevent and/or stop the financial crisis. For example, if the reason of the propagation of a crisis is a normal time interdependence with the crisis origin country due to real linkages, then by implementing well defined preventive policies, the spread of crisis can be limited. On the other hand, if a crisis propagates due to speculative attacks or irrational behaviours, then "national policy makers will face difficulties in protecting their markets from such a crisis" (Kleimeier et al., 2003, p.2). Comparing tranquil and shock periods' heteroscedasticity corrected conditional correlations, this paper tests the widely accepted belief of the significance of a 'contagion effect' from the US to emerging European markets during the latest global financial crisis.

1. Introduction

Although, the investigation of the propagation of financial crises has always been popular among scholars, the latest global financial crisis and its catastrophic impacts on other countries have dramatically increased the popularity of the literature. Today, by using new techniques and investigating more specific research questions scholars try to expose the mystery of the propagation speed and destructive power of the 2008 US subprime mortgage crisis.

Besides other reasons such as financial linkages, multicultural financial markets, etc. the financial contagion is seen as the primary reason of the quick and destructive propagation of almost all of the recent global financial crises into other countries. In the broadest definition, financial contagion means the transmission of a crisis from one country to others due to financial panic.

Separation of contagion and interdependence is essential due to two main reasons. Firstly, separation of contagion and interdependence may provide crucial insights to policy makers for implementing appropriate policies to prevent and/or stop the financial crisis. For example, if the reason of the propagation of a crisis is a normal time interdependence due to real linkages such as export-import relations, financial linkages and macroeconomic linkages, then by implementing well defined preventive policies, the spread of crisis can be limited. On the other hand, if a crisis propagates due to speculative attacks or irrational behaviours such as financial panics and herd behaviour then "national policy makers will face difficulties in protecting their markets from such a crisis" (Kleimeier et al., 2003, p.2). Secondly, the correlation between international markets is the most important factor while forming an internationally diversified portfolio since investors need to form their portfolios with uncorrelated stocks to minimize risks. However, "contagion can change the correlation between cross-border financial markets rapidly" (Yiu et al., 2010, p.348). In this case, the contagious nature of financial crises becomes particularly important since it may wipe out the advantages of international portfolio diversification when it is most needed.
In this light, we particularly investigate whether the subprime mortgage crisis spilled over contagiously to the emerging European countries. Previous studies suggest that increase in

market co-movement following a shock in one market provides evidence of a financial contagion. However, an increase on the correlation coefficients may occur due to increased volatility of stock returns during the crisis times and thus this may lead to false or spurious conclusion about the existence of contagion. To fix that fundamental problem we use the heteroscedsaticity corrected correlation test that is proposed by Forbes and Rigobon (2002) and we investigate whether there is a significant increase in cross-market correlations during the latest financial crisis.

The remainder of the paper is organized as follows. Section 2 defines the international financial contagion. Section 3 discusses the data. Section 4 presents the heteroscedasticity corrected correlation technique and provides the analysis of the estimated adjusted correlation coefficients. Finally, section 5 summarizes and concludes.

2. Defining the international financial contagion

Today, there is no consensus on what the term of 'financial contagion' entails. Moser (2003) describes the financial contagion as incidents in which a financial crisis in one country brings about a crisis in another. However, Forbes and Rigobon (2002) believe that contagion should be defined in a straightforward and narrow way. For this purpose, the authors suggest the term 'shift contagion' for the propagation of financial shocks and associate it with the behaviour of investors that are unrelated to the economic or trade based links. According to this, instead of economic fundamentals, contagion is triggered with the herd behaviour of investors. The authors prefer to quantify and define this phenomenon as "a significant increase in cross-market linkages after a shock to one country (or group of countries)" (p.2223). This definition dictates that if two markets already show a high degree of co-movement during tranquil times, even if those markets are still highly correlated after a shock to one market, this may not constitute a contagion. Unlike interdependence, in the case of financial contagion there are breaks in the international correlations owing to herd behaviour. Thus, a change in the structure of stock market linkages (a significant increase during the crisis) can be a solid proof of the existence of contagion. Accordingly, if the co-movement between two markets does not significantly increase but continues to have high level of market correlation, this suggests strong linkages between two markets that exist in all states of the economy. Only a significantly increased cross-market co-movement after a shock constitutes a contagion. In this paper, we use the above concept/definition of financial contagion since it provides a straightforward framework for testing the presence of contagion.

3. Data

We construct the dataset with daily observations and use the main stock indices of the stock markets of emerging European countries; Czech Republic, Hungary, Poland, Russia and Turkey[10]. To represent the US market, we use the S&P 500 Index since it includes 500 leading companies from leading industries, and covers over (according to Standard & Poor's Financial Services) 75% of the market's total value in the US.

The sample period covers the period of January 1, 2005 to March 31, 2009 and it is divided into two sub-periods as the pre-crisis period and crisis period so as to be able to examine the possible changes in co-movement relations. Naoui et al. (2010) suppose that the explosion of

[10]The main indices are as follows: the PX of Prague Stock Exchange (the Czech Republic); the BUX of Budapest Stock Exchange (Hungary); the WIG20 of Warsaw Stock Exchange (Poland); the RTS Index of Russian Trading System Stock Exchange (Russia); and the XU100 of Borsa Istanbul (Turkey).

the subprime bubble occurred on August 1, 2007 when the US stock markets began to show sharp declines approximately around that date. Therefore, we construct the pre-crisis period such that it covers a period of two and a half years prior to that date. We choose March 31, 2009 as the end of the crisis since "S&P 500 index rebounded well from its lowest value by the end of March" (Manda, 2010, p.10). Our assumptions regarding the sub-periods are thus as follows:

Table 1
Division of Sample Period for Subprime Mortgage Crisis

Period	Observations	Corresponding date
Pre-crisis	1 to 673	01-01-2005 to 31-07-2007
Crisis	674 to 1108	01-08-2007 to 31-03-2009
Full Sample	1 to 1108	01-01-2005 to 31-03-2009

Our major concern related to daily data is the differences in time zones. Since the US stock markets open and close after the stock markets in Europe, the shocks originated from the US may affect the markets when they open the day after. To deal with this issue we calculate the index returns as two-day rolling average. To test the presence of unit roots in data series, we apply both the Augmented Dickey-Fuller (ADF) test, and the Phillips-Perron (PP) test. Since we divide our return series in two periods as pre-crisis, and crisis; we test the existence of unit root in both of those periods separately. All index return series are found to be stationary since both ADF and PP tests clearly rejects the null of a unit root in the series at 1% significance level.

4. Forbes and Rigobon (2002) technique and Adjusted Correlation Coefficients

4.1 Forbes and Rigobon (2002) technique

Forbes and Rigobon (2002) propose to scale the conditional (unadjusted) correlation (ρ_c) by a nonlinear function of the percentage change in volatility in the asset return of the source country $\left(\left(\sigma_{h,x}^2 - \sigma_{l,x}^2\right)/\sigma_{l,x}^2\right)$, over the high and low volatility periods. Under the assumptions of no omitted variables, no endogeneity, and no feedback from market y_t to x_t; heteroscedasticity corrected correlations are calculated as follows:

$$\rho_u = \frac{\rho_c}{\sqrt{1 + \left[\left(\sigma_{h,x}^2 - \sigma_{l,x}^2\right)/\sigma_{l,x}^2\right](1 - \rho_c^2)}}, \qquad (1)$$

where, ρ_c is the adjusted correlation coefficient during the crisis period, $\sigma_{h,x}^2$ is the high period volatility, and $\sigma_{l,x}^2$ is the low period volatility.

Considering the crisis period as the high volatility period and the tranquil period as the low volatility period, by following Forbes and Rigobon (2002) we form and test the following hypothesis:

$H_0: \rho_c \leq \rho_t$
$H_1: \rho_c > \rho_t$

If a financial contagion exists, co-movement during the crisis period should be larger than the stable period. Therefore while H_0 is the null hypothesis of no contagion, H_1 is the hypothesis of significant contagion.

Forbes and Rigobon (2002) propose using the Fisher z transformations that convert standard adjusted correlation coefficients to normally distributed z values. Any test statistic greater than the critical values for the Fisher z test confirms the existence of contagion, while any test statistic less than or equal to those critical values proves no contagion:

$$Z = \frac{\frac{1}{2}\ln\left(\frac{1+\rho_c}{1-\rho_c}\right) - \frac{1}{2}\ln\left(\frac{1+\rho_t}{1-\rho_t}\right)}{\sqrt{\frac{1}{T_c-3}+\frac{1}{T_t-3}}} \qquad (2)$$

where, T_c and T_t are the sample sizes of the crisis periods and tranquil periods, respectively.

Forbes and Rigobon (2002) define the tranquil period as a full sample period that covers both pre-crisis period and crisis period. On the other hand, Dungey et al. (2005) claim that there is a significant danger with using an overlapping data (taking the tranquil period as a full sample period). The authors believe that while using an overlapping data keeping the pre-crisis period a lot longer or shorter than the crisis period may directly affect the overall full sample estimations of correlations. Dungey et al. (2005) believe that this kind of bias may cause to rejection or failure to rejection of null of contagion effect. Therefore, the authors suggest using a non-overlapping data and investigating the existence of contagion effect by comparing the cross-market correlations of pre-crisis and crisis periods.

4.2 Adjusted Correlation Coefficients

Before we present the adjusted correlation coefficients between emerging European countries and the crisis origin country, the US, we need to exhibit the conditional correlation coefficients to see how the correction of heteroscedasticity will change the results.

Table 2

Unadjusted Correlation Coefficients

This table reports cross-market correlation coefficients (unadjusted) for the stock markets of the US and 5 emerging European countries for the pre-crisis period and the crisis period. "C" indicates that the crisis correlation coefficient is greater than the pre-crisis period correlation coefficient and therefore contagion occurred. "N" indicates that the pre-crisis period correlation coefficient is larger than or equal to the crisis correlation coefficient and therefore no contagion occurred.

	Pre-crisis	***Crisis***	***Test Statistics***	***Contagion?***
Czech Republic	0.22749	0.34290	2.0393**	C
Hungary	0.10809	0.39017	4.9184***	C
Poland	0.18897	0.36430	3.0884***	C
Russia	0.18402	0.35777	3.0498***	C
Turkey	0.14939	0.38071	4.0576***	C

***Statistical significance at 1% level. **Statistical significance at 5% level. *Statistical significance at 10% level.

Table 2 presents the unadjusted correlation coefficients for pre-crisis and crisis periods. A comparison of the correlation coefficients shows that the crisis has increased the correlations between the US stock market and the stock markets of emerging European countries. During the pre-crisis sample period (January 1, 2005 to March 31, 2009), the correlation coefficients of emerging European markets with the American market vary between 0.1080 and 0.2274. During the crisis period, however, we note a considerable increase on the correlations of all

sample countries (between 0.3429 and 0.3901). The test-statistics confirm the presence of contagion for all sample countries as the increase on the correlations are statistically significant. Therefore, the comparison of simple (unadjusted) correlation coefficients confirms the presence of contagion during the global financial crisis of 2007-2009. However, as Forbes and Rigobon (2002) claim this may not be an evidence of contagion as the increase can be a consequence of an increased volatility of the stock markets that ultimately causes a heteroscedasticity bias.

Table 3 presents the heteroscedasticity adjusted correlation coefficients for the stock market of the US and the stock markets of emerging European countries with overlapping data as Forbes and Rigobon suggest (2002).

During the full sample period (from January 1, 2005 to March 31, 2009) the correlation coefficients of the emerging European markets returns with the American market vary between 0.224 and 0.357. The authors suggest that the presence of the contagion effect can be confirmed only if the crisis period cross-market correlations are significantly higher than the tranquil period correlations. Table 3 reveals that for the cases of the Czech Republic and Russia, the crisis period adjusted correlation coefficients clearly higher than tranquil period correlation coefficients. On the other hand, for Hungary, Poland and Turkey tranquil period cross market correlations are clearly larger than the crisis period heteroscedasticity corrected correlations. Therefore, we can easily say that the contagion effect is not observed for those countries during the subprime mortgage crisis. For the Czech Republic and Russia we need an additional tool to investigate the presence of contagion since we do not know the increases on correlation coefficient are significant enough to confirm the presence of contagion. For this purpose, we have computed the test statistics for one-sided t-tests to examine whether the cross-market correlation coefficient during the crisis period (high volatility) is significantly greater than the full sample period.

Table 3

Heteroscedasticity-corrected Correlation Coefficients with Overlapping Data

This table reports unconditional (adjusted) cross-market correlation coefficients for the stock markets of 5 emerging European countries with the US stock market. The correlation coefficients have been adjusted for heteroscedasticity. The test statistics are for Fisher's z-tests examining if the cross-market correlation coefficient during the crisis (high volatility) period is not significantly greater than during the tranquil period (full sample period). "C" indicates that the test statistic is greater than the critical value and therefore contagion occurred. "N" indicates that the test statistic is less than or equal to the critical value and therefore no contagion occurred.

	Tranquil	*Crisis*	*Test Statistic*	*Contagion?*
Czech Republic	0.30659	0.34111	0.67608	**N**
Hungary	0.35691	0.30062	-1.10648	**N**
Poland	0.33225	0.27526	-1.10075	**N**
Russia	0.22396	0.26304	0.72838	**N**
Turkey	0.31262	0.26130	-0.98039	**N**

***Statistical significance at 1% level. **Statistical significance at 5% level. *Statistical significance at 10% level

Although the comparison of correlation coefficients for the full time period and crisis period signals the possible presence of contagion effect of subprime mortgage crisis for Czech

Republic and Russia, the test statistic fails to reject null of no contagion. Therefore, one-sided t-tests show us that the cross market correlation coefficient during the crisis period is not significantly greater than the tranquil period for any of the sample countries. Thus, we are not able to confirm the existence of contagion effect of subprime correlation coefficient on all emerging European countries by leaning on the unconditional correlation analysis.

We confirm that using the unadjusted correlation coefficients to investigate the presence of contagion is not a right tool since increased volatility clearly causes a heteroscedasticity and this leads to rejection of null of no contagion. On the other hand, FR corrected correlation coefficients for the heteroscedasticity bias has shown us that increase on correlation coefficients occurs due to high volatility of the crisis periods and adjustment of those biases give a solid test of contagion. In other words, we see that higher correlations during the subprime mortgage crisis are largely driven by the rise in volatility. However, as we have mentioned in the above section, the failure of rejection of no contagion may be the result of overlapping data. Therefore, by following Dungey et al. (2005) we investigate the presence of contagion with non-overlapping data.

As Table 4 shows the cross-market unconditional (adjusted) correlations between the US and all of the sample countries during the crisis period are larger than those during the pre-crisis period. Therefore, by only looking at the changes (increase) on correlation coefficients it is possible to say that contagion effects are observed for all five emerging European markets. However, Forbes and Rigobon (2002) suggest that this increase should be tested with t-statistic to investigate whether it is significant enough to confirm the presence of contagion. Examination of the test statistics shows that while stock index returns of the Czech Republic, Hungary, and Turkey experience significant increases in adjusted correlation during crisis period, increases on the correlation coefficients of Poland and Russia are not significant to confirm the contagion effect of subprime mortgage crisis. These findings show us that higher correlations during the subprime mortgage crisis are largely driven by the rise in volatility and does not signal an increase in equity market interdependence of Polish and Russian markets. For the Czech Republic, Hungary, and Turkey it is possible to confirm the increasing impact of the crisis on equity market interdependence of those countries with the US market. As a result, although overlapping data fails to reject the null of no contagion, by using non-overlapping data by following Dungey et al.'s (2005) suggestion, we are able to confirm the presence of contagion effect of subprime mortgage crisis on the Czech Republic, Hungary, and Turkey.

Table 4

Heteroscedasticity-corrected Correlation Coefficients with Non-Overlapping Data

This table reports unconditional (adjusted) cross-market correlation coefficients for the stock markets of 5 emerging European countries with the US stock market. The correlation coefficients have been adjusted for heteroscedasticity. The test statistics are for Fisher's z-tests examining if the cross-market correlation coefficient during the crisis (high volatility) period is not significantly greater than the pre-crisis period (low volatility). "C" indicates that the test statistic is greater than the critical value and therefore contagion occurred. "N" indicates that the test statistic is less than or equal to the critical value and therefore no contagion occurred.

	Pre-crisis	*Crisis*	*Test Statistic*	*Contagion?*
Czech Republic	0.22749	0.34111	2.00591**	**C**
Hungary	0.10809	0.30062	3.26774***	**C**
Poland	0.18897	0.27526	1.47875	**N**

Russia	0.18402	0.26304	1.34853	**N**
Turkey	0.14939	0.26130	1.89545*	**C**

***Statistical significance at 1% level. **Statistical significance at 5% level. *Statistical significance at 10% level

6. Summary and Conclusions

To investigate whether there is a significant increase in cross-market correlations during the subprime mortgage crisis, we use heteroscedasticity adjusted correlation coefficients technique that is suggested by Forbes and Rigobon (2002). Furthermore, as Dungey et al. (2005) claim that the length of pre-crisis period directly affects the estimation of full period correlations, we conduct our test by using both overlapping data as Forbes and Rigobon (2002) suggest and non-overlapping data (comparison of pre-crisis period and crisis period) as Dungey et al. (2005) suggest.

The findings are quite straightforward and consistent. According to this, our methodology fail to reject the null of no contagion by using overlapping data for all sample countries. Therefore, the findings show that crisis period correlations are not significantly larger than the full period correlation for any emerging European economies that we used in our dataset. On the other hand, a non-overlapping data reveals the presence of contagion for the Czech Republic, Hungary, and Turkey.

Our results have revealed two key implications regarding methodological issues. According to that we have clearly proved that high volatility during crisis period leads false rejection of null of no contagion. Correction of the heteroscedasticity bias and failure to reject the null of no contagion clearly show that subprime mortgage crisis has not actually increased the interdependence between the US and emerging European markets. However, this point brings us to our second methodological implication since the construction of the hypothesis directly affects the result of the test regarding the presence of contagion. According to that if one construct the hypothesis as crisis period correlations should be higher than full sample period correlations (using overlapping data), this may possibly lead to failure to reject the null of no contagion. However, examining the presence of contagion by using non-overlapping data and comparing the correlations of pre-crisis period and crisis period have stronger chance to reject the null of no contagion.

Here, we should highlight that the result of contagion does not mean there is no significant effect of real linkages on the propagation of the crisis. As we construct our model leaning on the assumption that the significant increase on the correlation coefficients is the solid proof of a contagion, here we are not able to measure the impacts of the real linkages on the propagation of the crisis. Therefore, we are only able to say that during the latest global financial crisis Czech Republic, Hungary and Turkey suffered from a contagion from the US (according to non-overlapping data). Furthermore, we again need to highlight that the result of no contagion does not mean there is no irrational behavior in those stock exchanges. There may be two explanations for this situation; either there was a herd behavior in these countries too but that never become systematic enough to create contagion or the time period that we investigate does not cover the period when the herd behavior become systematic. Therefore, we can say that our model has shown that Russia and Poland did not suffer from a contagion during our sample period. This means that either herd behavior became systematic for those countries later on or it never became systematic and caused a contagion for those countries.

Besides methodological implications, our study has also practical implications too. According to this, Modern Portfolio Theory dictates that if national stock markets display low correlations with each other, international diversification should reduce the risk and increase the expected return of a portfolio. However, if market integrations (correlations) strengthen after a financial shock, this would abolish the benefits of international diversification strategy while, in fact, it is needed most. Therefore, investigation of contagion, as we define and analyse in this paper, implies a test of the advantages of international diversification strategy during a crisis time. By detecting the clear (unbiased) impact of financial crisis on the correlation structure of the stock markets and how it changes the relationships, we provide clear opinion about the effectiveness of international diversification in reducing the risk during a stressed/crisis times. Secondly, our paper has provided crucial insights for policymakers. For instance, our results could be used to evaluate the role and potential effectiveness of international institutions and bailout funds. Since our definition of the contagion comprises the propagation of a financial crisis due to liquidity problems (investor behaviours based on microeconomic fundamentals), any evidence that shows the existence of contagion, could justify the short term loans and IMF interventions to prevent secondary countries from facing a financial crisis. However, our results have revealed that even though emerging European countries are vulnerable towards the contagion, they also significantly suffer from over-strong normal day interdependence. Thus our results imply that while the policy makers are implementing new policies to stop the propagation of financial crises, they should consider both normal day interdependence and contagion.

The results have shown us that strong normal day interdependence and real linkages are needed to be investigated carefully by policy makers as those are important for crisis to propogate as well as contagion in emerging European countries. According to that, national policy makers in emerging European countries may focus on trading partnerships, international credits, foreign direct investments and currency depreciation. They may make policies to diversify the trading partners and financial relationships, decrease the dependency to foreign currencies, and provide liquidity where it is needed to weaken the impact of strong normal day interdependence in case of financial crisis. Our results have also shown that some of the emerging countries suffered from contagion during the last global financial crisis. In this case instead of national policy makers regulatory authority may be more efficient to control the propogation of crisis. According to that, to be able to control the panicked and irretional investors and to prevent their moves to become systematic, abnormal price and quantity movements may be controlled, sessions can be suspended and the settlement method of securities can be changed in the Stock Exchanges. Furthermore, Central Banks and trustworthy politicians may use the method of forward guidance to cool off the investors.

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THE RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT AND INTRA INDUSTRY TRADE: AN EMPIRICAL ANALYSIS ON TURKEY AND EU (15) COUNTRIES

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Abstract

Nowadays, the importance of intra-industry trade has increased to explain global trade more than traditional foreign trade theories. Determination of intra-industry trade indicatives which is accepted as development index of foreign trade is also important in terms of foreign trade policies. For this reason, intra- industry trade and research of the relations between directly foreign investment which is thought to be effect intra-industry trade theoretically constitutes the topic of this study. Direct foreign investment which comes to Turkey from EU (15) countries and transportation tools in foreign trade to again these countries with correlation of intra-trade industry level which is calculated for base metal industry sectors, are searched using monthly data in 2007:01-2015:10 period. While it was reached that intra-industry trade level which was calculated of base metal industry sector is granger reason of direct foreign investment in empirical results, no causality relations was reached between intra-industry trade which was calculated for transportation tools and direct foreign investment. These correlations are tested according to variance composition, impulse response analysis and the results support granger causality test.

Keywords: Intra Industry Trade, Foreign Direct Investment, Granger Causality Test

Introduction

Traditional foreign trade theories have failed to explain the trade between the same industries in the recent period that globalization has gained momentum. Developing modern foreign trade theories that include labor and technological progress, Intra Industry Trade (IIT), which explains the realization of export and import of similar goods, has gained importance. Custom unions, the effect of multinational corporations, economies of scale are influential on countries' orientation towards IIT and increasing importance of IIT.

Foreign Direct Investment (FDI), which is expected to make a significant contribution to the country's economy, affects IIT through scale economies. When depending on the quality of FDI, the level of IIT is increasing or decreasing; the development at the level of IIT is also influential in the success of the country in shrinkage FDI. The aim of this study is to examine the relationship between IIT and FDI for the base metal industry and the transportation tools sector[11] between Turkey and EU (15) countries[12]. It is expected that established causality and the direction of causality or causality that can to be established benefit the policy for the future by case evaluation and contribute to the related literature.

[11] In the TSI's (Turkish Statistical Institute) 2014-year data from these two identified sectors ISIC (International Standard Industrial Classification) Rev.4. classification of Turkey's foreign trade volume, transportation tools is the first and the base metal industry is the second place

[12] This countries: are: 61% of foreign direct investments coming to Turkey according to the CBRT (Central Bank of the Republic of Turkey) data of 2014, made from countries; France, Netherlands, Germany, Italy, England, Ireland, Denmark, Greece, Portugal, Spain, Belgium, Luxembourg, Sweden

In the study, the relation between IIT and FDI was theoretically transferred and the literature on this subject was included in the literature section. In the empirical part of the study, IIT level and FDI relationship were investigated in sectors determined between Turkey and major trade partners and between EU (15) countries where shrinkage FDI a high amount. The period of the study consists of the 2007 year and after data the breakdown of the FDI as sector and country which is due to the lack of data in the previous period and due to the recent period.

FDI and IIT Relationship

When international trade data are interpreted in general, it can be said that it is possible to make two conclusions: It is heavily invested by countries which are close in terms of international trade development level, countries do not exclusively specialize in certain commodities but rather export and import of the same commodities. Traditional foreign trade theories are insufficient to explain the second inference, even if the first inference is clear. Doing foreign trade in the same industry sector in the same period instead of specializing in different industrial sectors and carrying out foreign trade in these sectors is called IIT (Yılmaz, 2010:236). Especially after the II. World War era, IIT became important in inter-country trade due to the influence of free trade zone, customs union, common market, economic union and full economic integration.

While there was an orientation to IIT from inter-industry trade in the goods and service markets with the globalization in world economy after the 1980; FDI has also increased its importance in the capital market. Developments such as supposing developing countries as more reliable in terms of foreign currency supply than other financial instruments, the existence of significant influences on macroeconomic balances in the host country where the investment is made, transferring of profits to the country of origin of investment etc. encourages attraction and realization of FDI.

Theoretically, the relationship between FDI and IIT has been proposed by two schools of thought and it has been investigated how FDI affects the IIT level. According to the school of first thought, FDI influences IIT through multinational corporations, which are composed of merged firms that produce horizontal and vertical differentiated goods for people with different levels of income and enjoyment and preferences. According to the second school of thought, FDI influences IIT, as most of the IIT is made among firms affiliated with multinational corporations located in different countries with different stages of production (Chen, 2000: 1-2).
It is expected that FDI will affect IIT due to its purpose and variety. FDI, which is made from developed countries to developing countries and underdeveloped countries aims to increase market share within the country by producing complementary goods in the country where the investment is made. In this case, the ITT level of the invested country is adversely affected.
FDI's scale economies of different stages of production realized in the same industries and in case of cost-effectiveness, the level of IIT in trade between countries is positively affected.

While high technology developed by the country of origin allows technology transfer to be used for the production of important capital goods, FDI increases the country's production with high innovation. Industrial specialization based on factor endowment and technological diversity contributes to the IIT level with the adaptation to different consumer preferences.

In addition, multinational companies make one or more stages of their production in different countries, and FDI, which is increased by importing these products after the export of

assembly materials, contributes to the progress of the IIT. This is because mutual trade takes place in the same industries (Zhang and Clark, 2009: 339-340).

Literature Review

Chan (2000) investigated the relationship between FDI and IIT with data for the period from 1985 to 1994 of U.S.A, 15 APEC countries and 17 EU countries by the spearman correlation test. According to empirical test, there is a strong and positive relationship between FDI and IIT in U.S.A. Andreoss and Bassino (2001) investigated the impact of FDI on IIT with annual data for the period 1998 -1996 by the panel data. According to their test results, FDI effects positively IIT level between Japan and EU, Indonesia, Malaysia, Philippine, Thailand in the machine, chemical and transport vehicle sectors.

Chiho and Chul (2001) investigated determinations of IIT level of South Korea with important trade partners for the years of 1991-1999. According to empirical test, FDI effects vertical IIT level in South Korea. Liv and et al. (2003) investigated determinations of IIT level of U.S.A with 26 countries in insurance sector for 1995 and 1996 years by using cross section panel regressions method. According to empirical test, FDI from USA to 26 trade partners effects positively IIT level with these countries.

Fukao and. et al. (2003) investigated determinations of vertical IIT level of Japan with important trade partners for the years of 1998-2000 by using panel data in electrical machinery industry. According to empirical test, FDI effects vertical IIT level in East Asia. Sohn and Zhang (2006) investigated relation between IIT and FDI in South Asia for the years of 1990-2000 by using panel regression. Their results show that cross-country FDI has a positive relationship with horizontal IIT and a negative relationship with vertical IIT.

Xing (2007) investigated relation between FDI and IIT for the years of 1980-2004 by using panel data in six manufacturing sectors. According to empirical test FDI from Japan and U.S.A promoted their bilateral IIT level with China. Yoshida and et. al. (2009) investigated relation between vertical IIT and FDI for the years of 1988-2004 by using panel regression. According to empirical test FDI from Japan to EU promoted their bilateral IIT level. Özkaya (2010) investigated determinations of IIT level of Turkey for the years of 1989-2009 by using regression analyze in textile sector. According to empirical test FDI effects negatively IIT level.

Klimek (2010) investigated determinations of IIT level of Poland with important 15 trade partners for the years of 2000-2007 by using panel data. According to empirical test bilateral FDI effects positively IIT level of Poland with trade partners. Türkcan and Ateş (2011) investigated determinations of vertical IIT level of U.S.A in auto parts sector fort the years of 1989-2006 by using panel data. According to empirical test FDI from U.S.A to 27 trade partner countries effects positively vertical bilateral IIT level.

Ambroziak (2012) investigated the impact of FDI on IIT with annual data for the period 1995 -2008 by the panel data in Visegrad countries. According to empirical test FDI effects vertical and horizontal IIT level. Doğanay and et. al (2014) investigated how IIT level is linked to FDI in Turkish transport equipment sector with monthly data for the years of 2006-2013 by using granger causality test. According to empirical test there is a unidirectional causality from FDI to IIT. Küçükahmetoğlu and Aydın (2011) investigated determinations of IIT level of Tukey

with trade partners in 2005 by using cross section data. According to empirical test FDI from abroad to Turkey effects negatively IIT level.

Data and Empirical Results

Three variables are used in this study to investigate relation between IIT and FDI with monthly data set of the period between 2007:01 and 2015:10. These variables: FDI from EU (15) countries to Turkey (lfdi), calculated IIT level of Turkey with these EU (15) countries in base metal industry (lbm) and transportation tools (ltt) sectors. The dolar-based foreign trade data taken from TSI data system and classified according to ISIC Rev. 4 at the 2- digit level for the years of 2007-2015 is used in the calculation of the intra-industry trade levels of foreign trade realized between Turkey and EU (15) countries. Grubel and Lloyd index which has frequently been used in the literature was used for the calculation of intra-industry trade level in foreign trade between Turkey and EU (15) Countries. FDI data is taken from CBRT. All series was purged from seasonal effect and used logarithmic form in this study. The relationships between the following were determined sequentially: the relationship between first FDI and IIT in base metal industry (model A) and then FDI and IIT in transportation tools sector (Model B). The Following tests were used in the study with this purpose:

- ✓ ADF (Augmented Dickey Fuller) and PP (Phillips-Perron) Unit Root Test
- ✓ Granger Causality Test
- ✓ Impulse Response Analysis
- ✓ Variance Decompositions

Table 1:ADF and PP Unit Root Tests

Variables	ADF Test			Phillips-Perron Test		
	I(0)		I(1)	I(0)		I(1)
	Constant	Constant and Trend	Constant	Constant	Constant and Trend	Constant
lfdi	-4.9927 (1)*	-5.1997(1)*	-12.959 (1)*	-7.86 (6)*	-8.21319(5)*	-35.782 (39)*
lbm	-4.6027 (0)*	-4.8785 (0)*	-10.554 (1)*	-4.437(3)*	-4.79516(3)*	-17.487(20)*
ltt	-7.5735 (0)*	-7.5778 (0)*	-8.3796 (4)*	-7.57 (1)*	-7.58771(1)*	-41.34(45)*
ADF test lag lengths (max 12) is specified automatically by considering SBC Information Criteria. PP test bandwith is specified automatically by considering Newey - West Bandwith						

* denotes significance at the level %1.

The ADF and PP tests were applied to determine of stationary state of variables and results of tests are presented in Table 1. In the ADF and PP unit root tests, the alternative hypothesis which is stationary is tested against the null hypothesis that the series contains a unit root. If the absolute value of the calculated values in the ADF and PP tests based on the 1% level of significance is bigger than the critical value, the null hypothesis can be rejected and it is concluded that there isn't the unit root. According to test results, all variables found stationary in both methods.

Table 2. Granger Causality Test

H_0 Hypothesis	Observation	F statistic	Prob
lbm does not granger cause lfdi	104	5.620553	0.0602
lfdi does not granger cause lbm	104	4.541149	0.1033
ltt does not granger cause lfdi	104	0.718953	0.6980
lfdi does not granger cause ltt	104	0.384763	0.8250

According to granger causality test, which is presented in Table 2, there is a unidirectional causality from IIT to FDI in base metal industry and no-causality between IIT and FDI in transportation tools sector.

Table 2. The Optimal Lag Length Selection in VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ	
0	-54.38628	NA	0.010835	1.150740	1.203495	1.172078	Model A
1	-24.06408	58.78792	0.006332	0.613553	0.771816*	0.677567*	
2	-20.84401	6.111559	0.006434	0.629470	0.893242	0.736160	
3	-15.65711	9.632828*	0.006282*	0.605247*	0.974528	0.754614	
4	-14.03942	2.938256	0.006599	0.653866	1.128656	0.845908	
5	-12.84050	2.128684	0.006993	0.711031	1.291329	0.945750	
6	-9.222199	6.276646	0.007057	0.718820	1.404628	0.996215	
7	-8.295353	1.569963	0.007526	0.781538	1.572854	1.101609	
8	-7.721462	0.948678	0.008089	0.851458	1.748284	1.214206	
0	20.40859	NA	0.002354	-0.375685	-0.322931	-0.354347	Model B
1	29.83337	18.27253	0.002108*	-0.486395*	-0.328132*	-0.422381*	
2	33.72990	7.395459	0.002113	-0.484284	-0.220512	-0.377593	
3	36.58301	5.298635	0.002163	-0.460878	-0.091597	-0.311511	
4	37.79646	2.204023	0.002291	-0.404009	0.070780	-0.211967	
5	43.14033	9.488084*	0.002231	-0.431435	0.148864	-0.196716	
6	45.82649	4.659663	0.002295	-0.404622	0.281186	-0.127227	
7	47.52407	2.875493	0.002409	-0.357634	0.433683	-0.037563	
8	49.13283	2.659391	0.002535	-0.308833	0.587992	0.053914	

Optimum lag length is specified as 3 by considering LR (Likelihood Ratio), FPE (Final Prediction Error), AIC (Akaike Information Criteria), as 1 by considering SC (Schwarz) HQ (Hannan Quinn) in model A. Optimum lag length is specified as 5 by considering LR, as 1 by considering FPE, AIC, SC, HQ in model B. Var (2) model is selected so that the autocorrelation and heteroscedasticity problems are reached at lags1 in both models.

Table 3. Impulse Response Analysis (Model A)

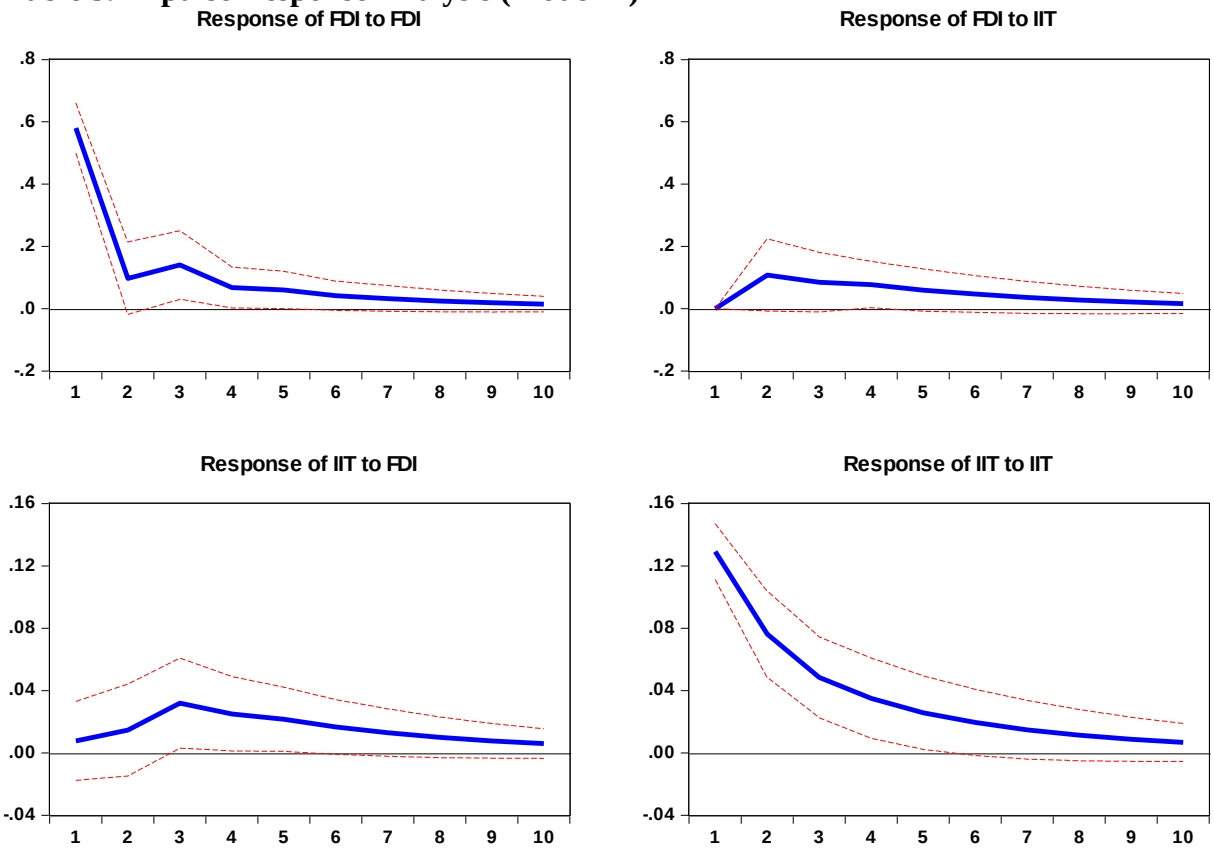

Table 4 shows impulse response analysis and reports responses of lfdi and lbm to one standart deviation shock in lfdi and lbm. If there is a standart shock in IIT level, the response of FDI is positive in the first two periods and then it is decreasing. Besides, response of IIT level to FDI is positive in the first three periods and then it is decreasing.

Table 4. Variance Decomposition (Model A)

Variance Decomposition of FDI

Period	S.E.	LDY_SA	LMEIT_SA
1	0.580184	100.0000	0.000000
2	0.598108	96.75348	3.246521
3	0.620118	95.10613	4.893871
4	0.628584	93.73035	6.269648
5	0.634198	92.96519	7.034809
6	0.637270	92.49181	7.508186
7	0.639116	92.21846	7.781535
8	0.640186	92.05672	7.943278
9	0.640818	91.96214	8.037864
10	0.641189	91.90650	8.093501

Variance Decomposition of IIT

Period	S.E.	LDY_SA	LMEIT_SA
1	0.129366	0.351068	99.64893
2	0.150837	1.189165	98.81083
3	0.161582	4.926115	95.07389
4	0.167197	6.838849	93.16115
5	0.170521	8.166177	91.83382
6	0.172424	8.907866	91.09213
7	0.173542	9.350504	90.64950
8	0.174196	9.606056	90.39394
9	0.174580	9.756039	90.24396
10	0.174805	9.843692	90.15631

Table 5 shows variance decompositions of the FDI and IIT for model A. The results indicate that IIT level explains % 0.0 of the variation in FDI in the first period and this rate is about %8 in the last period. The variation in FDI, as explained by the IIT, increases from first period to tenth period. FDI explains % 0.3 of the variation in IIT in the first period and this rate is

about %10 in the last period. The variation in IIT, as explained by the FDI, increases from first period to tenth period.

Table 5. Impulse Response Analysis (Model B)

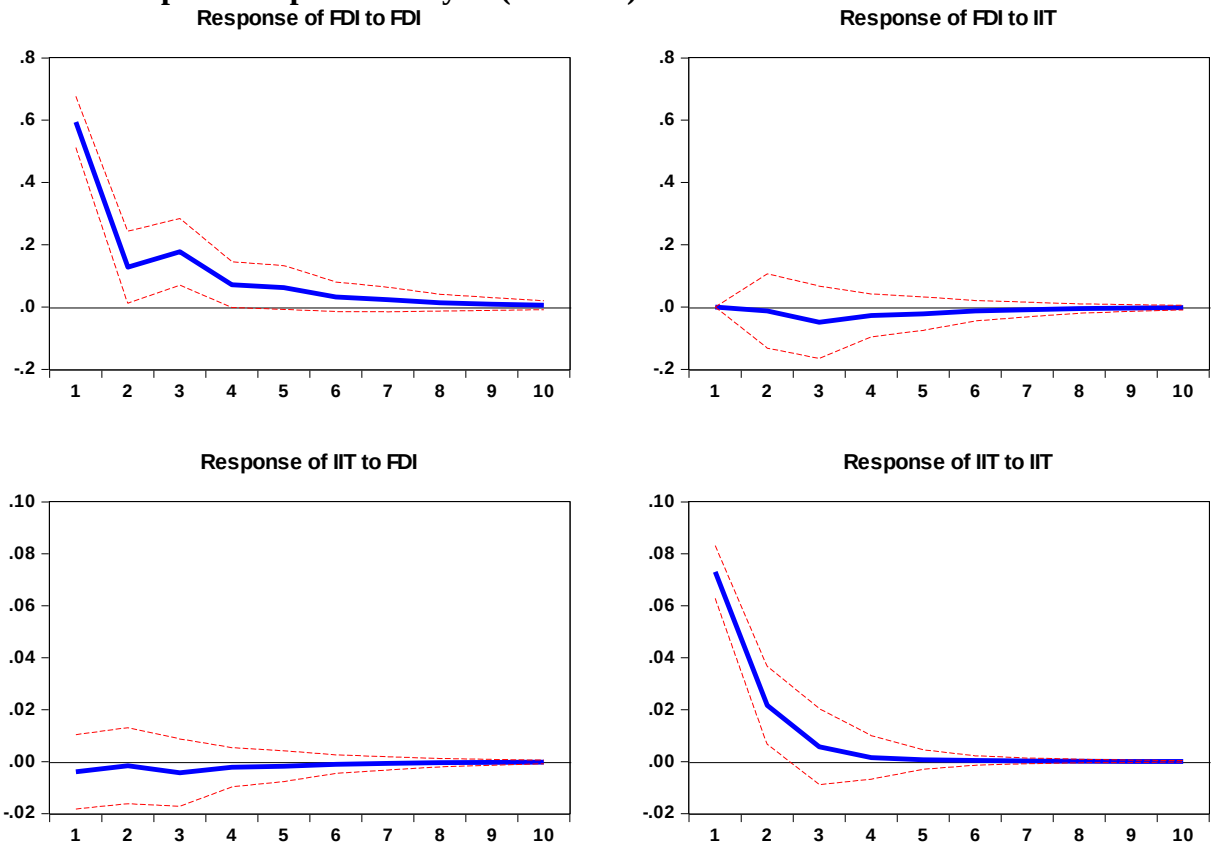

Table 6 shows impulse response analysis and reports responses of lfdi and ltt to one standart deviation shock in lfdi and ltt. If there is a standart shock in IIT level, the response of FDI is negative and minimal and the effect of this shock begins to die out after sixth period. Besides, response of IIT level to FDI is negative and minimal and the effect of this shock begins to die out after sixth period.

Table 6. Variance Decomposition (Model B)

Variance Decomposition of FDI

Period	S.E.	LDY_SA	LUEIT_SA
1	0.594272	100.0000	0.000000
2	0.607971	99.95513	0.044874
3	0.635240	99.35916	0.640841
4	0.639814	99.18561	0.814392
5	0.643195	99.08073	0.919272
6	0.644141	99.04591	0.954092
7	0.644631	99.02977	0.970232
8	0.644801	99.02377	0.976226
9	0.644877	99.02121	0.978793
10	0.644906	99.02020	0.979797

Variance Decomposition of IIT

Period	S.E.	LDY_SA	LUEIT_SA
1	0.073145	0.292640	99.70736
2	0.076297	0.312487	99.68751
3	0.076630	0.625483	99.37452
4	0.076678	0.706882	99.29312
5	0.076702	0.760789	99.23921
6	0.076710	0.777831	99.22217
7	0.076714	0.786063	99.21394
8	0.076715	0.789052	99.21095
9	0.076716	0.790354	99.20965
10	0.076716	0.790858	99.20914

Table 7 shows variance decompositions of the FDI and IIT for model B. The results indicate that IIT level explains % 0.0 of the variation in FDI in the first period and this rate is about %0.9 in the last period. The variation in FDI, as explained by the IIT, is minimal during all period. FDI explains % 0.3 of the variation in IIT in the first period and this rate is about %0.7 in the last period. The variation in IIT, as explained by the FDI, is minimal during all period.

Conclusion

In explaining the changing nature of increased trade with the acceleration of economic integration between countries after the II. World War, traditional foreign trade theories are inadequete. The ability of measuring IIT which means the export and import of similar goods instead of specializatıın in the production of certain goods by countries with Grubel and Lloyd's (1971) studies has increased the interest in IIT in foreign trade theories.

Product diversification, scale economies, increasing IIT, which takes multinational corporations into account, means increasing foreign trade and increasing profits in the country's economy, so countries should set their foreign trade policies to increase IIT.Especially product differentiation, scale economies, economic integration and multinational corporations influence IIT through FDI, while the determinants of IIT vary depending on multiple factors in the country, commodity and market. It was shown in the literature review that theoretically shown this relationship is not investigated too much empirically, and studies on IIT are mostly done in the form of index calculation. When the calculation of IIT is effective in the analysis of the situtation in the foreign trade of the country, studies which questinaed the relationship between the import variables determining IIT, such as FDI will benefit in this regard, especially in making sectoral-based political conclusion.

In the empirical part of the study, the relationship between FDI and IIT, significant amount of FDI atrracted by Turkey that has a high foreign trade volume among the EU (15) which is the most important trade partner countries were investigated for base metal industry and transportation tool sector. According to empirical findings, when the causality relationship from the IIT level calculated between Turkey and the EU (15) countries to FDI which is made from these countries to Turkey has been reached in the base metal industry sector, the direct causality relation from FDI to IIT has not been reached. In the transportation tools sector, a causality relation between the IIT level calculated between Turkey and the EU (15) countries and FDI to Turkey from these countries could not be reached. In addition, impulse response and variance composition tests support the results of the granger causality test within the two models developed for both sectors.

When evaluating empirical findings and study wide, FDI from developed EU countries has a limited connection with the IIT level in the base metal industry; And in the transportation tools sector, no link has been established with the IIT level. This situation confirms that FDI entering Turkey does not constitute new fields of activity in these two-major manufacturing sub-industries and that it has made a limited contribution to IIT by targeting the domestic market. Coming FDI to Turkey mostly in the finance and real estate sectors as purchasing, merging and privatization and its contribution to the country's economy have mostly been criticized. To reach Turkey its foreign trade targets in the coming period and accelerate the integration process with EU, it is important that FDI contributes to IIT in the two major sectors of Turkey's foreign trade deficit, base metal industry and transportation tools sectors.

The FDI shrinkage strategy which contributes IIT of Turkey will bring Turkey into a competitive country as a complementary country to the EU in terms of the closure of foreign trade deficits and sustainable economic growth.

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PRIVATE EQUITY/VENTURE CAPITAL IN HIGH-TECHNOLOGY SECTOR

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Abstract

The development of private equity/venture capital market (PE/VC) is perceived as an opportunity for economic growth, especially in the area of high-technology projects. The main objective of the following study is to verify if the Venture Capital investments relate in a wide extent to high-tech sector, to analyse the level of high-tech investments share in total PE/VC investment amount and its' trend, in chosen European countries and to identify the areas of the high-tech, which are the most desirable by investors in Europe and the particular high-tech projects that are currently financed or co-financed by PE/VC funds. That can show the path of high-tech development in particular countries.

Special emphasis will be placed on determining the share of investment in high-tech in the total value of PE/VC investments; identifying types of high-tech projects, products or services most effectively attracting VC, as well as, presenting the differences and similarities between the European countries in these terms.

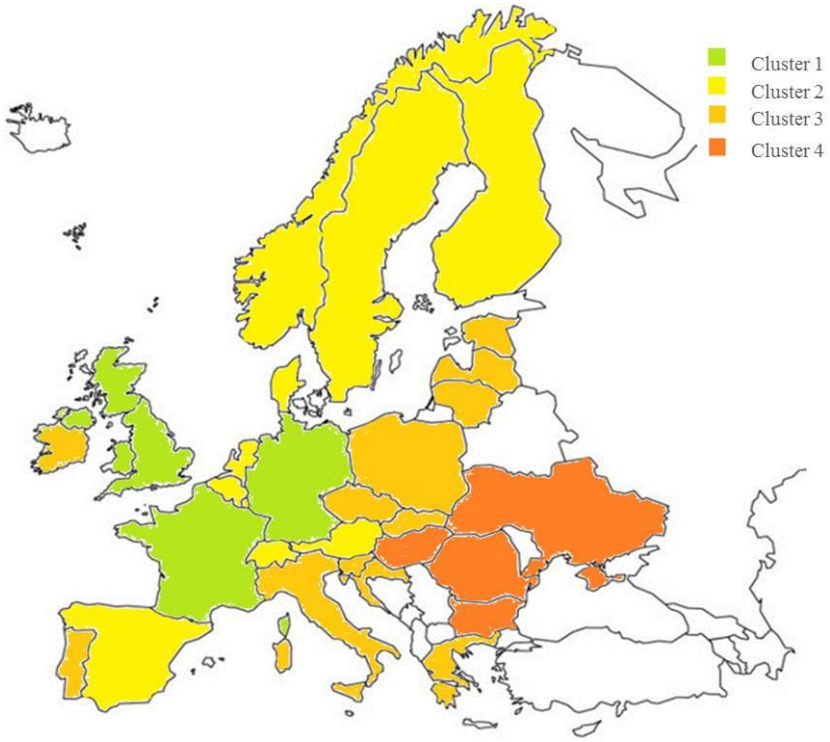
The article is based on latest available statistical data collected by Invest Europe (previously EVCA), as well as, the latest research reports on the PE/VC market. Analysis of PE/VC funds' portfolios are based on the information about investments that each funds publish on their websites.

The proper specification of this market is extremely important as it allows an understanding of the mechanisms affecting the analysed sector. It proves that the area of communication and IT, as well as, medicine sectors are the ones, where the number of projects financed by VC is the biggest, and at the same time, the ones that produce the biggest number of high-tech projects, which attract venture capital.
Keywords: high-tech, private equity, venture capital, PE/VC

Introduction

Private Equity/ Venture Capital (PE/VC) market is perceived as a very important one for innovative ideas often related to high technology, however, looking more closely at the statistics, it is difficult to prove it. In recent years an investment boom can be noticed, especially in business services, banking services and related industries providing consumer goods. It is however, hard to say if PE/VC industry is focused on high-tech, or rather other sectors only linked to technical innovation or technology. Therefore, it is an interesting topic.
The main objective of the following study is to analyse the industry share of PE/VC in high-tech products, processes and services in European countries. Furthermore, the objective of the study is the identification of projects in high technology areas, which are nowadays the most desirable by investors in Europe.
In the analysis, special emphasis will be placed on determining the share of investment in high-tech in the total value of PE/VC investments; identifying types of high-tech projects, products or services most effectively attracting venture capital, as well as, presenting the differences and similarities between the European countries in these terms.

In the study there are used statistical data published by the Invest Europe (EVCA)[13] (for years 2010-2015) for selected European countries. In addition, there are used statistical data provided by Eurostat[14]. Due to the nature of the sources, analysed data treat the PE/VC market with no division into different types of private equity capital. Analysis of PE/VC funds' portfolios are based on published information on particular funds websites.
The analysis of high-technology area attracting venture capital was preceded by countries clustering, that was made based on the taxonomic analysis proposed by Professor Z. Hellwig. This method is an estimation of the level of differentiation of objects described by a set of statistical characteristics (e.g. volume of PE/VC investments, the number of PE/VC companies, the share of PE/VC investments in GDP, the number of patent applications, population of human resources employed in technology and science, etc.)[15]. As a consequence it led to identification of homogeneous groups - clusters of counties with similarities in the level of its development [Kopczewska, 2009]. The taxonomic analysis of clusters for the five year period 2009-2013 brought the results to the four distinguished groups, presented on the map below [Grzegorczyk, 2015, p.247].



Map 1. Map of Europe with analysed clusters indicated in 2014

Source: Grzegorczyk E., *Private Equity/Venture Capital sector specifics in certain groups of countries within Europe* [in:] 14th EBES Conference – Barcelona Proceeding Volume 3, EBES Barcelona 2014, p. 1944.

PE/VC investments in high-technology in Europe

When it comes to high-tech investments within the indicated clusters, the share in overall PE/VC investments is presented in the table 1 below.

[13] EVCA - European Private Equity & Venture Capital Association – now Invest Europe

[14] Eurostat - European Statistical Office

[15] More details about the methodology and the characteristics of diversified clusters can be found in: Grzegorczyk E., 2015. Private Equity/Venture Capital sector specifics in certain groups of countries within Europe [in:] Mehmet H., Business Challenges in the Changing Economic Landscape – Vol. 1. Proceedings for the 14th Eurasia business and Economics Society Conference, Springer, pp.239-260.

Table 1. PE/VC investment share in high-technology sector, in indicated four clusters of European countries in 2010-2015 [%]

	2010	2011	2012	2013	2014	2015	Av.
Cluster 1 (Top level)							
France	*11,91%*	*5,37%*	*6,53%*	*8,59%*	*9,27%*	*11,60%*	*8,88%*
Germany	*11,89%*	*18,23%*	*9,06%*	*5,58%*	*6,51%*	*17,00%*	*11,38%*
UK	*4,07%*	*11,60%*	*5,49%*	*7,00%*	*11,53%*	*7,90%*	*7,93%*
Average	*9,29%*	*11,73%*	*7,03%*	*7,06%*	*9,10%*	*12,17%*	*9,40%*
Cluster 2 (Improving level)							
Austria	*17,40%*	*9,09%*	*3,84%*	*5,71%*	*15,87%*	*8,00%*	*9,99%*
Belgium	*23,96%*	*28,52%*	*40,86%*	*6,55%*	*12,59%*	*34,40%*	*24,48%*
Luxembourg	*41,09%*	*45,25%*	*13,80%*	*36,09%*	*21,74%*	*22,30%*	*30,05%*
Sweden	*5,32%*	*15,10%*	*8,94%*	*9,94%*	*5,32%*	*26,50%*	*11,85%*
Norway	*12,67%*	*28,63%*	*27,39%*	*8,05%*	*5,13%*	*35,10%*	*19,50%*
Finland	*10,92%*	*8,75%*	*11,93%*	*13,46%*	*9,00%*	*16,60%*	*11,78%*
Netherlands	*8,21%*	*9,21%*	*14,07%*	*11,79%*	*7,49%*	*11,00%*	*10,29%*
Spain	*1,70%*	*5,38%*	*4,82%*	*5,26%*	*4,66%*	*5,60%*	*4,57%*
Switzerland	*28,15%*	*49,06%*	*23,54%*	*26,10%*	*27,39%*	*25,00%*	*29,87%*
Average	*16,60%*	*22,11%*	*16,58%*	*13,66%*	*12,13%*	*20,50%*	*16,93%*
Cluster 3 (Satisfactory level)							
Baltic	*17,39%*	*25,95%*	*15,43%*	*41,88%*	*16,47%*	*13,80%*	*21,82%*
other CEE countries	*2,43%*	*38,16%*	*5,07%*	*7,35%*	*8,07%*	*32,70%*	*15,63%*
Czech Republic	*31,71%*	*4,26%*	*78,32%*	*2,30%*	*15,06%*	*14,10%*	*24,29%*
Greece	*16,67%*	*73,09%*	*n/a*	*0,00%*	*0,00%*	*0,00%*	*17,95%*
Italy	*8,77%*	*14,68%*	*7,25%*	*1,69%*	*4,19%*	*1,30%*	*6,31%*
Poland	*0,06%*	*3,11%*	*3,94%*	*0,68%*	*0,81%*	*0,97%*	*1,59%*
Potrugal	*8,13%*	*3,07%*	*5,93%*	*13,45%*	*5,96%*	*17,60%*	*9,02%*
Average	*12,17%*	*23,19%*	*19,32%*	*9,62%*	*7,22%*	*11,50%*	*13,84%*
Cluster 4 (Unsound level)							
Bulgaria	*73,01%*	*1,82%*	*0,14%*	*100,00%*	*18,19%*	*0,00%*	*32,19%*
Hungary	*46,02%*	*11,66%*	*8,70%*	*9,74%*	*3,54%*	*1,40%*	*13,51%*
Romania	*0,00%*	*0,00%*	*0,00%*	*4,11%*	*0,00%*	*0,00%*	*0,68%*
Ukraine	*0,00%*	*4,59%*	*14,70%*	*4,03%*	*6,78%*	*4,70%*	*5,80%*
Average	*29,76%*	*4,52%*	*5,88%*	*29,47%*	*7,13%*	*1,53%*	*13,05%*
Total Average	*16,59%*	*18,02%*	*14,08%*	*14,32%*	*9,37%*	*13,37%*	

Source: own based on EVCA Yearbook 2015 and Invest Europe 2016.

In the countries within first cluster, as those with the most developed PE market, investments in technology are on relatively low, but stable level - several percent of GDP. This group includes countries with high proportion of PE/VC investments in GDP - Average fife-year share is around 8% and 10% of GDP. There is as well a significant advantage over other countries when it comes to the number of patents in European patent office (the three countries together cover more than 63% of all high-tech patent applications by all European

countries[16]) [Eurostat 2014]. Around 50% of workers in these countries are employed in the field of science or technology. PE/VC Investors are putting their capital in practically all branches. Most capital is attracted by: business & industrial products, life sciences, and consumer goods & retail and communications; least likely to gather funds are: agriculture, construction and the real estate.

In the second group of countries, the average share of investment in high-tech in total value of GDP is higher than in the first group. This may be related to the fact that in these countries, entrepreneurs aware of the need for development of new technologies, see their gates to the rapid growth of competitiveness and sales in high-tech market. With the exception of Spain and Sweden this level, depending on the country varies on average between 10% and 30% of GDP. The level of technological knowledge in this group of countries is relatively high – in 2013 the volume of reported high-tech patent applications was on average 170 per country. Not without the influence is the fact that on average around 51% of employees in the national economy works in the science or technology area. This should be a strong factor for the development of the country, as these countries aim to develop quickly and to reach the level of 'top' countries rapidly. Similarly to the first cluster, the greatest interest in 2013 was attracted by life sciences and consumer goods & retail industry, as well as, business & industrial products. Sectors such as real estate and financial services are the least interesting for VC.

Third cluster contains a particular part of the countries from Central and Eastern Europe and the countries of the eastern Mediterranean basin, where the level of development of the PE/VC sector is assessed as satisfactory. Characteristic for these countries is a low participation of PE/VC investments in GDP value or high fluctuations of this level among years. As visible on the table 1, the third cluster is highly diversified in terms of the share of investment in technology to GDP in each year. Although the five-year average indicates often a high level of participation, the analysis of annual data prove that the volatility of the share between the years are substantial, both for the Baltic countries, Czech Republic, Greece and other CEE. Slightly different situation can be noticed in the rest of countries from this cluster - there are smaller variations but the level of participation is lower. Overall, however, it can be stated that under this cluster the investment share of high-tech in total GDP varies between 3% to 20%. In this cluster 28%-50% of the employees are qualified - hired in technology or science, which is not significantly different to the previous cluster. On average, in 2013 the countries of this group report on average 35 high-tech patent applications to the European Patent Office. All countries are focused mainly on 2-3 branches in a given year drawing from about 60% up to 90% of the total value of PE/VC investments. However, for each country sectors attracting interest are different: e.g. for Poland in 2014 there was: consumer goods & retail (26%), Business &industrial services (17%); for Italy: business & industrial products and services (45% of the products plus 26% of services).

The countries included in group fourth are characterized by a very low share of PE/VC high-tech investments in GDP. With the exception of Bulgaria an average is 4% -10%. In these countries only 25%-35% of workers are employed in the sector connected with science and technology. In 2013 the average number of patent applications for high-tech area was around 12 per country. Similarly as in the case of the third cluster, here PE/VC funds were concentrated primarily around one or two major industries, usually different for each country e.g.: Romania: transportation (42%), chemicals & materials (26%); Ukraine: business &

[16] Eurostat data for 2013 (Germany 1591; France 1162; United Kingdom 561).

industrial services (42%), communications (40%). Usually from 85% to 95% of equity goes to the selected sectors.

The percentage of PE investments in the sector of high-tech, in years 2010-2014, shows a downward trend in all clusters except the first.

Portfolio analysis with the focus on high-tech sector

Before going to the portfolio analysis of high-tech projects, it is worth to determine what is the exact definition of "high-tech". It seems as this term came into vocabulary circulation as a concept understood intuitively, usually from the perspective of specific companies or industries (such as computer science, electronics, automation, nanotechnology, etc.). As a result definitions which now can be found, they are not uniformed. There is none that would gain widespread recognition, but certainly different elements that are essential for defining them are common [Zimny A., 2014, p.7]. Polish Language Dictionary describes the high-tech as the "determination of the level of product technology, process, system testing, etc., allowing its classification as a top at the time of the art." [Słownik Jezyka Polskiego]. This new technology - advanced technology and application of the latest scientific discoveries in practice, assuming that they were not used in the last five-ten-year period.

One of the classification established by the Thomson Reuters[17] – VEIC (Venture Economics Industry Codes) groups companies taking into account the company's high-tech. According to this classification distinguishes between two basic groups: technology and non-high technology. The division is as follows [Springer and Zimny A., 2012, p.4]:

- Information Technology (Communications, Computer Hardware, Computer Software, Internet Specific, Computer Other, Semiconductor, Electronics.
- Medical / Health / Life Science (Biotechnology, Medical, Health)
- Non-High Technology (Consumer Relate, Industrial, Energy, Transportation, Financial Services, Business Services, Manufacturing, Agriculture, Forestry, Fishery, Construction, Utilities, Other.

Thus, as high technology projects should be considered those that are carried out in the first and the second area. However, nowadays it is difficult to agree that the computer software is high technology. These are currently everyday equipment/ products. However, there are areas of technology which certainly should be treated as high technologies such as .: aerospace, biotechnology, pharmaceuticals, information technology, nanotechnology, aeronautics, robotics, medicine or telecommunications. These areas will be considered at an angle of high-tech for the analysis of portfolio investment funds.

Unfortunately, the data indicated by EVCA refers to the total value of investments in technology projects without separating the areas. Therefore, to see what kind of technologies now attract VC investors, it is therefore needed to analyse the investment portfolios of PE/VC funds. Due to the fact that not every Equity Association provides a list of its members, for the analysis there were chosen countries for which it was possible to collect data about portfolio investments.

[17] Thomson Reuters Corporation is a major multinational mass media and information firm

For the study there were selected one representative country for each cluster. However, there were excluded countries from the first cluster, as PE/VC market development level differ significantly from the rest of Europe. Those should become the subject of separate study.
Portfolio analysis is based on data from webpages of particular National PE/VC Associations such as:

- Finnish VC Association – FVCA - (http://www.fvca.fi/)
- Polish PE Association – PSIK[18] - (http://www.psik.org.pl/fundusze.html)
- Hungarian VC Association – HVCA - (http://www.hvca.hu/)

Each PE/VC fund has its own investment policy and specific industry preferences, thus it is worth to pay attention to the diversification of fund portfolios in analysed countries. Below analysis for three countries each representing its cluster, shows a research of the portfolios of 125 funds operating in Finland, Poland and Bulgaria grouped by national PE/VC associations. Some of the funds gathered in the associations, however, due to the lack of sufficient information published, had to be omitted. In the study there were taken into account the investments indicated by funds as the current (ongoing) projects and/or portfolio investments funded no earlier than in 2010. Projects considered are those that concern country market (in some cases, where it was not possible to distinguish – European market).

There are projects funded by more than one fund, therefore may be included in the analysis twice or more. This does not affect negatively the interpretation, since the main question posed in the survey, apart what are the particular high-tech projects, is about the industries that attract investors attention. Thus, if the project is able to attract more than one investor or if investors are willing to conduct the investment together, it represents the better situation for the particular sector. In the following analysis of portfolios, the data relate to the amount of projects, not the amount of capital allocated for this purpose. What is more, many projects do not apply strictly to one sector, but is on the borderline of industries, making the qualification more difficult. Most complicated was, however, the classification of projects in high-tech area.

Case of Finnish VC market

In Finland volume of investments in high-technologies is stable and oscillates from around 40 to 50 thousands a year. Year 2015 brings almost doubled amount (table 2).

Table 2. The amount of PE/VC investments in high-tech in Finland, in 2010-2014 [in euro k]

FINLAND (in € k)	2010	2011	2012	2013	2014	2015
Total investment	**441 687**	**436 788**	**483 193**	**555 714**	**566 498**	**512182**
Subtotal High-Tech (amount)	***48 245***	***38 207***	***57 636***	***74 793***	***50 984***	***85 239***
Subtotal High-Tech (%)	***10,90%***	***8,70%***	***11,90%***	***13,50%***	***9,00%***	***16,64%***

Source: Own based on EVCA Yearbook 2015 and Invest Europe 2016.

Among five years presented above, the value of investments in high-tech has been stable around 12% of the total PE/VC investments. It is exact as European average for 2015. In Finland around 50 million euro goes to the high-tech sector from PE funds each year. High level of high-tech patent applications is characteristic for Scandinavian countries. In this region investments in technologies are common.

[18] [PL] Polskie Stowarzyszenie Inwestorów Kapitałowych

The table 3 below represents an analysis of the portfolios of over 50 funds operating in Finland grouped by national PE/VC association[19]. Over 500 projects concern mainly Finnish market, but in some cases as well Scandinavian market. In 2016, high-tech projects still present in PE/VC funds' portfolios represent around 15% of all projects examined below.

Table 3. Portfolio analysis of Finnish PE/VC funds gathered under Finnish VC Association in 2016

FINLAND	# of PE/VC funds investing in particular sectors	# of projects in current PE/VC funds portfolios	# of high-tech projects in current PE/VC funds portfolios	Examples of projects from current PE/VC funds portfolios connected with technology area
Agriculture	3	3	0	n/a
Business & industrial products	16	40	4	Euro-Diesel - engine technology projects BestGlass - production of insulating glass Fiber technology - fiber technology JPT Industria - industrial machine and electronic technology
Business & industrial services	34	114	0	n/a
Chemicals & materials	20	27	4	IONPHASE - advanced polymer technology Salaha Works - new technology in petrochemical & chemical industry Arvos Group - heat transfer solutions for petrochemical, chemical and metallurgical processes Pesmel Oy - Engenieering solutions for material handling
Communications	32	202	12	HeadAI - software based on advanced big data analysis Liaison Technologies Ltd (Anilinker Oy) - big data architecture and microservices technology Zen Robotics - Artificial Intelligence (AI) machines The Curious AI Company - artificial intelligence (AI) - semi-supervised and unsupervised machine learning RESMAN - innovative tracer and data analysis technology KNL NETWORKS – KYYNEL - software-defined

[19] Finnish VC Association – FVCA

				& cognitive radio technologies FilmMe Group - fully automated camera system Funambol Oy - Cloud solutions Visedo - Integrated drive systems for mobile working machines Vionice - machine vision and pattern recognition Umbra - optimized database from your 3D data Tinkercad - 3D design and 3D printing app
Computer & consumer electronics	21	46	24	NorthStar - New technology betteries Enfucell - SoftBattery printed batteries Navico - New solutions for marine electronics & navigation systems TactoTek Inc. - 3D prototype designs Tridify Oy - engineering 3D models Trafotek - specialized power electronics components MINDFIELD GAMES - virtual reality games developer CANATU - transparent conductive films and touch sensors SPECTRAL ENGINES - MEMS-based sensor technology Afore - Microelectromechanical systems is the technology of microscopic devices SILEX MICROSYSTEMS – EXITED – MEMS systems MERUS POWER - Electronical manufacturing Universes - IT milti-divices HOUM lightning control Sharper Shape Ltd - drone-based solutions CONFORMIQ INC. - technology innovation THETA MICROELECTRONICS INC. - fabless semiconductor for multi-mode wireless systems OptoFidelity Oy - pioneer in robot assisted testing Kitron ASA - Electronics Designing and Manufacturing Panphonics Ltd - directional audio technology iLOQ Ltd - digital locking nLight Photonics Corporation - high-performance lasers Cavitar Oy - diode laser technology Cajo Technologies Oy - color patterning laser technology
Construction	14	16	1	Nordomatic - automation systems of energy-efficient buildings
Consumer goods	30	97	0	n/a

& retail				
Consumer services	28	95	0	n/a
Energy & environment	23	37	12	Enhanced drilling – specific drilling technology for gas&oil Arctic Drilling Company - Advanced drilling equipment Cubility AS - technology for drilling fluids in oil and gas industry AW-ENERGY - unique system for the generation of electricity CristalSol - new type of photovoltaic modules LNGTainer - prototyps for new gas systems Rototec - new geothermal energy solutions MetGen Oy - biofuels industries and recycling Elcogen AS - Fuel cells Siqens - Methanol Fuel Cell Ductor - Biotechnology for biogas Norsepower - renewable wind energy for maritime industry
Financial services	6	9	0	n/a
Life sciences	27	55	24	Fit BioTech - Biotechnology Innovations DNA based BhavioSec - behavioural biometric solutions PET-technology - nuclear medicine: diagnosis by PET/CT technology Merivaara - Medical and surgery equipment BioSilta - biomolecules and microbial cultures Herantis Pharma Oyj - pharmaceutical development for diseases Priaxon AG - molecule therapeutics Medtentia - developing novel mitral (heart) valve repair products VALON LASERS - ophthalmic lasers Mekitec Oy - innovative X-ray equipment Scint-X AB - new technology of x-ray imaging Binding Site - Clinical laboratory diagnostics BLUEPRINT GENETICS - molecular genetic diagnostics SSi Diagnostica A/S - Microbiology and advanced diagnostics Acino - innovative pharmaceuticals ERT - eClinical solutions for the pharmaceutical industry Maripoc - technologies in medicine Oncos - cancer immunotherapy TILT Biotherapeutics - technology tumor T-cell therapy Sooma - non-invasive brain stimulation devices

				Ubiome - microbiome Oura - physiological monitoring with app Optomed - medical technology Optomeditech - patent pending technology
Real estate	2	2	0	n/a
Transportation	12	15	2	Linkker - new buses and equipment for public electric transportation systems Visedo Oy - high efficiency hybrid and full electric vehicle solutions
Unclassified	8	10	7	ICEYE - monitoring from space Carbodeon Ltd Oy - nanodiamond materials Specim - Spectral Imaging Ltd Turvakolmio Oy - high profile security technology for Aviation, Military, etc. LABROX - Biotechnology for agriculture, food, medicine industry TitanX - ENGINEERING MediSapiens - Bio-IT company
Total no. of funds / projects	**53**[20]	**768**[21]	**90**	

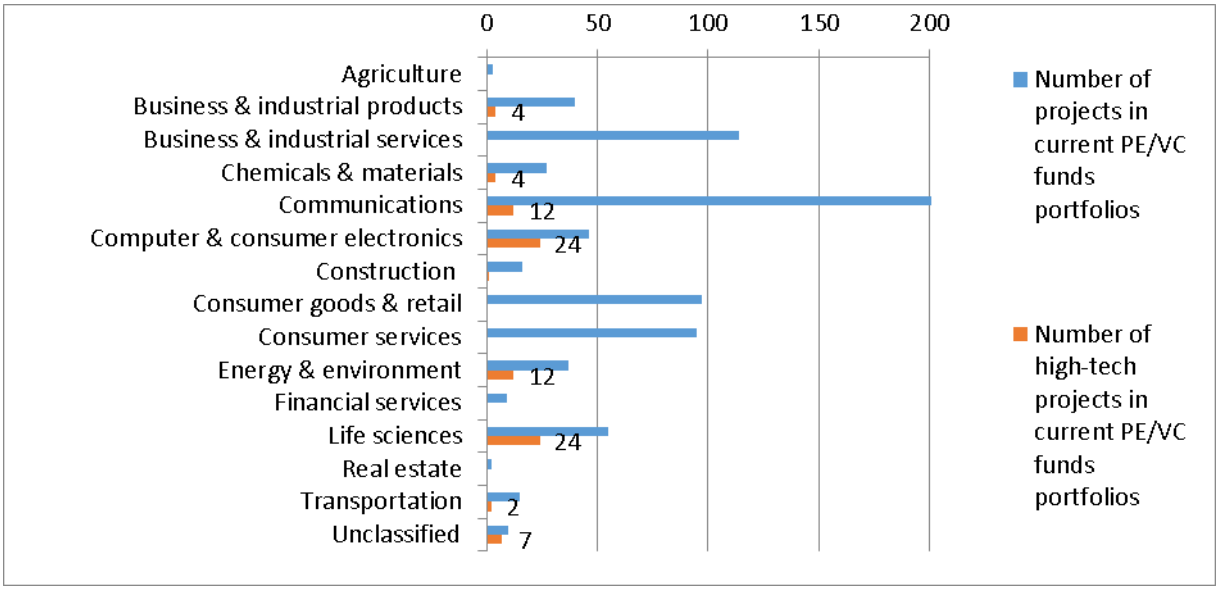
Source: Own based on data from particular funds webpages (funds lists available on: FVCA http://www.fvca.fi/) [access on 08.2016].

As the data in table 3 states, the largest number of investors in the study - 34 (64% of all investors) are investing in projects in ***Business & industrial services***, and 32 funds (60%) are interested in ***Communications.*** Equally high interest gains projects from the area ***Consumer goods & retail***, where 30 funds decided to invest their capital. As for the number of projects, the largest amount - more than 200 projects - were financed in the ***Communication*** sector. These are mainly investments in various kinds of software, games, new applications, or social networks. These projects usually do not require substantial financial resources and in the

[20] The number is not the sum of the column, but the exact number of analysed PE/VC funds gathered in Finnish VC Association. Some of the funds invest in variety of sectors.

[21] Although the total value in the table 3 shows 768 projects, some of them were classified to more than one sector, e.g. software solution project for SME's – IT and services for business.

internet age, there can be seen high demand for this type of goods or services. Often among projects there are various concerning applications, portals, software, or logistics for companies, therefore many projects - 114 - relates to the field of ***Business & industrial services***. Nearly 100 projects concern each ***Consumer services*** and ***Consumer goods & retail***. EVCA figures for 2014 year show that the total of these two sectors has been gathered more than 20% of total PE/VC capital invested[22]. Specific for the Finnish market are also projects on widely understood water transport: the construction of boats, water transport services, navigation systems, energy consumption on ships, etc.



Graph 1. Number of high-tech projects in all current projects financed by PE/VC funds gathered under Finnish VC Association (FVCA) in 2016

High-tech projects also require commentary. Most projects – 24 – 26% of all high-tech projects – can be qualified to each ***Computer & customer electronics*** and ***Life sciences***. When it comes to the former sector, most projects regards new models of engineering technology-based 3D, Micro Electro Mechanical Systems (MEMS) technology, laser technology, new technology batteries, new electronics, navigation and wireless systems, audio and video technologies, as well as, virtual reality. In the latter, you may find among others: innovative X-ray equipment, advanced genetic diagnostics, therapeutics and innovative pharmaceuticals especially for cancer, tumour, Parkinson and other serious diseases. In Life sciences there are as well projects regarding medical biotechnology, microbiomes, biomolecules and microbial cultures. Health technology is Finland's now largest high-tech sector, representing nearly half of all high-tech exports. In 2014 Finland's health technology sector enjoyed its best trade year ever (exports of healthtech grew 8,3% to - €1.8 billion) [Finland is a Small Giant…].

In the ***Communication*** sector there were financed 12 projects in high-tech area. There were more projects in that sector, but most of them were only an idea for a new usage of the already known technologies and solutions. Those which can be regarded as high-tech are: Artificial Intelligence, big data architecture and analysis, Integrated and automated systems, and new cloud solutions. Noteworthy is also the area of Energy & environment. You can find 12 projects there: specialized drilling technology fuel cells, few renewable energy projects in the wind / sun / geothermal area.

[22] Consumer goods & retail 42.481 k euro, Consumer services 72.240 k euro in 2014 (EVCA Yearbook 2015)

A systematic approach to promote innovation has been something that Finland has focused on for many years. They implemented a national innovation strategy, various technology programmes, and a network of regional science and technology parks. Finnish investment funds and agencies plays an important role, in providing funds, expertise and information on R&D and innovation projects [Herring P., 2013.].

Case of Polish PE/VC market

Venture capital is by definition an important source of financing innovative ideas that are worth investing in. It is obvious that highly advanced technologies are the first to be taken into account. The alarming fact is that investments in high-technologies in Poland are extremely small and since 2013 do not reach even 1% of total PE/VC investments (table 4).

Table 4. The amount of PE/VC investments in high-tech in Poland, in 2010-2014 [in euro k]

POLAND (in € k)	2010	2011	2012	2013	2014	2015
Total investment	**504 432**	**692 157**	**540 588**	**351 520**	**337 040**	**802 197**
Subtotal High-Tech (amount)	***318***	***21 502***	***21 277***	***3 199***	***2 736***	***7 755***
Subtotal High-Tech (%)	***0,06%***	***3,10%***	***3,94%***	***0,91%***	***0,81%***	***0,97%***

Source: Own based on EVCA Yearbook 2015 and Invest Europe 2016.

In 2013 and 2014 the value of investments in highly developed technologies has not reached even 1% of the total PE/VC investments. In comparison, in 2014 the average European share of high-tech was 10.1% [EVCA 2015]. The reason might be: the risk aversion of Polish PE/VC investors, which however stands in conflict with the definition of venture capital or the insufficient number of ideas in this area that investors would be willing to support. On the other hand, positive is the fact that the number of patents applications concerning strictly high-tech industry, submitted by Poland at the European Patent Office is increasing and in 2013 it was 72 patent applications (the volume increased by 21% to the previous year) [Eurostat 2014]. However, this amounts highly differ from the European average which is approximately 200 high-tech patent applications in 2013 [Eurostat 2014].

Table 5 below represents an analysis of the portfolios of 48 funds operating in Poland, grouped by national PE/VC association[23]. Around 300 projects considered concern only Polish market. In 2016 all high-tech projects indicated in portfolios of Polish PE/VC finds represents around 7% of total list of projects.

[23] Poland – PSIK (Polskie Stowarzyszenie Inwestorów Kapitałowych)

Table 5. Portfolio analysis of Polish PE/VC funds' gathered under Polish PE Association (PSIK) in 2016

	# of PE/VC funds investing in particular sectors	# of projects in current PE/VC funds portfolios	# of high-tech projects in PE/VC funds portfolios	Examples of projects from current PE/VC fund portfolios connected with technology area
Agriculture	0	1	0	n/a
Business & industrial products	18	31	1	binary Helix S.A. – high-technology products
Business & industrial services	16	53	0	n/a
Chemicals & materials	8	8	0	n/a
Communications	20	83	3	ORE S.A. - digital library and interactiv education center Dr Omnibus - tool for therapy and education OptizenLabs - Modern digital media and mobile applications
Computer & consumer electronics	11	18	5	WB Electronics S.A. - specialized electronics and information military 3DKreator - rapid prototyping technology Tech Sim Sp. z o.o. - modern flight simulators EgzoTech sp. z. o.o. - exoskeleton FlyTech Solutions - innovative unmanned systems
Construction	6	12	0	n/a
Consumer goods & retail	14	25	0	n/a
Consumer services	19	50	1	iTaxi - Modern taxi portal
Energy & environment	10	14	0	n/a
Financial services	9	20	0	n/a
Life sciences	20	34	9	HTL-Strefa – medical tools ZdroweGeny.pl - Advanced genetic testing BioTech – innovative dietary supplements Smart Pharma - innovative medicines and medical products Laboratory Diagnostics - advanced diagnostics

				Biogenetica International Labolatories - Innovative clinical trials Numed Sp. z o.o. - Modern medical equipment novel-ID - The pharmaceutical nanotechnology Lifebrain - biotechnology
Real estate	3	3	0	n/a
Transportation	6	8	1	AERO AT Sp. z o.o. - aviation sector Zakłady lotnicze MArgański & Mysłowski SA – modern manufacture of aircrafts
Unclassified	5	6	2	Blue Dot Solutions Sp. z o.o - kconsulting in the space sector NanoVelos - nanotechnology
Total no. of funds / projects	**48**[24]	**366**[25]	**22**	

Source: Own based on data from particular funds webpages (funds lists available on: PSIK http://www.psik.org.pl/fundusze.html) [access on 7.2016].

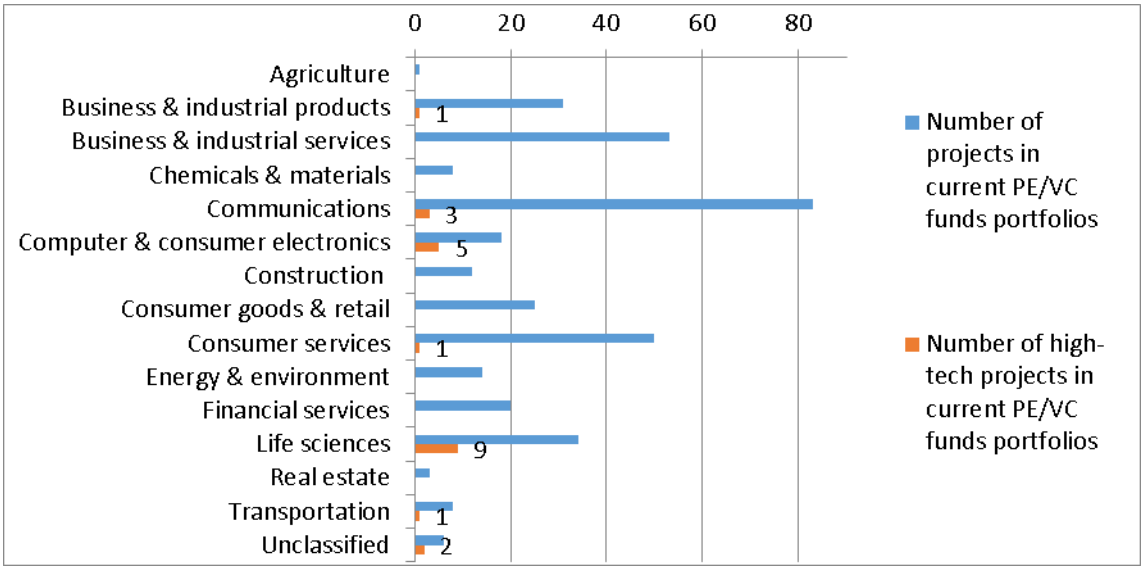
As the data in the table 5 stands, the largest number of investors are interested in the area ***life sciences***, ***communication*** and ***consumer services***. While in the communication sector, there is financed the largest number of projects - 83, in the health area there are currently funded 33 projects, which puts this sector at the 4th place. This is probably due to the fact that the projects in the communication area relate largely to new software, new applications and are relatively non-capital-consuming, while medical projects, e.g. setting up private clinics, expansion of medical service offers, etc. require greater financial input. What is more in software sector revenues are growing very fast – for leaders even by 600%-700% [22 polskie firmy…].

Large amount of projects – 50 – regard ***Business & industrial services*** and ***Consumer services***. In 2014 consumer services gained over 30% of total PE/VC capital[26]. The rapid development of networks and a significant increase in the availability of the Internet, is boosting the creation of new solutions for consumers, based on the network, e.g. travel agencies, insurance companies or comparison portalr, portals and platforms for learning etc.

[24] The number is not the sum of the column, but the exact number of analysed PE/VC funds gathered in Polish PE Association. Some of the funds invest in variety of sectors.

[25] Some of the projects were categorized to more than one sector, so the total number in the cell is bigger than the exact number of projects analysed.

[26] 103.608 k euro in 2014 (EVCA Yearbook 2015)



Graph 2. Number of high-tech projects in all current projects financed by PE/VC funds' gathered under Polish VC Association (PSIK) in 2016

While analysing projects concerning strictly advanced/high technology, it's about 22 projects, 6% of all analysed projects, that can qualify to this area. As indicated in the table 5 and on the graph 2 above, 9 of them concerns the health sector (***life sciences***). It is both a construction of modern medical devices, biotechnology, advanced laboratory diagnostics (especially genetic) and the area of pharmacy and pharmaceutical nanotechnology. Noteworthy is as well the ***computers and electronics*** sector. You can find projects to create different kinds of prototypes and simulators or specialist electronics for the military. What is more investments such as consulting in the space sector, and nanotechnology (classified to a group of others, as difficult to classify) are also interesting.

At the moment, high-tech entrepreneurs have greenhouse conditions. European and Polish grants really allow funding of research leading to commercial products [Leszczyński M., 2013]. However, many of development barriers of Polish high-tech sector, such as: improper structure of expenditure on research and implementation of studies results, faulty structure of scientists employment in industry sectors, high level of bureaucracy, level of the efficiency of Polish scientific institutions, etc., cause that Polish companies are losing the global race, despite a sizeable human potential [Chrzanowski K., 2013.]. However, interesting is the fact, that in the 15th edition of the Forbes ranking - The Fastest Growing Technologically Innovative Companies in Central Europe, 17 out of 50 companies were Polish (in main category). Position of the leader in main category went to Hungarian company, but the second prize - Polish company [22 polskie firmy…].

Case of Hungarian PE/VC market

In Hungary, the share in total PE/VC investments among years was much higher than e.g. for Poland analysed before. However, alarming could be the fact, that the trend is declining since 2013.

Table 6. The amount of PE/VC investments in high-tech in Hungary, in 2010-2014 [in euro k]

Hungary (in € k)	2010	2011	2012	2013	2014	2015
Total investment	**45 204**	**78 111**	**104 308**	**22 097**	**100 645**	**117 998**
Subtotal High-Tech (amount)	***20 805***	***9 108***	***9 076***	***2 153***	***3 564***	***1 640***
Subtotal High-Tech (%)	***46,02%***	***11,66%***	***8,70%***	***9,74%***	***3,54%***	***1,39%***

Source: Own based on EVCA Yearbook 2015 and Invest Europe 2016.

As negative can be taken fact that the number of high-tech patents applications, submitted by Hungary to the European Patent Office is decreasing each year since 2011. In 2013 the value was 26 applications [Eurostat 2014]. Buying licenses and patents for technological solutions already proven are faster and cheaper, however, it do not influence directly on the Hungarian market innovativeness, which is a room for improvement.

The table below represents an analysis of 24 PE/VC funds operating in Hungary, grouped by Hungarian VC association[27]. More than 250 projects considered were dedicated mainly to Hungarian market, but partially also to Czech and Slovakian market. In 2016 - 22 high-tech projects listed in the table 7 represents almost 9% of all projects that attracted PE/VC funds.

Table 7. Portfolio analysis of Hungarian VC funds' gathered under Hungarian VC Association (HVCA) in 2016

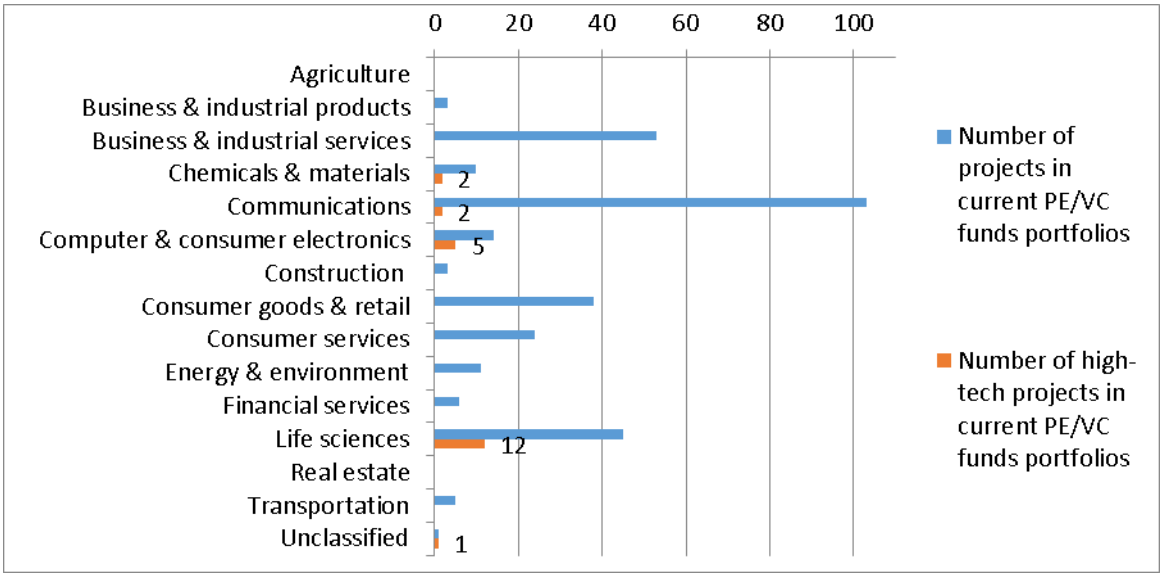
Hungary	Number of PE/VC funds investing in particular sectors	Number of projects in current PE/VC funds portfolios	Number of high-tech projects in current PE/VC funds portfolios	Examples of projects from current PE/VC funds portfolios connected with technology area
Agriculture	0	0	0	n/a
Business & industrial products	1	3	0	n/a
Business & industrial services	23	53	0	n/a
Chemicals & materials	6	10	2	Pannon Tyre Recycling Ltd. - new tyre recycling Aquajet Zrt. - new rubber recycling
Communications	21	103	2	INTELLIO - new generation of advanced video surveillance systems LogMeIn - cloud based solutions
Computer & consumer electronics	12	14	5	AdasWorks - creating prototypes Leopoly - new 3d solutions NowTechnologies - new equipment design

[27] Hungary – HVCA Hungarian Venture Capital Association

				Estimote Beacons - wireless sensors for location Polarisol Kft. - polarized light devices
Construction	3	3	0	n/a
Consumer goods & retail	17	38	0	n/a
Consumer services	11	24	0	n/a
Energy & environment	6	11	0	n/a
Financial services	5	6	0	n/a
Life sciences	17	45	12	AppCellTech Ltd. - Biotechnology MDQuest Ltd. - R&D Biotechnology StemLab - Preserver of umbilical cord stem cells NEBOTRADE - microbiology products Kinestica - technology for neuromotoric disorders Medical Innovation Partners (MIP) - developing pharmaceuticals Baby Life Care - Advanced remote embryo testing Norma Instruments - innovative blood analysis systems for in-vitro PMP Technology - computer-controlled dental labs orthosera - cell therapies Omixon - global molecular diagnostics Aim Alliance Kft. - Biotechnology
Real estate	0	0	0	n/a
Transportation	3	5	0	
Unclassified	1	1	1	BBS NANOTECH - nanotechnology
Total no. of funds / projects	**24**	**316**	**22**	

Source: Own based on data from particular funds webpages (funds lists available on: HVCA http://www.hvca.hu/) [access on 7.2016].

Almost all funds grouped in the HVCA are interested in investing in the area of ***Business & industrial services*** and ***Communications***. By far the most - more than 100 projects – were financed in the communication field, especially in mobile applications as well as forums and social networking sites. As was mentioned earlier, these projects do not require significant cash inflow, and taking into account the rapidly growing "mobile" market, the prognosis are promising. Projects in the ***business services*** sector also attract capital. More than 53 projects involving especially consulting, support for business systems and advanced networking support management. Western European countries are increasingly being chosen by multinational corporations, especially in the service sector. The area widely known as the ***life sciences*** is also considered by venture capitalists to be interesting, as currently VC funds finance about 45 projects in this area.



Graph 3. Number of high-tech projects in all current projects financed by PE/VC funds' gathered under Hungarian VC Association (HVCA) in 2016

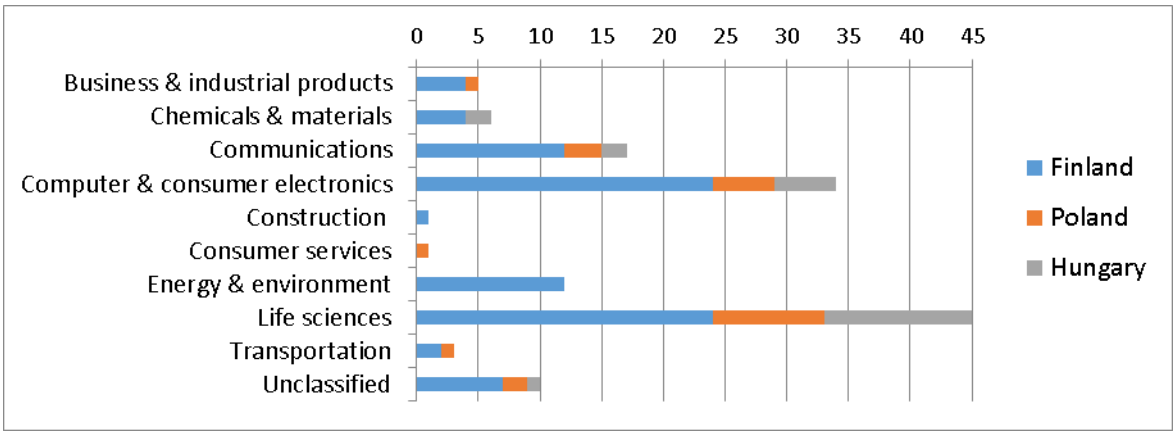
As for high-tech projects, similarly to the case of Polish PE market, 22 projects (almost 7% of all projects reviewed) can be classified as high-tech. It also shows some similarities to the Polish PE/VC market when it comes to the areas of those projects. As it can be seen on the graph 3 above, more than half of high-tech projects recognized - 12 concerns the health sector (***life sciences***). These are projects on medical R&D and biotechnology, as well as, modern research and therapy on stem cells. There were also projects using remote diagnosis and prenatal, and also projects in the area of microbiology and molecular diagnostics. In the field of ***computers and customer electronics*** it was possible to find 5 projects on i.a. polarized light devices, wireless sensors for location, or new technology solutions for prototyping and 3D printing. There should also be mentioned the sector of ***chemicals & materials***, where there are two separate projects on new tire recycling.

Summary

The main aim of the study was to verify if the VC investments relate mainly to high-tech by analysing the level of high-tech investments share in total PE/VC in chosen countries and identifying the areas of the high-tech, which attract funds from venture capital investors.
The study carried out in the article allows the following conclusions. Associating PE/VC investments mainly with high-tech projects is to be considered too far-reaching. According to EVCA statistical data in 2014, high-tech investments represented on average 10% of total PE/VC investment in Europe (Finland 9%, Poland 0,8%, Hungary 3,5%). What is more the share of investments in high-tech in general PE/VC investments in the last 5 years is rather decreasing. In 2016, high-tech projects still present in the PE/VC funds' portfolios in Finland, Poland and Hungary represented respectively: 15%, 7% and 9% of all portfolio projects. Therefore, if high-tech is understood as specific projects technologically or technically advanced, representing solutions unknown or undeveloped for the last 5-6 years, it cannot be claimed that high-tech is a significant part of the total PE/VC investment value/volume. However, if high-tech would be considered as specific sectors of economic activity related to technology (such as: aerospace and aeronautics, IT and communication, bio- and nano-technology, robotics, pharmaceuticals and medicine), theorem is correct. Number of projects in those high-tech sectors represented 50%-60% of all projects in companies portfolios.

When it comes to identifying the areas of high-tech projects, which attract funds from VC investors, based on the portfolios of FVCA, PSIK and HVCA, there are two sectors which far outweighs others: ***life sciences*** and ***computer & consumer electronics***. They represents 59% of all high-tech projects in PE/VC funds' portfolios in Finland, Poland and Hungary.

Graph 4. Number of high-tech projects in PE/VC funds' portfolios in Finland, Poland and Hungary, in 2016.



Source. Own based on analysis results

There is, however, a lot of projects as well in the area of ***communications***, ***energy & environment,*** and nano- or bio-technology, which as per variety of applications, are usually classified in "***unclassified***" sector.

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- http://3tscapital.com/
- http://www.ajh.hu/
- http://arxequity.com/
- http://www.bonitasktk.hu/
- http://www.buranvc.com/
- http://dbh-group.com/en/
- http://www.doclerinvestments.hu/
- https://www.ei.com.pl/hu/
- http://www.euroventures.hu/?lang=en
- http://www.finatech.hu/
- http://finext.hu/
- http://ieurope.com/
- http://www.krscapital.hu/
- http://www.mideuropa.com/
- http://pbgfmc.hu/
- http://portfolion.hu/?lang=en
- http://primuscapitalpartners.com/hu/
- http://www.riversideeurope.com/
- http://www.szta.hu/
- http://www.wallis.hu/

List of particular fund portfolios available at webpages published at PSIK Portal <http://www.psik.org.pl/fundusze.html>:

- http://www.21concordia.com/
- http://3tscapital.com/
- http://www.abris-capital.com/
- http://www.adventinternational.pl/
- http://www.arxequity.com/
- http://www.avallon.pl/
- http://www.blackpearls.pl/
- http://www.bridgepoint.eu/
- http://www.seedfund.pl/
- http://www.c-p.pl/
- http://cee-equity.com/
- http://www.darbyoverseas.com/darby/index.jsp
- http://www.vestor.pl/kim-jestesmy
- http://www.ei.com.pl/pl/
- http://www.eqt.se/
- http://evf.com.pl/
- http://gpventures.pl/
- http://www.highlander-partners.com/
- http://www.ikinvest.com/
- http://www.imperasa.pl/
- http://www.innovacap.com/
- http://www.iqpartners.pl/

- http://www.kfk.org.pl/
- http://www.krokuspe.pl/
- http://mci.pl/
- http://www.mezzmanagement.com/
- http://www.mideuropa.com/
- http://www.montagu.com/
- http://www.oresaventures.com/
- http://www.pentonpartners.com/
- http://www.pinebridge.com/
- http://www.rp.com.pl/?id=1
- http://www.resourcepartners.eu/en
- http://www.riversidecompany.com/
- http://www.royalton-partners.com/
- http://www.satus.pl/
- http://www.secus.pl/
- http://www.skyline.com.pl/
- http://http//speedupinnovation.com/
- http://www.syntaxis-capital.com/
- http://value4capital.com/
- http://www.warburgpincus.com/
- http://www.warsawequity.com/
- http://www.waterland.nu/
- http://www.wsicapital.pl/

List of particular fund portfolios available at webpages published at FVCA Portal <http://www.fvca.fi/>:

- http://www.3i.com/
- http://www.aboaventure.fi/
- http://adelisequity.com/en/
- http://www.altor.com/
- http://armadamezzanine.com/
- http://www.auratum.com/aura-capital/aura-capital
- http://butterfly.vc/
- http://www.canelco.fi/fi/etusivu/
- http://www.capman.com/
- http://www.conor.vc/
- http://www.eqt.fi/
- http://www.essedel.com/
- http://www.helmetcapital.fi/
- http://www.industrikapital.com/
- http://www.innovestorgroup.com/
- http://interapartners.fi/
- http://www.invenicapital.com/
- http://inventure.fi/
- http://ipr.vc/
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- http://www.nordicmezzanine.com/
- http://www.noweco.fi/
- http://openoceancapital.com/
- http://www.pontos.fi/
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THE PRINCIPAL-AGENT PROBLEM IN HEALTH CARE SYSTEMS: IS IT EFFECTED BY PERFORMANCE-BASED SUPPLEMENTARY PAYMENT SYSTEM?

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Abstract

Health service systems exhibit certain features which distinguish them from regular markets. One of the most important features of health care markets is the principle-agent problem that arises from information asymmetries between health care supply and demand. Accordingly, the demand for health care services is argued as a physician-led phenomenon. In Turkey, after implementation of the Health Transformation Program (HTP) in 2003, the demand and also the expenditure for the healthcare services considerably increased, but however the increase in health care supply, e.g. the physician supply, increased in slight scale. The sub reform of performance-based supplementary payment system (PBSPS), which was implemented at the beginning of 2004, is seen as the most important effect of the rise in healthcare services demand, in which the performance payments of physicians are be bound up to the output they generate. The aim of this paper is to empirically investigate the principle-agent problem for the Turkish health system, considering the PBSPS reform. The Bound test approach, autoregressive distributed lag approach (ARDL) and Kalman Filter Modelling are employed for the 1975-2013 period to examine the co-integration relationship, between the health care demand and supply in Turkey.

Key Words: Principal-agent problem, Health System Reforms, Bound Test; ARDL Model; Kalman Filter Method.

I. Introduction

Health service systems exhibit certain features which distinguish them from regular markets. One of the most important features of health care markets is the principle-agent problem that arises from information asymmetries between health care supply and demand. An agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent (Jensen & Meckling, 1976). In health care services, citizens lack information about the range and efficacy of treatments. Even expert collective purchasers of health services, such as insurance organizations, find it difficult to judge whether services are being provided according to their preferences (Smith, Stepan, Valdmanis, & Verheyen, 1997). As the patients do not have perfect knowledge of their medical condition, their need for care, or the expected outcome of health care services, they are willing to have physicians act as their agents in providing information and services (Petersen, Woodard, Urech, Daw, & Sookanan, 2006). In the relationship between the physician and the patient, the patient (the principle) delegates his/her health problem to the physician (the agent). On the other hand, the agent has his own utility function, which he maximizes. This utility function may coincide partly with the utility function of the principle, but may also differ (Ludwig, Van Merode, & Groot, 2010). Thus the demand for health care services is argued as a physician-led phenomenon.

In Turkey, after implementation of the Health Transformation Program (HTP) in 2003, the demand and also the expenditure for the healthcare services considerably increased, but however the increase in health care supply, e.g. the physician supply, increased in slight scale. The sub reform of performance-based supplementary payment system (PBSPS), which was implemented at the beginning of 2004, is seen as the most important effect of the rise in healthcare services demand, in which the performance payments of physicians are be bound up to the output they generate.

The aim of this paper is to empirically investigate the principle-agent problem for the Turkish health system, considering the PBSPS reform. The Bound test approach, autoregressive distributed lag approach (ARDL) and Kalman Filter Modelling are employed for the 1975-2013 period to examine the co-integration relationship, between the health care demand and supply in Turkey.
The rest of the paper is organized as follows. Section II introduces data and methodology. Section III presents empirical results and the last section concludes.

II. Data and Methodology

In the study, two variables are used to test the validity of the principle-agent problem and the physician-led health demand issue in Turkey, for the years 1970-2013. The variable CONS is the number of per capita consultations in a year, which is used to represent healthcare demand. The variable DR, representing the healthcare supply, is the number of Physicians (per 1,000 people). The data for the variables are obtained from OECD statistics and The Word Bank Statistics portal, for the variables CONS and DR respectively. All variables are measured in natural logarithms for the analysis. Two other dummy variables are described to capture the effect of two important health policy implementation in Turkey. The first dummy variable is used to capture the effect of Green Card and named as DUM_GRN which has the values of "0" for the years 1970-1991, and "1" for the rest. The second dummy variable DUM_PERF is used to capture the effect of PBSPS and has the has the values of "0" for the years 1970-2003, and "1" for the rest.

In the empirical analysis, three econometric models are used to investigate the relationship between healthcare demand and supply, after stationarity checks for the variables. The stationary properties of the CONS and DR are diagnosed both by conventional unit root tests including ADF, PP and Ng-Perron tests.

In the first stage of analysis, the Bound test approach[28] proposed by Pesaran et al. (2001) is used to check the validity of co-integration relationship between variables. After co-integration analysis, in the second stage, ARDL approach is used to investigate the long and short- term static relationship between per capita physicians and per capita consultations. ARDL model specification for the estimates is as in the equation 1:

$$CONS_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} CONS_{t-i} + \sum_{i=0}^{n} \alpha_{2i} DR_{t-i} + \alpha_3 DUMGRN + \alpha_3 DUMPERF + \mu_t \qquad (1)$$

In the third stage of the analysis, in order to estimate the dynamic relationship between variables, the Kalman filter approach is used to explore the time-varying interaction between

[28] The bounds testing approach has several advantages over conventional co-integration methods. First the Bound testing approach is applicable irrespective of whether the regressors are purely I(0) or I(1) (Pesaran, Shin, & Smith, 2001). Secondly, this approach presents efficient and superior results for small sample (Narayan & Narayan, 2004).

CONS and DR. The dynamic model used in this study is based on a classical reference of Harvey (1989) with the Kalman filter approach with a form of state space representation.

III. RESULTS

Unit Root Tests

The stationarity properties of the variables are diagnosed both by using the conventional unit root tests including ADF (Dickey & Fuller, 1979), PP (Phillips & Perron, 1988), and Ng-Peron (Ng & Perron, 2001) tests. The results of stationary tests are presented in Table 1 below. According to Table 1, all conventional unit root tests shows that CONS and DR variables are stationary after differencing so that CONS and DR series are I(1).

Table 1: Conventional Unit Root Test Results

	ADF Test Results		**PP Test Results**	
Variable	**t-stat**	**Prob**	**t-stat**	**Prob**
CONS	-1.471	0.825	-1.476	0.823
DR	-0.747	0.963	-2.892	0.175
ΔCONS	-5.389	0.000	-5.389	0.000
ΔDR	-8.151	0.000	-7.858	0.000
	Ng-Perron Test Results			
Variable	**MZa**	**MZt**	**MSB**	**MPT**
CONS	1.411	1.141	0.809	51.452
DR	0.941	0.796	0.847	51.126
ΔCONS	-15.113	-2.739	0.181	1.660
ΔDR	-11.012	-2.277	0.207	2.491

Ng-Peron critical values for CONS and DR series; MZa, MZt, MSB, MPT respectively;
%5 significance level : -17.30, -2.91, 0.17 and 5.48.
Ng-Peron critical values for ΔCONS and ΔDR series; MZa, MZt, MSB, MPT respectively;
%5 significance level: -8.10, -1.98, 0.23 and 3.17

Bound Test Co-Integration Approach

In this study, the Bound testing co-integration approach is chosen due to its advantages over conventional cointegration methods, which are stated above. Table 3 shows the bound test results.

Table 3. Bound Test Results

K*	**F-statistics**	**Critical Value at %5 Significance Level**	
		Bottom Bound	Upper Bound
1	10.65	4.94	5.73

*k is the number of the independent variables in equation 1. Critical values are taken from Table C1.iii at Pesaran et al. (2001, p. 300)

According to Table 3, F statistics is greater than the upper bound of the critical values, and the null hypothesis of no cointegration is rejected. As a result, we found a significant long-run cointegration relationship between CONS and DR.

ARDL Model

After co-integration analysis, the long and short run static relationship between the variables are investigated by employing the ARDL model. In order to determine the optimal lag length in Equation 1, the maximum lag number of 4 is taken and ARDL (1,0) model is selected employing the Schwarz information criterion. The estimated long and short term coefficient using ARDL (1,0) model are shown in Table 4.

According to diagnostic checks, error terms in ARDL model are normally distributed and there is no serial correlation, heteroscedasticity and misspecification problems in the model. Moreover, according to stability checks there is not any problem about parameter stability.
Long term coefficients obtained from ARDL (1,0) model suggest that health expenditures coefficient is statistically significant. Long term DR coefficient is estimated 0.614. This shows that 1% increase in per capita physician number will lead to 0.614% increase in per capita consultation number. Moreover, the long- term parameter estimates of the dummy variables are both positive and statistically significant. This implies that the implementation of the Green Card system and PBSPS had a positive impact on demand for health care services. The error correction term, ECT(-1), shows eliminated rate of the short run disequilibrium in the long run. ECT coefficient is estimated -0.179. It means, approximately 18% of disequilibrium from the previous year's shock eliminated in the current year

Table 4. ARDL (1,0) Model Long and Short Term Parameter Estimations

Estimated Long Term Coefficients and Error Correction Coefficient Using ARDL(1,0) Model		
Variables	Coefficient	t-statistics
DR	0.614	2.820*
DUM_GRN	0.746	3.863*
DUM_PERF	0.809	7.035*
C	0.396	3.981*
ECT(-1)	-0.179	-4.666*
Diagnostic Checks		
X^2_{BG} (A)	0.276 [0.760]	
χ^2_{NORM} (B)	2.232 [0.327]	
χ^2_{WHITE} (C)	0.421[0.519]	
X^2_{RAMSEY} (D)	0.352 [0.726]	
Stability Checks		
Cusum Test	Stable at 5% level	
Cusum Square Test	Stable at 5% level	

*denotes %1 significance level, ** denotes %5 significance level
(A) Lagrange multiplier test of residual serial correlation, (B) Based on a test of skewness and kurtosis of residuals (C) Based on the regression of squared residuals on squared fitted values, (D) Ramsey's RESET test using the square of the fitted values.
CUSUM and CUSUMSQ tests proposed by Brown, Durbin, and Evans (1975) used to

examine the presence of parameter stability

Dynamic Approach – Kalman Filter

The Kalman filter model used in this study is presented in equations 2 and 3 below.

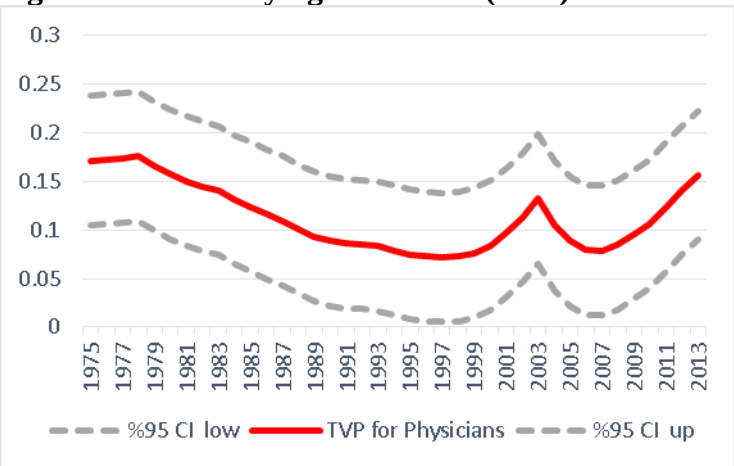
$$LY_t = a_0 + a_{1,t}LH_t + a_{2,t}DUMGRND + a_{3,t}DUMPERF + \varepsilon_t \quad (2)$$

$$a_{i,t} = a_{i,t-1} + v_{i,t} \quad (3)$$

The time varying parameter estimates for health expenditures by employing Kalman Filter approach are shown in Figure 1. The dynamic parameter estimates for the variable DR are found to be also statistically significant. The results show that per capita physician number has a positive and increasing effect on per capita consultation especially after the first years of Health Transformation Program (HTP) and PBSPS. Thus the estimated dynamic parameters of DR are compatible with static coefficient.

According to the TVP estimates of Kalman filter approach, the effect of DR on CONS decreased between 1979 and 1998 and increased in the period of 1999-2003. In the first four years of HTP and, which covers the first 2 years of PBSPS, the dynamic parameters decline. But after 2007, as can be seen from the upward trend of the dynamic parameters, the effect of DR on CONS increases considerably.

Figure 1: Time Varying Parameter (TVP) Estimates for Kalman Filter Approach



IV CONCLUSION

In this study, a stable long-run cointegration between the healthcare service supply and demand is found for Turkey for the years 1975-2013. The results of the ARDL model suggest that an increase in the number of physicians per capita leads an increase for health care demand, namely number of consultations per capita. Additionally, two other policy implementations, the Green Card System and Performance Based Supplementary Payment System, is found to have positive and statistically significant effect on health care demand. To this respect, this study offers some primitive evidence for the proposal which states that the demand for health care services is as a physician-led phenomenon due to the principal-agent problem. On the other hand, these results should also be compared with the results of another model that is extended by using microeconomic tools. Thus, the need for further research in this area remains profound.

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THE DETERMINANTS OF BORROWING BEHAVIORS OF TURKISH MUNICIPALITIES

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Abstract

Municipalities in Turkey being categorized as metropolitan, nonmetropolitan, and district and town municipalities, have substantially increased their borrowing amounts in the past ten years. Having regard to the fact that the flypaper theory exists in municipalities in Turkey, they are spending pretty much under the influence of non-matching financial transfers. The more the borrowing amounts of local governments increase, the more the public expenditures grow. Moreover, Turkish municipalities may respond more impulsively in borrowing as there is not a golden rule confining them regarding the quantity of borrowing. Thus, the substantial growth in local borrowing may have a boosting effect on total public expenditures. The object of this paper is to analyze whether any other determinants or factors are affecting the borrowing behaviors of municipalities in Turkey. The determinants of the borrowing behavior relating to the analysis are selected as financial transfers, own revenues, and expenditures of municipalities, to achieve the object. The Bound test and autoregressive distributed lag (ARDL) approaches are employed for the 2007 – 2014 period quarterly to examine the co-integration relationship between the borrowing and its determinants.

Keywords: Intergovernmental transfers, local borrowing, flypaper effect, ARDL Model

1. Introduction

Local authorities are self – governing units so as to designate adequate financial resources of their own, and these resources should be commensurate with the responsibilities provided for by the constitution and the law, according to European Charter of Local Self – Government (Council of Europe, 1985). In Turkey, the autonomy of local governments and adequate financial resources to be commensurately provided within the scope of their responsibilities are ensured by the Constitution and the Law No.5393. Although Turkey adopted the Chart, also was chary of a number of articles of the Chart, such as sufficiently diversification of resources allocated for local governments, and provision of grants not to remove their basic freedom. Article 74 of the Constitution of the Republic of Turkey explicitly states that "*Taxes, fees, duties, and other such financial obligations shall be imposed, amended, or revoked by law*". According to the article, local governments are not capable of levying tax or such financial obligations on the local public as the Assembly is the unique supreme body for imposing, amending or revoking financial issues. Another constitutional obligation for local finance ensured in Article 127 is that the local governments shall be allocated financial resources in proportion to their functions. These legal arrangements denote a structure for local governments on the one hand to be a fiscally autonomous authority, on the other hand having limited power to designate their own revenues.

Local governments, however, have an enormous expenditure increasing particularly in last decade. Because of lack of fiscal autonomy, local governments could defray these expenditures by either receiving financial transfers (grants) from central government or borrowing domestically or from abroad. The studies resulted that the flypaper effect exists in Turkish municipalities, the most authorized local government tier, which means that municipalities in Turkey are given to financial transfers rather than their own revenues in meeting their responsibilities. This complex situation denotes that it could not be claimed that local governments in Turkey have a financial autonomy in practice. So it is obvious that self – government of local authorities in Turkey remains a fiscal problem.

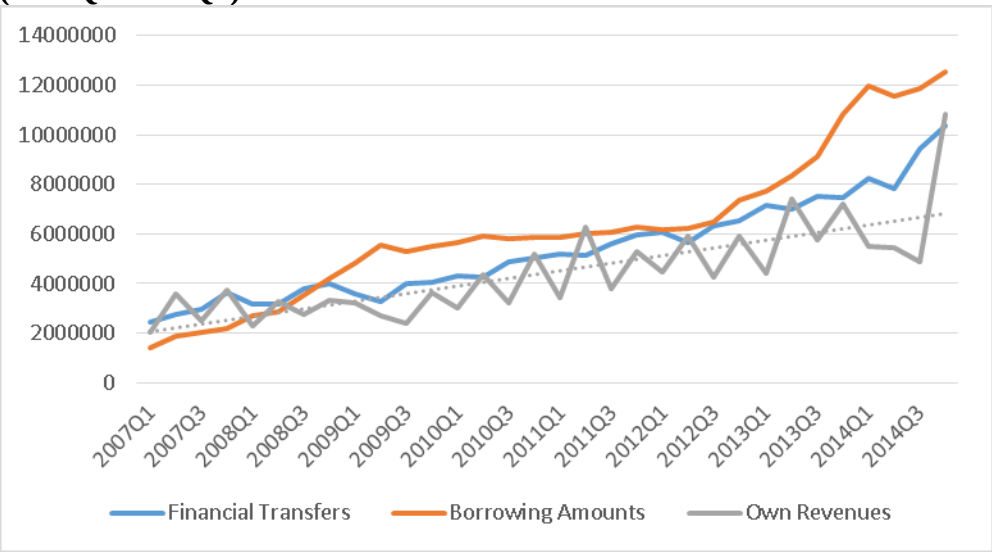
This study aims to analyze the determinants or factors affecting the borrowing behaviors of municipalities (metropolitan, nonmetropolitan, and district and town municipalities) in Turkey. A direct relation is normally expected between expenditures and borrowing. Because of the existence of flypaper effect, own revenues and financial transfers are also involved in the estimation model in addition to the expenditures. In the direction of the literature, expenditures and financial transfers are expected to increase the borrowing whereas the increase in own revenues is expected to reduce the borrowing amount.

Financial Data Trend of Municipalities in Turkey

Municipalities in Turkey have a great number of responsibilities to be met. But however, they are not able to design their own revenues as mentioned above. Municipal Revenues Law No. 2464 itemizes the most of the own revenues of municipalities. The Law No. 5779 designates the rate and distribution criteria of the financial transfers on the basis of municipality types separately. The main criterion in allocating the transfers is the population of the municipality, by affecting the 80% of the share. The remaining 20% is bound up the rank of the municipality in the provincial development index which is specified by Ministry of Development. These transfers consist of revenue sharing amounts and grants from central to local level. The Municipal Law No. 5393, however, establishes the rules of borrowing of municipalities. There is not a golden rule on local government borrowing in Turkey. The Golden Rule is defined as "local governments should not borrow to finance current expenditures but investment expenditures" (Swianiewicz, 2004, pp. 5-9; Council of Europe, 1985). Moreover, Municipal Law states "*A municipality can borrow and issue bond in order to finance its expenditures required for its assignments and services…*" Nothing but foreign borrowing is subject to such a golden rule; foreign borrowing is allowed only for financing projects included in the investment program. There is, however, some limitations demarked in The Law No. 5393, such as total amount of debt of a municipality including debt of its corporations and its affiliates shall not exceed their total budget receipts augmented by annual revaluation rate.

Figures 1, 2 and 3 indicates the change and the trend of financial data including borrowing and expenditures on all three types of municipalities in Turkey totally. As shown in Figure 1, the borrowing amounts of municipalities approximately multiplied eight times beginning from 2007Q1 to 2014Q4. The jump in the own revenues and the financial transfers in the last two quarters is due to change in the number of metropolitan municipalities.

Figure 1: Change in Financial Transfers, Own Revenues and Borrowing Amounts (2007Q1-2014Q4)



The borrowing amounts of municipalities is a stock variable, whereas the amounts of financial transfers and own revenues are changing by the beginning of the budget year. Besides the legal amendments relating financial transfers and own revenues, the borrowing amount changes are in parallel with the increase in the expenditures. Figure 2 shows that the increase in borrowing amounts is greater than the increase in debt stock of municipalities.

Figure 2: Change in Borrowing and Debt Stock Amounts (2007Q1-2014Q4)

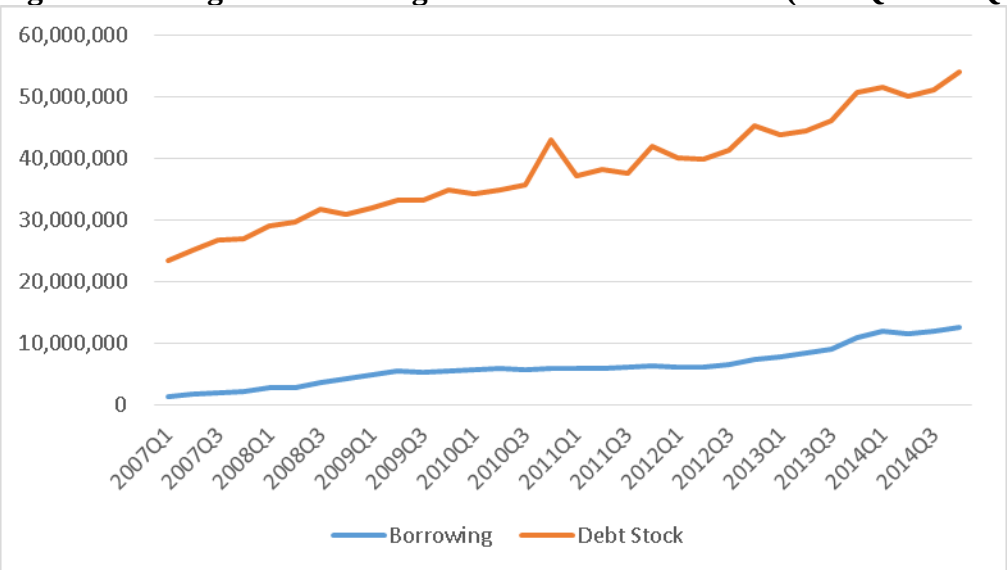
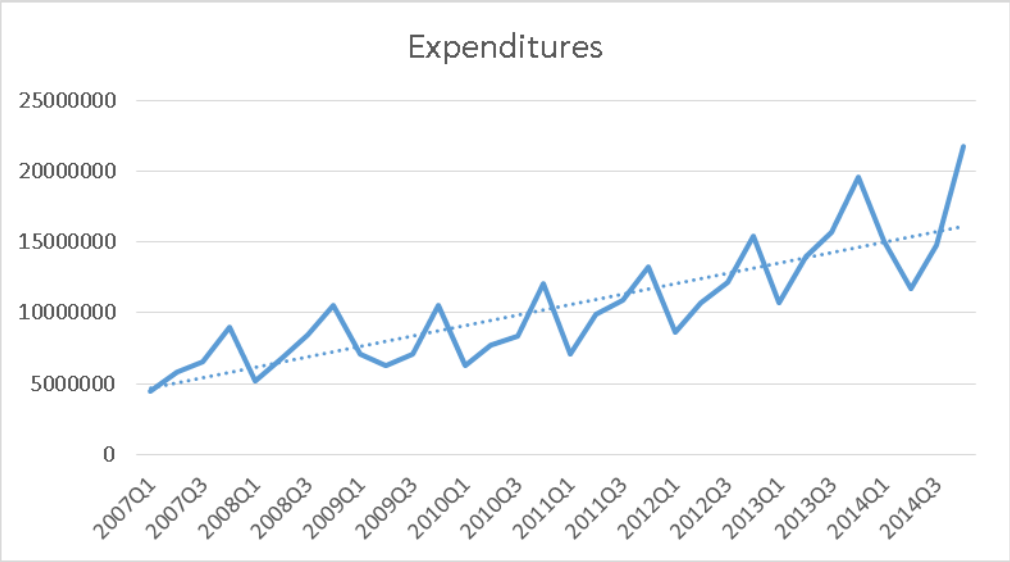


Figure 3 indicates both the change and the trend of the expenditures made by all types of municipalities in Turkey. %90 of total borrowing amount is composed of the loans received by municipalities from İlbank Inc., the primary creditor of the municipalities, which is the only local government bank in Turkey for over eighty years.

Figure 3: Change and Trend in Expenditures (2007Q1-2014Q4)



2. Literature Review

Flypaper effect can be explained by the expression that intergovernmental financial transfers affect the increase in local government spending more than the own revenues do. Although there are studies that indicate the flypaper effect on municipalities in Turkey exist (Aytaç, 2015; Sağbaş & Saruç, 2004; Yaş & Akduğan, 2015), there is not such a study analyzing the effect of financial transfers or expenditures on borrowing associated with own revenues and expenditures. There are some foreign studies suggesting that fiscal dependency ratio –the share of intergovernmental transfers and grants in total local government revenues– causes to higher borrowing costs and burden (De Mello, 2001). In a previous study(Yaş & Atılgan, 2016), it is suggested that a rise in the financial transfers given to municipalities causes a rise in the long-run borrowing of the municipalities in Turkey as these governments neither are able to determine their own revenues nor can increase the amount of the financial transfers because of the legal limitations.

3. Data and Method

In this study, to test the fly paper effect theory, an ARDL model is specified and estimated using quarterly data for the municipalities for the years 2007-2014. In the analysis, the total borrowing amount of the municipalities is the dependent variable and named as BOR. Three independent variables used in the ARDL model. First one is FT, which accounts the total financial transfers from central government to municipalities. The second variable OWN is the own revenues of the municipalities. The third variable EXP is the total expenditures of the municipalities. All the variables used in the analysis is expressed in natural logarithms. As the variables FT, OWN and EXP has seasonal effects, these variables are seasonally adjusted by using the Tramo/Seats methodology.

In the first stage of the empirical analysis, the stationary properties of the variables BOR, FT, OWN and EXP are diagnosed by unit root tests including ADF, PP and Ng-Perron tests. Then

the Bound test approach[29] proposed by Pesaran et al. (2001) is used to check the validity of cointegration relationship between variables. After cointegration analysis, in the second stage, ARDL approach is used to investigate the long and short- term static relationship variables. ARDL model specification for our study is presented in equation 2:

$$BOR_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} BOR_{t-i} + \sum_{i=0}^{n} \alpha_{2i} FT_{t-i} + \sum_{i=0}^{n} \alpha_{3i} OWN_{t-i} + \sum_{i=0}^{n} \alpha_{4i} EXP_{t-i} + \mu_t \qquad (2)$$

where $i = 1,2,\ldots n$ represents the municipalities and $t = 1,2,\ldots,T$ is the time subscript and the variable definitions are as described above.

4. Results

Unit Root Tests

The stationarity properties of the variables, are diagnosed by using the conventional unit root tests including ADF (Dickey & Fuller, 1979), PP (Phillips & Perron, 1988), and Ng-Peron (Ng & Perron, 2001) tests. The results of conventional stationary tests are presented in Table 1 below.

Table 1: Unit Root Test Results

	ADF Test Results		**PP Test Results**	
Variable	**t-stat**	**Prob**	**t-stat**	**Prob**
BOR	-4.952	0.003	-2.860	0.189
FT	-4.918	0.003	-2.539	0.309
OWN	-4.040	0.018	-1.320	0.864
EXP	-4.206	0.012	-4.232	0.011
ΔBOR	….	…..	-4.541	0.006
ΔFT	…	….	-6.727	0.000
ΔOWN	…..	…..	-5.389	0.000
ΔEXP	…	…	…	…
	Ng-Perron Test Results			
Variable	**MZa**	**MZt**	**MSB**	**MPT**
BOR	-3.081	-1.221	0.396	29.078
FT	-10.071	-2.034	0.202	9.941
OWN	-70.190	-18.707	0.027	0.214
EXP	-14.507	-2.693	0.186	6.283
ΔBOR	-12.068	-2.436	0.202	7.660
ΔFT	-13.758	-2.561	0.186	6.971
ΔOWN	-69.240	-17.290	0.028	0.409
ΔEXP	-12.361	-2.458	0.199	7.522
Ng-Peron critical values for BOR, FT, OWN and EXP; MZa, MZt, MSB, MPT respectively; %5 significance level : -17.30, -2.91, 0.17 and 5.48.				

[29] The bounds testing approach has several advantages over conventional co-integration methods. Firstly, the Bound testing approach is applicable irrespective of whether the regressors are purely I(0) or I(1) (Pesaran, Shin, & Smith, 2001). Secondly, this approach presents efficient and superior results for small sample (Narayan & Narayan, 2004).

Ng-Peron critical values for ΔCONS and ΔDR series; MZa, MZt, MSB, MPT respectively; %5 significance level: -8.10, -1.98, 0.23 and 3.17

According to Table 1, unit root tests suggest different results for the variables. The variable BOR is found to be I(0) according to ADF test but I(1) according to PP test. This same result is also obtained for the variables FT and OWN. EXP variable is found to be I(0) according to all unit root tests.

Bound Test Cointegration Approach

Conventional unit root tests suggest different results for the variables. Therefore, we choose employing the Bound testing co-integration approach proposed by Pesaran et al. (2001), as this approach could be used irrespective of whether the regressors are purely I(0) or I(1). Table 2 shows the bound test results.

Table 2. Bound Test Results

K	**F statistics**	**Critical Value at %5 Significance Level**	
		Bottom Bound	Upper Bound
3	15.13	3.23	4.35

k is the number of independent variables in equation 1. Critical values are taken from Table C1.iii at Pesaran et al. (2001, p. 300)

According to Table 2, F statistics is greater than the upper bound of the critical values, and the null hypothesis of no cointegration is rejected. As a result, we found a significant long run cointegration relationship between the borrowing and its determinants.

ARDL Model

After co-integration analysis, the long and short run static relationship between the variables are investigated by employing the ARDL model. In order to determine the optimal lag length in Equation 1, by taking the maximum lag number as 4, ARDL (3,1,4,3) model is selected employing the Schwarz information criterion. The estimated long-run coefficients of ARDL (3,1,4,3) model are shown in Table 3.

Table 3. ARDL (3,1,4,3) Model Long and Short Term Parameter Estimations

Estimated Long Term Coefficients and Error Correction Coefficient Using ARDL(4,4,3,4) Model		
Variables	Coefficient	Prob
FT	-1.339	0.091
OWN	-1.926	0.003
EXP	4.489	0.000
C	-6.453	0.000
ECT(-1)	-0.421	0.000
Diagnostic Checks		
X^2_{BG} (A)	0.618 [0.556]	
χ^2_{NORM} (B)	0.799 [0.670]	
χ^2_{WHITE} (C)	0.289 [0.746]	
X^2_{RAMSEY} (D)	0.829 [0.595]	
Stability Checks		
Cusum Test	Stable at 5% level	
Cusum Square Test	Stable at 5% level	

(A) Lagrange multiplier test of residual serial correlation, (B) Based on a test of skewness and kurtosis of residuals (C) Based on the regression of squared residuals on squared fitted values, (D) Ramsey's RESET test using the square of the fitted values.
CUSUM and CUSUMSQ tests proposed by Brown, Durbin, and Evans (1975) is used to examine the presence of parameter stability

According to diagnostic checks, error terms in ARDL model are normally distributed and there is no serial correlation, heteroscedasticity and misspecification problems in the model. Moreover, according to stability checks, there is not any problem about parameter stability.

According to ARDL (3.1,4,3) model, the estimated long-run coefficient of FT is not statistically significant. Long-term coefficient of OWN is -1.926 ($p<0.05$), which means that 1% increase in the own revenues of municipalities will lead %1.93 decrease in the total borrowing amount. Additionally, the estimated long-run coefficient of EXP shows that 1% increase in the expenditure of municipalities causes 4.49% rise in the total borrowings ($p<0.05$). The coefficient of the error correction term (ECT (-1)), which shows eliminated rate of the short run disequilibrium in the long-run, is estimated -0.421. Therefore, we found that the speed of adjustment of a disequilibrium from the previous year's is eliminated within the next year.

5. Conclusion

In the previous study (Yaş & Atılgan, 2016) in which a panel data framework including all types of municipalities in Turkey is implemented, presented that there is a long-run relationship from financial transfers to both short and long-term borrowing amounts of municipalities. Contrariwise the previous, time series analysis is used and the total amount of borrowing of metropolitan and nonmetropolitan provincial municipalities are analyzed in this paper, without separating borrowing amounts to short and long components. Moreover,

expenditures and own-revenues of municipalities are also included in this model. Therefore, the effect of financial transfers over borrowing could not be sighted for this model.

The results of the analysis suggest that an increase in own revenues of the municipalities lowers their borrowing requirement. In contrast, an increase in municipal expenditures raises the borrowing amount of the municipalities. These results are in parallel with the expectation related to Turkish municipalities. As the maximum amount of financial transfers and the ability to obtain the own revenues is limited within in the laws No. 5779 and Constitution respectively, the municipalities concentrate on borrowing as a last resort in order to defray the growing expenditures.

In order to suggest a policy proposal, if the local self – government issue in Turkey is going to be intimately resolved, then the capability of designating their own revenues have to be allowed for local governments in less than no time. Slightly limited borrowing can lead a moral risk for local authorities. Public debt, otherwise, may grow enormously owing to increase in local borrowing amounts.

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THE IMPORTANCE OF EFFECTIVE SOCIOECONOMIC CONDITIONS, GOVERNMENT POLICIES AND PROCEDURES FACTORS FOR ENTREPRENEURIAL ACTIVITY: (USING FUZZY ANALYTIC HIERARCHY PROCESS IN EIGHT DEVELOPING COUNTRIES)

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Abstract

The aim of present research is to determine how environmental factors in terms of entrepreneurial activity can be effective in developing countries. While developing, countries are becoming a renowned force in international entrepreneurship; there is a distinct need to know the most important indicators that influence entrepreneurial activities. Lately, there are many literatures about entrepreneurship, but most of them do not consider the features of entrepreneurial activity, especially in developing countries. This research evaluates some effective socioeconomic conditions and government policies and procedures indicators which influence the level of entrepreneurial activity. For this purpose, 287 individuals of population selected as sample from the case countries, thereafter, questionnaires were distributed and collected data among them. This study proposes an integrated approach of multiple criteria decision making (MCDM) method and fuzzy analytic hierarchy process (FAHP) using the pairwise comparisons between criteria to derive the true weights from a fuzzy comparison matrix. Based on the empirical results of this study, commercial and services infrastructure, opportunities to business start-up and unemployment rate have the greatest relative impact on the level entrepreneurial activity summary for the case study, respectively.

Keywords: Environmental factors, Entrepreneurial activity, Fuzzy-AHP model, Developing countries

1. Introduction

Traditionally, there has been no bold contrast for notions of management and entrepreneurship. However, the entrepreneurship has addressed to small business start-up and management for most of the twentieth century (Morris et al., 1996). Entrepreneurship was introduced by specialists as a way to reinvigorate economies and assist the economic growth in many developing countries (Spencer and Gómez, 2004). As Stevenson, et al., (1985) argue, the entrepreneurship denoted by means of "the process of creating value by bringing together unique combinations of resources to exploit an opportunity". Nevertheless, entrepreneurship and small business are not synonymous perceptions literally, but they are

linked together. In entrepreneurial activity perspective, entrepreneurs engage opportunities instead resources (Thurik and Wennekers, 2004). Even though there has been "entrepreneurship" by means of a significant term in business framework there about two centuries, but the meaning has converted during the time (Morris et al., 1996). Wennekers and Thurik (1999) describe entrepreneurs are persons who recognize new economic opportunities. In face of uncertainty, they employ their ability and desire to take hold of opportunities through their particular activity into the market.

Newly, following of economy growth is in the spotlight. In this circumstance, growth is defined by a substantial rise in sales, profits, assets, employees, and/or locations. The entrepreneurial firm is one that proactively strive to develop, and is not restricted by the resources under its control at present (Morris et al., 1996). A broad letter has occurred considering firm entry and exit which is commonly applied to measure entrepreneurial activity as well as pragmatic work, since effectual work on the entrance in Canadian manufacturing (De Backer and Sleuwaegen, 2003).

Later research focused on characters of individuals as the indicators impact on entrepreneurial activity. The main concerning was costs of own business formation. Recent researchers investigate that organizational constitutions affect national levels (Specht, 2003). It is possible to apply entrepreneurial activity as a conditional factor to entrepreneurship research by particular conditions such as social, economic and policies (Minaev, 2016). In spite of its applied value, there is no sufficient realization that which factors impress on high rates of entrepreneurship in a country, then how governments are able to boost entrepreneurial activity in domestic economies (Spencer and Gómez, 2004).

Certainly, it cannot be overlooked the effective relationship between the growth and prosperity of the societies (Bjørnskov,and Foss, 2010). According to Birch and McCracken's (1987) findings, the entrepreneurial sector was demonstrated "as a relatively small subset of the small business sector". In recent times, the preference of many people is starting a firm rather than salaried outside organizations. For this reason, entrepreneurial activities were promoted by public administration to simplify creative business establishment procedures and academics through their research support to design the public policies (Alvarez et al., 2011). The members' manner of society to make decision for becoming an entrepreneur can be affected considerably by attitudes, values and principals belong to that society (Shapero and Sokol, 1982). According to sociological or institutional approach, environment plays the critical role in starting a business. This is not only about public policies or legal aspects, but also pertains to the socio-cultural perspective (Alvarez et al., 2011). As clearly exposed by Lucas (1973), whenever the national income level is enlarged consequently the average size of domestic companies will be increased. According to the above investigation, for the advancement of entrepreneurship, different organizations have made known special policies and strategies. Simultaneously, academic researchers are concerned that determine effective factors on entrepreneurial activity (Alvarez and Urbano, 2011).

This paper concentrates to rank of the crucial environmental factors on the entrepreneurial activity. In this regards, all societies are not the same in lots of respects. Commonly, in this type of cases, the socioeconomic development classification is applied for performing the researches (Minaev, 2016). Gnyawali and Fogel (1994) recommended the framework for the entrepreneurial environment which includes government policies and procedures, socioeconomic factors, entrepreneurial and business skills, and financial and non-financial assistance along with their effective sub-factors. Minaev (2016:4) describe that the "lack of

entrepreneurial sector trends" is the principal drive to research in developing countries, because many difficulties are available in procedure of creating own business for people. As well as environmental conditions the economies situation can fluctuate every year. There is no precise approach to tracing the trend of entrepreneurial activity index in many developing countries. In doing so, it is imaginable to reflect more unchanging indicators which stimulus entrepreneurial activity in addition to unexpected statuses (Minaev, 2016).

The present research focuses on two groups of environmental conditions, which can affect the index of entrepreneurial activity as follows: Socioeconomic and government policies and procedures. If majority of society's sight about entrepreneurship to be with distrust, entrepreneurship may not succeed. Motivation of entrepreneurs to creation a new firm is a foundation of prevalent communal support and desirable outlook of people to entrepreneurship. Indeed, social conditions as principle as ease to reach of information, finances, technical aid and tangible services (Gnyawali and Fogel, 1994). In 1988, Mokry's findings show that the local communities have the vital impress in entrepreneurial environment development. Likewise, Societies and cultures have a tendency to grow public systems to encourage entrepreneurship (Vesper, 1983). The countries with potent entrepreneurial environment may also empower to attract foreign aids such as technology (Spencer and Gómez, 2004:1100). Economic circumstances also have to impact the rate of self-employment in a society. The higher unemployment rate in a country, the larger stimulant is the cause of exploring the self-employment opportunities (Evans and Leighton, 1990; Wildeman et al., 1998). However, self-employment phenomenon is probably publicized in developing countries.

Findings show the entrepreneurial business activities are more likely to entail "advanced manufacturing technique" and "economics of scale" that is like obstacles for business start-ups. Wholly, some criteria such as unemployment rate and per capita GDP can influence on entrepreneurial activities (Spencer and Gómez, 2004). The economic meters such as "entrepreneurial activity" are usually assessment tools of entrepreneurship (Minaev, 2016).
Moreover, market mechanisms productivity can affect by government policies through eliminating conditions that cause executive inflexibilities and market failures. They can also form an "enterprise culture" that empowers businesses to take rational risks and search for profits. While, there are numerous rules and procedures to start an innovative business or entrepreneurs may become hopeless to pursue them and if they have to take more time and cost to meet the requirements (Dana, 1987, 1988; Young and Welsch, 1993).

2. Literature Review:

Krzysztof Wach (2015) made a study about considering the impact of social and cultural indicators toward entrepreneurship, according to the data related to the Global Entrepreneurship Monitor's (GEM) report on 2013. In the European Union, entrepreneurial activity was inspected in 23 countries. The outcomes of the study show: in entrepreneurial culture, innovation-oriented and efficiency-oriented economies of European Union are not different. The willingness of people to use entrepreneurial opportunities to launch a business which leads to an increase in entrepreneurial activity, as hypothesis two was confirmed. Based on the other supported hypothesis, there is the low level of necessity-driven entrepreneurship in cultures with developed level of the entrepreneurial environment.
A research is also conducted by Hessels, van Gelderen, Thurik (2008) to answer the question whether the reasons are to start their own business and the level of social security of the country to explain the prevalence of entrepreneurial aspirations. The cross-country analysis is

performed on global Entrepreneurship Monitor data (GEM) for 29 countries in 2005. The list of countries is Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Slovenia, South Africa, Spain, Sweden, Thailand, United Kingdom, United States, and Venezuela. The outcomes explained the adverse influence of social security level on people's entrepreneurial intentions. Furthermore, the positive correlation was discovered from findings between the rise in motivation to gather prosperity and entrepreneurial aspirations with regard to employment and export growth.

In 2000, the multivariate logistic regression analysis was carried out by Thomas and Mueller for the case of 8 countries (USA, Canada, Ireland, Belgium, China, Singapore, Slovenia and Croatia) to explore the relationship between main individuals and culture characteristics on entrepreneurial activity. In addition to culture feature, the human creativity, a sense of self-control, the propensity for risk and activity of the individual had been implemented. In this case the entrepreneurs were appeared more dynamic. As a result, a sense of self-control is the most important indicators for entrepreneurial activity in individualistic societies in the high level of satisfaction the large effect on the motivation of public to become, if entrepreneurs are tendency to risk.

The research about the foreign direct investment incentives entrepreneurial activity was conducted by Kim and Li (2014). The authors also consider because of socio-political conditions, the relationship differs across countries. They were analyzed dependent count variable and time-varying covariates for 104 countries from 2000 to 2009 by using a panel negative-binomial model. They declare entrepreneurial activity as the level of firm establishment for the duration of a specified period of time. This construct in terms of the annual number of lately registered limited-liability businesses was measured in each country. As a conclusion, the positive benefits on firm formation are strongest in districts with weak institutional infrastructures and low entire educational procuration.

McMullan, Bagby and Palich (2008) have published an article entitled "economic freedom and motivation to engage in entrepreneurial activity". In their study, by applying institutional theory, they analyzed opportunity-motivated entrepreneurial activity (OME) and necessity-motivated entrepreneurial activity (NME) on 10 indicators of economic liberty and gross domestic product (GDP) per capita for 37 countries. The results depict that OME and NME are correlated negatively to GDP and with labor freedom positively. The researchers explain entrepreneurial activity affect from governmental limitations for economic liberty in a different way depending on the specific freedom constrained by government and the entrepreneur's motivation for employing in entrepreneurial action.

Grossman and Shapiro (1984) have analyzed the effect of foreign investment on the business creation of domestic entrepreneurs in an open economy, even though the most occupational choice models have been studied in a closed economy situation. In Grossman's research illustrates that falling the numbers of domestic entrepreneurs as the result of lower prices on the market are affected by import competition and foreign direct investment. Subsequently, entrepreneurial income becomes less than the wage income.

Measuring the weights of environmental factors is a major issue as well as a driving force of the discussion on entrepreneurial activity context. Developing evaluation criteria and methods that reliably measure environmental framework is a prerequisite for focusing the more effective factors on entrepreneurial activity. The multiplicity of criteria and measuring

tools being developed in this fast-growing field shows the importance of the conceptual and methodological work in this area. The development and selection of factors require parameters related to the reliability, appropriateness, practicality and limitations of measurement. The used criteria to evaluate the environmental factors in the literatures mainly divide to two groups: Socioeconomic conditions, government policies and procedures which are summarized in Table (1). The first dimension includes per capita income, unemployment rate, education and training, public attitude toward entrepreneurship, diversity of economic, opportunities to business start-up. Another dimension comprises entry barriers, political stability, procedures for starting a business, commercial and services infrastructure, market openness, Intellectual property rights. We purpose to estimate the weights of environmental conditions and their sub-factors which impact the level of entrepreneurial activity in developing countries through fuzzy approach of analytic hierarchy process. Finally, we present the results which will be depicted the weights of these factors using data from eight developing countries.

Table 1: The effective environmental conditions and factors on entrepreneurial activity

Environmental conditions	Factors	Literatures
Socioeconomic conditions	Per capita income	(Hessels and van Stel, 2011); (Bjørnskov,and Foss, 2010); (Spencer and Gómez, 2004); (Alvarez and Urbano, 2011)
	Unemployment rate	(Acs and Armington); (Audretsch and Keilbach, 2004); (Morris et al., 1996); (Spencer and Gómez, 2004); (Alvarez et al., 2011)
	Education and Training	(Alvarez et al., 2011)
	Public attitude toward entrepreneurship	(Gnyawali and Fogel, 1994)
	Diversity of economic	(Gnyawali and Fogel, 1994)
	Opportunities to business start up	(Alvarez et al., 2011)
Government policies and procedures	Entry barriers	(Gnyawali and Fogel, 1994)
	Political stability	(Alvarez and Urbano, 2011)
	Procedures for starting a business	(Alvarez and Urbano, 2011)
	Commercial and services infrastructure	(Alvarez et al., 2011)
	Market openness	(Alvarez et al., 2011)
	Intellectual property rights	(Alvarez et al., 2011)

3. Data sample and methodology:

Since this research, by collecting the dimensions and factors has created the possibility of deciding over the effective socioeconomic conditions and government policies factors on entrepreneurial activities, though, this research, objective–wise is applicable. But methodology-wise, this research due to the description of the criteria and alternative decisions creates the possibility of subject's analysis and decision making, so it is considered as descriptive – analytic research.

In the first step of this research we identified the environmental dimensions and factors influencing the entrepreneurial activities brand by using the library methodology and valid databases and relevant scientific scripts. The identified criterion was distributed within the Delphi questionnaire among the experts who were asked to comment on the factors' refusal or confirmation. They were also asked to consider adding up some other factors in the questionnaire besides the ones identified. After completing the questionnaire, the confirmed factors were selected by experts as the final ones which were compared with separate

standard AHP questionnaires in pairwise comparisons. This methodology gives an analytic procedure that can join and solidify the assessments of the choices and criteria by either an individual or group included in the task of decision making. It should be noted that the two elements that are compared at a particular time largely reduces the conceptual complexity of the analysis, we provide empirical evidence of the impact of socioeconomic conditions and government policy key factors and procedures on entrepreneurial activity, in eight of developing countries. We collected 287 respondents divided into eight countries, the Algeria, Egypt, Iran, Libya, Nigeria, North Cyprus, Tajikistan and Turkey, respectively, 31, 32, 42, 35, 37, 35, 35, and 40. The age range of the respondents varied between 20 and 55. With regarding to job experience, respondents divided into five groups. According to this classification, there were 15 percent is lower than 5 years, 22 percent is 5 to 10 years, 31 percent is between 10 and 15 years, 22 percent is 15 to 20 years, and finally 10 percent is more than 20 years. Some professionals on the subject were asked to contribute to the research by completing the questionnaire to reduce bias.

Analytic hierarchy process (AHP) (Saaty, 1988) has been broadly used as an advantageous multiple criteria decision making (MCDM) tool or a weight estimation technique in many areas such as selection, evaluation, planning and development, decision making, forecasting, and so on. The traditional AHP requires crisp judgments. A number of methods have been developed to handle fuzzy comparison matrices. Among the above approaches, the extent analysis method has been employed in quite a number of applications due to its computational simplicity. However, such a method is found unable to derive the true weights from a fuzzy or crisp comparison matrix. The weights determined by the extent analysis method do not represent the relative importance of decision criteria or alternatives at all. Therefore, it should not be used as a method for estimating priorities from a fuzzy pairwise comparison matrix. The theory of Saaty's (1980) priority for fuzzy extension has applied by many researchers. Then Laarhoven and Pedrycg (1983) suggested the fuzzy comparing judgment with triangular fuzzy numbers. Chang (1996) proposed an extent analysis method on fuzzy-AHP to obtain a crisp priority vector from a triangular fuzzy comparison matrix. It is found that the extent analysis method cannot estimate the true weights from a fuzzy comparison matrix and has led to quite a number of misapplications in the literature (Wang et al., 2008).

In this article, by applying Chang's (1996) new approach to conduct fuzzy-AHP, the priority vectors for environmental dimensions and sub-factors determined by the extent analysis method. Initially, triangular fuzzy numbers are implemented for pairwise comparison scale. Thereafter, through the extent analysis method, the synthetic extent value S_i of pairwise comparison, weight vectors in terms of each factor under a certain dimension can be computed.

4. Results

After the conversion of qualitative variables to triangular fuzzy numbers M On R: [1/9, 9] that its membership is (l, m, u), where $l \leq m \leq u$, l and u exist for lower and upper bond of the support of M respectively, and m for the modal value (Chang, 1996). A triangular fuzzy comparison matrix demonstrated by (Wang et al., 2008):

$$\tilde{A} = (\tilde{a}_{ij})_{n\times n} = \begin{bmatrix} (1,1,1,1) & (l_{12},m_{12},u_{12}) & \cdots & (l_{1n},m_{1n},u_{1n}) \\ (l_{21},m_{21},u_{21}) & (1,1,1,1) & \cdots & (l_{2n},m_{2n},u_{2n}) \\ \vdots & \vdots & \vdots & \vdots \\ (l_{n1},m_{n1},u_{n1}) & (l_{n2},m_{n2},u_{n2}) & \cdots & (1,1,1,1) \end{bmatrix}$$

If, (l, m, u) = a is a triangular fuzzy number, the inverse form will be as follows:

$$\tilde{a}_{ij} = (l_{ij}, m_{ij}, u_{ij}) = \tilde{a}_{ij}^{-1} = \left({}^{1}/_{u_{ji}}, {}^{1}/_{m_{ji}}, {}^{1}/_{l_{ji}}\right) \quad for\ i,j = 1,\dots,n\ and\ i \neq j.$$

The preliminary matrix of pairwise comparisons for environmental dimensions and their sub-factors after data integration will be shown in table (2-1), (2-2) and (2-3) as follows:

Table 2-1: Fuzzy comparison matrix of two environmental dimensions after data integration

dimensions	**D_1**	**D_2**
D_1	(1.00, 1.00, 1.00)	(0.11, 2.42, 9.00)
D_2	(0.11, 0.41, 9.00)	(1.00, 1.00, 1.00)

Whose data provide:

- D_1: Socioeconomic conditions
- D_2: Government policies and procedures

Table 2-2: Fuzzy comparison matrix of six socioeconomic factors after data integration

factors	**SE_1**	**SE_2**	**SE_3**	**SE_4**	**SE_5**	**SE_6**
SE_1	(1.00, 1.00, 1.00)	(0.11, 0.23, 6.00)	(0.11, 0.26, 5.00)	(0.20, 3.22, 9.00)	(0.11, 0.57, 8.00)	(0.25, 3.89, 9.00)
SE_2	(0.17, 4.44, 9.00)	(1.00, 1.00, 1.00)	(0.20, 7.14, 9.00)	(4.00, 8.62, 9.00)	(0.50, 6.95, 9.00)	(2.00, 8.25, 9.00)
SE_3	(0.20, 3.86, 9.00)	(0.11, 0.14, 5.00)	(1.00, 1.00, 1.00)	(4.00, 7.72, 8.00)	(0.11, 2.37, 9.00)	(0.50, 5.43, 9.00)
SE_4	(0.11, 0.31, 5.00)	(0.11, 0.12, 0.25)	(0.13, 0.13, 0.25)	(1.00, 1.00, 1.00)	(0.13, 0.25, 5.00)	(0.14, 0.25, 6.00)
SE_5	(0.13, 1.76, 9.00)	(0.11, 0.14, 2.00)	(0.11, 0.42, 9.00)	(0.20, 4.08, 8.00)	(1.00, 1.00, 1.00)	(3.00, 7.20, 9.00)
SE_6	(0.11, 0.26, 4.00)	(0.11, 0.12, 0.50)	(0.11, 0.18, 2.00)	(0.17, 3.94, 7.00)	(0.11, 0.14, 0.33)	(1.00, 1.00, 1.00)

Whose data provide:

- SE_1: Per capita income
- SE2: Opportunities to business start up
- SE3: Unemployment rate
- SE4: Public attitude toward entrepreneurship
- SE5: Education and Training
- SE6: Diversity of economic

Table 2-3: Fuzzy comparison matrix of six government policy factors after data integration

factors	**GP_1**	**GP_2**	**GP_3**	**GP_4**	**GP_5**	**GP_6**
GP_1	(1.00, 1.00, 1.00)	(5.00, 8.43, 9.00)	(0.50, 6.32, 9.00)	(6.00, 8.77, 9.00)	(5.00, 8.89, 9.00)	(2.00, 9.00, 9.00)
GP_2	(0.11, 0.12, 0.20)	(1.00, 1.00, 1.00)	(3.00, 7.20, 9.00)	(0.11, 0.57, 8.00)	(0.25, 3.89, 9.00)	(0.11, 0.26, 5.00)
GP_3	(0.11, 0.16, 2.00)	(0.11, 0.14, 0.33)	(1.00, 1.00, 1.00)	(2.00, 8.25, 9.00)	(4.00, 7.72, 9.00)	(0.50, 5.43, 9.00)
GP_4	(0.11, 0.11, 0.17)	(0.13, 1.76, 9.00)	(0.11, 0.12, 0.50)	(1.00, 1.00, 1.00)	(0.20, 3.22, 9.00)	(0.20, 3.42, 9.00)
GP_5	(0.11, 0.11, 0.20)	(0.11, 0.26, 4.00)	(0.11, 0.13, 0.25)	(0.11, 0.31, 5.00)	(1.00, 1.00, 1.00)	(0.14, 0.25, 6.00)
GP_6	(0.11, 0.11, 0.50)	(0.20, 3.86, 9.00)	(0.11, 0.18, 2.00)	(0.11, 0.29, 5.00)	(0.17, 3.94, 7.00)	(1.00, 1.00, 1.00)

Whose data provide:

- GP1: Commercial and services infrastructure
- GP2: Political stability

- GP3: Market openness
- GP4: Procedures for starting a business
- GP5: Entry barriers
- GP6: Intellectual property rights

Chang (1996) defined in the next step, the value of synthetic extent as Si vector should be calculated. To obtain the first vector, we accumulate together the components of fuzzy numbers in each row. In the second vector, the total sum of the existing triangular numbers in the above matrix turned to their reverse form. This vector is the same in all Si calculations. Such vector is the multiplication product of two vectors which is calculated. Considering the above description, the vectors Si will be calculated in table (3-1), (3-2) and (3-3) as follows:

Table 3-1: degree of possibility of $\tilde{S}_i \geq \tilde{S}_j$ for environmental dimensions

S_1	(0.0556,0.7074,4.5000)
S_2	(0.0556,0.2926,4.5000)

Table 3-2: degree of possibility of $\tilde{S}_i \geq \tilde{S}_j$ for socioeconomic factors

S_1	(0.0091,0.1037,1.6277)
S_2	(0.0403,0.4118,1.9704)
S_3	(0.0303,0.2322,1.7562)
S_4	(0.0083,0.0232,0.7496)
S_5	(0.0223,0.1652,1.6277)
S_6	(0.0082,0.0638,0.6354)

Table 3-3: degree of possibility of $\tilde{S}_i \geq \tilde{S}_j$ for government policies and procedures

S_1	(0.1095,0.4274,1.2486)
S_2	(0.0257,0.1314,0.8740)
S_3	(0.0433,0.2287,0.8234)
S_4	(0.0098,0.0971,0.7781)
S_5	(0.0089,0.0208,0.4465)
S_6	(0.0095,0.0946,0.6650)

Subsequently, based on Wang et al., (2008)' findings usage is for comparing the degree of possibility of Si vectors in algorithm of fuzzy hierarchical analysis compute by the following equation:

$$V(\tilde{S}_i \geq \tilde{S}_j) = \begin{cases} 1, & if\ m_i \geq m_j, \\ u_i - l_j/(u_i - m_i) + (m_j - l_j), & if\ l_j \leq u_i, \\ 0, & others \end{cases} \quad i, j = 1, \dots, n; j \neq i$$

Where $\tilde{S}_i = (l_i, m_i, u_i)$ and $\tilde{S}_j = (l_j, m_j, u_j)$.

Thus, the comparison of vectors S_1 to S_6 of the above formula will be shown in table (4-1), (4-2) and (4-3) as follows:

Table 4-1: Comparison S_i vectors for environmental dimensions

$S_1 \geq S_2$	$S_2 \geq S_1$
1.0000	0.9146

Table 4-2: Comparison S_i vectors for socioeconomic factors

$S_1 \geq S_2, S_3, S_4, S_5, S_6$	$S_2 \geq S_1, S_3, S_4, S_5, S_6$	$S_3 \geq S_1, S_2, S_4, S_5, S_6$	$S_4 \geq S_1, S_2, S_3, S_5, S_6$	$S_5 \geq S_1, S_2, S_3, S_4, S_6$	$S_6 \geq S_1, S_2, S_3, S_4, S_5$
0.8482	1.0000	1.0000	0.9022	1.0000	0.9402
0.9309	1.0000	0.9055	0.6470	0.8659	0.6320
1.0000	1.0000	1.0000	0.7754	0.9598	0.7828
0.9658	1.0000	1.0000	0.8369	1.0000	1.0000

Table 4-3: Comparison S_i vectors for government policies and procedures factors

$S_1 \geq S_2, S_3, S_4, S_5, S_6$	$S_2 \geq S_1, S_3, S_4, S_5, S_6$	$S_3 \geq S_1, S_2, S_4, S_5, S_6$	$S_4 \geq S_1, S_2, S_3, S_5, S_6$	$S_5 \geq S_1, S_2, S_3, S_4, S_6$	$S_6 \geq S_1, S_2, S_3, S_4, S_5$
1.0000	0.7209	0.7823	0.6694	0.4533	0.6254
1.0000	0.8951	1.0000	0.9565	0.7919	0.9457
1.0000	1.0000	1.0000	0.8481	0.6598	0.8226
1.0000	1.0000	1.0000	1.0000	0.8512	0.9962

The degree possibility for convex fuzzy number to be larger than k convex fuzzy numbers M_i (I = 1, 2, …, k) can be determined in table (5-1), (5-2) and (5-3) as follows:

$V(M \geq M_1, M_1, \ldots, M_k)$
$= V[(M \geq M_1)$ and $(M \geq M_2)$ and … and $(M \geq M_k)$
$= \min V(M \geq M_i)$, $\quad i = 1, 2, \ldots, k.$

$d'(Ai) = \min V(S_i \geq S_i)$, $\quad k = 1, 2, \ldots, n; k \neq i$

Table 5-1: d'(Ai) values for environmental dimensions

$d'(A1) = \text{Min}(S_1 \geq S_2)$	1.0000
$d'(A2) = \text{Min}(S_2 \geq S_1)$	0.9146

Table 5-2: d'(Ai) values for socioeconomic factors

$d'(A1) = \text{Min}(S_1 \geq S_2, S_3, S_4, S_5, S_6)$	0.8482
$d'(A2) = \text{Min}(S_2 \geq S_1, S_3, S_4, S_5, S_6)$	1.0000
$d'(A3) = \text{Min}(S_3 \geq S_1, S_2, S_4, S_5, S_6)$	0.9055
$d'(A4) = \text{Min}(S_4 \geq S_1, S_2, S_3, S_5, S_6)$	0.6470
$d'(A5) = \text{Min}(S_5 \geq S_1, S_2, S_3, S_4, S_6)$	0.8659
$d'(A6) = \text{Min}(S_6 \geq S_1, S_2, S_3, S_4, S_5)$	0.6320

Table 5-3: d'(Ai) values for government policies and procedures factors

$d'(A1) = \text{Min}(S_1 \geq S_2, S_3, S_4, S_5, S_6)$	1.0000
$d'(A2) = \text{Min}(S_2 \geq S_1, S_3, S_4, S_5, S_6)$	0.7209
$d'(A3) = \text{Min}(S_3 \geq S_1, S_2, S_4, S_5, S_6)$	0.7823
$d'(A4) = \text{Min}(S_4 \geq S_1, S_2, S_3, S_5, S_6)$	0.6694
$d'(A5) = \text{Min}(S_5 \geq S_1, S_2, S_3, S_4, S_6)$	0.4533
$d'(A6) = \text{Min}(S_6 \geq S_1, S_2, S_3, S_4, S_5)$	0.6254

According to Chang method, then the weight vector is given by:
$W' = (d'(A_1), d'(A_2), \ldots, d'(A_n))^T$
Where Ai (I = 1, 2, …, n) are n elements.
Via normalization, we can get the normalized weight vectors:
$W = (d(A_1), d(A_2), \ldots, d(A_n))^T$

Where W is a nonfuzzy number. The final weight vectors will be depicted in table (6-1), (6-2) and (6-3):

Table 6-1: final matrix for environmental dimensions

W'	$(1.0000,0.9146)^T$
W	(0.5223,0.4777)

Table 6-2: final matrix for socioeconomic factors

W'	$(0.8482,1.0000,0.9055,0.6470,0.8659,0.6320)^T$
W	(0.1732,0.2041,0.1849,0.1321,0.1768,0.1290)

Table 6-1: final matrix for government policies and procedures factors

W'	$(1.0000,0.7209,0.7823,0.6694,0.4533,0.6254)^T$
W	(0.2352,0.1696,0.1840,0.1575,0.1066,0.1471)

The end result can be obtained from the multiplication of weight of each factor into related dimension. Thus, based on the fuzzy-AHP Technique, the priorities of the effective socioeconomic conditions and government policies and procedures on entrepreneurial activity are illustrated in table (7) as follows:

Table 7: Prioritization weight of effective environmental factors summary for case study

	Factor relative important	**Total relative important**
GP1	Commercial and services infrastructure	0.1124
SE2	Opportunities to business start up	0.1066
SE3	Unemployment rate	0.0965
SE5	Education and Training	0.0923
SE1	Per capita income	0.0904
GP3	Market openness	0.0879
GP2	Political stability	0.0810
GP4	Procedures for starting a business	0.0752
GP6	Intellectual property rights	0.0703
SE4	Public attitude toward entrepreneurship	0.0690
SE6	Diversity of economic	0.0674
GP5	Entry barriers	0.0509

5. Conclusion:

At the company level, standing literature has recognized the influence of environmental factors on business efficiency (Covin and Slevin, 1991; Venkatraman and Prescott, 1990; Zahra, 1993). The discussions advanced recommend that alike contacts may exist between environmental factors and individual entrepreneur's performance, and matching between specific entrepreneurs' requirements and environmental forces would lead to bigger likelihood of firm creation and achievement.

It was addressed among the environmental conditions two main dimensions as socioeconomic and government policy and procedures. Even though, further factors were available for each dimension, but according to scholars' opinions, six remarkable indicators were chosen from previous literatures. We attempted to find out the weight of each condition, and their sub-indicators. The weight from evaluation for each dimension to each factor affects the ranking of the design from formulating the data given.

Based on the drawn results, the commercial and services infrastructure highest one, where the total relative important is 0.1124 compared with eleven others. In continue, opportunities to business start-up, unemployment rate, education and training, and per capita income

respectively have the next major effect for the level of entrepreneurial activity. The rest of factors, market openness, political stability, procedures for starting a business, Intellectual property rights, public attitude toward entrepreneurship, diversity of economic, entry barriers are the next order.

However, due to the complexity and uncertainty involved in real world decision problems, entrepreneurship decision and policy makers may sometimes feel more confident to provide fuzzy judgments than crisp comparisons. A decision maker can be used this integrates fuzzy-AHP outputs to enhance the level of entrepreneurial activities in a nation.

Certainly, this study was carried out for 8 developing countries because we did not access enough information about countries. Meanwhile, applying the fuzzy-AHP method is a new approach for entrepreneurship development. For future research, we suggest that the interested researcher can study about others developing countries to reach the more accurate information for making a better decision toward entrepreneurship environment. Considering the most important elements cause to faster growing with regard to motivate and support entrepreneurs in countries.

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ENVIRONMENTAL KUZNET'S CURVE FOR SAUDI ARABIA: AN ENDOGENOUS STRUCTURAL BREAKS BASED ON COINTEGRATION ANALYSIS

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Abstract

The study attempts to analyse cointegrating relationship between carbon emissions, energy consumption, income and trade openness in case of Saudi Arabia using the time series data for the period 1971-2011. For this purpose, it uses the ARDL cointegrating technique to find out the long run relationships among the variables. The bounds test results indicate that there exist long- run relationships between the variables. The study also used threshold cointegrating test in order to test the environmental Kuznet's curve hypothesis in the presence of regime shift. This study confirms existence of cointegrating relationship in case of single structural break, but for two structural break there is no cointegration among the variables. The Environmental Kuznet's curve hypothesis does not hold in Saudi Arabia. The study does not find long run coefficients statistically significant except for trade openness.

Keywords: Carbon emissions, energy consumption, Threshold cointegration, Environmental Kuznet's curve

1. Introduction

The Environmental Kuznets curve (EKC) hypothesis that aims to establish the relationship between environmental pollution and economic growth plays central role in the formulation of efficient energy policy. According to EKC hypothesis, at the initial phase of economic growth and development an economy witnesses a positive relationship between economic growth and environmental pollution and after reaching some threshold level of economic growth, environmental pollution begins to decline. Under this assumption, the EKC hypothesis is considered as an inverted U-shaped curve, exhibiting the relationship between environmental degradation and economic growth of an economy. In the literature, studies have shown that EKC hypothesis is determined by scale, composition and technique effects (Kanjilal K. & Ghosh, 2013). In the scale effect, it is assumed that higher environmental degradation is strongly linked with higher economic activity; this appears to be highly relevant in the initial phases of economic growth and development in an economy. As the economy expands, industries gradually start adopting cleaner technologies, reducing the share of pollution intensive products in the production process. The latter is known as 'composition' effect whereas the former is regarded as 'technique' effect. A close survey of existing studies on EKC reveals that a large number of studies have been undertaken to validate the existence of EKC in cases of developed as well as emerging economies. Unfortunately, a limited attention has been paid to investigate the existence of EKC hypothesis in case of Gulf Cooperation Council (GCC) countries. The possible explanation could be because of unavailability of large sample data and less priority given by researchers due to the limited contribution of these economies in the global carbon emission. But in recent year, owing to continuous monitoring of carbon emission across countries by United Nations Framework Convention on Climate Change (UNFCC), the issue of climate change has become a global issue and has garnered the considerable attention of regulators and

researchers to undertake necessary measures to reduce the carbon related emissions from the existing level. Considering these issues into account, the present study attempts to test the EKC hypothesis in the context of possible regime shifts in cointegrating relationship between CO_2 emission, energy consumption, economic growth and trade openness for Saudi Arabia. The sample period of the study is 1971-2011. This may be a significant contribution to the existing literature in case of Saudi Arabia as there is no study as per my knowledge that has examined such relationship in cointegration framework by taking into account the possible endogenous structural break in the data. The present study promises to add value to the existing literature.

The present study is motivated to study the extent to which economic growth is linked with environmental degradation in case of Saudi Arabia. As per the reports of US Energy Information Administration (EIA, 2008), Saudi Arabia has been ranked 11th among the major carbon emitting countries in the world. At the same time, it is also the second largest (after Iran) in terms of carbon emission in the Middle East region. According to recent data on CO2 emission, among all Middle East nations, the percentage share of Saudi Arabia in 2011, is more than 26% (see EIA, 2011). With respect to year on year growth rates, in 2011, the growth rate of carbon emission has been around 9.5% higher than the last three years. One of the reasons of such a high growth in carbon emission could be because of strong surge in economic activities supplemented by high energy demand and heavy exploration of hydrocarbons in order to meet the sudden rise in global demand. In recent year, Saudi Arabian economy has witnessed strong boom in real estate and manufacturing activities, as there is strong emphasis of reducing the oil dependence in coming years to a sustainable level. The major sources of carbon emission are oil related sectors, electricity generation, the solid waste management, and the agricultural sectors (see Rahman, 2012). Even though Saudi Arabia is the world's largest producer of crude oil, not surprisingly, the hydrocarbons are one of the major sources of fossil-fuel CO2 emissions (Boden et al. 2011). These figures are really surprising especially at the time when environmental degradation is a hotly debated issue. These figures also clearly reveal that Saudi economy faces the challenge of balancing act between economic growth and environmental degradation like other major economies in the GCC region and across the world. In order to sustain the high economic growth, Saudi's economy must emphasize on reducing the environmental degradation from the existing level. In this regard, the technological innovation and design and implementation of environmental policy can play pivotal role in shaping up the fragile nature of the environmental degradation. In the literature, studies have shown that the successful implementation of environmental regulations is strongly linked with the pattern of economic growth and development and is the basis of environmental Kuznet's curve (EKC) hypothesis which has garnered considerable attention of empirical research in the past decades (see Stern, 2004).The recent studies have also added the new dimension of research by way of applying the recently developed time-series and panel data econometric models. In this respect, the present study will add value to the existing literature by providing a new dimension (application of endogenous structural break models) of EKC research in case of Saudi Arabia. The study appears to be promising from the perspective of environmental policy because it has add new avenues in the area of sustainable environmental policy research that may also be a basis for other GCC countries.

2. Review of Literature

There is huge wealth of literature available on examining the nexus between carbon emission, energy consumption and economic growth. For the ease of better exposition, these studies can be divided into three different streams based on the objectives and outcomes. The first stream focusses upon exploring the relationship between energy consumption and economic growth. The central issue has been whether economic growth augments energy consumption or energy consumption itself drives economic growth via the indirect channels of aggregated effective demand, technological progress and overall energy efficiency. In this regard, (Kraft, 1978) in their study exhibited the causal relationship between energy consumption and economic growth. Later work also reported the similar empirical inference, some of which include (Akarca and Long 1980), Yu and Hwang (1984), Yu and Choi (1985), Erol and Yu (1987), Abosedra and Baghestani (1989), Bentzen, Engsted (1993). As highlighted by Stern (1993) these studies suffer from specification biases due to small sample size and omission of relevant variables. Recent literature on examining the nexus between energy consumption and economic growth under multivariate framework are Stern (2000), Soytas and Sari (2003, 2006, 2009), Ghali and El-Sakka (2004), Altinay and Karagol (2004), Oh. and Lee (2004) Wolde-Rufael (2005), Akinlo (2008); Narayan and Smyth (2005),Apergis and Payne (2009) among others. In this regard, Brown and Yucel, (2002) provide a detailed survey of the theory and evidence on the macroeconomic impact of energy prices. Huang et al. (2008) provide a comprehensive literature survey on the empirical findings from energy-economic growth causality results. A close re-appraisal of existing literature reveals that the role of energy consumption in economic growth have reported mixed results across sample countries and periods.

Second thread of research focuses on the relationship between economic growth and environmental degradation, where the researchers have investigated the existence of EKC hypothesis covering developed and emerging economies. In this line of research, the first seminal study was proposed by Grossman and Krueger (1991) followed by a series of studies viz., Shafik, (1994), Heil and Selden (1999), Friedl and Getzner (2003), Dinda and Coondoo (2006), Managi and Jena (2008), Coondoo and Dinda (2008),Romero-Avila (2008), Akbostanci et al. (2009), among others. With regard to EKC literature, Stern (2004) and Dinda (2004) provided a comprehensive literature review. However, despite such a large volume of literature, the results are still inconclusive and provide further scope of re-examination.

Finally a third stream of research has emerged, which combines the first and second streams by investigating the dynamic relationship between carbon emissions, energy consumption and economic growth. Some of the important studies in this field include Soytas et al.(2007),Ang(2008), Soytas and Sari (2009a, 2009b), Zhang and Cheng (2009), Halicioglu (2009), Jalil and Mahmud, (2009), Ghosh (2010).

Studies concerning Saudi Arabia, researchers have paid very limited attention on investigating the existence of EKC for Saudi Arabian economy. To the best of our knowledge, there is only one study that attempted to investigate the existence of EKC in case of Saudi Arabia. Mansur and Mello (2011)in their study examine the relatinship between carbon emission and GDP per capita for Saudi Arabia. The sample period of this study was 1975-2003. The main objective of this study was to confirm whether EKC hypothesis is applicable in case of Saudi Arabian economy. They applied Long Run Structural Modelling (LRSM) technique. The findings of this study suggested the long-run relationship between carbon emission and economic growth and exhibtied the existence of N-shape EKC. In the

light of the review of the above mentioned streams of existing studies and literature on Saudi Arabia, the present study is expected to add value to the existing literature in following manner:

1. In the context of Saudi Arabian economy, this is the first study that highlights the role of structural breaks in the EKC analysis. This is mainly because with the help of structural break, it is easier to capture impact of economic crises, technological shocks, external shocks or policy changes on the existence of EKC hypothesis.
2. Besides this, the incorporation of structural break in empirical analysis may also provide insight about the possible reason of long-run disequilibrium between the underlying variables.
3. In addition, the analysis of structural break often provide strong argument against the conventional cointegration assumption that the cointegrating relationship remain same during the period under consideration.
4. With the use of recent data, the study attempts to capture the impact of recent policy measures with regard to carbon related emission.
5. In recent years, climate change has become dominant policy issue with global appeal. In this light, it is imperative for every economy to undertake research related with carbon emission and its impact on economic growth. So that pragmatic policy measures could be annocuned. Since Saudi's economy is also one of the largest emitter of carbon gas, hence, this study will be a guiding tool from policy persepctive.
6. With the incorporation of Saudi's export and import, the study tries to exhibit the impact of trade openness and oil export on carbon emission as oil sector is considered to be the largest emittor of CO_2in the country

3. Objectives of the study

The major objectives of this study is:

1. To examine the long-term relationship between CO_2 emission, energy consumption, economic activity and traded openness for Saudi Arabian economy;
2. To re-visit the cointegrating relationship by employing cointegration test with endogenous structural break. This is mainly to validate the EKC hypothesis in the presence of possible endogenous structural break in the existing long run relationship of sample variables.
3. To confirm whether EKC hypothesis is applicable for Saudi Arabia.
4. To study the identified structural breaks from policy perspective.
5. To study the policy implications of EKC hypothesis in case of Saudi Arabia.

4. Data and Research Methodology

4.1. Data

In this study, CO_2 emissions (metric tons per capita), Energy use (kg of oil equivalent per capita), GDP per capita (constant 2005 US$), Exports and Imports as % of GDP are retrieved from World Development Indicators (WDI).The sample period of this study is 1971-2011.In case of other observations, the study has retrieved the data from the websites of Saudi Arabian Monetary Authority (SAMA) and EIA.

4.2.Empirical methodology

At first stage of empirical analysis, the study has applied the tests of unit root to confirm whether the sample data are stationary or not. For this purpose, three different variants of unit root tests viz., Augmented Dickey and Fuller (1979), Phillips and Perron (1988) and Dicky and Fuller – Generalized Least Square (DF-GLS unit root tests developed by Elliot et al. (1996) has been applied. Generalized Least Square (DF-GLS unit root tests is an efficient and modified version of conventional ADF test that is based on the detrended variable. Apart from these the study has also used unit root test with breakpoint by Perron (1989). Based on the inference obtained from these tests, the study has inferred that the variables are nonstationary at levels but stationary at first difference. After the test of stationarity, the study uses Auto-Regressive Distributed Lag (ARDL) model to test the cointegration among the variables. It may here be noted that unlike Johansen's cointegration, the test of stationarity in case of Autoregressive Distributed Lagged (ARDL) model is not a pre-requisite criterion due to the presence of lower and upper bounds. In other words this model is used even with a mix order of integration.

4.2.1 The model

Following Halicioglu (2009) and Kanjilal and Ghosh (2013), the study specifies the following linear logarithmic quadratic functional form for long run relationship among carbon emission, energy consumption, economic activity and trade openness for the country.

$$CO_2 = \phi_0 + \alpha_1 Y_t + \alpha_2 Y_t^2 + \alpha_3 EN_t + \alpha_4 TO_t + \varepsilon_t \quad \ldots\ldots (1)$$
$$t = 1, 2, \ldots n$$

Where CO_2, Y_t, Y_t^2, EN_t and TO_t denote the per capita carbon emission, per capita GDP, square of per capita GDP, per capita energy use and trade openness, respectively, after logarithmic transformation.

- If the EKC hypothesis is true, the expected sign of α_1 is positive and α_2 is negative. The statistical significance of α_2 implies that a monotonically increasing relationship between per capita carbon emission and income.
- The sign of per capita energy use α_3 is expected to be positive as higher energy consumption leads to higher carbon emission.
- The expected sign of α_4 may either be mixed because it is strongly linked with the stages of growth and development and environmental aspects of production process of an economy (see Grossman and Krueger, 1991).
- The expected sign of trade openness is also dependent upon the nature of economy. For an import dependent country, the sign of trade openness may either be negative and vice-versa.

Table 1. Descriptive Statistics

	CO2	Y	Y^2	EN	TO
Mean	2.644436	9.582885	91.87898	8.143262	4.341453
Median	2.6406	9.493536	90.12723	8.37412	4.324448
Maximum	2.943261	9.99888	99.97759	8.794829	4.792641
Minimum	2.283502	9.348854	87.40106	6.886964	4.033784
Std. Dev.	0.161146	0.220178	4.259087	0.544373	0.164685

Skewness	-0.26876	0.815774	0.832758	-1.21843	0.278749
Kurtosis	2.516925	2.170083	2.193893	3.120179	2.735558

4.2.2 Cointegration methodology

Like conventional tests of cointegration such as Engle and Granger (1987) and Johansen and Juselius (1990) which have been used widely in empirical research to examine the long-term relationship of variables under consideration in a bivariate or multivariate framework and having several advantages, one of the drawbacks of conventional cointegration is that it assumes strict non-stationarity of an economic variable, failing which the model is not recommended to estimate. In order to overcome this methodological drawback, ARDL bounds tests approach for cointegration (Pesaran et al. (2001) is becoming increasingly popular in empirical research due to its several methodological advantage. First, it can be employed regardless of whether the underlying variable is I (0) or I (1). Second, there is advantage of simultaneous estimation of long and short-run parameters in a model. Third, the small sample properties of ARDL are superior to that of multivariate cointegration (Narayan, 2004).

One of the major drawbacks of conventional cointegration tests is the assumption that the cointegrating relationship is not time-varying even in the case of large sample series. Besides this, the cointegration results may be suspected when the sample period under analysis may have witnessed major events (e.g., a global economic crisis such as sovereign debt defaults, currency devaluation, domestic policy upheavals, regulatory shocks, etc.), which are likely to create structural breaks in a particular series. Since conventional cointegration tests are not applicable to exhibit the long-run relationship especially when structural breaks are present in sampled series. Hence, it is always recommended to estimate the Gregory and Hansen (henceforth, GH, 1996) and Hatemi-J (henceforth GJ, 2008) cointegration test to estimate the variables. This is mainly because these tests are able to identify the presence of structural breaks in a long time series that may change the cointegrating relationship. In other words, the long run relationship is likely to witness one or two regime shifts in the sample period. In that case, conventional cointegration tests, as stated above, may suffer from specification bias and provide misleading results. In this light, this study uses the ARDL bounds test cointegration methodology followed by GH and HJ threshold cointegration tests to examine EKC hypothesis for Saudi Arabia.

4.2.2.1 ARDL model specification

An ARDL model is a general dynamic specification, which uses the lags of the dependent variable and the lagged and contemporaneous values of the independent variables, through which the short-run effects can be directly estimated, and the long-run equilibrium relationship can be indirectly estimated, removing problems associated with omitted variables and autocorrelation. ARDL technique involves estimating unrestricted error correction model. An ARDL representation of Eq. (1) is given as follows:

$$\Delta CO_2 = \alpha_0 + \sum_{i=1}^{n} \beta_1 \Delta CO_{2t-i} + \sum_{i=1}^{n} \beta_2 \Delta Y_{t-i} + \sum_{i=1}^{n} \beta_3 \Delta Y_{t-i}^2 + \sum_{i=1}^{n} \beta_4 \Delta EN_t + \sum_{i=1}^{n} \beta_5 \Delta TO_t +$$
$$\gamma_1 CO_{2t-1} + \gamma_2 Y_{t-1} + \gamma_3 Y_{t-1}^2 + \gamma_4 EN_{t-1} + \gamma_5 TO_{t-1} + \varepsilon_{1t} \text{.....}(2)$$

F-test is used to find out whether a cointegrating relationship exists among the estimated variables. The null hypothesis of no cointegration among the variables in Eq. (2) is $H_0 : \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = 0$ against $H_1 : \gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq \gamma_5$ which is denoted as $F_{CO_2}(CO_2 \mid Y, Y^2, EN, TO)$. Two sets of critical F-values have been provided by Pesaran and Shin (1998) and Pesaran et al. (2001) for large samples, Narayan (2005) for sample size ranging from 30 to 80 and Turner (2006) for response surface analysis, where one set assumes that all variables in ARDL model are I (1) and another assumes that all variables are I (0) in nature. If the calculated F-statistics is greater than the band, a conclusive decision can be taken without prerequisite of whether the underlying variables are $I(0)$ or $I(1)$. If the computed F-statics falls within the critical band, inference remains inconclusive. Further, once the orders of the lags in the ARDL model have been appropriately selected, one can estimate the cointegration relationship using a simple Ordinary Least Square (OLS) method.

4.2.2.2 Threshold cointegration approach

GH and HJ have considered 'Level Shift (C)', 'Level Shift with Trend (C/T)' and 'Regime Shift (C/S)' models to test possible structural breaks in cointegration tests. This study considers Regime Shift model both for GH and HJ cointegration tests. GH test has taken one break point whereas HJ has incorporated two break points. The regime shift model representation of Eq.(1)for GH and HJ tests which incorporate structural breaks on both intercept and slope are defined as:

GH Test:

$$CO_2 = \phi_0 + \alpha_1 D_{1t} + \alpha_{01} Y_t + \alpha_{11} D_{1t} Y_t + \alpha_{02} Y_t^2 + \alpha_{12} D_{1t} Y_t^2 + \alpha_{03} EN_t + \alpha_{13} D_{1t} EN_t + \alpha_{04} TO_t + \alpha_{14} D_{1t} TO_t + \varepsilon_t \quad \text{..... (3)}$$

HJ Test:

$$CO_2 = \phi_0 + \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_{01} Y_t + \alpha_{11} D_{1t} Y_t + \alpha_{21} D_{2t} Y_t + \alpha_{02} Y_t^2 + \alpha_{12} D_{1t} Y_t^2 + \alpha_{22} D_{2t} Y_t^2 + \alpha_{03} EN_t + \alpha_{13} D_{1t} EN_t + \alpha_{23} D_{2t} EN_t + \alpha_{04} TO_t + \alpha_{14} D_{1t} TO_t + \alpha_{24} D_{2t} TO_t + \varepsilon_t \text{.....(4)}$$

α_1 is the differential intercept over the common intercept ϕ_0 with single structural break for eq. (3) but differential intercept over the common intercept for the first sub-sample of structural break for Eq. (4). α_2 is the intercept differential over the common intercept α_0 for the second sub-sample of structural break for Eq. (4). α_{0i} is the coefficients for ith independent variable i = 1,2,3,4. α_{1i} is the differential slope coefficient over the base slope coefficient over the base slope coefficient α_{0i} with single structural break for Eq. (3) but for Eq. (4) differential slope coefficient over the base slope coefficient α_{0i} is for the first sub-sample of structural break i =1,2,3,4; α_{2i} is the differential slope coefficient over the base slope coefficient α_{0i} for the second sub-sample of structural break for Eq. (4). D_{1t} is the dummy variable for the endogenous structural break at time t = 1, 2,….., n for Eq. (3), but for Eq. (4), dummy variable to represent the first endogenous break. D_{2t} is the dummy variable representing the second endogenous structural break at t = 1, 2,….., n for Eq. (4).

$D_{1t} = 0$; if $t < [nT_1]$
$=1$; if $t > [nT_1]$
$D_{2t} = 0$; if $t < [nT_2]$
$=1$; if $t > [nT_2]$

are the dummy variables with the known parameters T_1 and T_2 belonging to the 0, 1 meaning the relative timing of regime change point or structural break points which are not known a priori. The standard methods of testing the null hypothesis of no cointegration in the context of eq.(3) and eq.(4), when there are no dummies for structural breaks are residual based approach of Engle and Granger(1987). GH has shown that residual based tests namely Augmented Dicky- Fuller (ADF) and Z_α , Z_t test proposed by Perron (1989) applied to regression errors to test the null hypothesis of no cointegration leads to misspecification of cointegration if the structural breaks are unknown. GH has however used an advanced nonlinear cointegration test with a structural break which is considered as multivariate extension of univariate ZA unit root test. Gregory-Hansen (1996) proposed a residual based cointegration test (GH-test) that takes into account regime shifts either in the intercept or the entire vector of coefficients. They proposed biased –corrected modified ADF*, Z_α* and Z_t* for testing cointegration of the above variables.

$$ADF^* = \inf_{(\tau) \in T} ADF(\tau) \quad (5)$$

$$Z_t^* = \inf_{(\tau) \in T} Z_t(\tau) \quad (6)$$

$$Z_\alpha^* = \inf_{(\tau) \in T} Z_\alpha(\tau) \quad (7)$$

The null hypothesis of no cointegration is tested first by running regression of Eqs. (3) and (4) for each possible structural break $\tau \in T = (0.15, 0.85)$ in the case of GH test and $\tau_1 \in T_1 = (0.15, 0.70)$ and $\tau_2 \in T_2 = (0.15 + \tau_1, 0.85)$ for HJ test. Then applying (5)-(7) for regression errors of each possible structural break. The smallest value of (5)-(7) is chosen to compare against the critical values of one –break point and two –break point test developed by GH and HJ[30], respectively, to accept and reject the null hypothesis of no cointegration.

5. Empirical Results and Discussions

In order to analyse the stochastic properties of the series under study, unit roots test have been performed. Augmented Dicky Fuller Tests, Phillip-Perron test and DF GLS Test have been applied. Table 2 shows the results of these tests. The results reveal that all series are non-stationary at levels but are stationary at first difference. The results of Zivot-Andrews unit roots have also been performed (see Table 3). ZA test identified three breaks dates of 1995, 1982 and 1998 in model C. Model C shows the intercepts and trend both in the series.

[30] The author would like to express thanks to Hatemi-J for using his GAUSS codes to test threshold cointegration.

Table2. Unit root tests

	ADF Test (Intercept and Trend)		PP Test (Intercept and Trend)		DF GLS Test (Intercept and Trend)	
	Level	First -diff	Level	First -diff	Level	First -diff
CO2	-3.08387	-6.132453***	-3.0839	-6.33883***	-2.75723	-6.0811***
Y	-0.98416	-5.507032***	-1.7958	-3.548821**	-2.19239	-3.2056**
Y2	-1.00858	-5.648971***	-1.8145	-3.540837**	-2.18421	-3.2143**
EN	-2.78131	-3.255526*	-1.5415	-5.032135***	-2.17563	-3.816***
TO	-2.64046	-8.845933***	-2.6839	-9.082058***	-2.64021	-8.7139***

Note: ***, **, * significant at 1%, 5% & 10% repectively

Table 4 reports the calculation of F-statistics by bound testing procedure based on the selected ARDL models. The optimal order of lag length selected by the model is based on Akaike (AIC) information criteria. The bound test indicates the presence of cointegration when CO2 is dependent variable. This is because the result shows that $F_{CO_2}(CO_2 \mid Y, Y^2, EN, TO)$ = 5.361 is higher than the upper critical value of F-statistics at 1% level of significance. Therefore we reject the null hypothesis of no cointegration in favour of alternative hypothesis of long run relationship among the variables specified in equation(1).

Table.3 ZA unit root tests

	Model A		Model B		Model C	
	t-Stat	Break year	t-Stat	Break year	t-Stat	Break year
CO2	-3.8915	1995	-3.8162	2000	-4.9427	1995
Y	-4.6783	1982	-3.6227	1986	-4.6395	1982
Y2	-4.7546	1982	-3.6853	1986	-4.732	1982
EN	---	---	-7.2734	1982	----	---
TO	-5.054	2004	-5.397	1999	-5.2901	1998

The result of Threshold cointegration test with regime shift are reported in Table 5. It shows that the modified ADF and Z_α* and Z_t* test reject the null hypothesis of no cointegration at 5% level of significance for Gregory-Hansen test of single breakpoint but in case of two break point of Hatemi-J (HJ) test, it does not confirm the results. The critical values for GH and HJ tests are available in GH (1996, pp109) and HJ (2008, pp501). The Threshold cointegration test for single break confirms the long run relationship between carbon emissions and rest of the variables in the equation.

Table 4. ARDL Cointegration Bound Testing Approach for the Model

ARDL Function	Optimal lag length	F- statistics	Inference
$F_{CO_2}(CO_2 \mid Y, Y^2, EN, TO)$	4,4,4,3,4	5.361***	Cointegration
Significance level	Critical Bound F- Values		
	Lower	Upper	
1%	3.29	4.37	
5%	2.56	3.49	
10%	2.2	3.09	

Note: ***computed statistics falls above the upper bound value at 1% level of significance

Table.5 Threshold cointegration results with Regime Shift

$F_{CO_2}(CO_2 \mid Y, Y^2, EN, TO)$	ADF*	Zt*	Zα*
GH test	-11.03**	-11.1**	-67.5
HJ test	-5.71 (0.41, 0.48)	-5.77 (0.14, 0.31)	-37.47 (0.14, 0.31)

** Significant at 5% level of significance. The critical values for GH and HJ tests are available in GH (1996, pp109) and HJ (2008, pp 501).

With the given existence of long-run relationship, the ARDL cointegration methodology is used to estimate the parameters of eq (1). The error correction coefficient is negative (-1.23) as required and very significant and its magnitude is quite high indicating a fast return to equilibrium in case of disequilibrium.

Table. 6 Long run coefficients based on ARDL cointegration results

Variables	Coefficients
Y	-39.85 (-1.10)
Y2	2.03 (1.09)
EN	0.11 (1.32)
TO	1.20 (2.69)
Constant	191.38 (1.10)

Author calculation. Figures in brackets are t- Statistics

The coefficients of the variables are not statistically significant except in case of trade openness. The long run elasticity of CO2 emissions, with respect to energy consumption is0.11 pointing that for each 1% increase in per capita energy, per capita CO2 emission rise by 0.11 percent. The elasticity of CO2 emissions with respect to trade openness in the long run is 1.2 indicating high contribution in CO2 during the estimation period. The statistically insignificance of square of per capita real income with positive sign shows that Saudi economy does not support the EKC hypothesis.

6. Conclusions

This paper has tried to analyse the relationship between CO2 emission, energy consumption, income and trade openness for Saudi Arabia by using the model provided by Halicioglu, F. The study used the ARDL bound test approach which confirms the existence of cointegration among the variables. Further, the study also examines the cointegrating relationship for Saudi Arabia using threshold cointegrating tests of Gregory- Hansen (1996) single structural break and two structural break Regime Shift model of Hatemi-J (2008) with an observation to test the EKC hypothesis. In case of ARDL model and single structural break model, there is presence of cointegration among the variables but in case of two –structural break Regime Shift, there is no cointegration.

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EXPLORING THE PERCEPTIONS OF TOURISM STUDENTS ABOUT INDUSTRIAL CAREER: A PERSPECTIVE FROM TOURISM ECONOMICS OF TOURISM INDUSTRY

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Abstract

The purpose of this study is to examine the attitudes and perceptions of current undergraduate tourism and hospitality students towards careers in the industry. For this study, a sample of 132 undergraduate students from hospitality and tourism management programs in was surveyed in research location. SPSS Version 21 was used to explore the data. Results shows that the career factor items students have concerns over include job security, pay and promotion, reasonable workload, and job-family balance offered within the industry. Surprisingly, the most alarming finding to come out of this study is that more than 40% of the tourism students are undecided and not willing to work in the industry, which means the industry lose more than one third of the qualified graduates. Implications for hospitality and tourism educators and industry employers are discussed.

Keywords: career perceptions; human resources; tourism industry; tourism education; hospitality profession.

1 Introduction

According to Baum et al. (1997), "tourism is a labor intensive service industry and dependent for survival (and for competitive advantage) on the availability of qualified personnel to deliver, operate and manage the tourism product". In this regard, Human Capital Theory (Schultz, 1971) shows that a people with more human capital, such as, skills, knowledge and expertise gained through education and experience, engage in better effort. Past empirical research supports the theory that there is a significant positive relationship between higher education and organizational success (Bates, 1990; Cooper et al., 1994; Kangasharju and Pekkala, 2002; Pennings et al., 1998). Because tourism industry is a an human-oriented and success is mostly depends on the personnel who are well-educated, satisfied, and committed with their jobs, thus it stays critical for the industry to have enough number of qualified graduates willing to engage in the industry (Aksu and Koksal, 2005; Kusluvan and Kusluvan, 2000; Richardson, 2012).

The Northern Cyprus tourism industry is a case in point. This island country has limited resources and expects development through tourism and at the same time retaining of qualified human resource stays critical. Many local industry stakeholders argue that while the future prosperity of the industry depends on the quality of its people, the Northern Cyprus hospitality industry has been facing managerial problems such as a shortage of skilled personnel (Alipour and Kilic, 2005; Arasli et al., 2006).

Against this backdrop, the current study aims to examine the attitudes and perceptions of current undergraduate tourism and hospitality students towards a career in the industry. There is a paucity of empirical research on this subject in the tourism and hospitality management

literature. Thus, the current study contributes to the tourism and hospitality management literature and aims to assist industry practitioners.

2. Theoretical background

One of the most important reasons for limited human capital is accepted as the negative image of the industry (Baum, 2006; Brien, 2004; Deery and Shaw, 1999; Travel Trade Gazette, 2000; Richardson, 2009 2010; WTTC, 2002). A study conducted by Choy (1995) reveals that the major reason of the poor image related tourism jobs was career for the school graduates. In identifying major concerns in tourism, Baum et al. (1997) by another study have approved the similar finding.

According to the findings of some other research, working conditions and limited wages were found to be an important reason for being an unattractive industry in which to work (Alipour and Kilic, 2005; Arasli and Karadal, 2009; Baum, 2007; Daskin, 2013; Getz, 1994; Pizam, 1982; Richardson, 2008 2009). These negative images have collectively affected the ability of tourism to attract and retain skilled staff compared to other industries (Christensen Hughes, 2002; Lucas and Jeffries, 1991; Richardson, 2008), and they are difficult to improve when the nature of the work and wages in tourism may be seen as less attractive than the work and wages in other sectors (Kelley-Patterson and George, 2001).

Sigala and Baum (2003) reported that new improvements are being done relate to tertiary education and this makes big impacts on learning system, curriculum design, and process. In this regard, educational changes and developments are also important for the tourism and hospitality sectors because the students start their career at university where they are offered with a foundation of knowledge and experience (Horner and Swarbrooke, 2004). Effective tourism education and training require a cooperative approach, involving partnerships among academic institutions, private organizations, and governmental authorities.

In this regard, tourism education programs at higher education institutions in Northern Cyprus have been offered over two decades as mandated by the Higher Education Act. There are at present **five universities** operating in Northern Cyprus and all universities offer tourism and hospitality programs at vocational, undergraduate and graduate level. It is worth noting that these programs at these universities are mostly conducted in English.

3 Research methodology

3.1 Sample and data collection

There are five universities in Northern Cyprus that offer tourism education at different levels. In order to examine the career perceptions and attitudes of undergraduate tourism students in Northern Cyprus, all the tourism and hospitality management schools from these universities were included in the survey. This provides a 100% sampling ratio among the schools. Specifically, the sample in this study consisted of last year tourism students, because these students are expected to have working experience and reflect the realities in the industry.

To receive permission for data collection, the campus administrators of the each university were contacted and provided with a sample of the questionnaire and an official letter explaining the purpose of the study. Upon receipt of permission, in order to test for any necessary revision of the research content, the questionnaire was pilot tested with 15 students

from the schools. As a result of the pilot test, no reason was found to change the survey instrument. In this field study, non-probability convenience sampling was conducted. The questionnaire was distributed to 195 last-year tourism students along with a cover letter and information assuring confidentiality.

The research team tried to collect data on a face to face basis and, so as to get a higher response rate. As a result, nearly most of the questionnaires were conducted on a face to face basis with the willing respondents and the rest of the respondents were asked to contact the research team via email or telephone to return the self-administered questionnaires by hand over the following days. Of the 195 questionnaires, 132 were completed and usable for further data analysis, yielding a response rate of 67.7%.

3.2 Questionnaire development and measures

Based on the literature review, the measurement for the related construct was adopted from the existing measure that had been used in the relevant literature (e.g., Richardson, 2012). The survey instrument used for the present study is organized of two parts. The first part consist of a twenty (20) item scale developed by Kyriacou and Coulthard (2000) was used to measure the extent to which tourism students believe a career in tourism and hospitality offers these items. Sample items from this scale are "A job that I will find enjoyable'' and ''Colleagues that I can get along with''. All measures used a 5-point Likert-type scale that ranged from '5' = 'strongly agree' to '1' 'strongly disagree'. The second part of the survey was composed of profile of the survey sample; gender, work experience, qualification for a managerial job, intention to work in the tourism industry, sector preference, and position expected upon graduation.

4 Analysis and results

4.1 Descriptive statistics

As it is shown in Table 1, the majority of respondents in this study are females with 52.3%. When we look at the working experience column, we see that 84.1% of the students have industry experience. Unexpectedly, one fourth of the respondents seem that they are not sure about their qualifications to take a responsibility of managerial job. Surprisingly, only 59.1% of the tourism students seem decisive to work in the tourism industry. The majority of the students have a preference for working in the accommodations and air transport sections with 39.9% and 25.8 % of the students have a preference for working in other sectors out of tourism. Over 60% of the respondents are expecting to work in supervisory and assistant department managerial jobs, including the students who preferred other sectors.

Table 1 Respondents' profiles

Gender	**Frequency**	**Percent**
Male	63	47.7
Female	69	52.3
Work experience		
Yes	111	84.1
No	21	15.9
Qualification for a managerial job		
Yes	90	68.1

no	9	6.9
undecided	33	25.0
Intention to work in the tourism industry		
yes	78	59.1
no	19	14.4
undecided	35	26.5
Sector preference		
accommodation	32	24.0
catering/restaurant	10	7.6
entertainment	8	6.0
travel/tour agency	12	9.0
air transportation	21	15.9
tourism education	15	11.4
other sectors out of tourism	34	25.8
Position expected upon graduation		
blue collar	6	4.5
supervisor	38	28.8
assistant department manager	44	33.3
department manager	13	9.8
assistant general manager	7	5.3
tourism lecturer	15	11.4
others	8	6.0

4.2 Psychometric properties of the measure

In order to test construct reliability, this study used Cronbach's alpha coefficient to examine internal consistency (Nunnally, 1978). As shown in Table 2, the overall reliability for the scale exceeded the acceptable cut-off value of 0.70 as suggested by Nunnally (1978), indicating that items are free from random error and internal consistency is adequate (Fornell & Larcker, 1981). In order to see whether the distribution of the values was adequate for conducting analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used and the construct exceeded the threshold value of 0.50 (0.904 > 0.50) as suggested by Field (2000). In addition, Bartlett's test of sphericity measure indicated that the multivariate normality of the set of distributions was normal for the construct, showing a significant value, $p = 0.000$ (< 0.05). Therefore, the data was feasible for conducting the factor analysis. In observing the communalities, as presented in Table 2, all factor loads were found to be significant and exceeded the recommended threshold value of 0.50 as suggested by Barclay, Thompson, and Higgins (1995). Means and standard deviation scores were also presented in Table 2.

Table 2 Students' ratings for career factor items the industry offers

Career factor items	Strongly agree / agree	Neither agree nor disagree	Strongly disagree / disagree	Mean	SD	Factor Loads
A job that I will find enjoyable.	70.3%	19.7%	19%	3.75	1.38	0.73
Job mobility—easy to get a job anywhere.	69.7%	19.7%	10.6%	3.83	1.16	0.64
A job where you gain transferable skills.	67.5%	22.0%	10.6%	4.04	1.18	0.67
The opportunity to travel abroad.	67.4%	12.9%	19.7%	3.84	1.42	0.68
A job that offers opportunity for further training.	66.7%	11.4%	21.9%	3.70	1.38	0.70
A job with high quality resources and equipment.	60.6%	9.1%	30.3%	3.52	1.56	0.69
A job where I can use my university degree.	59.8%	22.7%	17.4%	3.79	1.35	0.74
A career that provides intellectual challenge.	56.8%	25.8%	17.5%	3.70	1.24	0.64
A job which gives me responsibility.	56.1%	25.0%	18.9%	3.68	1.36	0.66
A job where I can care for others.	49.2%	21.2%	29.6%	3.20	1.30	0.77
A job where I will contribute to society.	47.8%	31.8%	20.5%	3.47	1.32	0.70
A job that is respected.	46.2%	33.3%	20.4%	3.46	1.29	0.60
Good promotion prospects.	45.5%	22.0%	32.6%	3.37	1.45	0.55
High earnings over length of career.	44.7%	30.3%	25.0%	3.40	1.34	0.72
Pleasant working environment.	44.7%	28%	27.3%	3.29	1.38	0.70
Colleagues that I can get along with.	41.7%	32.6%	25.7%	3.20	1.31	0.69
Reasonable workload.	31.0%	11.4%	57.6%	2.55	1.58	0.64
A secure job.	28.8%	34.8%	36.3%	2.90	1.42	0.63
A job that can easily be combined with parenthood.	27.3%	14.4%	58.3%	2.51	1.35	0.67
Good starting salary.	21.2%	11.4%	67.4%	2.17	1.31	0.59
Cronbach's alpha			**0.93**			

Notes: N = 132. SD: standard deviation. *All items are measured on five-point Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

As shown in the table 2, the first part of the questionnaire provides details of the degrees of agreement with each one of the 20 statements. For better understanding, perceptions were summarized in group percentages as "strongly agree and agree" and "strongly disagree and disagree". The overall mean value was 3.36 out of 5, which means the perception of the respondents towards the tourism profession, in general, was neither favorable nor unfavorable. Importantly, it is valuable to understand that which items are being offered by

the tourism and hospitality industry. As shown in Table 2, a noticeable fact is that there are only 9 areas where more than 50% of respondents claimed the industry offers those factors.

4.3 Independent samples t-test

In order to test comparison of the mean scores of career perception, this study used the independent samples *t*-test. As shown in Table 3, there is a statistically significant relationship between work experience and perceptions of tourism careers (0.000, $p < 0.05$). Again according to Table 3, there is a significant gender-based difference in the perception of tourism careers (0.001, $p < 0.05$). This result shows that male students have more negative perceptions towards working in tourism jobs than do female students.

Table 3 Independent samples *t*- test results

Working experience		**N**	**Mean**	**SD**	**t value**	**Sig. (2-tailed)**	**F value**
Perceptionssum	Yes	111	63.43	17.02	-6.69	0.000	39.325
	No	21	88.57	4.90			
Gender							
Perceptionssum	Male	63	61.93	19.64	-3.44	0.001	13.328
	Female	69	72.44	15.32			

Notes: *All items are measured on five-point Likert scales ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

5 Conclusion

The tourism industry is a locomotive one for the success of North Cyprus tourism economics. However it is not possible to create a strong tourism economy without strong human factor and the first point to realize this starts from education which means creating well-educated and trained people for the industry. In this regard, this study aimed to put a slight contribution by searching the tourism students' perceptions of industrial career. According to the study findings, the common attitude towards tourism as a profession appears to be neither positive nor negative. This is an alarming finding meaning some students have chosen tourism education, but seem to be undecided about tourism as a career. This finding also signals a gap between the educators, industry and students. The critical findings of the present study indicate that the tourism students are mostly concerned about job security, good starting salaries, reasonable workloads and job-family balance.

Another critical finding of the current study depicts that the students who had work experience in the industry mostly possess negative attitudes towards professional career in the industry. On the other hand, unlike the past empirical research undertaken by Roney and Oztin (2007), the current empirical results show that the female students have more positive perceptions towards working in tourism jobs, in comparison with their male counterparts.

Importantly, the critical finding from this study is the number of tourism students who have no future plans towards getting a tourism profession. More than quarter of them is not willing to work in the industry. Northern Cyprus is an island country dependent on tourism industrial economy where there is already shortage of qualified people. Under the circumstances, the industry should not have a chance to lose more than 40% of its qualified graduates.

The findings of this research study depict that more than 40% of the tourism students from the universities of Northern Cyprus are not willing to work in the industry; an industry that urgently needs well-educated and skilled personnel. This means the industry will lose more than one-third of qualified graduates. Therefore, industry practitioners and tourism educators should cooperatively deal with these problems as soon as possible if they want to improve the service quality of Northern Cyprus as a destination brand. The tertiary tourism educators, starting from the first year of education, should balance the theoretical education and training at a rate of 50% and 50%.

Tourism students should certainly become professionalized according to their occupational preferences such as travel agency, marketing, catering, and so forth. Through rotations in different branches, their skills and capabilities should be observed and directed accordingly. Standardized working conditions for trainees should be provided by the industry practitioners and all these training periods should be under the routine control of tourism educators. After a long period of training, new graduates will be ready to take managerial positions.

A rotational system in intensive customer-oriented areas can be improved for working days such that a group of employees may alternately not work at the weekends by working ten hours in the weekdays. Thus, this kind of managerial perspectives always undermine the image of the industry. Like all research, the present study has also some limitations. First, the study is based on a sample of students from Northern Cyprus universities and cannot be generalized to other countries. Empirical studies may be conducted in other places in order to find out current career perceptions and expectations of tourism students. More in-depth studies, possibly qualitative in nature, are needed to ponder the unrevealed reasons and aspects of career perceptions and expectations. Third, as a sample selection, this study included the last year tourism students in the survey. This is also a limitation and future studies could look at other levels of tourism and hospitality students.

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THE EFFECT OF FOREIGN BANK ENTRY ON THE FINANCIAL PERFORMANCE OF THE COMMERCIAL BANKS IN TURKEY

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Abstract

Due to the globalization and financial market integration, the investors are more fascinated to make their investments to foreign countries where there are opportunities. In this sense, the purpose of this study is to analyze the effect of foreign banks' entry on the commercial banks' financial performance participating in the domestic financial market for the case of Turkey. Our analysis are carried out for the period 2003:01- 2013:04 and the data used in the study are quarterly. In the analysis, 33 commercial banks are included in the study. As a model Ordinary Leat Square (OLS) method is used. The main findings of the study suggest that foreign bank entry increases loss reserve measured as loss reserve / total gross loans, maturity mismatch and decreases non performing loan of the commercial banks.

Keywords: Bank performance, foreign bank entry, OLS

1. Introduction

Owing to the globalization, foreign banks' interest in entering into the local economies has increased. There may be many reasons of these foreign banks entering into the other countries domestic markets. This may be because of they facilitate their trading activiries.

The positive and negative impacts of of these entries are also reported in several studies. Levine (1996), Walter and Gray (1983), Gelb and Sagari (1990) reported the potential gains of the domestic economy in the case a foreign bank enters to the market. Detragiache, Tressel and Gupta (2008) reported that in low-income countries the entry of foreign banks is relationed with less credit being extended. Kalluru and Sham (2009) examined how foreign bank entry affected the public sector banks in India and reported that it increased profitability, overhead expenses and non performing loans. Boadi (2015) analyzed the impact of foreign bank entry on the performance of domestic banks in Ghana for the period 1997-2014. The results show that it increased net interest income and return on assets. Opposing to their finding, Claessens, Demirguc-Kunt, and Huizinga (2001) found that foreign banks entry decreases the profitability and margins of the banks in domestic market.
In this paper, the effect of foreign banks entry on the financial performance of commercial banks are examined for the case of Turkey in terms of business orientation, efficiency, asset quality and stability.

The paper is organized as follows: In the second section data and methodology is presented and the last section concludes.

2. Data and Methodology

In the study, the period that is considered is between 2003:01-2013:04 and the data are quarterly. The data on banks are obtained from Banks Association of Turkey, Borsa Istanbul, Independent Audit Reports and Bankscope. In our dataset, 33 banks are included. Although as of December 2013, 50 banks are operating in Turkey, 17 of them are excluded. This is because either the data of the banks do not go back long enough, or transferred to the Savings Deposit Insurance Fund or Islamic banks.

We consider a set of variables to consider the effect of foreign bank entry on the commercial banks, denoted as $Y_{i,t}$, which are fee income/total operational income, non-deposit-funding/total funding, loans to deposits ratio, cost to income ratio, overheads/total assets, loan loss reserves/total gross loans, loan loss provisions to total gross loans, non-performing loans to total gross loans, maturity match, *z*-score, return on assets, equity to assets ratio, total assets (in logarithm), fixed assets/total assets. *D* denotes the foreign bank entry. In the case of a foreign bank entry exist in a particular date, 1 was assigned to the related term (quarter), otherwise 0 was assigned.
To be specific the following OLS model is estimated:

$$Y_{i,t} = a_1 + D_f + \varepsilon_{i,t}$$

The bank efficiency variables are; overhead cost (operating cost/total costs), cost/income. For the asset quality, loss reserves/gross loans, loan loss provisions/gross loans and non-performing loans/gross loans are taken. Loan loss provision is obtained by dividing loan loss provisions to net interest income which shows the quality of asset of a bank. When quality of the assets are not good, the negative affect is expected on the profitability of the banks. For the bank stability, maturity match (liquid asset/deposit and short term funding), *z*-score (the summation of return on assets and capital to asset ratio to standard deviation of return on assets) variables are used. The high *z*-score shows that the bank is stable and far from insolvency.

3. Conclusion

The empirical results of the OLS shows that foreign bank entry increases loss reserve measured as loss reserve / total gross loans where the statistically significant effect is not found in the study of Claessens, Demirguc-Kunt, and Huizinga (1998); increases maturity mismatch and decreases non performing loan of the commercial banks in the domestic market opposing to the study of Ukaegbu (2014) who reported in his study that, foreign banks enteries increases non performing loans of the domestic banks.

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THE DEVELOPMENT OF E-COMMERCE AND THE INFLUENCE OF CONSUMER CONFIDENCE ON THE ECONOMY OF IRAN

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The electronic era of commerce is a fundamental and vital part of businesses worldwide. The explosion of E-commerce has generated a vast array of opportunities for businesses to thrive, utilising the ability to pass information electronically.

The exploitation by businesses of this method of conducting commercial transactions has established a core business practise allowing companies to conduct their business in this Dot.Com age. However, these practises are not prevalent with in The Islamic Republic of Iran due to the compulsory government restrictions and the external sanctions enforced by the remainder of the world. This study has explored the influential factors that have prevented the enhancement of consumer confidence within Iran however the growth of e-commerce although sporadic has not been allowed to flourish.

The restrictions that are currently affecting Iran are inhibiting the development of an e-commerce industry that in turn is restricting the economy of both corporations and the country. In this research, the author has highlighted the effects that the restrictions imposed on the e-commerce and e-marketing sectors could, if removed or loosened, dramatically improve the economics of Iran. The potential technological advancements in Iran are vast, and the result of this study indicates that consumer confidence within e-commerce, if permitted to thrive could generate a huge impetus with the economy of Iran.

Keywords: electronic commerce; consumer confidence, data security; Iran

1. Introduction

The dramatic increase in internet and the detonation of its usage have facilitated the development of electronic commerce which is described as the movement of buying and selling, or the trading of products, service and information between and among the organizations and individuals all the way through computer networks including the internet. When investing in online/internet marketing, strategic thinking will bring to the best rewards. From the very inception of the Internet and the World Wide Web, the effect that has been felt on companies and corporations around the globe has transformed the running and functions of operating businesses. In terms of the most dramatic change, the marketing process has been the most influenced with companies now regularly using this new form of technology to manage their businesses and to develop new areas of expertise. With the generation of the information technology age, the utilization of the Internet has effectively increased business in companies and developed a new education process. By using the internet consumers from around the world are able to engage in cross global enterprise and experience a marketplace that has no geographical borders with the additional benefit of having no time constraints. By using an e-commerce strategy there is the opportunity to provide and exploit a complete marketing capability.

The companies that thrive with in this new marketplace are those that is able to analyze and react to the strengths and weaknesses of communities and other companies. To recognize the information available to them from across the Internet and to respond in a manner that suits the consumer via an e-commerce approach. The design and implementation of such opportunities will then be employed to then extend their competencies and use a variety of marketing options at their disposal e.g. direct marketing, transaction marketing and email marketing. All of these opportunities have been created from the development of the Internet and the World Wide Web.

2. Literature review

2.1 The definition of e-commerce

According to Different definitions have been suggested to describe electronic commerce and the vast majority is based upon previous experiences of utilizing electronic commerce (Bonyani, 2014). The European Commission stated in 1997 that electronic commerce was the "process and transmitting of electronic data including text, voice and image. Electronic commerce embraces various activities such as electronic transaction of goods and services, immediate delivery of digital demands, electronic payment, electronic stock exchange, electronic bill of lading, commercial plans, direct marketing and after sales services."

2.2 Islamic law and e-commerce

According to my recent research into Islamic law, it was apparent that the Quran was a key factor in the preparation by the lawmakers. All those who approach the topic of Islamic Law enter an area that cannot be easily compared to a western counterpart, as much of the laws of Islamic countries including Iran are governed by decrees set down by the Prophet. For example at the time of the Prophet, he specifically permitted some merchants to act in one way whereas others he strictly forbade. Therefore from my research current laws directly affected by those set down by the Prophet. As a result those sacred directions have provided specific guidelines from which to work within, however that have allowed a very constricted range for interpretation. Therefore the current lawmakers and legislators have a very limited source from which to apply their rules.

2.3 The Internet and e-commerce in Iran

The Iranian society has only recently experienced the opportunity of conducting electronic commerce and therefore has had limited experience of legislative processes to protect consumers. The legislation in relation to e-commerce was accepted and introduced by the Iranian Parliament (Majlis) on 7th January 2004, comprising of 81 articles designed specifically to align the Iranian development of e-commerce with that of global and domestic requirements (Mancuso, 2007). The laws comprised of six defining chapters on the subject of data exchange via digital/computer networks, which at the time was considered to be new technology.

Within the third subdivision of this law, data protection is introduced with a number of provisions, which are set down in three defining areas. These are highlighted as the following:

- The ability to have access to complete information
- The right of removal of personal data

- The ability to protect oneself from prejudicial contractual obligations

2.4 Situation of e-commerce in Iran

As a fledgling country in terms of the electronic commerce arena, Iran faces a lengthy road to reach what most would consider to an acceptable level. With the entry of the new technology into this field, it has raised new requirements in data processing, the interchange of information and the necessity for the proper tools and infrastructures for its implementation.
However, in Iran the main users of Internet are researchers in universities and specially designed centers in various cities however their access has a limited level.
In order to develop electronic commerce in the country and to enable the entry in the global market places and organizations such as the World Trade Organization, the country must first create a stable and efficient banking system (Najafi 2010). So, by using the information and communication technology it is vital for the creation of electronic banking and then to integrate it with the existing banking system, makes this a massive task. Although over the years some methods of providing electronic banking services such as ATM machines and debit cards in the banking system of the country have been implemented, there is still a long way to go to achieve the level of electronic banking in the developed countries.

2.5 Consumer confidence in Iran

Under the current regulations offered to protect consumers the legal system is divided in to two areas of protection.

1. Specific legislation – these are laws and regulations that have been reviewed and passed by the Majlis
2. Research Centres – designed to encourage progressive approach to review existing and create new legislation for review and enforcement by the government.

Consumers today however remain cautious and in some cases unprotected from the unscrupulous merchants, hence these policies are under continual review. As a result of these developments the consumers are discovering a wider array of products and facilities in the global market. It appears that as countries develop merchandises from outside markets are actively encouraged therefore creating an ideal opportunity for countries wishing to export their produce (Ranjbarian et al. 2011). In countries developing like Iran, this is actively encouraged too, together with regulations to improve the development of home based industries to compliment the arrival of the vast array of foreign products. With respect to precedents set with in e-commerce law, there are very few examples to enable the legislators of law to create a suitable framework from which to work within. The essence of an electronic contract are essentially set down that the parties to the contract are not required to be present however their acceptance can be verified by simply receiving electronic confirmation. This is essentially the same for e-payments, where the funds are not physically passed between parties, but by the transference of funds by electronic means either via credit card payment or through e-banking transferring (Haghighi et al. 2014). The most important infrastructures are namely appropriate communication and telecommunication networks, data interchange security, proper legal infrastructures, cultural readiness of the society and enterprises for accepting and using electronic banking services.

2.6 Association and the legal system in Iran

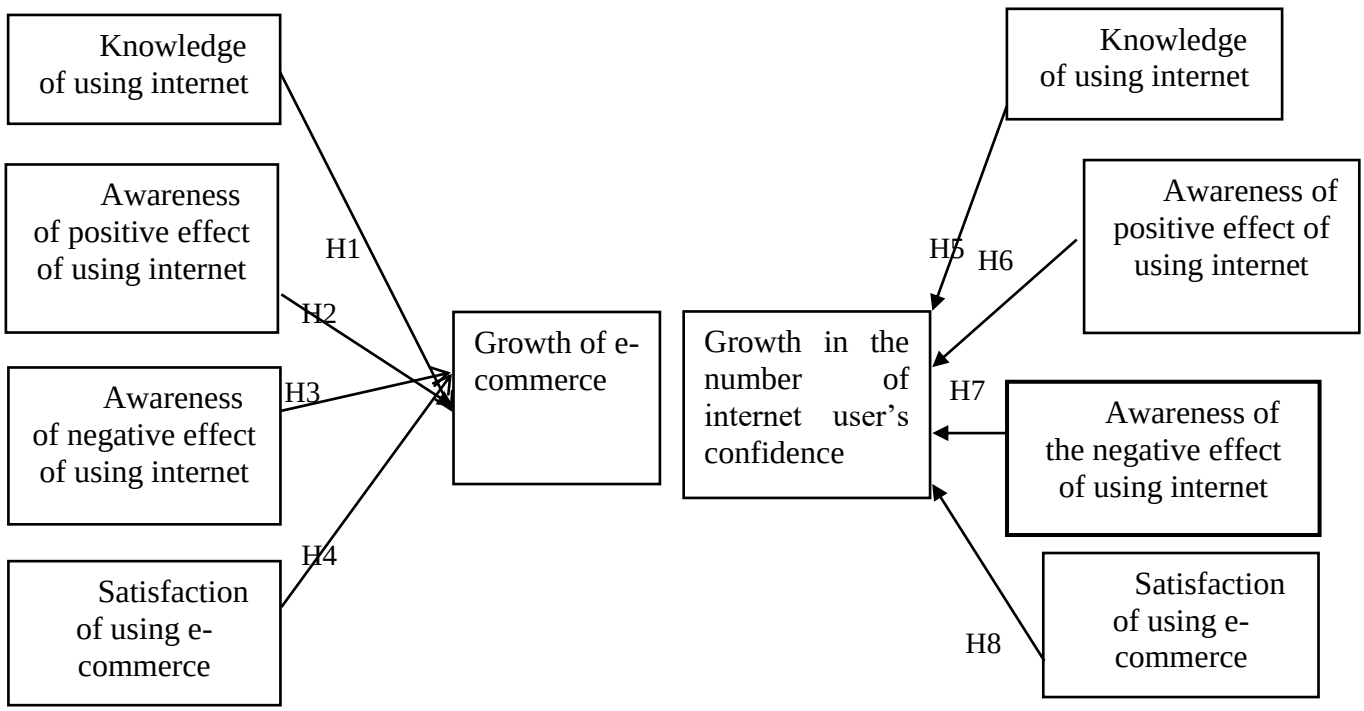
As the volume of the Iranian population increases at such a rapid pace, the Iranian government, are actively embracing these opportunities to explore the benefits of e-commerce and are conducting seminars to focus the population on the potential social effects of e-commerce. As a result the Iranian government is creating a structure within their country to facilitate a development within the e-commerce sector.

In order to provide consumers with adequate protection, there must be in place a process for them to actively seek recompense, so as the increase in internet traffic is inevitable following the development in technology, then so must the protection be improved. However, this user protection is not a specific legal process in the eyes of the law. Previous legal entities have in the past ignored and in some cases banned the process of legal redress in disputed matters arrived at from consumer dealings.

In accordance with the United Nations draft proposal (2006), with regards data protection, it underwent stringent reviews in the Parliament of Iran, following separate committee investigations in various other economic areas. The final approved draft was accepted and ratified in by the parliament in 2004 and became known as the Electronic Commerce Act (ECA).

3. Research model

This research project represents two subjects: The growth of e-commerce and the growth in the number of Internet users' confidence, and the influential factors on them. After achieving the results, the relationship between the growth of e-commerce and influential factors, and also the relationship between the number of the internet user's confidence and its influential factors will be investigated.



3.1 Research Hypothesis

For considering the impact of four factors, influential on growth of e-commerce in Iran, the following hypotheses are tested.

H1: There is a significant relationship between the knowledge of using the Internet and the growth of e-commerce in Iran.

H2: There is a significant relationship between the awareness of the positive effect of using the Internet and growth of e-commerce in Iran.

H3: There is a significant relationship between the awareness of the negative effect of using the Internet and the growth of e-commerce in Iran.

H4: There is a significant relationship between the satisfaction of using e-commerce and the growth of e-commerce in Iran.

For considering the impact of the four factors on consumer confidence within e-commerce the following hypotheses are tested.

H5: There is a significant relationship between the knowledge of using the Internet and the growth in number of Internet users' confidence in Iran.

H6: There is a significant relationship between the awareness of the positive effect of using the Internet and the growth in the number of Internet users' confidence in Iran.

H7: There is a significant relationship between the awareness of the negative effect of using the Internet and the growth in the number of Internet users' confidence in Iran.

H8: There is a significant relationship between the satisfaction of using e-commerce and the growth in the number of Internet users' confidence in Iran.

3.2 Methodology

In this research, the author used a self-administrated questionnaire method of delivery and collection of data from participants, with the questions being designed to collect data on respondents' attitude. A survey was conducted on 171 respondents in order to explore the issues that arise in relation to consumer confidence and effect on the growth of e-commerce. Participants were chosen randomly in both male and female groups in order to answer questions dealing with essentials of computer, Internet, and e-commerce.

The potential technological advancements in Iran are vast, and the result of this study indicates that consumer confidence within e-commerce, if permitted to thrive could generate a huge impetus with the economy of Iran.

3.3 Research Sample

In this research the population of interest is Iranian people. The sampling method, which is used in this study, is convenience sampling, based on the concept of random selection.

According to convenience sampling, which is a non-probability technique, the researcher is able to use their judgment in order to verify the sample size. Since this study was applied within just one place with a small population, plus due to lack of awareness of the respondents about the research topic and limited time and budget, this researcher decided to apply 200 questionnaires in order to generate a minimum required respondents. As a result a selection of people at a popular mall in Tehran were chosen randomly to generate a wider audience for the study to be tested on, to discover how they thought their involvement with the internet and e-commerce would influence their confidence. Finally from these 200 questionnaires, 171 questionnaires were collected thereby creating the sample size which this author considered adequate for this research.

4. Descriptive Analysis and result

To carry out this research 200 questionnaires were spread randomly among people from whom 171 respondents replied. From the 171 total respondents, the breakdown of gender responses was as follows: 45.6% were female and 54.5% were male.

The demographics of those respondents included the following; 15.2% were aged 19 or under, 23.4% were aged between 20 and 24, 28.1% were aged between 25 and 30, and 33.3% were aged 30 or more.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	93	54.4	54.4	54.4
	Female	78	45.6	45.6	100.0
	Total	171	100.0	100.0	

Gender distribution

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19 or under	26	15.2	15.2	15.2
	20-24	40	23.4	23.4	38.6
	25-30	48	28.1	28.1	66.7
	30 and more	57	33.3	33.3	100.0
	Total	171	100.0	100.0	

Age distribution

Computer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	158	92.4	92.4	92.4
	No	13	7.6	7.6	100.0
	Total	171	100.0	100.0	

Accessibility to computer

Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	150	87.7	87.7	87.7
	No	21	12.3	12.3	100.0
	Total	171	100.0	100.0	

Accessibility to the internet

Used

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	134	78.4	78.4	78.4
	No	37	21.6	21.6	100.0
	Total	171	100.0	100.0	

Used internet before

Ecommerce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	88	51.5	51.5	51.5
	No	83	48.5	48.5	100.0
	Total	171	100.0	100.0	

Use e-commerce

4.1 The result of factor analysis

According to table below, the result of KMO for growth of e-commerce and consumer confidence is 0.616 which is satisfactory and from Bartlett's test is significant at level 0.000.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.616
Bartlett's Test of Sphericity	Approx. Chi-Square	212.306
	Df	21
	Sig.	.000

Table below as a descriptive analysis which consisted of 34 items:
These items represent the questions from the questionnaire, which is followed by likert scale questionnaire.
IM: Knowledge of using the internet
PF: The awareness of the positive effect of using the internet
NF: The awareness of the negative effect of using the internet
SA: The satisfaction of using the internet

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
IM1	3.75	1.217	171
IM2	4.33	.797	171
IM3	4.29	.709	171
IM4	4.28	.883	171
IM5	3.70	.963	171
IM6	3.77	1.052	171
IM7	3.54	.989	171
IM8	3.40	.898	171
IM9	3.09	.963	171
IM10	3.87	.901	171
IM11	3.80	1.015	171
IM12	4.09	1.144	171
IM13	4.26	.918	171
PF1	4.50	.672	171
PF2	4.42	.658	171
PF3	4.39	.671	171
PF4	3.89	.836	171
PF5	3.92	.982	171
PF6	3.79	.941	171
NF1	3.81	1.101	171
NF2	3.97	.904	171
NF3	4.25	1.073	171
NF4	3.67	1.006	171
NF5	4.06	1.044	171
NF6	3.87	.924	171
NF7	3.93	.878	171
SA1	3.14	1.303	171
SA2	2.80	1.111	171
SA3	4.27	.742	171
SA4	4.06	.780	171
SA5	4.16	.822	171
SA6	4.19	.821	171
SA7	4.32	.771	171
SA8	3.99	.748	171

Descriptive analysis of all items

Total variance explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.904	29.130	29.130	9.904	29.130	29.130
2	4.732	13.918	43.047	4.732	13.918	43.047
3	2.655	7.809	50.856	2.655	7.809	50.856
4	1.801	5.298	56.154	1.801	5.298	56.154
5	1.679	4.938	61.091			
6	1.277	3.757	64.848			
7	1.050	3.088	67.936			
8	.996	2.928	70.865			
9	.928	2.729	73.594			
10	.831	2.444	76.038			
11	.746	2.195	78.233			
12	.658	1.935	80.168			
13	.581	1.710	81.878			
14	.541	1.590	83.468			
15	.524	1.541	85.009			
16	.494	1.453	86.461			
17	.439	1.291	87.752			
18	.430	1.266	89.018			
19	.375	1.102	90.120			
20	.362	1.065	91.185			
21	.330	.971	92.156			
22	.319	.937	93.093			
23	.273	.804	93.897			
24	.261	.768	94.665			
25	.251	.737	95.403			
26	.221	.651	96.054			
27	.210	.618	96.672			
28	.198	.581	97.253			
29	.189	.554	97.808			
30	.180	.530	98.337			
31	.167	.492	98.830			
32	.144	.424	99.254			
33	.129	.379	99.633			
34	.125	.367	100.000			

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.868
Bartlett's Test of Sphericity	Approx. Chi-Square	3650.040
	Df	561
	Sig.	.000

KMO and Bartlett's test for IK, PE, NE, SA

KMO table which is Rotated component matrix, also shows that contrary to the original model, the items of internet knowledge, positive effect of using internet, negative effect of using internet, satisfaction of using e-commerce were loaded in to four components.

4.2 The results of correlation analysis

For considering the impact of four factors, influential on growth of e-marketing in Iran, the following hypotheses are tested.
H1: There is a significant relationship between the knowledge of using the internet and the growth of e-commerce in Iran.
H2: There is a significant relationship between the awareness of the positive effect of using the internet and growth of e-commerce in Iran.
H3: There is a significant relationship between the awareness of the negative effect of using the internet and the growth of e-commerce in Iran.
H4: There is a significant relationship between the satisfaction of using e-commerce and the growth of e-commerce in Iran.
The result of correlation analysis for the above hypotheses is as follow:
According to the table 4.15, the correlation is significant at the 0.01 level for knowledge of internet and growth of e-commerce. Therefore it can be concluded that H1 is accepted, in other words, there is a significant relationship between the knowledge of the internet and the growth of e-commerce in Iran. This demonstrates that the knowledge of internet will positively influence the growth of e-commerce in Iran.
In table below, this shows that correlation is significant at the 0.01 level for positive effect of using internet and growth of e-marketing, which means H2, is accepted and it can be concluded that there is a positive effect that the using of the internet is effective in the growth of e-commerce within Iran.

Correlations

		Knowledge	Growth
Knowledge	Pearson Correlation	1	.401**
	Sig. (2-tailed)		.000
	N	171	171
Growth	Pearson Correlation	.401**	1
	Sig. (2-tailed)	.000	
	N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation positive and growth table in below demonstrates that correlation is significant at the 0.05 level, which means that the negative effect of using internet is also important in the growth of e-commerce with in Iran, therefore H6 is also accepted.

Correlations

		Positive	Growth
Positive	Pearson Correlation	1	.378**
	Sig. (2-tailed)		.000
	N	171	171
Growth	Pearson Correlation	.378**	1
	Sig. (2-tailed)	.000	
	N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Negative	Growth
Negative	Pearson Correlation	1	.164*
	Sig. (2-tailed)		.032
	N	171	171
Growth	Pearson Correlation	.164*	1
	Sig. (2-tailed)	.032	
	N	171	171

*. Correlation is significant at the 0.05 level (2-tailed).

Correlation negative growth demonstrates that correlation is significant at the 0.05 level, which means that the negative effect of using internet is also important in the growth of e-commerce with in Iran, therefore H6 is also accepted. Correlation is significant at the 0.01 level, which means that the satisfaction of using e-commerce is effective on growth of e-commerce in Iran, therefore H4 is also accepted.

Correlations

		Negative	Growth
Negative	Pearson Correlation	1	.164*
	Sig. (2-tailed)		.032
	N	171	171
Growth	Pearson Correlation	.164*	1
	Sig. (2-tailed)	.032	
	N	171	171

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		Satisfaction	Growth
Satisfaction	Pearson Correlation	1	.447**
	Sig. (2-tailed)		.000
	N	171	171
Growth	Pearson Correlation	.447**	1
	Sig. (2-tailed)	.000	
	N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

For considering the impact of the four factors on consumer confidence within e-commerce the following hypotheses are tested.

H5: There is a significant relationship between the knowledge of using the internet and the growth in number of internet users' confidence in Iran.
H6: There is a significant relationship between the awareness of the positive effect of using the internet and the growth in the number of internet users' confidence in Iran.
H7: There is a significant relationship between the awareness of the negative effect of using the internet and the growth in the number of internet users' confidence in Iran.
H8: There is a significant relationship between the satisfaction of using e-commerce and the growth in the number of internet users' confidence in Iran. As presented in table 4.21, the correlation for H5 is significant at the level 0.01. This therefore means H5 is accepted, in other words, there is a significant relationship between the knowledge of using the internet and consumer confidence within e-commerce in Iran.
According to table below, H6 is also accepted because the correlation is considered significant at the 0.01 level, therefore the positive effects of using the internet impact on the consumer confidence for the number of e-commerce users.

Correlations

		Positive	RULE
Positive	Pearson Correlation	1	.227**
	Sig. (2-tailed)		.003
	N	171	171
RULE	Pearson Correlation	.227**	1
	Sig. (2-tailed)	.003	
	N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.23 shows that H7 is rejected in order to negative result, consequently the negative effect of using internet has not been significant in relation to consumer confidence within e-commerce.

Correlations

		Negative	RULE
Negative	Pearson Correlation	1	-.130-
	Sig. (2-tailed)		.092
	N	171	171
RULE	Pearson Correlation	-.130-	1
	Sig. (2-tailed)	.092	
	N	171	171

Table below demonstrates, H8 is accepted, in order to correlation is significant at the 0.01 level, which means the satisfaction of using e-commerce can and will impact upon consumer confidence.

Correlations

		Satisfaction	RULE
Satisfaction	Pearson Correlation	1	.270**
	Sig. (2-tailed)		.000
	N	171	171
RULE	Pearson Correlation	.270**	1
	Sig. (2-tailed)	.000	
	N	171	171

**. Correlation is significant at the 0.01 level (2-tailed).

In order to study the relationship between these factors correlation analysis has been used and regarding to the result of table 4.19 the calculated correlation is 0.447.

H4: According to H4, “There is a significant relationship between satisfaction of using e-commerce and growth of e-marketing in Iran”. In order to study the relationship between these factors correlation analysis has been used and regarding to the result of table 4.19 the calculated correlation is 0.447.

Among these four variables, satisfaction of using e-commerce has the highest correlation value of(0.447), followed by knowledge of the internet (0.401), awareness of positive effect of using internet (0.378), the awareness of the negative effect of using internet (0.164).

In order for the author to demonstrate the co-relation between the satisfaction of using e-commerce and the growth of e-marketing, it was established that the two aspects go hand in hand. The element of trust in the e-commerce sector exists from the development of legislation put in place to protect consumers. The development of such legislation has confirmed that with more trust, consumers will inevitably feel more comfortable to use the e-commerce and therefore develop e-business. With the improvements of data security in the e-commerce field, the confidence in consumers will significantly grow and this in turn will

further improve the e-commerce sectors' economy. To allow e-marketing to flourish, the data security and the laws that cover it, should reflect the developing nature and thereby continue to provide protection for consumers. This will allow a fledgling economy to increase and therefore the country's overall economy to improve as a result. In order to study the relationship between these factors correlation analysis has been used and regarding to the result of table 4.21 the calculated correlation is 0.377.

Among these four variables, knowledge of the internet has the highest correlation value of(0.377), followed by satisfaction of using e-commerce (0.270), awareness of positive effect of using internet (0.227), awareness of negative effect (0.164).

5. Conclusions and Recommendation

After the Factor Analysis, it was discovered that three of the indicators were found not to be important on the growth of e-marketing and the growth of consumer confidence within e-commerce. However, we have retained them (albeit they have not had any effect on the result) in order to utilize them for correlation analysis.

5.1 Conclusions

H1: "There is a significant relationship between the knowledge of using the internet and the growth of e-commerce in Iran".

Consumer awareness of the uses of the internet and how it can affect their lives is a crucial aspect for the development of the e-commerce sector. The knowledge and the personal understanding of how the internet can positively affect personal development through education, personal research and a wide range of facilities offers the user the opportunity to explore a wide array of options. It is this awareness that is offering e-commerce a prospect of establishing a true growth in business opportunities. By providing consumers with the ability of understanding and being reassured by their knowledge, it is expected that consumers will be able thrive and therefore the e-marketing sector alongside.

H2: "There is a significant relationship between the awareness of the positive effect of using the internet and the growth of e-commerce in Iran".

The use of the internet and the positive affect it can generate in consumers lives can be highlighted in many ways, including accessing information previously unavailable at ones fingertips, the speed of finding out data and the benefit of discovering more facilities available. It is this kind of immediate response time that allows consumers to provide themselves with up to date information thereby allowing e-marketing opportunities for corporations to investigate. Therefore this is allowing a significant growth in e-marketing prospects and enabling businesses to thrive on the consumers' knowledge and understanding.

H3: "There is a significant relationship between the awareness of the negative effect of using the internet and the growth of e-commerce in Iran".

Consumer knowledge of the reverse side of the internet comes in many forms. Consumers are constantly being advised of the affects third parties accessing their personal data can have on them. The comparative high cost of accessing the internet and the poor connectivity which leads to the frustrations of delayed responses together with the underlying fear factor leads to a negative effect on the use of the internet. These concerns are inevitably hindering the

development of e-marketing prospects. Plus if one considers that e-marketing also generates junk mail/spam, the effects are therefore magnified still further. However the main and most relevant concern remains the constant threat of security breaches which prevents many from engaging in e-commerce.

H5: "There is a relationship between the knowledge of the internet and the growth in number of the internet user's confidence in Iran".
In order to generate an improved e-commercial environment the knowledge and training available to consumers will enhance the opportunities of increasing electronic business. It is the awareness of what the internet is capable of providing to individuals and companies alike that makes it so essential. The speed and access to data has enabled consumers to explore and refine their research capabilities. With this understanding of the internet comes a greater understanding subject to the availability of legislative protection. Should the government of Iran establish sustainable data protection legislation, therefore the prospect of improving e-commerce will be even greater.

H6: "There is a relationship between the awareness of the positive affect of using the internet and the growth in number of internet user's confidence in Iran".

The awareness of the effects the internet can have on consumers is growing and therefore the positivity that it generates is having a direct result on how consumers consider using the internet. The more that they understand, and become aware of how it can assist their lives the more they decide to use the facility. By engaging in more e-commercial activity the comprehension increases generating a positive effect and enabling e-commerce to thrive.

H8: "There is a significant relationship between the satisfaction of using e-commerce and the growth in the number of internet user's confidence in Iran".

Upon engaging in e-commerce consumers are discovering that with knowledge and understanding their confidence grows. However the implementation of decisive and strong legislation will further enhance the confidence. The government of Iran should support growth of e-commerce within their country to the whole population and provide a detailed framework of legal facilities to protect consumers and thereby enhance the growth of confidence.

After Factor Analysis, contrary to what expected, one of these factors (H7), is not significant in the growth in number of internet user's confidence in Iran. This result was also confirmed by professionals' point of view.

According to their opinion, high cost, poor connectivity, junk mail, (all items of negative effect) are not important to the growth of consumer confidence.

In order to improve consumer confidence within the e-commerce sector and e-marketing, it is crucial for the government of Iran to implement a strategy to increase consumer awareness and knowledge. This technical education should incorporate a wide range of topics to include the legislation in relation to e-commerce and consumer rights and the specific removal of restrictions of accessing data on the internet which will in turn offer the consumer a wider range of products and services. With the removal of restrictions this will allow consumers to explore the internet and increase their confidence in internet usage. By allowing a wider spectrum of services the consumers of Iran will be entitled to investigate e-commerce and to

establish an electronic capability. This inevitably will allow the e-commerce sector to grow and therefore the economy of Iran.

In order for the government of Iran to enable the growth of e-commerce, it should commence by proffering a reassurance of preventative measures to ensure consumers are protected against fraudulent activity and to ensure there is sufficient legislation against third party access. The satisfaction of consumers will provide a foundation from which the e-commerce sector will generate a significant impact of the overall economy for the country.

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THE RELATIONSHIP BETWEEN ELEMENTS OF INTERNAL FINANCIAL FLEXIBILITY IN MARKET PARTICIPANT'S DECISION MAKING

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Abstract

Financial flexibility is one of the most important issues in the analysis of financial market activists, especially in investing managers' focus to assess the capital resource risk. The aim of this paper is to examine the relationship between the components of internal financial flexibility for optimal decisions of the investors. Hence, the present study examines the relationship between the components of internal financial flexibility of 92 firms listed at Tehran Stock Exchange during 2005 up to 2014. Therefore, the extracted data were tested and analyzed with descriptive statistical methods and panel data approach. The results indicate that the debt capacity is not effective in predicting the retention amount of cash resources; yet, the amount of cash resource retention is considered as one of the factors which influences the determination of the debt capacity of firms.

Keywords: cash holdings, debt capacity, financial market, internal financial flexibility

Introduction

Financial flexibility is one of the fundamental issues in financial and investment management that leads to the improved performance of managers in the use of the resources. Financial flexibility is a basis for evaluating the company's liquidity. This power is a determinant of the entity's ability to make payments such as salaries and benefits to employees, payments to suppliers of goods and services, financial costs, investment, repayment of loan received, the distribution of profits among shareholders.

So, financial flexibility usually involves loss of some interests against obtaining some advantages. For example, maintenance of the easily traded assets in the market is marker financial flexibility. But this may be caused by the satisfied rate of return that is less than the rate that can achieve investment in the assets with lower liquidity. Financial flexibility could reduce risks associated with operations. Overall, in each level of operational risk a business unit with high financial flexibility is faced with fewer hazards compared with the business unit with lower financial flexibility (Hwee Chua, 2012).

Volberda (1998) defines financial flexibility as the ability in creating effective activities to seek changes in the business environment, as well as compatibility to predict the changes that have affected the company's goals. He believes that financial flexibility has two prospects:

- internal financial flexibility such as amount of the corporation capacity for compatibility with environmental needs

- External financial flexibility such as amount of the corporation capacity to influence the environment and to ultimately reduce vulnerability.

According to Volberda the main components of internal financial flexibility involves debt capacity and cash reserves held by the company. Determining the relationship between the components of the company's internal financial flexibility is very important because by revealing this issue corporate executives will be able to manage and control these components in maintaining company's internal financial flexibility as an important issue in the company. Thus it will be able to manage crises and unexpected problems and desirably take advantage of investment opportunities arising that it would ultimately increase the company's value.

So far, there has been no research which has directly investigated the interrelation between these two main components of internal financial flexibility, but some **studies have examined relationships between each components and other factors associated with them that we can refer to research conducted by** Saeidi & Abesht (2013) **on firm's debt capacity which investigate** the relationship between debt capacity and its several associated variables. The research conducted by the Gord et al (2009) examines the relationship between characteristics of corporate governance and cash holdings. Sepasi & Yablouyi (2007) also investigate the sensitivity of cash holdings level instead of cash flows. Hence, the present study examines the relationship between the components of the internal financial flexibility of firms listed in Tehran Stock Exchange by using its two main components, namely debt capacity and cash resources companies, how to measure the internal financial flexibility of the companies has been studied. This study continues with relevant research background as well as research methodology and hypotheses derived from the issue and research theory principle and then discuss the test results and finally concludes with respect to the theoretical fundamentals and hypotheses test results, and ends with some recommendations.

Theoretical background of research

In a company, creating the internal and external flexibility with optimal balance is important. Recent studies and research indicate that external flexibility refers to liquidity and ease of access to the company's financial instruments in the bond market and stock; hence, we can say that this type of financial flexibility is focused on the market capacity of the foreign capital and its restrictions on financing. Company's bonds and commercial papers as well as stock available in the market are significant in determining foreign financial flexibility. In other words, these factors are equally important in measuring and determining foreign financial flexibility (Hwee Chua, 2012). On the other hand, based the research carried out by Lins et al (2010) internal flexibility management directly depends on how to use cash flow and credit facilities as well as practical considerations and their interactions with them in time of crisis and external shocks. In fact, the most important factors to measure internal financial flexibility are as follows:

1. Cash assets and cash held by the company;
2. Credit lines and corporate debt capacity.

Internal financial flexibility

Mainly internal financial flexibility affected by company's liquidity and debt capacity that cash flow holding is a determinant of company's ability in to deal with risk and debt capacity. It also determine how company use the appropriate investment opportunities. Lack of internal flexibility causes company's internal financial resources not to respond to unexpected growth

opportunities. Thus, company seeks foreign financial resources that finally result in company face high and heavy costs, thus due to such costs the company can't have sufficient flexibility and make proper use of opportunities. Thus companies try to maintain their flexibility at the lowest cost; some of them maintain their own financial flexibility through policies related to the hold cash and others with a conservative debt policy based on excess debt capacity. In a research done with Lins et al (2010) cash flow and debt capacity are evaluated separately and the results have shown that there is little interaction between these two components. There elements are acceptable financial resources for company but determination of their relationship is not easy.

Cash flow

Cash, as a major factor in determining the company's internal financial flexibility, devotes a significant portion of company's assets to itself and is considered as an important current asset in the process of implementation of the company's operation and profit units. Residual cash varies from period to period and mainly depends on changes in the company's cash flow and dividend policy (Ozkan & Ozkan, 2004). Although, cash holding in the balance sheet is an important asset for company, the excessive holding of this asset can be a sign of inefficiency in resource allocation and can impose cost to company such as the cost of capital opportunity and the cost of representative associated with monitoring. In fact, flexibility cannot be achieved by holding large amounts of cash as two deterrent factors, namely tax and company costs, lead to some limitions (Foley et al 2007). Also, cost opportunity of cash, due to large amount of cash in company, results in the loss of firm's investment opportunities and reduction of the positive investments (Almeida et al, 2004). So, one of the most important tasks of financial managers is to forecast proper entry and exit of cash. In other words, cash management and maintenance of an appropriate level of cash in the company is one of the most important tasks in financial management process.

Debt capacity

Debt capacity, as another determinant of internal financial flexibility, includes the amount of debt that the company can create in its financial resources. This capacity enables the company not to suffer from financial difficulties and reduction in debt payments. Debt capacity depends on the nature of the assets of a company because the company's assets, on the one hand, are considered as collateral for these debts and on the other hand company's debt capacity should not exceed the purification value of the assets of a company. This is because the amount of debt created must be to the extent that in the event of company's bankruptcy, its assets could meet debt payments. The ability to determine the debt capacity is one of the ways that facilitates act to proper use of investment opportunities as well as to avoid wasting resources. By predicting maximum debt creation capacity in each investment opportunity, investors could design their finance program and with least likely to inability to repay their debts, act to began their activities. In fact, we can say that debt capacity represents the financial position of the company in creating additional debt because the company which is suffering from financial issues and has limited debt issuance, may fall into serious financial and economic crisis by creating additional debt. Therefore, the investigation of debt capacity by company's financial managers is an effective factor in increasing the likelihood of continuation of activities (Hwee Chua, 2012). Cash flow loan plays a vital role in internal financial flexibility and can be considered as an alternative to debt capacity. Debt capacity depends on the nature of company's assets, stability and predictability features of a company whereas cash varies from period to period and depends on changes in cash flow and dividend

(Bates et al, 2009). So since cash and debt capacity are partial alternatives for each other, companies often decide to create a balance between these two. Considering that the level of cash is more volatile than debt capacity, question arises whether the amount of cash on the same period depends on the company's debt capacity? Or, conversely, whether the company's debt capacity depends on the amount of cash kept the company in the same period. Ferreira and Vilela (2004) examined factors affecting cash in a sample of companies in Europe Union countries from 1987 to 2000. They make use of three different regression method includes: 1. Fama and Macbeth annual time series regression model, 2. cumulative cross-sectional regression and 3. Cross-sectional regression using the average of the variables in time series.The results showed that the cash inventory is positively affected by investment opportunities and cash flows and negatively affected by asset liquidity, leverage and size of the company. It further revealed that there is a negative relationship between bank debt and cash inventory and confirmed that having closer relationship with banks motivate companies to hold lower cash.

Research empirical background

Ozkan & Ozkan (2004) studied the factors affecting cash holdings of companies for an example of UK firms during the period of 1984 to 1999. Using cross-sectional regression model and cash flow final model, they emphasized on the managerial authority among other features of corporate governance including the board structure. This research shows that the company's cash flows and growth opportunities have a positive effect on its cash holdings. It further clarifies that there is significant evidence that current assets other than cash flow, bank debt and financial leverage have negative effects on cash flow level.

Subramaniam et al (2011) studied the relationship between the structure of the company and the amount of cash. Through the collection of evidences drawn from the Newyork Stock Exchange context during 1988 to 2006, they showed that companies with decentralized management structure keep a significantly lower level of cash comparing to those with centralized structure of management.

Hwee Chua (2012) in a study examined the relationship between the components of internal financial flexibility of Malaysian companies during 1990 and 2008. The results showed that the debt capacity is an effective factor in predicting cash holdings and cash resources are effective factors in predicting the company's debt capacity.

By selecting a sample of 150 companies during the period 2002 to 2006, Fakhari & Taghavi (2009) evaluated the effect of accruals quality on firms' cash residual. In this study accrual quality was measured with **dicho- dicho model.** The results showed that the variables used in this study, explains approximately 62% of the changes in residual cash flow of the selected sample companies during the research period. There is a significant and negative relationship between accrual quality and residual cash flow. This means that accruals quality as a factor affecting the amount of cash is important and relevant.

Saeidi & Abesht (2013) studied debt capacity of firms accepted on Tehran Stock Exchange from 2004 to 2008, except the companies which have delayed the repayment of bank debts. Information of 128 companies was analyzed by using unbalanced consolidated data model. The regression model they used was the Generalized Least Squares (GLS) and the data were adjusted with using cross-sectional data weighting. The results approved that there is a significant relationship between debt capacity and five desired variables that is ratio of fixed assets to total assets, day value of the company, amount of sale, type of industry, and debt-assets ratio of the previous period.

Research hypothesis

This study seeks to investigate the relationship between the components of internal financial flexibility. Thus, according to theoretical principals and research objectives, following assumptions are considered:

1. Dept capacity can significantly and inversely increase the prediction of company's cash holding level.
2. Cash holding level can significantly and inversely increase the prediction of company's dept capacity.

Research methodology

The data has been collected from the financial statements of companies listed on the Tehran Stock Exchange, Stock databases and Rahavard Novin software. The collected data has been prepared using Microsoft Excel and then final analysis was performed using software such as Stata, Eviews and Spss. Time period of this research has been considered as ten-year period based on firm's financial statements from 2005 to 2014. The research sample included those firms listed in Tehran Stock Exchange, which has the following features:

1. Companies that their **fiscal years ended in March.**
2. The date of acceptance of the companies in the Tehran Stock Exchange was before the fiscal year of 2005.
3. Between the years 2005 to 2014 have not changed fiscal year.
4. Due to the different nature, do not as financial, investment and banks institutions.
5. Fully provided the financial data needed to conduct this study during the studied period.

According to the surveys conducted in 92 companies in the period between 2005 to 2014 which have above conditions and were selected for statistical sample.

Variable definitions

1. Industry cash flow volatility (INDSTDCF) measurement follows BKS and is computed as the standard deviation of industry cash flow to assets.
2. Q ratio measures growth opportunities of firm. Firms with greater Q ratio have more growth opportunities and tend to keep more cash for investments. Q ratio is also the market-to-book value of assets ratio following Bates et al. (2009), computed as such.

Q = [Total assets – Book value equity + Market value equity] / Total assets

3. Firm size (Ln (AT)) is computed as the natural logarithm of total assets. Larger firms may hold less cash since borrowing is easy for reputable and large firms. However, larger firms have greater profitability and more ability to maintain a larger cash pool compared to smaller firms. (Bates et al, 2009).
4. Cash flow to assets (CF) is predicted to have a negative relationship with cash because firms with greater cash flow require less cash on hand for payments and investments. Following BKS (2009), CF is measured by the following:

CF = [Earnings - Interest - Tax - Common dividend] / Total assets

5. Networking capital (NWC) is predicted to have negative relationship with cash as working capital represents alternative to cash holdings and is readily convertible to cash. NWC is computed as follows:

NWC = Working Capital - Cash / Total assets

6. Capital expenditure (CAPEX) measures current period in addition to firm's tangibility and may be used as collaterals for additional borrowings, thereby reducing the need to hold cash. The multiplier effect of new capital investment on a firm's debt capacity is proven in Almeida & Campello (2004). CAPEX is measured using capital expenditure to total assets.
7. Book value of debt (BKDEBT) may have both positive and negative relationship with cash depending on the current level of debt. BKDEBT is measured as follow:
BKDEBT = Long term debt + Debt in current liabilities / Total assets
8. Net equity issues to total assets (EQUITY) is measured by the sale of equity less purchase of equity divided by total assets.
9. Debt capacity (DC) is measured as the maximum borrowing capacity of firm, estimated by the firm-level measure of expected asset liquidation value (less cash holdings) following Berger et al. (1996). Measurement of debt capacity implicitly assumes that it is in fact the tangibility of existing assets that matters because they provide collateral for total firm debt.
DC = Tangibility/Total assets = [Receivables + Inventory + PPE] / Total assets
10. Cash holdings equal cash and cash equivalents (marketable securities) reported in the balance sheet of financial statements. Cash is measured by using cash holdings to total assets.

Research models

To investigate the first hypothesis using BKS[31] model (2009), which considers factors affecting amount of cash flow, have designed a model to predict cash hold ability by companies, the amount of cash flow of companies listed in Tehran Stock Exchange has been predicted and calculated:

$$Cash_p = c + \alpha_1 INDSTDCF_{i,t} + \alpha_2 Q_{i,t} + \alpha_3 Ln(AT)_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 NWC_{i,t} + \alpha_6 CAPEX_{i,t} + \alpha_7 BKDEBT_{i,t} + \alpha_8 \Delta EQUITY_{i,t} + \varepsilon_i \quad \textit{(model 1}$$

In this model, debt capacity is not considered and mentioned as an effective factor in determining and predicting cash hold by company. Therefore, investigating whether debt capacity is effective as an independent variable in predicting company's cash holdings or not, debt capacity is added as an independent variable to previous referred model. In this level, the amount of cash hold by company is calculated and predicted with adjusted model and debt capacity. The adjusted model is as follows (Hwee Chua, 2012):

$$Cash_{p-DC} = c + \alpha_1 DC_{i,t} + \alpha_2 INDSTDCF_{i,t} + \alpha_3 Q_{i,t} + \alpha_4 Ln(AT)_{i,t} + \alpha_5 CF_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CAPEX_{i,t} + \alpha_8 BKDEBT_{i,t} + \alpha_9 \Delta EQUITY_{i,t} + \varepsilon_i \quad \textit{(Model 2}$$

By comparing the results of the above two models with actual residual, if the results of the first model is close to the actual values of cash in the company's financial statements, it can be concluded that in Iranian companies debt capacity is not effective in predicting cash, but if the results of the second model is close to the actual values of cash, it can be concluded that in Iranian companies debt capacity is effective in predicting cash. To investigate the second hypothesis, self by taking advantages of model provided by Sufi (2009) and Campello et al (2011) that considering factors affecting debt capacity have design a model to investigate and predict corporate debt capacity, debt capacity of companies listed at Tehran Stock Exchange is predicted and calculated that the model is as follows:

[31] Bates, T, Kahle, K. and Stulz, R

$$DC_p = c + \alpha_1 CF_{i,t} + \alpha_2 INDSTDCF_{i,t} + \alpha_3 Ln(AT)_{i,t} + \alpha_4 Q_{i,t} + \varepsilon_{i,t}$$

(Model 3

In this model, cash resources are not considered and mentioned as an effective factor in determining and predicting company's debt capacity, so to investigate whether cash holding is effective as an independent variable in predicting company's debt capacity or not, cash flow is added as an independent variable to previously referred model. In this level, the amount of company's debt capacity is calculated and predicted with adjusted model and cash flow. The adjusted model is as follows (Hwee Chua, 2012):

$$DC_p = c + \alpha_1 CF_{i,t} + \alpha_2 Cash_{i,t} + \alpha_3 (CF * Cash)_{i,t} + \alpha_4 INDSTDCF_{i,t} + \alpha_5 Ln(AT)_{i,t} + \alpha_6 Q_{i,t} + \varepsilon_{i,t}$$

(*Model 4*

So as mentioned beafore, by considering the results of these models with debt capacity, if the results of the first model to be close to the actual values of debt capacity, it is concluded that in Iranian companies cash flow is not effective in predicting cash, but if the results of the second model to be close to the actual values, it is concluded that in Iranian companies the cash flow is effective in predicting company's debt capacity.

Research findings

Descriptive statistics

The results of the descriptive analysis of the data are given in Table 1. As can be observed the mean, median, minimum, maximum and standard deviation of the variables are listed in the table below. Considering the obtained values we can say that company size variable has lowest stability and net equity issues due to the highest standard deviation between research variables. The lowest standard deviation has maximum stability over a period of ten years.

Table 1				
Descriptive Statistics				
			Panel A: Descriptive Statistics (n=920 firm-year)	
Variable	**Mean**	**Std. Dev**	**Min**	**Max**
INDSTDCF	.1343	.5357	.000	6.28
Q	1.59	.9462	.495	10.41
Ln(AT)	27.19	1.52	21.23	32.27
CF	.1030	.154	-.2957	1.30
NWC	.093	.444	-1.52	5.60
CAPEX	.054	.066	2.36	.5236
BKDEBT	.219	.501	.0004	6.536
EQUITY	.025	.056	-5.06	.5863
DC	.769	.281	.0042	4.25
Cash	.043	.087	.00041	4.52

Inferential statistics

In Table 2 results from estimation of initial model of the hypothesis 1 (model 1) and adjusted model related to hypothesis 1 (model 2) has been presented which is as follows:

Table 2: Results of xtgls regression		
Variables	**Model 1**	**Model 2**
	Coefficients (z)	**Coefficients (z)**
Constant	.033 (.085)	-.070 (.719)
DC	-	.103 (.059)
INDSTDCF	.005 (.000)	.003 (.780)
Q	.002 (.069)	.002 (.564)
Ln(AT)	-.0004 (.545)	.0009 (.874)
CF	-.010 (.127)	-.0092 (.654)
NWC	.002 (.548)	-.029 (.356)
CAPEX	.010 (.956)	.086 (.596)
BKDEBT	.029 (.000)	.016 (.219)
EQUITY	-.009 (.632)	-.004 (.917)
Number of obs	920	950
Number of groups	92	92
Time periods	10	10
Adjusted R-squared	.40	.48
Wald chi2(8) & F(9,91)	52.44 (.000)	1.71 (.098)
CHOW TEST	1.57 (.000)	1.73 (.000)
Housman test	4.49 (.000)	49.55 (.000)
Wald test	5.8 (.000)	3.9 (.000)
Wooldridge test	3.9 (.049)	1.36 (.246)
$Cash_p = c + \alpha_1 INDSTDCF_{i,t} + \alpha_2 Q_{i,t} + \alpha_3 Ln(AT)_{i,t} + \alpha_4 CF_{i,t} + \alpha_5 NWC_{i,t} + \alpha_6 CAPEX_{i,t} + \alpha_7 BKDEBT_{i,t} + \alpha_8 \Delta EQUITY_{i,t} + \varepsilon_i$		

$$Cash_{P-DC} = c + \alpha_1 DC_{i,t} + \alpha_2 INDSTDCF_{i,t} + \alpha_3 Q_{i,t} + \alpha_4 Ln(AT)_{i,t} + \alpha_5 CF_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CAPEX_{i,t} + \alpha_8 BKDEBT_{i,t} + \alpha_9 \Delta EQUITY_{i,t} + \varepsilon_i$$

According to the table 2, the meaningful level of Limer F test is less than 5% in the first and second model, so using the panel data is confirmed at the confidence level of 95%. Also, the Hausman test is less than 5% in both models. As a result, the model is accepted with fixed effects. Variance heterogeneity is tested with adjusted Wald test; in both models, the meaningful level of adjusted Wald test is less than 5% indicating that there is variance heterogeneity at first and second models. The meaningful level of wooldridge test is less than 5% at first and second model and more than 5% at second model; this shows the existence and absence of serial autocorrelation in models respectively. It should be noted that final estimation of models is after removal of the variance heterogeneity and serial autocorrelation. At first model, among all variables, just deviation variables of company, cash flow from industry, opportunities of company growth and the book value of debt are meaningful and with the confidence of 90% has direct relation with dependent variable. In the first regression model is not point to debt capacity as an effective factor in predicting and determining of stored cash money. So, to check whether debt capacity as an independent variable in predicting the value of companies cash is effective or not, the adjusted model with debt capacity (model 2) calculate and predict the stored cash of companies. The results of the estimation of second model of regression shows that debt capacity has direct effect on the maintenance level of cash resources; however, the level of debt capacity is meaningful in the level of 10%. Hence, above assumption is accepted with the confidence of 90%.

In Table 4 results from estimation of initial model of the hypothesis 2 (model 3) and adjusted model related to hypothesis 2 (model 4) has been presented as follows:

Table 3: Results of RE GLS regression with AR(1) disturbances

Variables	**Model 3**	**Model 4**
	Coefficients (z)	**Coefficients (z)**
Constant	1.72 (.000)	1.92 (.000)
CFE	-	-.118 (.077)
Cash	.672 (.000)	-.372 (.002)
CF* Cash	-	.8.94 (.000)
INDSTDCF	.005 (.836)	-.003 (.904)
Ln(AT)	-.035 (.000)	-.041 (.000)
Q	-.013 (.000)	-.025 (.006)
Number of obs	920	950
Number of groups	92	92
Time periods	10	10
Adjusted R-squared	.16	.24

Wald chi2	81.90 (.000)	234.94 (.000)
CHOW TEST	4.64 (.000)	5.41 (.000)
Housman test	2.91 (.572)	4.70 (.582)
Wald test	1.4 (.000)	2.8 (.000)
Wooldridge test	4.39 (.038)	5.07 (.026)
$DC_p = c + \alpha_1 CF_{i,t} + \alpha_2 INDSTDCF_{i,t} + \alpha_3 Ln(AT)_{i,t} + \alpha_4 Q_{i,t} + \varepsilon_{i,t}$		
$DC_p = c + \alpha_1 CF_{i,t} + \alpha_2 Cash_{i,t} + \alpha_3 (CF * Cash)_{i,t} + \alpha_4 INDSTDCF_{i,t} + \alpha_5 Ln(AT)_{i,t} + \alpha_6 Q_{i,t} + \varepsilon_{i,t}$		

According to the table 3, the results of Limer F test and Hausman test in the third and fourth models respectively shows panel data with random effect of intercept. Also, the results of adjusted Wald test and Wooldridge test shows that in both models, respectively, variance heterogeneity and existence of serial of autocorrelation are confirmed.
It should be noted that final estimation of models is after removal of the variance heterogeneity and serial autocorrelation.
At the third model, cash flow and size of the company have direct and reverse relation with dependent variables respectively while this relation is statistically meaningful. Although, model 3 is not point to the cash resources (as an effective factor at predicting and determining the company's debt capacities), so for check whether the maintenence level of cash resources as an another independent variable in predicting of the company debt capacity is effective or not, by adjusted model with cash (model 4) calculate and predict the companies debt capacity.

The results of regression estimation of model 4 shows that cash flow variable, cash, the size of the company, growth opportunities, and diversion of company's cash flow and cash flow itself have reverse relations with debt capacity whereas the productive variable of cash flow at cash has direct relation with debt capacity.

According to the results, cash has direct and reverse relation on the company's debt capacity; therefore, hypothesis 2 is accepted. Hence, it can be said that the maintenance level of cash resources can increase predicting of company debt capacity meaningfully and conversely.

Conclusion and suggestion

The main objective of this paper is to examine the relationship between the components of the internal financial flexibility of the companies listed in Tehran Stock Exchange. According to the results from hypothesis testing it can be said that the debt capacity has no effect on cash holdings in companies listed on Tehran Stock Exchange. These results are consistent with the findings of Ferreira and Vilela, (2004), Ozkan and Ozkan (2004) and contrary to the results of Hocho (2012). Also according to results we can say that cash flow is as an effetive factor in determining and predicting Iranian firm's debt capacity and this finding is consistent with findings of Ferreira and Villela (2004) and Ozkan and Ozkan (2004) and Hwee Chua (2012). Considering that the financial flexibility has both internal and external dimensions, it

is recommended that a research should be done on components of foreign financial flexibility companies listed on Tehran Stock Exchange. It can be suggested to financial managers that in order to have dynamic and appropriate internal financial flexibility, they should pay special attention to firm's cash holding. Because cash resources, in addition to being one of the major causes of internal financial flexibility, play an important role in determining debt capacity as another factor in creating internal financial flexibility. Hence it can be concluded that cash resources play a very important role in forecasting the company's financial flexibility. So managers will be able to desirably manage crises and make efficient use of unexpected investment opportunities and increase the firm's value with continuous attention to cash flow holding as an effective factor in the management of financial flexibility.

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THE RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT, ECONOMIC GROWTH AND UNEMPLOYMENT IN TURKEY: AN EMPIRICAL ANALYSIS FOR THE PERIOD OF 2008-2015

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Foreign direct investment has an important role for many developing countries. Because foreign direct investment inwards may provide a positive contribution to economic growth, employment and technology. So foreign direct investment is extremely important for Turkey economy. Nevertheless, global financial crisis has affected the foreign direct investment negatively both in Turkey and in the world. In this study, the effect of foreign direct investment on the economic growth and unemployment after the global financial crisis in Turkey has been analyzed. The analysis used quarterly data from the period 2008-2015, the ADF unit root test, the PP unit root test, impulse-response analysis, variance decomposition and Granger causality tests, has been applied. As a result, in parallel similar studies in the literature, it has been observed that foreign direct investment has a positive impact on economic growth and unemployment. The other words, the increase in foreign direct investment not only trigger economic growth but also decrease unemployment by creating employment.

Key Words: Foreign Direct Investment, Economic Growth, Unemployment, Turkey, VAR Analysis

*This study was derived from the postgraduate thesis titled “The Relationship Between Foreign Direct İnvestments and Growth: An Empirical Analysis for Turkey After Global Financial Crisis ”

INTRODUCTION

After industrial revolution, the significance degree in production factors economically changed. The importance of capital and labor factors come into prominence much more. Capital has begun to go toward the regions it will make more profit and countries have begun to attract capital to their own countries. This cycle has become more fast and flexible at the present days with also the effect of globalization. In commercial meaning, the world, whose borders are removed, has been begun to be seen as a single country for capital owners. Capital owners, as in the past, also plan their international investments according to the economic and political stability, cheap labor force, cheap raw material.

Direct foreign capital entering country, also with the effects of privatizations made in 2007, reached the peak point. However, just as 2008 global crisis affected all the world, negatively affected Turkish economy as well. Turkey postponed global capital investment plans and, following economic developments, altered its investments according to the new conditions. Foreign investments, which show an increase compared to the previous years before crisis, are still continuing their unstable process after crisis in global economy.

The aim of the study, is to investigate the effect of foreign direct investments in Turkey on economic growth and employment in the period after 2008 Global Crisis. In this direction, firstly, the process of foreign direct investments in Turkish economy was historically discussed. Then, it was investigated at what extent 2008 global crisis affects the foreign direct capital investments inflow the country, and effect of these investments on economic growth and employment was tested by means of VAR analysis.

1. Foreign Direct Investments and Turkish Economy

Foreign direct investments is that multinational companies (MNCs) and investors make long term investments in the political borders of another country out of their own countries. This sort of investments occur in the way of acquiring an existent company, taking in partnership, or making new investments. According to IMF, foreign direct investment is cross-country investments, which multinational companies make out of the countries, where their headquarters are located, in order to stay long time in the different economies (IMF,1993a:83).According to Kumral (2001:6), foreign direct investment is the investments, which are carried out by means of global companies being in active in at least two countries, including home country.

In this direction, investments in the way of that cross-country companies making trade and investment in global scale attempt the new investments in countries different from countries, in which their headquarters are located; and that they take in partnership in the existent local companies, are defined as foreign direct investments. The country making investment is called “parent company”; the companies in the invested countries, “subsidiary company”; “foreign company”, or “branch” (Seyidoğlu, 1998:711).

Together with the foundation of Republic, after İzmir Economic Congress in 1923, in the framework of liberal approach, it was observed that foreign direct investment was made on the certain areas. But, these investments were actualized via establishing local partnership. In the early years of Republic, while the number of companies with foreign capital was 94, when reached 1929, the number of companies with foreign capital rose to 114 and $ 30 million of capital entered the country. After Second World War ended, several legal arrangements were conducted so that foreign direct investment could enter the country. With the decision made, dated April 22, 1947, and numbered 13, based on the Law on Protection of Value of Turkish Currency, “it was foreseen that foreign capital was brought as foreign currency and invested on the areas such as agriculture, industry, transportation, and tourism. Provided that the government found the investment of foreign capital useful for development of the country and in quality increasing export, it can transfer some part of profit that forms abroad” (Koçtürk and Eker, 2012 :39).

In the framework of import substitution industrialization plan, thanks to these incentives the government presents to the certain holdings , these holdings began to have voice as much as involved in industrial policies. These holdings began to draw the companies, which will undertake a common enterprise with them, to the country with the support of government, not

multinational companies (MNCs) that will compete with them. Large states, with the partnerships they establish with MNCs, did not left living areas for SMSEs much more.

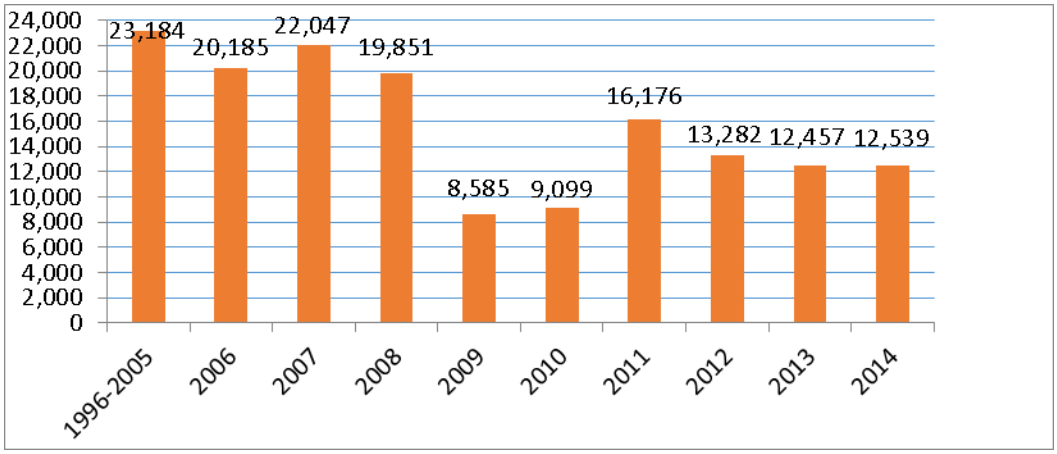
When reached 1980s, Turkish economy experienced a transition period from conservative economic policy to free economy. This actualized after the package of economic decisions of January 24, 1980 and Turkey passed to outward- oriented liberal economy. After January 24 decisions, in 1981, foreign investor coming to the country increased.

With the enactment, numbered 32, issued on August 11, 1989, based on the law on Protection of Value of Turkish Currency, quantity restrictions on foreign capital were removed and it was allowed for the foreigners to be able to make purchase in capital market in Turkey. This state caused the increase in foreign direct investments. Beside this, with coming of enactment into force, in Turkey, the rise of real interest rates resulted in important increases in the investments foreign direct capital (Göz, 2009 : 87).

High inflation, economic instabilities, amount of increasing domestic and foreign debts, and high public deficits pushed Turkish economy into 1994-1999-2001 crisis. Any of economic reforms made between the years of 1980-2001 could not prevent these crises. The causes such as high real interests and insufficient domestic savings led increasing effects of economic crises. The reforms made for foreign investors and tax incentives did not become effective in crisis environment (Şener and Kılıç ,2008 : 22-49).

In Turkey, for the encouraging FDIs, Agreement of Mutual Protaction and Encouragement of Investments was signed with 85 countries. With 76 countries, agreement on prevention of double taxation was signed and with 19 countries, Free Trade Agreement (Müsiad, 2014 68). As a result of the law issued in 2002 and economic and political stability, inflow of foreign direct investment has increased every years and reached the peak point in 2007. After 2002, increase of privatizations functions as an instrument for foreign capital to enter Turkey (Bayraktar, 2003:47).Some of large scale privatizations and acquirements of company are the sales of Türk Telekom, Turkcell, Garanti and Fortis Bank.

Financial crisis beginning in US economy, created by housing credits, spread all economies of the world in the short time and this crisis would also negatively affect international investments, since it will result in recession. One of the most affected from the crisis is also Turkey. With the effect of privatizations, acquirements of companies, and mergers, between 2004-2007, high amount of foreign direct investment was taken in the country and economic growth was realized. A point to be paid attention here is that foreign direct investors entering Turkey realize company acquirements and mergers instead of making new investments. These companies acquired companies via privatizations and made on investments on real estates. Due to the increase of costs and risks after crisis, inflow of foreign direct capital will decrease and this will negatively affect the growth (Alagöz et al, 2008: 79).



Graph 1: International Foreign Direct Investments in Turkey in the Period of 1996-2014 (Million Dollar)

Source: Central Bank of Turkey Republic, www.tcmb.gov.tr

As will be seen from Graph 1, foreign direct capital investments entering Turkey showed increase. One of the reasons for total investments not to reach 2007 level is that privatization is more during 2007 and before.

Mortgage crisis experienced in USA pushed international capital into the markets, where it can make more profit. However, after 2008 Crisis, foreign capital investments made in the world did not follow a stable course. The data of economic growth in the world economy prompted investors to behave more prudent.

Table 1: Developments in The Economic Growth of Turkey in the Period of 2002-2015

Years	GDP (Billion USD)	Per Capital Income (USD)	Growth (%)	Inflation(%)	Unemployment (%)	Fiscal Deficit (%)	Current Deficit (%)
2002	231	3.492	6,2	29,8	10,8	-11,2	-0,3
2003	305	4.565	5,3	18,4	11	-8,8	-2,5
2004	390	5.775	9,4	9,3	10,8	-5,4	-3,7
2005	482	7.036	8,4	7,7	10,6	-1,5	-4,6
2006	526	7.597	6,9	9,6	10,2	-0,5	-6,1
2007	649	9.247	4,7	8,4	10,3	-1,6	-5,9
2008	742	10.444	0,7	10,1	11	-1,8	-5,7
2009	617	8.561	-4,8	6,8	14	-5,5	-2,2
2010	732	10.079	9,2	6,4	11,9	-3,6	-6,2
2011	774	10.444	8,8	10,5	9,8	-1,3	-9,7
2012	786	10.497	2,2	6,2	9,2	-2,2	-6,1
2013	823	10.822	4,2	7,4	9,7	-1,2	-7,9
2014	800	10.404	2,9	8,2	10,9	-1,3	-5,4
2015	718	9.261	4	8,8	10,3	-1,2	-4,5

Source: Central Bank of Turkey Republic, www.tcmb.gov.tr; World Bank Database, www. worldbank.org

Economic growth has fallen after 2011.The reason for this case is the internal dynamics of the country, and the effect of slowing in world economy has a major share. As will also be seen from the data of world investment report, total world investments show a decrease. This state mostly affects the developing countries economies.

2. Literature

In the literature, while the studies dealing with the relationship of foreign direct investments and economic growth are quite more, the studies dealing with the relationship of foreign direct investments, economic growth, and unemployment are very restricted.

Balasubramanayam et al.(1996), as a result of the studies they carried out on 18 developing countries, which follow export -oriented development policy, identified that foreign direct capital investments had a positive effect on economic development and, in addition, with liberalization of foreign trade, that there was a linearity relationship between foreign direct investments and economic development.

DeMello (1999), in his study, which is related to the period of 1970–1999, on OECD member and non- OECD member country, observed that according to the production increase, increase in total factor productivity, increase in capital accumulation, and level of technological deficit, the relationship of foreign direct investment and growth varied. In this direction, as technological deficit increases, the effect of foreign direct investments on the growth falls.

Alfaro et al.(2001) studied the effect of presence of domestic financial market and foreign direct investments on economic growth. As a result of this study including the period of 1975-1995, they identified that the presence of domestic financial market and foreign direct investments are the effective instruments in increasing economic growth.

Mencinger (2003) studied the range of 1994-2000 of the countries passing to market economy. He did not find any cause – result relationship between FDI/GDP and fixed capital investments/GDP. He attributed the cause of this to rapidly performed privatization and company acquirements.

Lyroudı et al. (2004), in the study they carried out, observed that, as a result of econometric analysis they carried out on economic growths of transition economies, foreign direct investments did not have an important effect on the growth of transition economies.

Demirel (2006) studied how foreign direct capital affected GDP of Turkey. In his study, he, using the least squares technique with three stages, which include growth equations, made economic modeling and, reached the conclusion that GDP of Turkey was positively and significantly affected from in foreign direct investment inflows.

Khaliq and Noy (2007) studied the sectorial effect of foreign direct investments in Indonesia and, at the end of the studies, observed that foreign direct investments positively affected the economic growth but in respect with the sectors, showed change.

Ekinci (2011), in his study, using the data of the period of 1980-2010, studied the relationship between foreign direct investments, economic growth and employment. According to the results of causality analysis, while a long term relationship was found between foreign direct investments and economic growth, between foreign direct investments and employment, any relationship could not be identified.

Özcan (2014), in his study, studied the periods of 1980-2003 and 2003-2012 by means of Augmented Dickey Fuller test, Johansen Co-integration Analysis, Vector Error Correction and Granger Causality Analysis and reached the conclusion that foreign direct capital investments in Turkey were not the cause of growth.

3. Empirical Analysis

In this section, on the purpose of seeing the effects of foreign direct capital on economy in the period after global financial crisis, by means of econometric tests, applied analysis has been carried out.

3.1. Methodology

The universe of our study consists of foreign direct investments entering Turkey and our sample includes the figures of economic growth and unemployment in the range of years of 2008 and 2015.

3.1.1. VAR Model

VAR Model, among time series model, is the most used one in the recent times. Sims (1980), Dijk and Franses (2000), Johansen (2000), Kilian and Chang (2000), and Lutkepohl (2000) can be shown as example for the literature in the recent literature about VAR modeling and analysis (Özgen and Güloğlu, 2004: 4).

VAR, revealing the mutual relationships between the variables, is used for shaping macroeconomic policies. Vector time series models are the ones, in which more than one variables take place, but which include all features of univariate models. In other words, stationarity and prediction conditions that are necessary for univariate stochastic processes and the case that model is reversible, and its roots are out of unit circle are also valid for vector processes. VAR approach has become a method adopted by econometrists in the recent times.

Bivariate VAR Model can be expressed in standard way as follows:

$$y_t = a_1 + \sum_{i=1}^{p} b_{1i} y_{t-i} + \sum_{i=1}^{p} b_{2i} x_{t-i} + v_{1t}$$

$$x_t = c_1 + \sum_{i=1}^{p} d_{1i} y_{t-i} + \sum_{i=1}^{p} d_{2i} x_{t-i} + v_{2t}$$

In the above model, ρ represents the length of lags; v, randomized error terms, whose mean value is zero; whose variances with their own lagged values are zero and fixed; and which has normal distribution. The assumption that in VAR Model, the errors are irrelevant with their own lagged values does not bring any constraint on the model. For, with increasing the lagging length of the variables, the problem with autocorrelation is coped with (Özgen and Güloğlu, 2004: 96).

Pagan (1987) summarizes VAR model in four steps:

- The data are converted into a suitable form to VAR.
- By means of causality test, lagging values and variables are selected.
- Reducing lagging value and smoothing coefficients, VAR is tried to be made simpler.
- Shocks are obtained by the process of orthogonalization.

3.2. Model and Hypothesis

In this model formed to examine the effects of foreign capital investments on economy, as representative of long term capital entering the country, in accordance with the literature, the variable "foreign direct capital" is used. In order to measure the effects of foreign capital investments on economy, economic growth was used. Hence, the variable "gross domestic product" was added to the model. In addition, on the name of seeing the effects of foreign direct investment on the economy, the data of employment were added to the model. In this context, just as the number of person employed in the economy can be used, the number of persons, who is ready to be employed but cannot be employed in economy, can also be used. In this context, the number of unemployed people was also added to the model.

In this direction, in the model, the variables of amount of foreign direct capital, gross domestic product with fixed prices, and the number of unemployed people were used. The hypotheses established to each other of these variables are as follows:

Hypothesis 1: The increase in the amounts of foreign direct capital entering economy leads economic magnitudes to increase.

In an economy, increase of investments will increase both investments and amount of product that will be produced as a result of investments and this will cause economic magnitudes to show an increase.

Hypothesis 2: The increase in foreign direct capital investments entering economy leads unemployment to decrease.

Increase of investments in an economy, besides the increase of amount of production, depending on whether the investment to be made is labor intensive or capital intensive, will lead labor input in the production process to be more used.

Hypothesis 3: The increase in economic magnitude will cause unemployment to decrease.
The increase in economic magnitude means that the production and investments in the economy increase. Especially the increase in the production process means that the need for labor input increases, which also means that the number of unemployed people decreases.

In the light of all hypotheses to be planned to test, the expected result is that an increase in foreign direct investments helps economy grow and that there is a decrease in the number of unemployed people.

3.3.Data Definitions

The data belonging to the variables to be used in the analyses, differently from the existing literature, after the global financial crisis emerging the last months of 2007, in order to

measure the effects of foreign direct investments entering Turkish economy, include the time passing from 2008 to the present days. For this aim, the data belonging to the variables are separated to quarter period data, and they are from the first quarter of 2008 to the last quarter of 2015.

The data of foreign direct investments (FDI) are obtained from Electronic Data Distribution System of the Central Bank of the Republic of Turkey. The data are fixed and quarter and observations are used by converting to index through the value of the year 1998.The data are in US $.

The variable of Gross Domestic Product (GDP) used for measuring economic magnitudes is again obtained from Electronic Data Distribution System, published by the Central Bank of the Republic of Turkey. The data are fixed and quarter and observations are used by converting to index through the value of the year 1998. In short, it is seen to use the real GDP data more convenient instead of nominal GDP.

Finally, unemployment data (UNM) are obtained from the database of International Financial Statistics, published by International Monetary Fund. The data are in terms of the number of person.

The data belonging to the variables are planned to be included in the model by taking their logarithms in order to obtain the reliable results in the analyses. With these states of them, the descriptive statistics belonging to the variables are presented in the following table.

Table 2: Descriptive Statistics Belonging to the Variables

	FDI	GDP	UNM
Median	21.48335	17.17457	14.76935
Maximum	22.45315	17.36831	15.00721
Minimum	20.18541	16.85252	14.51563
Std. Deviation	0.512019	0.123343	0.144925
Skewness	-0.478527	-0.498137	-0.060743
Kurtosis	3.101270	2.735067	1.842147
Jarque-Bera	1.234946	1.417003	1.807175
Probability	0.539305	0.492381	0.405114
Total	690.4701	549.2621	472.6653
Total Std. Deviation	8.127060	0.471618	0.651098

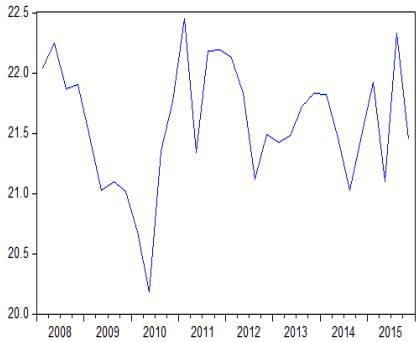
According to the value in the table, variation of the data belonging to each variation is seen low. Besides this, Jarque-Bera statistics is above the value “1”. When regarded to Skewness and Kurtosis values, it is seen that Skewness is negative. i.e. toward left and Kurtosis value is positive. That Kurtosis value of foreign direct investments is higher compared to the other variables means that its distribution compared to the other variables is less normal.

Finally, the figures of series belonging to the variables are given below. According to this, it is seen that foreign direct investments follow an rather unstable course after financial crisis. Especially throughout two years following crisis, seriously falling capital inflow increased by

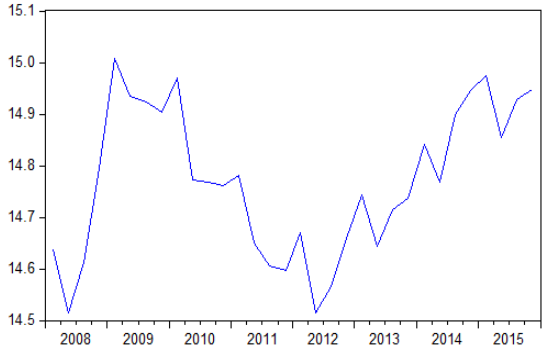
recovering with monetary policies applied by USA. In the next period, it is not possible to mention about this stability.

Graph 2: Graphical Analysis of the Variables

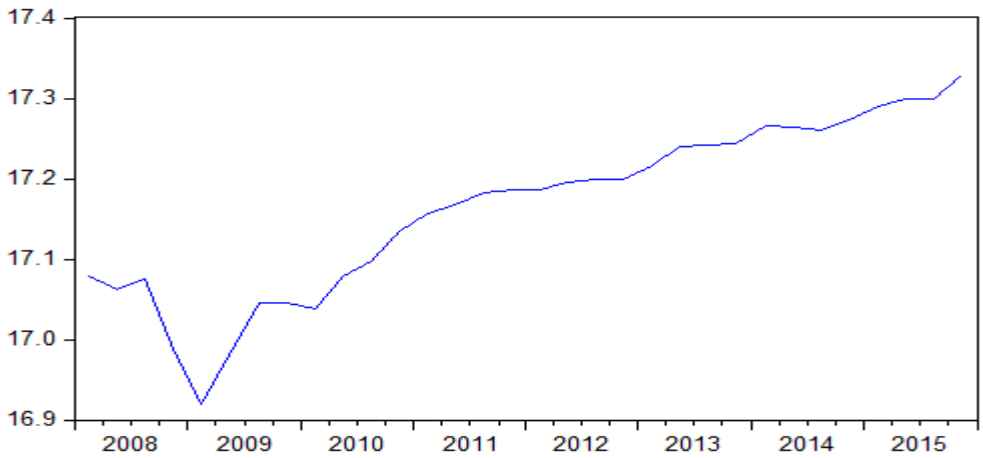
Foreign Direct Investment



Unemployment



Gross Domestic Product



When regarded to unemployment data, the effect of global crisis on employment is clearly seen. According to this, the number of unemployed people significantly showed increase and, together with that moderation of the effects of the crisis and that applied policies show their effects on the real sector, a decrease occurred in unemployment. But after 2012, it is seen that there is an increase trend in unemployment.

As in the other variables, the effects of global financial crisis are also seen on the variable GDP. GDP reached its bottom level in 2009. In the next periods, it enters a growth period, which is first rapid and then slow trended. After 2012, despite increase in unemployment, it is possible to reach the conclusion that in the existing growth model, while economic growth continues, employment does not increase.

3.4. Empirical Findings

Before empirical analysis of the established model, it should be checked whether or not the variables used in the model include unit root. For, including the series containing unit root in the model will make a current issue the problem with dummy regression. In addition, for

being able to identify the relationships between the variables to be used in Vector Auto Regression (VAR), it is necessary for the variables to be stationary. Therefore, it is necessary to test whether or not there is a test problem with the variables. Before establishing VAR model whether or not the variables are stationary is identified by linear unit root test, which are developed by Dickey-Fuller (1979,1981, ADF) and Phillips-Perron (1988, PP).

Table 3: Results of Stationarity Test

		ADF	PP
Level	Variables		
Constant	**FDI**	-3.543 [0.0133]**	-3.543 [0.0133]**
	GDP	0.3904 [0.979]	-1.581 [0.480]
	UNM	-3.527 [0.014]**	-1.941 [0.309]
Constant+Trend	**FDI**	-3.509 [0.055]*	-3.441 [0.064]*
	GDP	-3.5972 [0.047]*	-5.121 [0.001]***
	UNM	-3.506 [0.058]*	-1.848 [0.656]
First Difference			
Constant	**FDI**	-7.856 [0.000]***	-8.121 [0.000]***
	GDP	-4.200 [0.000]***	-6.706 [0.000]***
	UNM	-3.186 [0.032]**	-5.913 [0.000]***
Constant+Trend	**FDI**	-7.798 [0.000]***	-8.107 [0.000]***
	GDP	-17.743 [0.000]***	-6.475 [0.000]***
	UNM	-4.099 [0.017]**	-5.809 [0.000]***

Note: *, ** and *** are represented respectively %10, %5 ve %1 the values of significance level. The values in parentheses are the values of probability. For ADF unit root test, %1, %5, ve %10 confidence interval, Mac Kinnon (1996) critical values are -3.485. -2.885. -2.579 for constant model; -4.035. -3.447. -3.148 for constant and trend model. For PP test, %1, %5 ve %10 confidence interval, Mac Kinnon (1996) critical values are -3.483. -2.884. -2.579 for constant model; -4.033. -3.446 ve 3.148 for constant and trend model.

For the stationarity of the variables, it is necessary for the estimated τ (tau) statistical value of the variable to be bigger in terms of absolute value than table value ($|\tau_h| > \tau_t$), developed by MacKinnon (1996). In other word, with a simpler method, it is necessary for the probability values given in bracket to be smaller than significance level (1-0.01%, 5-0.05% and 10-

0.1%). When regarded to the level values of series, it is seen that they generally have unit root. According to the result of both tests, series of foreign direct investments is stationary at the level in the confidence interval of 5% and in in the confidence level of 10% in the model constant and with constant–trend. However, it is seen that the series, whose first difference is taken, is stationary at the significance level of 1% in the model constant and with constant–trend. In view of this, it can be said that that series is included in the model with their first differences is proper.

When the level values of the series belonging to the variable of gross domestic product is examined, it is seen that the model with constant has unit root, while in the model with constant and trend, they are stationary in ADF and PP test results are stationary at the significance level of 5% and 1%. However, both test results, it is understood that in the first difference of series at the significance level of 1%, the models with constant, and with constant and trend are stationary. Assuming that the variable of gross domestic product shows a feature of long memory, it can be said that in this variable, that analysis is continued by adding the first differences is proper.

Finally, when the level values of series belonging to the variable unemployment are examined, it is seen that while ADF test finds stationarity at the significance level of 5% in the model with constant and 10% in the model with constant and trend, PP test did not find stationarity in any model. When the first difference of the series is taken, it is seen that PP test presented evidences regarding that it became stationary at the significance level of 1%. However, the results of ADF test reports that unemployment series became stationary in its first difference in the model with constant and trend at the significance level of 5%. In this case, as in GDP series, in the framework of the assumption that it showed the feature of long memory, it will be proper to include the first difference of series in the model.

After unit root analysis, using the first difference of series, VAR Model is formed. While conventional VAR analyses are established, in the first stage, the first test that is necessary to be made is to determine the proper lagging time. For this aim, the test of lagging number is made and two lags are identified according to Schwarz information criterion. However, with auto correlation test, the presence of auto correlation is identified. In two lagged model, since it is seen that there is a problem with auto correlation, until this problem is removed, lagging number is increased. In five lagged model, it was seen that the problem with auto correlation was eliminated. Therefore, there are five lags in the analysis.

In the second stage, action-reaction analysis is carried out. In Table 4, the reactions each variable gave to the positive shocks in the other variables are summarized. According to this, the reaction the variable GDP gave to a positive shock occurring within itself are very positive and it is significant throughout the period. This case is significant both statistically and economically. The reaction GDP gave to 1% increase occurring in foreign direct investments is positive. The result maintains statistical significance throughout four periods. On the other hand, the result seems to be significant statistically, For, it is stated in Hypothesis 1 that increase in foreign direct investments will positively affect economy. The reaction the economic growth gave to the positive shock in unemployment is negative. The reaction is negative throughout the period experienced is negative and is statistically significant. When examined in the framework of economic theory, the result is economically significant, because a falls in employment will negatively affect the economic magnitudes due to decrease in the production.

Table 4: The Reaction Of GDP

	GDP	FDI	UNM
1	0.017596	0.000588	-0.004924
	(0.00244)	(0.00345)	(0.00338)
2	0.021747	0.005232	-0.013820
	(0.00617)	(0.00645)	(0.00690)
3	0.012621	0.008058	-0.014899
	(0.00864)	(0.00810)	(0.00953)
4	0.010227	0.002292	-0.007219
	(0.00818)	(0.00827)	(0.01082)
5	0.017804	-0.005483	-0.003507
	(0.00715)	(0.00830)	(0.01134)
6	0.017198	-0.005760	-0.010091
	(0.00818)	(0.00835)	(0.01211)
7	0.007300	0.003693	-0.016494
	(0.00913)	(0.00840)	(0.01346)
8	0.006745	0.003889	-0.011239
	(0.00838)	(0.00825)	(0.01341)
9	0.012859	-1.19E-05	-0.005854
	(0.00713)	(0.00787)	(0.01273)
10	0.014665	0.000419	-0.010792
	(0.00624)	(0.00774)	(0.01242)

The reaction the variable foreign direct investment will give to 1% positive shock that will be experienced in the other variables is summarized in the following table. According to this, the reaction it will give to the shock in foreign direct investments is positively and statistically significant. The reaction continues in this way throughout the period. The effect of 1% increase on foreign direct investments is negative and its statistical significance continues throughout four quarter. This may be a case related to the composition of foreign direct investments in Turkey, because it is possible for the investments having labor intensive production structure to be affected from the developments in the employment. The reaction of the variable foreign direct investment to 1% positive shock in the variable Gross Domestic Product is negative and it only continues throughout one period. This case reduces the statistical significance of the reaction. When economically regarded to, this shows that the growth of economy has a negative effect on foreign direct investments.

Table 5: The Reaction of FDI

	GDP	FDI	UNM
1	-0.014841	0.443991	-0.175469
	(0.08705)	(0.06157)	(0.08360)
2	0.232868	0.188996	-0.020629
	(0.14138)	(0.13101)	(0.15381)
3	0.146719	0.279898	-0.015740
	(0.16977)	(0.15738)	(0.18489)
4	0.308101	0.094217	-0.064516
	(0.15843)	(0.16720)	(0.20663)
5	0.207400	0.043563	0.032586
	(0.15876)	(0.17904)	(0.22196)
6	0.223855	0.171390	-0.173499
	(0.15275)	(0.17320)	(0.22199)
7	0.254375	0.054330	-0.036498
	(0.14773)	(0.17386)	(0.23313)
8	0.103205	0.276271	-0.206783
	(0.15128)	(0.16364)	(0.22893)
9	0.212631	0.061405	-0.013655
	(0.14742)	(0.17750)	(0.23414)
10	0.096669	0.174921	-0.090453
	(0.14271)	(0.17796)	(0.22629)

The reaction the variable unemployment gave to the positive shocks experienced in gross domestic product and foreign direct investments is shown in the following table. According to this, the reaction it gave to a shock occurring the variable unemployment is positive and it is statistically and economically significant. The variable unemployment gives a negative reaction to a positive development occurring in gross domestic product. The result is negative and statistically significant throughout all period. İt is also economically significant. For, the growth of economy brings together the decrease of unemployment with it. The reaction the variable unemployment gave to foreign direct investments is negative. When the result is economically evaluated, it is possible to say that foreign direct investments enter economy in such a way that forms employment.

Table 6: The Reaction of UNM

	GDP	FDI	UNM
1	-0.017713	-0.025015	0.063296
	(0.01217)	(0.01192)	(0.00878)
2	-0.044185	-0.038012	0.082611
	(0.02420)	(0.02304)	(0.02336)
3	-0.040482	-0.039364	0.095318
	(0.03465)	(0.03248)	(0.03595)
4	-0.043805	-0.034740	0.084525
	(0.03888)	(0.03722)	(0.04685)
5	-0.046761	-0.037023	0.104243
	(0.04132)	(0.04139)	(0.05424)
6	-0.044750	-0.031407	0.095954
	(0.04433)	(0.04122)	(0.06156)
7	-0.031949	-0.035492	0.109287
	(0.04702)	(0.04234)	(0.06875)
8	-0.036930	-0.031870	0.095693
	(0.04605)	(0.04217)	(0.07373)
9	-0.035669	-0.037981	0.109966
	(0.04644)	(0.04322)	(0.07725)
10	-0.036210	-0.039849	0.102198
	(0.04427)	(0.04276)	(0.07948)

After action - reaction analysis, the results of variance decomposition analysis testing that a shock occurring in each variable can be explained by variance analysis are given in the following table. According to the results of variance decomposition analysis, in the first period, all of a shock experienced in GDP is explained by GDP. In the progressing quarters, the ability of both unemployment and foreign direct investments to account for economic growth has increased. In the 10th quarter, 20% of shock in GDP is explained by foreign direct investments and 25%, by the variable unemployment. This result shows that foreign direct investments have an important place in Turkish economy.

Table 7: Variance Decomposition Results of GDP

	S.D.	GDP	FDI	UNM
1	0.017596	100.0000	0.000000	0.000000
2	0.019993	81.76394	8.891692	9.344365
3	0.022325	82.29071	8.408308	9.300978
4	0.023807	73.37440	13.42892	13.19668
5	0.026288	68.48517	19.21012	12.30471
6	0.027457	62.82887	17.62156	19.54957
7	0.031221	58.64271	22.17478	19.18251
8	0.031786	56.60512	21.39591	21.99897
9	0.033208	55.25071	20.84355	23.90574
10	0.033615	54.21156	20.36407	25.42437

In the first period, all of shock occurring in GDP can be explained by it itself. In the progressing periods, the ability of the variable GDP to account for shock increases and it rises to 21%. On the other hand, the ability to account unemployment ranges low in the first six quarters and shows increase in the next period. This case shows that investments takes into consideration the economic magnitude and employment structure, while entering economy.

Table 8: Variance Decomposition Results of FDI

	S.D.	GDP	FDI	UNM
1	0.443991	0.111730	99.88827	0.000000
2	0.582917	18.12287	75.88305	5.994080
3	0.596093	19.41926	74.74846	5.832278
4	0.649353	22.54095	70.70653	6.752526
5	0.661545	24.03490	68.79194	7.173162
6	0.695628	21.79334	65.62566	12.58100
7	0.714929	20.81472	64.76742	14.41785
8	0.775631	21.48279	62.85449	15.66272
9	0.826706	20.66237	61.86241	17.47522
10	0.845264	21.64710	60.86007	17.49282

In the first period, 75% of shock occurring in unemployment is explained by it itself; 8% by gross domestic product, and 16% by foreign direct investments. In the progressing periods, while the ability of GDP to account for increases, the ability of investments to account for remain constant. At the end of 10th quarter, the variable GDP accounts for 17% and foreign direct investment, 13%. The results show that the ability of foreign direct investments to create employment is high.

Table 9: Variance Decomposition Results of UNM

	S.D.	GDP	FDI	UNM
1	0.063296	7.831600	16.38545	75.78295
2	0.070372	20.48582	17.15178	62.36240
3	0.072103	19.77727	16.36687	63.85586
4	0.073209	19.39050	16.25689	64.35261
5	0.076144	18.07491	15.12556	66.79952
6	0.076636	17.91233	15.48242	66.60525
7	0.079779	19.10322	14.49711	66.39967
8	0.081517	18.67054	14.06539	67.26407
9	0.082939	18.05906	14.12342	67.81752
10	0.083560	17.79596	13.96536	68.23868

Finally, in order to examine causality relationship between variables, VAR based Granger causality analysis is carried out. The results of causality analysis, contrast to the results obtained from action-reaction and variance decomposition analysis, presents evidences regarding that there is no causality relationship between variables. Causality relationship is only from the variable GDP to foreign direct investments and its significance level is 5%.

Table 10. Granger Causality Analysis Results

Hypothesis	Wald Statistics	Probability Value	Result
GDP is not the cause of FDI.	11.16	0.0483	There is a causality from GDP to FDI
GDP is not the cause of UNM.	3.82	0.5749	There is no causality from GDP to UNM
FDI is not the cause of GDP.	4.06	0.5406	There is no causality from FDI to GDP
FDI is not the cause of UNM.	0.85	0.9736	There is no causality from FDI to UNM
UNM is not the cause of GDP.	2.21	0.8188	There is no causality from UNM to GDP
UNM is not the cause of FDI.	2.21	0.1339	There is no causality from UNM to FDI

When the results obtained from all analyses are evaluated together, it is possible to say that foreign direct investments have an important role for Turkish economy in the post crisis period. the increase in foreign direct investments not only triggers economic growth but also reduce unemployment, creating employment. In the last period, it will be true to say that the

increase of foreign direct investments having an extremely important role in the increase of gross domestic product will be an important factor of high rate growth in the progressing years. In addition, as the solution of the problem with unemployment experienced in Turkey, it is also useful to repeat that utilizing foreign direct investments will be a proper strategy.

CONCLUSION

Just as 2008 global economic crisis affected all countries of the world, it also negatively affected Turkish economy. That global capitalists avoid risk caused the new investments, which will be made, to be delayed or cancelled. This case led world economy to shrink. Globalization of economy causes a negative case occurring in the developed countries to directly affect the developing market economies.

In the study we have carried out, post crisis development of foreign direct investments and its effect on Turkish economy were analyzed by establishing an economic model. In the model, the variables of amount of foreign direct capital, gross domestic product with fixed prices, and the number of unemployed people were used. First of all, whether or not there is a problem with unit root in the variables was tested and before establishing a model in this direction, linear unit root test, which was developed by Dickey-Fuller (1979,1981, ADF) and Phillips-Perron (1988, PP), and which did not take into consideration the structural vulnerabilities. According to the result of both tests, the series of foreign direct investments is stationary in the confidence intervals of 5% in the model with constant at the level and 10% in the model with constant and with constant–trend.

When the level values of the series belonging to the variable gross domestic product are examined, it was seen that the model with constant had unit root and, in the model with constant and trend, ADF and PP test results are stationary at the significance levels of 5% and 1%

When the level values of the variable unemployment are examined, it was seen that while ADF test finds stationary at the significance level of 5% in the model with constant, PP test did not find stationary in any model, and when the first difference of series is taken, that the evidences regarding that PP test became stationary at the significance level of 1%.

In the second stage, in the action-reaction analysis carried out, the reaction the variable GDP gave to the positive shock occurring within itself is positive and is significant throughout the period. This case is significant both statistically and economically. It was seen that the reaction GDP gave to 1% increase occurring in foreign direct investments was positive.

It was observed that while the reaction 1% increase in unemployment gave to the positive shock was statistically significant, its effect on foreign direct investments was negative and its statistical significance continued throughout four periods. This can be a case related to the composition of foreign direct investments coming to Turkey.

The reaction the variable unemployment gave to the shock occurring within itself is positive and is statistically and economically significant. The variable unemployment gave negative reaction a positive development in gross domestic product.

In variance decomposition analysis, as a result of variations experienced in GDP, it is understood that foreign direct investments has an important role in Turkish economy. In the

variations experienced in foreign direct capital, it is seen that investments consider the economic magnitude and employment, while entering economy. In the variations occurring in unemployment, as a result of the analysis, it was observed that the ability of foreign direct investments to create employment was high.

Finally, in order to observe causality relationship between variables, Granger causality analysis was carried out. In the results of causality analysis obtained, in contrast to the results obtained from action-reaction variance analyses, presented the evidences regarding that there was no significant causality relationships between variables. Causality relationship is from only the variable gross domestic product to foreign direct investments and significance level is only 5%.

When the results obtained from all analyses are evaluated together, it is possible to say that foreign direct investments have an important role for Turkish economy in the post crisis period. For, the increase in foreign direct investments not only triggers economic growth but also reduce unemployment, creating employment. In the last period, it will be true to say that the increase of foreign direct investments having an extremely important role in the increase of gross domestic product will be an important factor of high rate growth in the progressing years. In addition, as the solution of the problem with unemployment experienced in Turkey, it is also useful to repeat that utilizing foreign direct investments will be a proper strategy.
In this direction, Turkey should continue foreign capital to take in the country; follow what the other developing and developed countries do about this issue; and update itself in this meaning. In addition, Turkey should pay attention to financial stability and enable foreign capital to feel itself in security.

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EFFICIENCY ASSESSMENT OF THE TRANSPORTATION SERVICES IN TURKEY

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Abstract

Transportation has a significant influence on the economy of the countries. Therefore, effective management of the transportation sector is very important for efficient use of resources and the provision for the investments. When transportation systems are efficient, they provide economic opportunities and benefits that result in positive multipliers effects. The main objective of this study is to investigate and examine the impact of air transportation, railways transportation, road transportation and maritime transportation on Turkey, over a period of 2003 – 2015. We used Data Envelopment Analysis (DEA) which has become one of the most used approaches in measuring efficiency due to its robustness in finding optimal efficiency scores for different problems. We analyze the technical efficiency of Decision Making Units (DMUs) using DEA. It evaluates the technical efficiency of DMUs but doesn't allow for a ranking of the efficient units themselves. Therefore, a super efficiency model is based on "slacks – based measure of efficiency (SBM)" is used in the analysis. The data and transportation indicators used in the analysis were taken from Ministry of Transport, Maritime affairs and Communication annual statistics reports. Finally, technical and super efficiency scores and rank of DMUs are examined and evaluated.

Keywords : Super Efficiency, SBM Model, Transportation, Data Envelopment Analysis

1. Introduction

The transportation system has been discussed widely in the literature which is mostly included on a single mode of transportation such as railways transportation. Therefore, there is an extensive need to include some other transportation system (Khan et al., 2017) for example, air transportation, road transportation and maritime transportation etc. Li et al. (2013) evaluated the performance of bus routes within a public transportation system using revised Data Envelopment Analysis (DEA) method and made sensitivity analysis of indexes. They were chosen passenger load rate, service reliability, average dwell time and average running speed as output indexes and a virtual index as input. Then, they applied DEA method to 3 bus routes of Beijing public transportation system and the improvement suggestions were put forward. Wu et al. (2015) applied DEA to measure the energy and environment performance of transportation systems in China with the goal of sustainable development. They treated transportation as a parallel system consisting of subsystems for passenger transportation and freight transportation. Finally of the study, they found that there were large efficiency differences between the passenger and freight transportation subsystems. Park et al. (2016) assessed the environmental efficiency of the transportation sector in the U.S. from years 2004 to 2012 and they found that the states could substantially reduce carbon emissions to improve the environmental efficiency of their transportation sectors.

The aim of this study is to examine the efficiency of air transportation, maritime transportation, road transportation and railways transportation in Turkey, over a period of 2003 – 2015. The transportation indicators from the available Ministry of Transport, Maritime affairs and Communication annual statistics database including equipment, capital, number of passengers and tones of freight items for Turkey.

2. Material and Methods

DEA, as developed by Charnes et al. (1978) and extended by Banker et al. (1984) is a linear programming technique based on approach for measuring the relative efficiencies. The efficiency of a Decision Making Units (DMU) is expressed in terms of a set of measures which are classified as DEA inputs and outputs (Cook and Zhu, 2014).

Suppose we have a set of n DMUs in the model, and each DMU has m inputs and s outputs. The CCR model can be mathematically expressed as (1).

$$\text{Max } \frac{\sum_{r=1}^{s} u_{rk} Y_{rk}}{\sum_{i=1}^{m} v_{ik} X_{ik}}$$

Subject to:

$$\frac{\sum_{r=1}^{s} u_{rk} Y_{rj}}{\sum_{i=1}^{m} v_{ik} X_{ij}} \leq 1 \qquad \text{for all } j \qquad (1)$$

$u_{rk} \geq 0$, $v_{jk} \geq 0$ for all r,k

Y_{rj} = the vector of output r produced by unit j,
X_{ij} = the vector of input i used by unit j,
u_{rk} = the weight given to output r by the base unit k
v_{jk} = the weight given to input i by the base unit k
$(r = 1, \dots, s)$, $(i = 1, \dots, m)$ [Tarim, 2001; Senel and Gumustekin, 2015; Ahn and Min, 2014].

The DEA relative efficiency measure for a target decision making unit k can be determined by solving the CCR (Charnes, Cooper and Rhodes) or BCC (Banker, Charnes, Cooper) models. CCR model calculates the efficiency ratio for the DMUs based on their inputs and outputs and it is under constant returns to scale (CRS) technology which are inputs and outputs linked in a strictly proportional manner. The others BCC model is under variable returns to scale (VRS) technology and it estimates the pure technical efficiency of a DMU at a given scale of operation. The only difference between the CCR and BCC models is the convexity condition of the BCC model, which means that the frontiers of the BCC model have piecewise linear and concave characteristics, which lead to variable returns to scale (Fancello et al., 2014).

DEA assigns an efficiency score, one to efficient units and less than one to inefficient units. Then, it evaluates the technical efficiency of DMUs but doesn't allow for a ranking of the efficient units themselves. However, super efficiency solves this problem. Therefore, a super efficiency DEA model is used in the analysis. In this model, the basic idea is to compare the unit under evaluation with a linear combination of all other units in sample, i.e., the DMU itself is excluded. It is conceivable that an efficient DMU may increase its input vector proportionally while preserving efficiency. The unit obtains in that case an efficiency score above one. The super efficiency model provides an efficiency rating of efficient units similar to the rating of inefficient units above (Andersen and Petersen, 1993).

Super efficiency model for input oriented CCR case can be described as follows (2) :

$$\theta^* = \min \theta$$

Subject to

$$\begin{aligned} \theta x_0 &= \sum_{j=1,\neq 0}^{n} \lambda_j x_j + s^- , \\ y_0 &= \sum_{j=1,\neq 0}^{n} \lambda_j y_j - s^+ , \\ \lambda &\geq 0, \quad s^- \geq 0, \quad s^+ \geq 0 \end{aligned} \tag{2}$$

where s^- and s^+ represent input and output slacks, respectively and λ is a non negative vector in $\mathbb{R}^n$. For an efficient DMU, θ^* is not less than unity, and this value indicates super – efficiency (Tone, 2002).

This paper analyze the non – radial and input oriented super efficiency model using SBM under the assumption of the constant returns to scale to measure efficiencies of transportation units in Turkey. With this aim, we consider two outputs: number of passengers (y_1) and tones of freight (y_2), and two inputs: equipment (x_1) and capital (x_2). Equipment is represented by the sum of available wagons for railways, capacity of seats for airways, number of ships for maritime and number of vehicle for roadway, respectively. Capital is explained by the total length of rail lines for railways, aircraft traffic for airways, the length of the road network and the total quantity of handled containers for maritime, respectively.

This study includes four transportation services in Turkey from 2003 to 2015 and employed data on real values for inputs and outputs based on years. Table 1 illustrates that the basic statistics of inputs and outputs.

Table 1. *Basic statistics of inputs and outputs*

		Equipment	*Capital*	*Number of Passengers*	*Tones of Freight*
Air Transportation	*Max*	*90259,00*	*1814958,00*	*181042000,00*	*2089000,00*
	Min	*27599,00*	*529205,00*	*34450000,00*	*960000,00*
	Mean	*52817,23*	*1132012,85*	*98604307,69*	*1495307,69*
	STD	*17892,18*	*397180,10*	*47361614,64*	*520709,99*
Railway Transportation	*Max*	*19990,00*	*12532,00*	*183012000,00*	*28074000,00*
	Min	*16997,00*	*10959,00*	*76031000,00*	*15094000,00*
	Mean	*18429,92*	*11565,15*	*101201230,77*	*22289538,46*
	STD	*1087,47*	*623,90*	*34424410,37*	*3785914,81*
Road Transportation	*Max*	*19994472,00*	*66567,00*	*290734,00*	*244329,00*
	Min	*8903843,00*	*63244,00*	*164311,00*	*152163,00*
	Mean	*14507664,85*	*64606,38*	*223006,31*	*192722,69*
	STD	*3400017,02*	*1100,09*	*41277,21*	*29435,14*
Maritime Transportation	*Max*	*1909,00*	*43647,00*	*164,00*	*416,00*
	Min	*1148,00*	*11383,00*	*99,00*	*189,00*
	Mean	*1635,23*	*27713,08*	*145,00*	*314,62*
	STD	*268,02*	*12303,03*	*21,29*	*72,92*

3. Results

We used input oriented super efficiency model using slacks based measure to calculate efficiencies of four transportation services and ranked these services. All DEA computation were done by Max – DEA Ultra and the results are listed in Table 2 which shows the super efficiency SBM scores and ranking of the air, road, railways and maritime transportation services.

Table 2. The results of DEA models

	Air Transportation				*Road Transportation*				*Railways Transportation*				*Maritime Transportation*			
Years	Technical Efficiency Score	Rank	Super Efficiency Score	Rank	Technical Efficiency Score	Rank	Super Efficiency Score	Rank	Technical Efficiency Score	Rank	Super Efficiency Score	Rank	Technical Efficiency Score	Rank	Super Efficiency Score	Rank
2003	1,0000	1	1,0496	1	1,0000	1	1,0576	1	0,6474	12	0,6396	13	0,8977	10	0,7223	9
2004	0,9215	3	0,8816	8	0,9702	7	0,9623	10	0,7318	11	0,7220	12	0,9840	2	0,6594	13
2005	0,8455	4	0,7879	12	0,9790	5	0,9782	8	0,7769	10	0,7685	11	0,9709	6	0,9623	5
2006	0,7937	7	0,7484	13	0,9906	3	0,9898	6	0,8068	9	0,8026	10	0,9834	3	0,7612	7
2007	0,7929	8	0,7906	11	0,9880	4	0,9826	7	0,8458	7	0,8330	8	1,0000	1	1,0193	4
2008	0,8073	6	0,7961	10	0,9494	9	0,9412	11	0,9272	4	0,9132	6	0,9756	5	0,6959	12
2009	0,8093	5	0,8029	9	0,9368	10	0,8971	13	0,8307	8	0,8210	9	1,0000	1	1,0235	3
2010	1,0000	1	1,0162	4	0,9605	8	0,9338	12	0,8990	6	0,8925	7	0,9663	7	0,7402	8
2011	1,0000	1	1,0382	3	0,9775	6	0,9624	9	0,9202	5	0,9190	5	0,9758	4	0,8282	6
2012	1,0000	1	1,0026	5	1,0000	1	1,0029	3	0,9289	3	0,9286	4	0,9597	9	0,7066	10
2013	1,0000	1	1,0395	2	0,9987	2	0,9980	5	0,9549	2	0,9481	3	0,9658	8	0,7054	11
2014	0,9919	2	0,9794	7	1,0000	1	1,0003	4	1,0000	1	1,0810	2	1,0000	1	1,2663	1
2015	1,0000	1	1,0004	6	1,0000	1	1,0224	2	1,0000	1	1,1868	1	1,0000	1	1,0366	2

The results show that among air transportation services, the efficiency of the 2003 is relatively best and that of the 2006 is relatively worst. Among road transportation services, the 2003 is most efficient and the efficiency of the 2009 is least efficient relative to the other years. Among railways transportation services, the 2015 is most efficient and the efficiency of the 2003 is least efficient relative to the other years. Among maritime transportation services, the 2014 is most efficient and the efficiency of the 2004 is least efficient relative to the other years.

As it can be observed, use of the radial technical efficiency model scores and the non – radial SBM model scores brought a slight differences in ranking of the transportation services in years.

4. Conclusion

In this paper, we used a super – efficiency model using slacks – based measure to analyze the performance of the transportation services in Turkey. This measure will rank those transportation services on their performance between 2003 and 2015. The empirical results show that the ranking, except for railways transportation, of the years has changed greatly between 2003 and 2015. The level of efficiency differ from one year to another.

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FINANCIAL PERFORMANCE INVESTIGATION WITH THE HELP OF THE BOOTSTRAP METHOD: AN EXAMPLE OF THE EREDIVISIE LEAGUE

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Abstract

Using Bootstrap method depends on obtaining the results from analysis that is difficult to be made manually. The importance of the method has been increased along with developing computer programming technology. In this study, with the help of the bootstrap method financial performance measures for four soccer teams being the champion in between 2005-2006 and 2015-2016 in Eredivisie League are evaluated and that of which club makes its financial performance convenient by spending consciously for criterions which UEFA determined is investigated.

Key words: Bootstrap, Bootstrap Confidence Interval, Bias, Standard Error, Mean Square Error.

1. Introduction

Bootstrap method is a process based on constructing with replacement and randomly samples the same dimension of the original data from the data. The method estimates statistics such as mean, median and variance that are interested in by iterating recurrently this process. The bootstrap that is a simple method gives robust results since it does not need heavily assumptions in case that familiar statistical methods and assumptions are inadequate. In this study theoretical information concerning the bootstrap method and evaluations for confidence interval of the method are performed. In the final step of the study, financial budget, consistent of soccer teams in Eredivise League that were champions from 2001 up to now and whether they spend their budget for the success of the team are investigated using the Bootstrap method. UEFA imposes sanctions such as outlawing teams and applying the transfer forbidden to teams which do not spend their budget in a balanced manner. The aim of this paper is to evaluate the financial performance of the teams in this respect. The Bootstrap method is commonly used in field such as discriminant analysis, clustering analysis, regression and time series analysis (Tercan, 2002).

There exist a range variety of studies interested in investigating financial budgets of teams in literature. However researches by means of Bootstrap method are rarely performed. For instance Zaman et al. (2015) executed a research related to whether champion teams in Turkey Super League spend their budget in a balanced manner. Ecer and Boyukaslan (2014) measured to the performances of the four major soccer clubs in Turkey by using financial rates based on Gray related analysis approach. Sakınç (2014) investigated the financial performances of Turkey soccer clubs using Gray related analysis method. Uluyol (2014) searched for the financial performances of soccer clubs in Turkey Super League.

2. Bootstrap Method

The Bootstrap was first introduced by Efron (Efron, 1992). It is a resampling method from the real data (Chernic, 1999). That is, main reasoning of the method is to construct new data sets by means of rescaling any observations regardless of their dimensions by replacing accidentally. Thus, more information from existing data set is taken. First, in this method the Bootstrap sample is constructed from original data set by selecting samples via the substituting method. A large amount of the Bootstrap samples are created in this way and confidence interval and test statistics of the estimator interested are computed (Hamajima, 1999). The Bootstrap sample obtained from original data set depends on the application. Actually It is possible to theoretically construct the n^n of the Bootstrap sample at most (Stine, 1990).

The main principle of the Bootstrap obtains sampling distribution of the estimation value and evaluates uncertainty of the population parameter value based on the distribution. For instance, the Bootstrap method can be summarized as follows:

$\theta^* = (\theta_1^*, \theta_2^*, \dots, \theta_n^*)$ New data set is obtained via sampling with replacement and randomly using $\theta = (\theta_1, \theta_2, \dots, \theta_n)$ original data set which composes of n-number sample. The possibility of none or more than one of realization for several $\theta_i$data is computed (Barker, 2005). Data sets of numerous B Bootstrap observations are constructed with the resampling technique. The data set created for $b = 1, \dots, B$ is represented with θ_b^*. Statistics interested is evaluated using this data set (Okutan, 2009). The Bootstrap used in nonparametric estimations such as computation of the standard deviation and the confidence interval is a simple and reliable method.

Even if forming the sampling distribution of the estimator is not unfeasible, it is quite difficult and time consuming. However the Bootstrap method used to construct empirical sampling distribution of the estimator overcomes this disadvantage. In this sense running algorithm of the Bootstrap method is processed as follows: (Fox, 1997).

1. Draw *n*-number sample from the population.
2. It is assumed that this sample drawn is the best estimator since any information on this population does not exist. For this reason, this sample is accepted as population. *n*-number of the population is provide to obtain again by taking $1/n$ the possibility of being in the sample of each observation. And this process is iterated *B*-times.
3. Compute the estimator interested for each Bootstrap sample.
4. Get the sampling distribution of the estimators using *B*-number sample.
5. Compute significant statistics such as mean, standard deviation and standard error concerning the distribution.
6. In this final step, evaluate the population via this estimation values.

Mean, standard error and variance of $\hat{\theta}$ estimator for the Bootstrap method are computed as follows:

$$\hat{\bar{\theta}}_b^* = \frac{1}{B}\sum_{b=1}^{B} \hat{\theta}_b^* \tag{2.1}$$

$$SE(\hat{\theta}_b^*) = \sqrt{\frac{\sum_{b=1}^{B}\left(\hat{\theta}_b^* - \hat{\bar{\theta}}_b^*\right)^2}{B-1}} \tag{2.2}$$

$$Var(\hat{\theta}_b^*) = \frac{1}{B-1}\sum_{b=1}^{B}\left(\hat{\theta}_b^* - \bar{\hat{\theta}}_b^*\right)^2 \qquad (2.3)$$

2.1. Confidence Interval for the Bootstrap Method

Confidence interval for any θ parameter presents more information than point estimation of θ parameter (Wehrenks et al. 2000). It is stated that the value of B is necessary to take between 1000 and 2000 (Efron and Tibshiranni, 1993). In this study confidence interval that is well accepted in Bootstrap method is investigated.

2.1.1. Normal Confidence Interval for the Standard Bootstrap

In case standard error of the statistics interested is unknown and sampling distribution provides assumption of the normal distribution, this confidence is used. It is calculated as follows:

$$\hat{\boldsymbol{\theta}} \pm z_{1-\frac{\alpha}{2}} * SE(\hat{\theta}_b^*) \qquad (2.4)$$

where $SE(\hat{\theta}_b^*)$ is standard error of $\hat{\boldsymbol{\theta}}$ estimator obtained by using the Bootstrap method. This method is not commonly used due to its assumptions. In practice the percentage approach is preferred instead of the normal confidence interval.

2.1.2. The Percentage Confidence Interval for the Bootstrap

The frontiers of the confidence interval are determined by means of the Bootstrap distribution of $\hat{\theta}$ in this method. Steps to compute the percentage bootstrap confidence interval

1. The estimation values computed from the Bootstrap samples are ascended sort such that $\theta_1^*, \theta_2^*, \dots, \theta_i^*, \theta_j^*, \theta_2^*, \dots, \theta_B^*$; $\theta_i^* < \theta_j^*$
2. $k = B\left(\frac{\alpha}{2}\right)$, the value of $\hat{\theta}^*$ in k-order is lower bound and the value of $\hat{\theta}^*$ in $(B-k)$-order is upper bound.
3. Bounds of $\%(1-\alpha)$ percentage bootstrap confidence interval for two-way are obtained as$(\theta_k^*,\ \theta_{B-k}^*)$.

Standard bootstrap and percentage bootstrap confidence intervals give rather close results if sampling distribution for Bootstrap statistics is almost normal.

2.1.3. t Confidence interval for the Bootstrap

When assumptions are provided to determine confidence interval in parametric methods, z and t table are required. In this method a table that is appropriate for existing data is constructed. The table is used to determining confidence interval. Steps can be states as follows:

1. The values of t^* are computed with the help of the formulation below:

$$t_b^* = \frac{\theta_b^* - \hat{\theta}}{SE(\hat{\theta}_b^*)} \quad b = 1, 2, \dots, B \qquad \textbf{(2.5)}$$

2. The values of t^* are ascended sort.

3. If the value of t^* in k-order and $\hat{t}_{1-\frac{\alpha}{2}}$ in $(B-k)$-order is taken as t^*, the confidence interval computed as follows:

$$\hat{\theta} - \hat{t}_{1-\frac{\alpha}{2}} SE(\hat{\theta}_b^*), \hat{\theta} + \hat{t}_{\frac{\alpha}{2}} SE(\hat{\theta}_b^*) \qquad (2.6)$$

Although t confidence interval for the Bootstrap can theoretically give good results, in practice it can present changeable results (Efron and Tibshiranni, 1993).

2.1.4. Bias-Corrected and Accelerated Confidence Interval ($(BC\alpha)$)

This method is called $BC\alpha$ due to its name. It was improved to overcome lacks of the percentage bootstrap confidence interval (Efron and Tibshiranni, 1993). There exist values shown as $\hat{a}$ and $\hat{z}_0$. They are acceleration and correction for bias, respectively. In case these value are zero, confidence interval of the $BC\alpha$ is transformed into percentage confidence interval (Yıldıztepe and Özdemir, 2013). The commonly used confidence interval is $BC\alpha$ in literature. Since confidence interval of $BC\alpha$ does not need parameter transformation and extensively used in most of nonparametric applications, the $BC\alpha$ confidence interval outperforms from other confidence intervals. It can be stated that this confidence interval give the best results according to others even if it does not present great results (Yay, 2003). In addition, (Carpenter ve Bithell, 2000) can be view for detailed information.

3. Application

In the application the financial performances of the teams that were champion following 2000 in Eredivise League were investigated via the Bootstrap method. Since the data which is prior to 2005-2006 seasons cannot be attained, this study was performed by using data between 2005-2006 and 2015-2016. The data used was taken from website called Transfer Market (URL-1). The teams in study are PSV, Ajax, Az Alkmar and Twente soccer clubs. It was researched how these teams spent their budget and which club is more consistent in last 11 seasons. Variable which is used for this study is total budget utilized to score a point by dividing clubs total values in last 11 seasons to total score in current season. Values for variable interested are demonstrated in Table 1.

Table 1. Financial Performance Ratio

	PSV	AJAX	AZ ALKMAR	TWENTE
05-06	1.255952	1.429167	0.642568	0.252766
06-07	0.998	1.075067	0.546528	0.292424
07-08	0.974306	1.043478	1.084884	0.344839
08-09	0.957692	0.877206	0.684125	0.372464
09-10	1.000641	1.198824	1.278226	0.534651
10-11	1.306232	1.526027	0.962373	0.821831
11-12	1.12942	1.094079	0.625846	1.326667
12-13	1.276087	1.333553	1.134103	1.191935
13-14	1.605932	1.492254	0.993617	0.797619
14-15	0.879545	1.056338	0.548871	0.976279
15-16	1.052976	0.893902	0.563559	0.777

The bootstrap statistics for the clubs is computed by considering this index values. The number of bootstrap repeat is taken 1000 in this study. Therefore it is quite difficult to compute manually. For this purpose, significant statistical values are evaluated with the help of computer programming. The calculations were carried out via R package software. The Bootstrap statistics of four teams interested are presented in Table 2.

Table 2. Bootstrap Statistics of Financial Performance Ratio

Upon analysed Table 2, original values are stated as the mean of 11 seasons for the teams. The bias is the extraction between original sample mean and the mean of 1000 bootstrap repeat. In addition the values of standard error and mean square error are the estimation of the Bootstrap concerning index values interested.

That mean square error is small can be expressed as a sign of consistent in last 11 seasons. Mean square error was descended sort as PSV, Ajax, Az Alkmar and Twente. This implies that PSV club is more consistent than other three teams in terms of point it gained and expenditure it spent in seasons interested. Also, the team has homogeneous structure and spend its budget in a balanced manner with regard to point it gained. That is, for the team an unexpected situation was not met in considering seasons.
Now, let's evaluate bootstrap confidence intervals by presenting a table.

Table 3. Bootstrap Confidences Intervals of Financial Performance Ratio

Takımlar	Normal	Basic	Yüzdeler	$BC\alpha$
PSV	1.008-1.254	0.993-1.240	1.021-1.268	1.034-1.309
AJAX	1.054-1.315	1.050-1.319	1.049-1.317	1.058-1.320
AZ ALKMAR	0.671-0.971	0.658-0.967	0.680-0.989	0.686-0.992
TWENTE	0.498-0.911	0.498-0.905	0.492-0.899	0.501-0.917

Takımlar	Orijinal	Yanlılık	Std. Hata	HKO
PSV	1.13057	-0.00037	0.06273	0.003935
AJAX	1.18358	-0.00100	0.06666	0.00444
AZ ALKMAR	0.82401	0.00244	0.07652	0.00586
TWENTE	0.69890	-0.00572	0.10538	0.01113

When the Bootstrap repeats are so close to normal, standard normal and percentage confidence interval give almost the same results. In this case, it is recommended to be preferred to percentage bootstrap confidence interval. Furthermore BCα confidence interval is an improved type of percentage confidence interval. A similar comment for all different confidence intervals is performed. Examination of normality plots for bootstrap repeats concerning the teams is required for more satisfying comments with this confidence interval. The distribution of the bootstrap repeats obtained from 1000 bootstrap concerning the four teams is given. Plots of PSV, Ajax, Az Alkmar and Twente soccer teams are presented in (a), (b), (c) and (d), respectively. While left plot in each figure shows the distribution of the bootstrap repeats, right plot in each figure demonstrates normal Q plot of the bootstrap concerning teams in stated years.

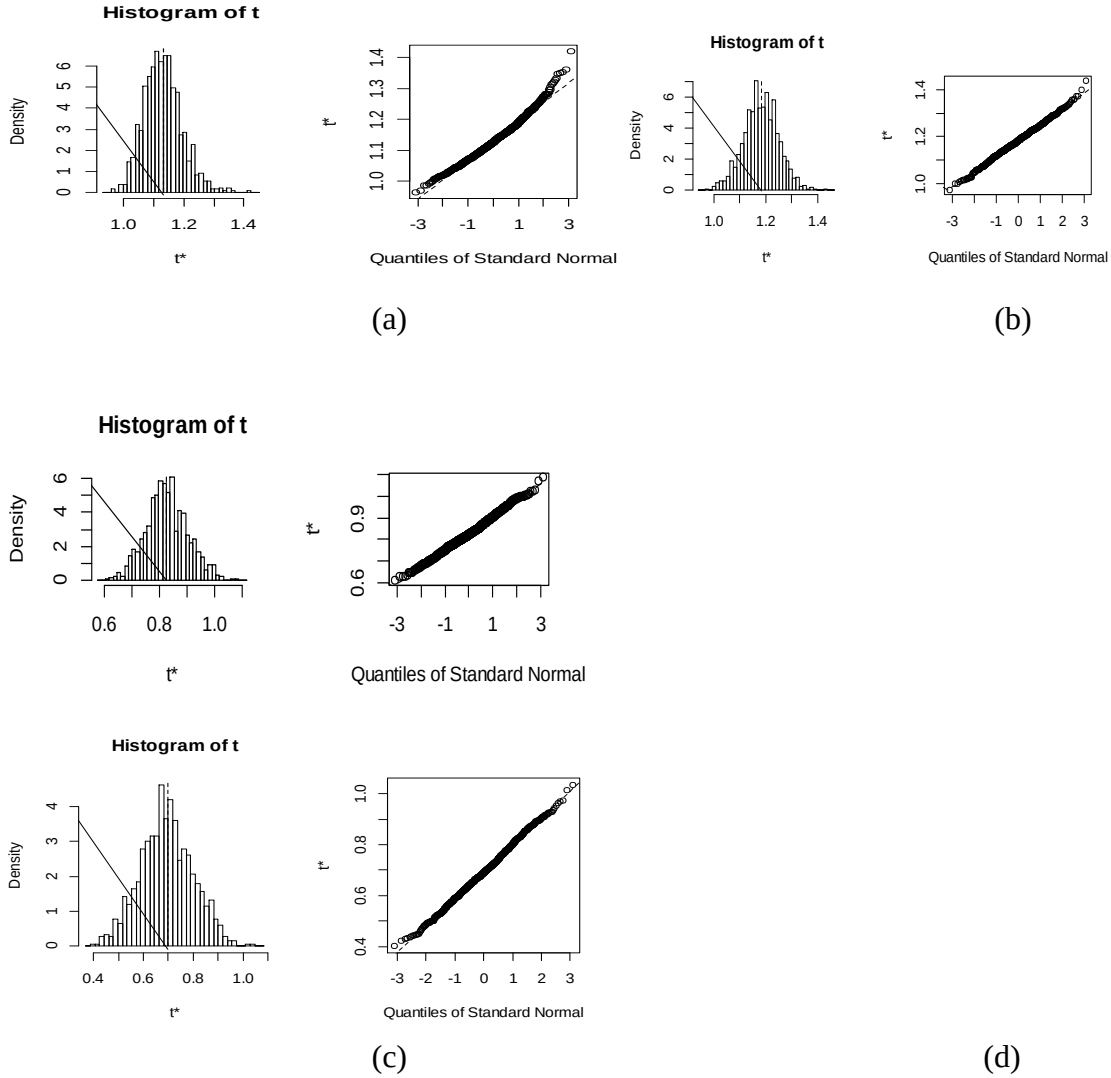

Figure 1. The Bootstrap plots of the Soccer Clubs

When looking at the above plots, the PSV team is the closest to the normal of the bootstrap repetitions. In addition, PSV team mean square error was found to be the smallest. So these results support each other. The inclusion of teams' index values in the bootstrap confidence interval is an indication that the index value of that year is useful. In other words, if the index values obtained between 2005-2006 and 2015-2016 are included in these confidence limits, it can be evaluated that the teams plan their expenditures correctly according to the points earned. Otherwise, the success of that year is a coincidence, or it can be evaluated together with the situation of other teams in the league that year.

4. Conclusion

Financial evaluation of teams is very important nowadays. In this study, the financial performances of the teams who won championship after 2000 in Eredivisie league were evaluated. The evaluation was based on the bootstrap method, one of the resampling methods. With the bootstrap method, a large number of bootstrap revolutions have been created from the small number of observations available and general results were obtained. It is difficult to calculate estimates of 1000 bootstrap repetitions obtained. However, thanks to

the development of computer technology, this difficulty has gone away. All analyzes made in this study were calculated with the help of R package program. Various bootstrap statistics, bootstrap plots and bootstrap confidence intervals were obtained for the teams in question, which resulted in the PSV team being the most stable team in the league. Based on the Eredivisie league, we believe that this study will be beneficial for those in need of scientific research on the assessment of teams' financial performance in the football sector.

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TESTING CONVERGENCE IN RESEARCH OUTPUT IN BIOTECHNOLOGY FOR G7 COUNTRIES

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Abstract

This study aims to analyze whether research output in biotechnology has converged in G7 countries. Biotechnology has become one of the crucial priorities in terms of economic growth. The priority for this potential to emerge is research activities. Research activities lead to the growth of scientific knowledge stock. Within this context, production of scientific publication has significant importance regarding research activities aimed at relatively new technologies like biotechnology. However, an empirical study that analyzes the convergence of the production of scientific publication (research output) in biotechnology has not been encountered in literature. Moreover, this study aims to complete this deficiency observed in literature. Accordingly, from the case of G7 countries, the convergence in research output in biotechnology was analyzed via nonlinear unit root tests.

Introduction

One of the basic sources of economic growth is generation of new technologies and production of goods and services that include such technologies (Evans 2010; Evans 2012). The most important characteristic of these new technologies is that they are based on scientific knowledge stock (Prange and Kaiser, 2004). Therefore, scientific activities are very important to develop scientific knowledge stocks that target new technologies (Inglesi-Lotz et al. 2014). The production of scientific information (research output) forms the basis of research activities. It has become one of the important objectives to develop scientific knowledge stock in biotechnology that is one of the leading information based technologies for countries.

Biotechnology that is defined as the manipulation of living organisms or parts included by these organisms for the production of goods and services has become one of the most important priorities of both developed and developing countries for economic growth (Bartholomew 1997; Rasmussen 2010; Wong et al. 2012). It is possible to consider biotechnology as a set of technologies that is used in traditional sectors (Bartholomew 1997; Niosi and Reid 2007; Niosi et al. 2013; Ho and Gibaldi 2003).

There are three key features that differentiate biotechnology from other known technologies (Bartholomew 1997). These are:

1) Biotechnology is extremely dependent on the basic researches that are conducted in the fields like microbiology, biochemistry, genetics and bioengineering.

2) Biotechnology has potential application fields in various sectors.

3) The process in which the basic research reaches at the application fields in traditional sectors includes various uncertainties. Economic, social and institutional arrangements play a vital role for the minimization of these uncertainties.

When the three key features given above are evaluated together, it is seen that biotechnology evolved with the improvement of research activities and spread to commercial application fields. However, the actualization of this process is possible with institutional, social and economic arrangements. This study focuses on carrying out a compared analysis of biotechnological research activities and testing empirically whether there is need for policy changes targeting these. Although there are studies in literature examining the relationship between biotechnological research output and economic growth (Yaşgül and Güriş, 2016), there is no study in literature that has made a comparative analysis through empirical ways. For this reason, the biotechnological research output convergence analyses were used for G7 countries (the USA, Germany, the United Kingdom, France, Italy, Japan and Canada) for the period 1977 – 2015. Two factors played a major role in choosing G7 countries as the sample group. The first is that the G7 countries have got similar economic, social and political characteristics. It was assumed that the convergence analyses between similar countries could produce more effective results. The second is that the countries in question are under the category of leading countries in the field of biotechnology (Rawat, 2008; Bartholomew, 1997). The convergence analyses that would be carried out between these countries could produce more effective results. Within this context, the USA was chosen as the trend country and the other countries' convergence potential to the USA were assessed. The determining factor for choosing the USA as the trend country was that the USA is a worldwide leader in the field of biotechnology. Although biotechnology was born in the USA and the United Kingdom, the USA has become the leader of biotechnology in the last 50 years (Rawat 2008; Niosi 2014). The ratio of USA's scientific publications in the field of biotechnology to worldwide and to G7 countries between 1977– 2015 is presented in Figure 1.

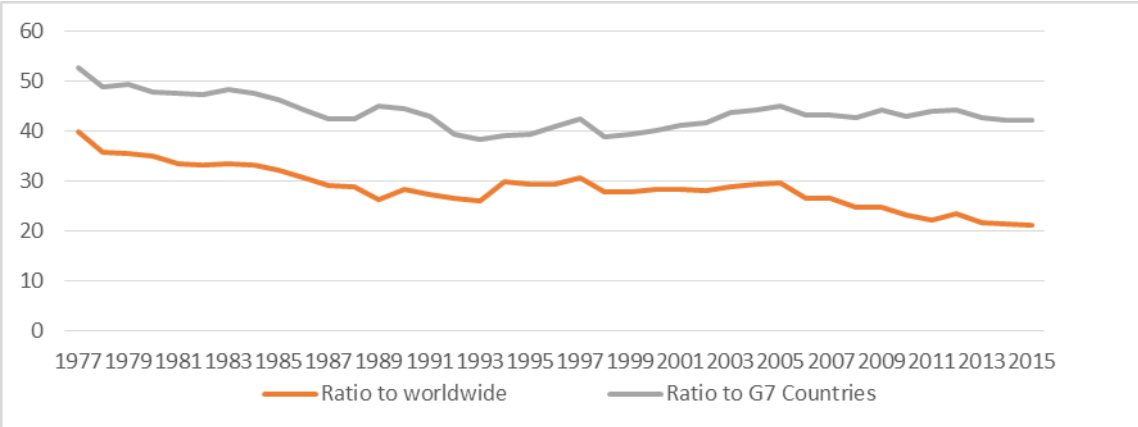

Figure 1 The ratio of USA's scientific publications in the field of biotechnology to worldwide and to G7 countries

The method frequently used in studies to test stochastic convergence empirically is the use of unit root tests. The nonlinear unit root test developed by Chong, Hinich, Liew and Lim (2008) (the CHLL test) was used in the study. The reason for preferring this test is that the transition between regimes considered to be more appropriate for the economic structure is smooth and has a better power than previous tests. In addition, this test allows for differentiating between convergence and catching up and this is a characteristic different from other smooth transition unit root tests. While convergence expresses a determined balance in the long run between countries, catching up expresses the decrease of difference between countries even if the convergence period has been completed for the period examined (Chong, et al, 2008).

The rest of the paper is structured as follows. Section 2 presents the set of data used in the study and outlines econometric methodology. Section 3 presents empirical findings. Section 4 summarizes the main results of the study and discusses political proposals.

3 Data and Methodology

In this study, it was tested whether research output in biotechnology has converged in G7 **c**ountries for the period 1977-2015. The number of scientific publications was used parallel to literature in order to measure the number of research output in the field of biotechnology (De Moya-Anegon and Herrero-Solana 1999; Jin 2009; Lee et al. 2011; Inglesi-Lotz and Pouris 2013; Inglesi-Lotz et al. 2014; Inglesi- Lotz et al. 2013).

The database of The National Science Indicators of Institute for Scientific Information (ISI) from Thomson Reuters was used to obtain research output. ‘‘Biotechnology and Applied Microbiology’’ was chosen to find international scientific publications in the field of biotechnology.

The number of scientific publications in the field of biotechnology in G7 countries for the period 1977 – 2015 is given in Figure 2. As can be seen in the figure, the USA displayed a much better performance in the given period than the G7 countries in terms of scientific publications in the field of biotechnology. For this reason, the convergence analyses used in the study examine the other G7 countries’ convergence/catching up potentials in comparison to the USA.

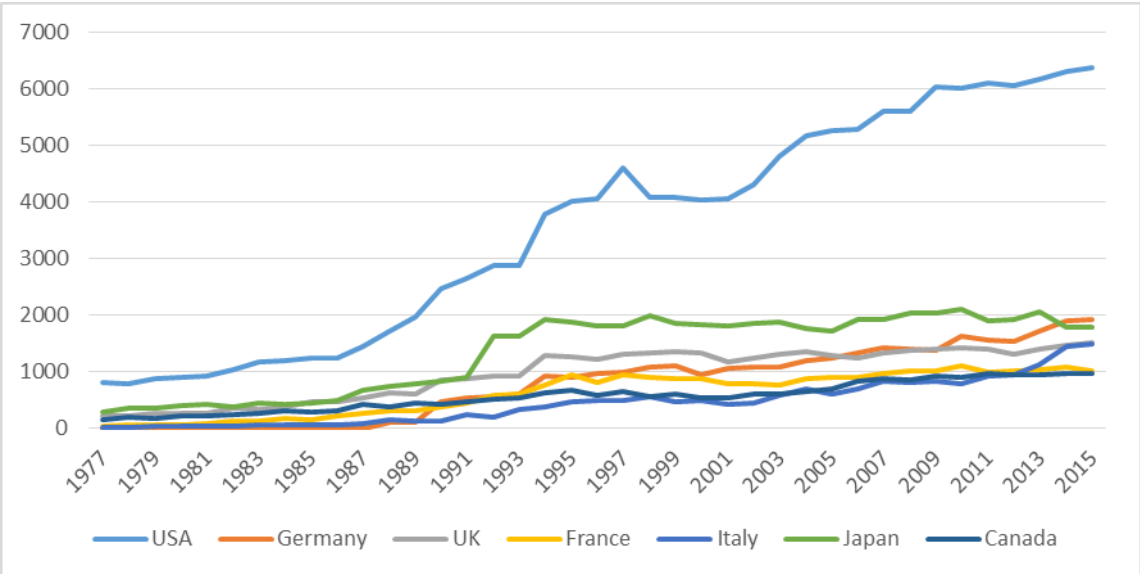

Figure 2 The number of scientific publications in the field of biotechnology in G7 countries

Stochastic convergence was introduced by Carlino and Mills (1993) and Bernard and Darlauf(1995). According to Bernard and Darlauf (1995), if the logarithm of the analyzed variable y_{ijt}, follows a stationary process, then stochastic convergence occurs.

$$y_{ijt} = logY_{it} - logY_{jt}$$

Where y_{ijt} is the analyzed variable, Y_{it} is the variable value for unit i at time t and Y_{jt} is the variable value for unit j at time t.

The method frequently used to test stochastic convergence empirically is the use of unit root tests. The stationarity finding to be obtained in the test expresses convergence. This study examines the convergence of research output in biotechnology in G7 countries to the USA and the nonlinear unit root test developed by Chong, Hinich, Liew and Lim (2008) was used. The reason for preferring these tests is that the transition between regimes considered to be more appropriate for the economic structure is smooth and has a better power than previous tests. In addition, the difference of this test is that it allows for differentiation between convergence and catching up.

Chong, Hinich, Liew and Lim (2008) test is an extended form of unit root test developed by Kapetanios et al. (2003)(KSS). The test is different from the KSS test as it was developed by adding the cutting parameter and the trend to the model to be used in the unit root test. It is, thus, possible to make the differentiation between the convergence and catching up hypotheses. The equation to be used for the test is as follows:

$$\Delta y_t = \mu + \phi G(Trend) + \delta y_{t-1}^3 + \sum_{j=1}^{p} p_j \Delta y_{t-j} + \xi_t$$

y_t is the original series to be examined and $G(Trend)$ is the trend variable and this variable can be in different forms. The trend variables used frequently are linear trend and nonlinear trend variables. The null hypothesis for nonstationarity is H_0: $\delta = 0$ and the alternative hypothesis for stationarity is H_1: $\delta < 0$. The test statistics is the test statistics of the δ parameter as it is the case with the conventional ADF test mentality. Critical values are tabulated in the study by Chong, Hinich, Liew and Lim (2008).

4. Empirical Findings

This study aims to test whether research output in biotechnology has converged in G7 countries. To achieve this, the CHLL test is used. The results are tabulated in table 1.

Table 1: CHLL Test Results

	Lags	Test Statistic	Trend Coef	Trend tstat	p value	
Germany	0	-5.041079[a]	-0.007211	-0.531017	0.5818	Convergence
France	3	-4.675093[a]	-0.004202	-3.694794	0.0009	Catching-up
United Kingdom	1	-2.793664[c]	-0.004789	-2.933023	0.006	Catching-up
Italy	2	-3.089871[b]	0.001408	0.98561	0.3317	Convergence
Japan	0	-2.932801[c]	-0.005403	-2.382878	0.0053	Catching-up
Canada	1	-0.069641	-0.000554	-0.238601	0.8128	Divergence

[a,b,c] Level of significance at the 1, 5 and 10 %, respectively

The significance of the test statistics indicates the rejection of the null hypothesis of no convergence. In Table 1, unit root is found only for Canada. This means that research output in biotechnology for Canada has been divergent from the USA. The research output in biotechnology has been found to converge for other countries. On the other hand, the significance of the trend parameter will suggest long-run convergence or otherwise the catching-up hypothesis. It can be seen in Table 1 that the significance of the trend parameter

are shown for France, the United Kingdom and Japan. The insignificant trend parameter for Germany and Italy indicates long run convergence to the USA.

5. Conclusion

In this study, it was aimed to analyze whether research output in biotechnology has converged in G7 Countries for the period 1977-2015. The number of scientific research publications in biotechnology was used as research output. With respect to the number of publications, the USA was taken as the trend country and the other G7 countries' convergence/catching up potentials in comparison to the USA were analyzed using the CHLL nonlinear unit root test.

In the light of the obtained findings, while Germany and Italy display long-term convergence performance, France, the United Kingdom and Japan display catching up performance. Canada, on the other hand, displays convergence in comparison to the USA's publication performance. Therefore, it was concluded that Canada needs a significant change in policy to increase scientific publications in biotechnology. The question of what these policies are/could be is beyond the scope of this research. Beyond empirical analyses, more comprehensive institutional, historical and social analyses are needed to be carried out in order to answer these questions. The purpose of this study is to determine the current situation in the light of data and methods available.

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COMPLEXITY, COMPETITIVENESS AND TECHNOLOGY: IS THERE A LINK?

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Abstract

This study aims to investigate whether complexity, which is a function of locally available capabilities, has an impact on manufacturing competitiveness that is said to be a vital source of sustainable economic growth by triggering export and to identify the possible drivers of complexity. In this study, differently from existing studies, the complexity based on application of network theory level has been calculated across industry-country level by using BACI database. Our high dimensional (country, industry and time) fixed effects estimation results combining UNIDO database for 65 countries for period of 1990-2010 show that the level of complexity has statistically significant and positive impact on competitiveness when all industries are included. If we split industries into different technological categories, however, this impact disappears in low- and medium-low tech industries, which largely consist of food and beverage, textile and petroleum products, and increases in medium high and high-tech industries. In addition, we found that average wage, which is taken into account to test the theory of comparative advantage, has insignificant impact in all but high-tech industries, being in favor of Kaldor paradox. Finally, for complexity model, number of establishment, industry-specific human capital, demand and market structure have been found as significant determinants.

Keywords: Competitiveness, complexity, manufacturing industry.

1. Introduction

The concept of "Competitiveness" frequently used by businessmen, politicians and economists originally developed in Business discipline forms basis for strategic analysis of firms to maximize the profits and to increase market share. In Economics literature, though the concept serves to various strategies (policies) to reach some objectives such as enhancing living standards, achieving sustainable development and breaking poverty trap, definitions may differ in terms of unit in question (country, sector), measurement (exchange rate, labor costs, trade share, GDP per capita) and period of time (short-run or long-run). These competitiveness definitions and indicators may be grouped as price (exchange rate, wage, price level) and non-price (investment, technology, productivity) or "national (GDP per capita, total export and trade share, balance of payment) and industry (industry trade share and industry wage level)". Due to the fact that national- and price-based definitions faced some criticisms because of ignoring basic mechanisms (scale economies, increasing returns, and externalities) and assuming structural factors constant, "industry competitiveness" concept has been developed and refer to strategic industries to improve national competitiveness and thus, living standards.

It is well-known in the international trade literature that price determinants (exchange rate, price level, labor costs) do not fully explain the competitiveness levels of countries and technological efforts are more persuasive. What is little-known is that developing countries suffering from institutional and market failures, uncertainties and low human capital ratio have substantial costs in engagement in the efforts and adapting transferred technology. Thus, they may need industry-selective government interventions to promote industrial capability base.

In this paper, our methodology is based on two steps. Firstly, we empirically investigated the of impact technological capabilities on competitiveness at country and country-product level. Complexity index, which is the application of network analysis and assumed to be function of the capabilities was calculated by using 1993-2010 BACI bilateral data. This methodology allows us to see whether industry-specific and nationwide capabilities have an effect on competitiveness performances of countries. We saw that while industry-specific complexity effect has been found significant in all industries, this effect is more apparent in medium high and high-tech industries. However, only country-level complexity impact is significant in low-tech industries.

Secondly, since the complexity index eventually an ex-post measurement, to see how to develop capabilities, we tried to identify possible drivers of it. Among them, industry-specific human capital, demand and market structure have been found as significant determinants.

The paper is organized as fallows: In section 2, we discussed the underlying theoretical and empirical studies on the link between competitiveness, technology and capabilities. We introduce how we calculate the nationwide and industry level complexity indices in section 3. Section 4 and 5 presents some empirical evidence for estimation results for complexity and competitiveness model by taking into account relative price (unit labor cost) and non-price determinants (labor productivity and investment intensity). Finally, section 6 concludes and derives sector-level policy implications.

2. Competitiveness, technology and capabilities approach

Relation between technology and competitiveness dates back to Leontief (1953)'s seminal work, showing that unlike the Heckscher-Ohlin's factor endowment theory, US export rely on labor intensive products. Although this paradoxical finding was attributed to high labor productivity in US industries by author, it led to rise of neo-technological trade theories developed by Posner (1961) and Vernon (1966). According to this argument, probability of generating new products is higher in industrialized countries because of high labor costs and purchasing power of its citizens. Inventors will have temporary monopoly profit in their products' early stages. However, since firms in follower low-wage countries will imitate these innovations in later stages, monopolist position in leader country begin to disappear. Length of this cycle depends on the degree of competition in the market and technological dimension of innovation (Posner, 1961, pp. 323-331; Vernon, 1966, pp. 200). This argument was found to be consistent with empirical evidence by selected several studies (Keesing, 1967; Gruber et al., 1967; Sveikauskas; 1983; Hughes; 1983; Hirsch and Bijaoui, 1985). Keesing (1967, pp. 40-45)'s analysis was based on correlation coefficient between the international competitiveness and R&D expenditures, and found that R&D activity is highly and significantly correlated with trade performance.

Gruber et al. (1967, pp. 23-30) also examined the link between the competitiveness of US exports and R&D expenditures. They found that there is a strong relation between the US exports and R&D expenditures in the industries having higher share of total US exports when denominator used as World trade. However, they reached insignificant results when Germany and United Kingdom were used as benchmark countries. Authors interpreted these findings with the fact that export profiles of these countries are very similar.

Sveikauskas (1983, pp. 546-550), calculated the net export/consumption ratios of 354 US industry in 1967. His findings showed that these ratios are higher in industries making higher R&D expenditure and patenting intensively. Moreover, these sectors contributed to total productivity in US.

Hughes (1993, pp. 546-550), differently from two studies above, tested the validity of neo-factor and neo-technological trade theories for 46 UK manufacturing industries in 1978. He reached that R&D, industry structure and skill level positively related with competitiveness, according to regression analysis results. However, traditional factor endowments do not have any effect on export level.

Hirsch and Bijaoui (1985, pp. 247-248) used trade, R&D and size data of Israeli innovative firms in regression analysis for period 1975-1981. They accepted the product life cycle hypothesis that the higher R&D intensity is associated with higher propensity to export. They explained this finding with the fact that every rational firm must reach certain domestic sales volume to make R&D profitable.

Product life cycle hypothesis has been systematically modeled by Krugman (1979a, pp. 254-262). According to so-called "product variety" model, international trade is function of continuous innovation process in North and and transfer of technology toward South. Model converge to the point that North export new products and South import them. In addition, North's success on maintaining high wages was explained by monopolist power over new products. Slower innovation rate and faster technology transfer would narrow wage gap and negatively effect the living standards.

Three theoretical arguments above have been criticized by Lall (2000, pp. 3-8). According to him, Heckscher-Ohlin theories assume that technological diffusion across firms and countries is costless and without lags. However, countries with similar factor endowments and even skill resources can differ in terms of export performances. He also questioned the product life cycle theories by stating that technology transfer does not necessarily trigger the imitation and learning process[32]. Technological capabilities approach, based on the evolutionary tradition of Nelson and Winter (1982) and modern information theory of Stiglitz (1996, pp. 156), focused on micro-level learning process in developing countries. Industrial success in these countries heavily depends on extent to which firms managed to mastering, adapting and improving process upon existing technologies. However, since this process in developing countries contain not only basic problems in economy (weak capital markets and institutional structure, lack information and provision problems) but also market failures, uncertainties, cost, and risk, governments are called to overcome the market and institutional failures. Furthermore, these interventions must be selective since every industrial activity has different technology level and therefore learning processes and externalities (Lall, 2004, pp. 11). Hence, this approach tries to answer the criticisms above and reconcile technological trade theories with developing countries' structural problems.

OECD (1987, pp. 18) illustrates the long term differences in industrialized countries' performance as follows:

> *"the best that can be achieved; while incentives guide the use of capabilities and, indeed stimulate their expansion, renewal or disappearance. In the advanced economies, capabilities refer primarily to supplies of human capital, of savings and of existing capital stock, as well as to the technical and organizational skills, and incentives. Both incentives and capabilities operate within an institutional framework."*

By using this conceptualization, according to Lall (1992, pp. 170) national technological capabilities is interplay of human and physical capital, technological efforts, incentives and institutions. Note that the definition above lies beyond R&D or patenting and see government policies and institutional structure as important factor to improve the national technological capabilities, especially in developing countries.

Capabilities, as in the sense above, is measured based on the indexes derived from the trade data. First of all was "sophistication index" developed by Lall et al. (2005, pp. 8). To obtain this variable requires to calculate product sophistication first, by multiplying GDP per capita with share of exports of country in related product. After normalizing the product scores, country sophistication score is calculated by multiplying the normalized scores with export share of product and taking weighted average. Lall et al. (2006, pp. 230-232) conducted descriptive analysis and saw that competitiveness level and sophisticated scores are highly related.

Hausman et al. (2007) used similar methodology but replaced export share of country with Balassa's RCA index when calculating the product sophistication. Their panel regression analysis found that export sophistication index is positive and significant determinant of productivity growth.

[32] Lall (2000) also stated that lack of new trade theories model of Krugman (1979b, pp. 469) deals trade between only (mostly industrialized) countries with same characteristics such as tastes, technology and factor endowments. However, since developing countries have localized in different regions, their trade patterns may not be explained with economies of scale.

Using income information in these measures caused to criticism that rich countries export rich-country products" (Abdon et al., 2010, 3). Instead, Hidalgo (2009, pp. 5) developed an "complexity" index by separating income information on income from information on network structure and used Lego models to be explained below. They also observed positive and significant effect of complexity on productivity growth (Hidalgo and Hausman, 2009, pp. 10574). Similar results for China at region level have been found by Poncet and Waldemar (2013).

Abdon et al. (2010, pp. 8-23) calculated the complexity index for countries and products, and found that countries with high more complex product share in world trade are also those having high income. In addition, as income grows, export composition of a country moves toward more complex products.

Karadam ve Ozmen (2015, pp. 25-26)'s paper is on the degree of integration to global value chains in Turkish manufacturing industries, which is positively correlated with product complexity index by assumption. Their fixed effect estimation results show positive relation between product complexity and industry export.

3. Measurement of Complexity Index

As we mentioned above, complexity index is an indirect measure of capabilities by assuming each capability as Lego model. When we think each product as Lego piece, an individual's Lego basket increases as he or she has different Lego pieces thus can build quite different shapes. Likewise, a country's capabilities would increase if it is able to export more different products, especially those that can be exported by less countries which their product diversification is high. Let formalize these explanations to be more clear.

First of all, we need to calculate the Balassa's Revealed Comparative Advantage RCA index for each country i and each product p (Hidalgo and Hausman, 2009, pp. 10570-10572).

$$RCA_{ip} = \frac{\frac{X_{ip}}{\sum_p X_{ip}}}{\frac{\sum_i X_{ip}}{\sum_i \sum_p X_{ip}}} \tag{1}$$

By using equation (1), we generated vector M_{ip} which is equal to one if RCA_{ip} is greater than one and is equal to zero, otherwise. In this way, we connected countries to products when $M_{ip} = 1$. Secondly, we aggregated M_{ip} vector for each country and each product. While former is called diversification $(k_{i,0})$, latter is ubiquity $(k_{p,0})$.

$$k_{i,0} = \sum_p M_{ip} \tag{2}$$

$$k_{p,0} = \sum_i M_{ip} \tag{3}$$

After multiplying $k_{p,0}$ $(k_{i,0})$ with M_{ip} and aggregated for each country (product), we divided by $k_{i,0}$ $(k_{p,0})$. This process was iterated "n" times until relative country complexity rankings remain same. After all, we would have country $k_{i,n}$ and product complexity $k_{p,n}$ indices:

$$k_{i,n} = \frac{1}{k_{i,o}} \sum_p M_{ip} * k_{p,n-1} \tag{4}$$

$$k_{p,n} = \frac{1}{k_{p,o}} \sum_i M_{ip} * k_{i,n-1} \tag{5}$$

Finally, we calculated "country-industry specific" complexity index by taking weighted average of $k_{p,n}$ for each country and three-digit manufacturing industry group (j):

$$COMP_{ij} = \sum_j w_{ip}{}^j * std(k_{p,n}{}^j)\,,\, w_{ip} = \frac{x_{ip}}{\sum_p x_{ip}} \tag{6}$$

4. The Data

We used three different data sources in this study. Firstly, BACI dataset by Gaulier and Zignago (2016) collect bilateral data for trade for period 1989-2014. It corrects the raw data of COMTRADE trade data reconciling the declarations of exporter and importer. Our second data source is UNIDO (2014) which presents value added, wage, investment and employment series of countries for manufacturing industry between 1989-2010. Finally, human capital and natural endowment indices at disaggregated level by Shirotory et al. (2010) has been used in complexity estimation which will be explained below.

5. Empirical Methodology and Findings

5.1. Competitiveness model

In the first place, we constructed a competitiveness model consisting price and non-price determinants to find out extent to which complexity has an impact on competitiveness across different technological intensities. The high-dimensional (country, industry and year) model which investigates the effect of country-product level complexity is as follows:

$$\Delta RXS_{ijt} = \beta_0 + \beta_1 COMP_{ijt} + \beta_2 RAW_{ijt} + \beta_3 RINV_{ijt} + \beta_4 RLP_{ijt} + D_i + D_j + D_t + \varepsilon_{ijt} \tag{7}$$

Assuming that subscripts i, j t are country, industry and time, dependent variable ΔRXS is change in relative export share of country. RAW, $RINV$, and RLP are relative average wage, relative investment intensity and relative labor productivity, respectively. Finally, terms D's represent country, industry and time dummies and ε is error term with white noise.

To test the country-level complexity effect, let $k_{i,16}$ shows the index value which have 16 iterations, equation (8) is our alternative model:

$$\Delta RXS_{ijt} = \beta_0 + \beta_1 std(k)_{i,16_{it}} + \beta_2 RAW_{ijt} + \beta_3 RINV_{ijt} + \beta_4 RLP_{ijt} + D_i + D_j + D_t + \varepsilon_{ijt} \tag{8}$$

Obviously, our variable of interest is β_1 and it expected positive for both specifications.

Our first competitiveness estimation results have been presented in Table-1. In the first column, country-product level complexity has positive and significant coefficient, expectedly. However, while this variable turned out as insignificant, as technological category moves to medium- and high-tech industries returns to the industry-specific capability endowment is not only significant but also higher than the other technology class. Among other variables, positive and significant coefficient of relative average wage confirms the Kaldor paradox but this finding contradicts when we estimate within high-tech industries. Relative investment rate and labor productivity is only significant and expected sign only in all industries and high-tech industries estimations.

Table-1: Competitiveness model with country-industry complexity, 1989-2010

VARIABLES	(1) All industries OLS	(2) Low-tech industries OLS	(3) Medium low-tech industries OLS	(4) Medium high-tech industries OLS	(5) High-tech industries OLS
$COMP_{ijt}$	0.030**	0.006	0.035	0.076**	0.101*
	(0.010)	(0.010)	(0.034)	(0.026)	(0.042)
RAW_{ijt}	-0.016	0.026+	0.003	0.021	-0.083**
	(0.010)	(0.014)	(0.027)	(0.020)	(0.024)
$RINV_{ijt}$	0.005*	0.004	0.006	0.007	0.019**
	(0.003)	(0.003)	(0.007)	(0.005)	(0.007)
RLP_{ijt}	0.015+	-0.004	-0.010	0.014	0.049**
	(0.008)	(0.013)	(0.019)	(0.013)	(0.015)
Observations	25,887	9,962	5,159	7,028	3,738
R-squared	0.053	0.061	0.042	0.075	0.133
Year Dummies	yes	yes	yes	yes	yes
Industry Dummies	yes	yes	yes	yes	yes
Country Dummies	yes	yes	yes	yes	yes

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

Table-2 shows the effect of country-level complexity on competitiveness and we saw that the variable of interest is significant for medium high-tech industries again. What is different from the findings above, general capability structure affects the low-tech and do not so for high-tech industries. Findings of other variables is found as similar with Table-1.

Table-2: Competitiveness model with country complexity, 1989-2010

VARIABLES	(1) All industries OLS	(2) Low-tech industries OLS	(3) Medium low-tech industries OLS	(4) Medium high-tech industries OLS	(5) High-tech industries OLS
$std(k)_{i,16_{it}}$	0.077**	0.076**	0.038	0.127**	0.082
	(0.019)	(0.023)	(0.053)	(0.039)	(0.066)
RAW_{ijt}	-0.015	0.028*	0.003	0.021	-0.088**
	(0.010)	(0.014)	(0.027)	(0.020)	(0.024)
$RINV_{ijt}$	0.006*	0.004	0.006	0.007	0.020**
	(0.003)	(0.003)	(0.007)	(0.005)	(0.007)
RLP_{ijt}	0.016*	-0.003	-0.010	0.018	0.053**
	(0.008)	(0.013)	(0.019)	(0.014)	(0.015)
Observations	25,887	9,962	5,159	7,028	3,738

R-squared	0.053	0.062	0.042	0.074	0.131
Year Dummies	yes	yes	yes	yes	yes
Industry Dummies	yes	yes	yes	yes	yes
Country Dummies	yes	yes	yes	yes	yes

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

5.2 Complexity model

Since our complexity index is ex-post measure, it could not give an explanation about the how we can develop capabilities. To do so, we identified some demand and supply factors, similar to Maggioni et al. (2016):

$$COMP_{ijt} = \alpha_0 + \alpha_1 ESTAB_{ijt} + \alpha_2 AVEWAGE_{ijt} + \alpha_3 RESOURCE_{ijt} + \alpha_4 HUMAN_{ijt} + \alpha_5 OECD_{ijt} + \alpha_6 IMPORT_{ijt} + D_i + D_j + D_t + \epsilon_{ijt} \quad (9)$$

$ESTAB$ is number of establishment and proxy for market structure of the industry. For example, the more firms operate the lower barriers to the entry are. Therefore, as market failure hypothesis Hausmann and Rodrik (2003) argued, discovery (and diversification) rate will fall since imitators penetrate to the industry. $AVEWAGE$ is total wage bill divided by number of worker and shows us whether wage information signals the human capital content of employee. $RESOURCE$ has been added to model to figure out that natural resource endowment (non-renewable resources, arable land and protected areas) of an industry weighted by total export share has any effect on capability development. $HUMAN$ is schooling rate of an industry and help to explain the question which human capital effect the competitiveness via producing complex goods.
Among the demand factors, while $OECD$ is import share of the industry in total imports of OECD countries, $IMPORT$ is import share for industry j of country i.

Table-3 includes estimation results of all, medium high- and high-tech industries which have significant country-industry level complexity effect. Being negative and significant value of $ESTAB$ confirms the market failure hypothesis. Other hand, $HUMAN$ and $OECD$ have positive and significant value for all cases. However, insignificant, even significant and positive coefficient of $AVEWAGE$ imply that compressive wage policy could not improve the trade performance by triggering the complexity.

Table-3: Complexity model, 1989-2006

VARIABLES	(1) All industries OLS	(2) Medium high-tech industries OLS	(3) High-tech industries OLS
$ESTAB_{ijt}$	-0.005**	-0.013**	-0.022**
	(0.002)	(0.003)	(0.004)
$AVEWAGE_{ijt}$	0.023+	0.019	-0.007
	(0.014)	(0.062)	(0.023)
$RESOURCE_{ijt}$	0.164**	0.100	0.150+

	(0.041)	(0.098)	(0.088)
$HUMAN_{ijt}$	1.591**	1.597**	2.831**
	(0.065)	(0.123)	(0.189)
$OECD_{ijt}$	21.615**	17.159**	4.350*
	(0.877)	(1.885)	(1.989)
$IMPORT_{ijt}$	0.000	0.002**	-0.000
	(0.000)	(0.001)	(0.000)
Observations	36,842	10,209	5,362
R-squared	0.826	0.698	0.673
Year Dummies	yes	yes	yes
Industry Dummies	yes	yes	yes
Country Dummies	yes	yes	yes
Adjusted R-square	0.825	0.694	0.666

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

6. Conclusion

What countries export is not simply determined by different combinations of inputs, as traditional trade theories claim. Choosing which product to be exported is a function of capabilities which are specific inputs that locally available. Moreover, these capabilities can be industry specific because some industrial activities have different technology level, and therefore learning processes and externalities.

In this study, we constructed a competitiveness model to test the impact of country-industry level complexity index. We found that returns to industry-specific complexity in terms of trade share in technology intensive industries are higher. On the other hand, trade performance of traditional industries can be improved only through general capability structure of countries. Put it differently, competitiveness performance of low-tech industries is determined by all industries' complexity structure. Penetration of new technologies to these industries can help their competitiveness.

We also found that developing capabilities requiring industry-specific focus, which are technology intensive industries and highest trade share in our case, depends primarily on industry specific human capital content, being consistent with Costinot (2009) and Maggioni et al. (2016). However, even though compressive wage policies contributed to competitiveness in some scenarios, these could not have specific effect on complexity that could provide sustainable and healthy trade performance.

Barriers to entry in the industry of an economy may be detrimental to the diversification, as market failure hypothesis argued. However, when considering the inter-spillover effects and importance of diversification in developing countries, to protect the industry should not be used as industry policy. Instead, first-mover entrepreneurs can be supported (Rodrik, 2004). Finally, demand structure of high income countries should be followed because their preference set is used as escalator to develop capabilities.

To conclude, we suggest that countries should concentrate on nationwide and industry specific capability building. However, governance and free-trade policies offered by

mainstream trade theories are inadequate in this process. Especially for developing countries, governments may overcome the market failures, information asymmetries and coordination problems in directing resources by establishing new institutions and agencies that handles the education (or training), competition and supervision policy at industry level.

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THE ANALYSIS OF THE RELATIONSHIP BETWEEN TURKEY'S REAL EFFECTIVE EXCHANGE RATE AND HAZELNUT EXPORT TO GERMANY VIA BOUNDS TEST

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Abstract

In this study, for 1996Q1-2016Q2 period, the relationship between the real effective exchange rate of Turkey and hazelnut export to Germany was examined using bounds test. The unit root tests of parameters were performed using ADF and PP unit root tests. According to the results of ADF and PP tests, all of the parameters were observed to be stationary at various levels. According to the results, it was concluded that the long-term changes in real effective exchange rates in Turkey affect Turkey's hazelnut export to Germany. It was determined that 1% increase in long-term effective exchange rate would decrease the hazelnut export by 1.5411%. But, in short-term, it was determined that real effective exchange rates effect was statistically non-significant. In other words, no significant relationship between the real effective exchange rate of Turkey and hazelnut export to Germany could be observed. On the other hand, ECM coefficient was found to be -0.53338, which indicates that 53% of the imbalance in short-term will be recovered in next period.

Keywords: Foreign Trade, Real Exchange Rate, Time Series, Bounds Test

1. Introduction

One of the most important agricultural products of Turkey in production and export is the hazelnut. According to the data of year 2014, 71% of hazelnut production in the world was made in Turkey, followed by Italy (11%). As well as in production, Turkey is in leading position also in hazelnut export. According to the data of year 2013, 66% of hazelnut export in the world was made by Turkey, followed by Georgia (11%) (Nuts and Dried Fruits Global Statistical Review 2014-2015). The destination of Turkey's hazelnut export varied in period of 1996-2016. 46% of Turkey's hazelnut export has been made to Germany, while this percentage declined to 12% in year 2015. On the other hand, in year 2015, 32% of Turkey's hazelnut export was made to Italy. As the Turkey's hazelnut destination shifted from Germany to Italy, Georgia became a destination for hazelnut export according to the Germany's data of year 2013 (calculated from database of TURKSTAT).

Germany and Italy are the countries known as hazelnut-processing countries and ranking as first 2 hazelnut importers in the world. It can be seen that the destination of Turkey changed between these 2 countries. The main point distinguishing Germany from Italy is that Germany do not grow hazelnut, while Italy is the 2nd largest hazelnut producer (Aktaş, 2009). It should be taken into account that the high-level dependency of hazelnut export to Italy, the second largest hazelnut producer, may have certain problematic results. Hence, in International Convention of Agriculture and Food on 14th-15th October, Turkish hazelnut was ranked first

in list of most dangerous imported foods by Coldiretti, the Italian Association of Agriculturists (http://www.bbc.com/turkce/haberler-dunya-37672069).

It should be considered that the loss of Germany, where there is no supply of hazelnut, to Georgia, which is the first competitor in export, would have possible negative effects on Turkey's hazelnut export in future. The share of Germany in Turkey's annual hazelnut export is presented in Figure 1.

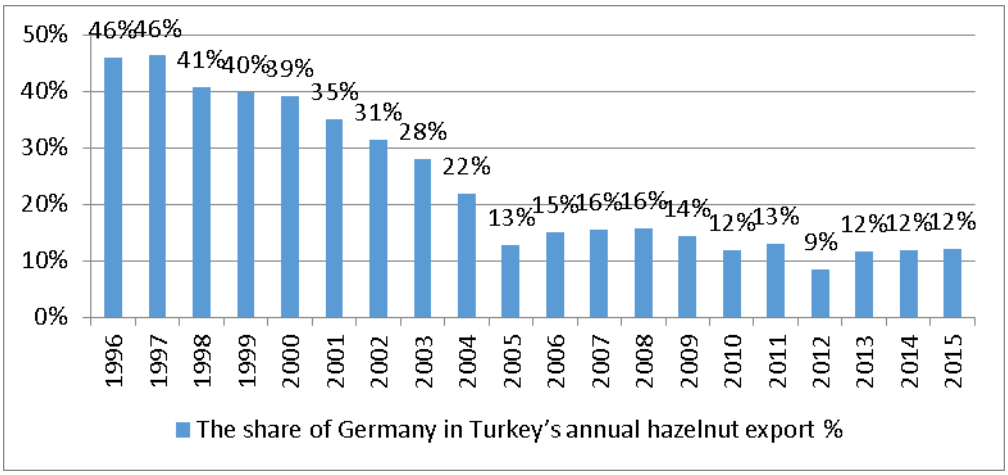

Figure 1. The share of Germany in Turkey's annual hazelnut export

As seen in Figure 1, the share of Germany in Turkey's annual hazelnut export shows downwards trend. Germany is an important market as non-producer important and processor and 2nd largest importer in the world. In present study, the relationship between the hazelnut export of Turkey to Germany, which is a globally important market, and the real affective exchange rate was investigated.

In literature, there are many studies discussing the relationship between the exportation and the exchange rate. Moreover, there also are studies examining the relationship between agricultural product exportation and foreign exchange rates in addition to the general foreign trade and exchange rate relationship. Among the agricultural products, the number of studies examining the relationship of hazelnut export with exchange rate is limited, there are some examples. Erdal (2008) has examined the relationship of Turkey's hazelnut export prices with exchange rate and European Hazelnut Exchange Prices in period of 1995-2007 by using Johansen Cointegration and Granger Causality tests. According to the cointegration test results, it was determined that there was a long-term relationship between the series. According to the causality test, on the other hand, there are one-way relationship form exchange rate to Turkey's hazelnut exchange prices and European Hazelnut Exchange prices and two-way relationship between Turkey's hazelnut exchange prices and European Hazelnut Exchange prices.

Hatırlı et al. (2008), in their study employing the monthly data of 1996-2006 period, have examined the permeability of hazelnut prices from Turkey to Germany by using the two-way logarithmic model and the exchange rate fluctuations by using GARCH approach. According to the model estimation results, the price permeability and exchange rate elasticities were found to be low in short and long-term, and the permeability was determined to be not complete.

Akal (2009) has examined the Turkey's domestic hazelnut export for 1978-2001 period by using simple econometric and autoregressive averages cause-effect techniques (ARMAX). The exchange rate elasticity of domestic hazelnut export was found to be inelastic, while the domestic hazelnut export amount elasticity of export incomes was found to be elastic. In estimations based on these models, it has been predicted that the domestic hazelnut export and incomes would increase.

Yanıkkaya et al. (2013) have investigated the effects of exchange rate and exchange rate fluctuations on the export of, in addition to the hazelnut, certain agricultural products of 46 countries including Turkey for 1971-2010 period. According to the analysis results, no statistical relationship could be determined between the agricultural product export and exchange rate fluctuation, while a statistically significant relationship has been found with the exchange rate.

In his study, Toktaş (2016) has examined the relationship between Turkey's real effective exchange rates and its hazelnut export to EU-member countries for 1997Q1-2015Q3 period by using bounds test. In that study, it has been reported that 1% increase in real effective exchange rates decreased Turkey's hazelnut export to EU countries by 2.47%.

In present study, the relationship between Turkey's hazelnut export and real effective exchange rates was investigated. Following the "Introduction" section including general introductive information and a short literature review, the empirical analysis is presented. The relationship between Turkey's hazelnut export and real effective exchange rate was tested using quarterly data for the period of 1996-2016 via bounds test. And then, the paper is ended with conclusion section.

2. Empirical Analyses

The variables used in this study are Turkey's real hazelnut export to Germany, real effective exchange rates, and Germany's real gross domestic product. The quarterly data covers the period between the first trimester of 1996 and the second trimester of 2016. The algorithms of series were cleansed from the seasonality.

Table 1. Variables used in present study

Abbreviation of Variable	Definition	Period	Source
LNREXP	Turkey's hazelnut export to Germany	1996Q1-2016Q2	TURKSTAT database
LNRGDP	Germany's real gross domestic product	1996Q1-2016Q2	EUROSTAT
LNREER	Real effective exchange rates	1996Q1-2016Q2	BIS

In present study, the foreign trade model used in studies of Bahmani-Oskooee and Goswami (2004) was employed in order to examine the relationship between export and real effective exchange rates:

$$LNREXP_t = a + bLNRGDP_t + cLNREER_t + \varepsilon_t \quad (1)$$

For Cointegration Analysis, there are cointegration tests in literature used by Engel and Granger (1987), Johansen (1988), Johansen and Juselius (1990). These tests cannot be used in cases of various levels of stationarity of variables. The bounds test developed by Paseran et al.

(2001) allows the cointegration analysis in case of various levels of stationarity of variables. For the bounds test, the unlimited error correction model (UECM) should be used at first. The version of UECM modified to present model is presented in Eq.2 below.

$$\Delta LNREXP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \Delta LNREXP_{t-i} + \sum_{i=1}^{p} \alpha_{2i} \Delta LNREER_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta LNRGDP_{t-i} + \alpha_4 LNREXP_{t-1} + \alpha_5 LNREER_{t-1} + \alpha_6 LNRGDP_{t-1} + \alpha_7 t + \epsilon_t \quad (2)$$

where, t represents trend variable and p indicates the number of lag. In present study, the length of lag with lowest Schwarz Bayesian Information Criteria (SBC) was considered the length of lag. In order to test the presence of cointegration relationship, F test is applied to first period lags of dependent and independent variables. For this test, the null hypothesis is H_0:α4=α5=α6=0. The F-statistic values calculated as a result of the test are compared to top and bottom limits in Pesaran's (2001) table. If the calculated F statistics is higher than the top critical limit of table, then it indicates the presence of cointegration relationship, while the values lower than bottom limit of table indicate the absence of cointegration relationship. In case of F values calculated to be within the range between top and bottom critical limits, no exact interpretation regarding the cointegration relationship can be made (Karagöl, Erbaykal and Ertuğrul, 2007).

After determining the cointegration relationship between the series, then the ARDL (Autoregressive Distribution Lag) model was established in order to investigate the long- and short-term relationships between the hazelnut export and real effective exchange rates. The ARDL model used in present study is shown in Eq.(3):

$$LNREXP_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} LNREXP_{t-i} + \sum_{i=1}^{r} \alpha_{2i} LNREER_{t-i} + \sum_{i=1}^{s} \alpha_{3i} LNRGDP_{t-i} + \alpha_4 t + \varepsilon_t \quad (3)$$

where, the optimal lengths of lag determined according to SBC are represented with "n, r, s''.

3. Analysis Results

The stationarity analysis of the series used in present study was tested using ADF (Augmented Dickey-Fuller) and PP (Phillips Perron) tests. The results of ADF and PP unit root tests are presented in Table 2. The null hypotheses of ADF and PP test equations are established based on the assumption that the series includes unit root.

Table 2. Results of ADF and PP Unit Root Tests

Variable			ADF		PP	
			Constant	Constant and Trend	Constant	Constant and Trend
LNREXP	Level	t-statistics	-3.843608*	-5.436865*	-3.627029*	-5.468792*
		1%	-3.513344	-4.075340	-3.513344	-4.075340
		5%	-2.897678	-3.466248	-2.897678	-3.466248

		10%	-2.586103	-3.159780	-2.586103	-3.159780
LNRGDP	Level	t-statistics	-1.822329	-1.776187	-1.513329	-1.434614
		1%	-3.521579	-4.086877	-3.521579	-4.086877
		5%	-2.901217	-3.471693	-2.901217	-3.471693
		10%	-2.587981	-3.162948	-2.587981	-3.162948
	First Difference	t-statistics	-6.249228*	-6.216397*	-6.295111*	-6.263475*
		1%	-3.521579	-4.086877	-3.521579	-4.086877
		5%	-2.901217	-3.471693	-2.901217	-3.471693
		10%	-2.587981	-3.162948	-2.587981	-3.162948
LNREER	Level	t-statistics	-3.017444**	-3.292062***	-2.973639**	-3.292062***
		1%	-3.521579	-4.086877	-3.521579	-4.086877
		5%	-2.901217	-3.471693	-2.901217	-3.471693
		10%	-2.587981	-3.162948	-2.587981	-3.162948

* indicates significance level of 1%
** indicates significance level of 5%
*** indicates significance level of 10%

In proportion to ADF and PP tests, since the t-statistic calculated for LNREXP and LNREER series in levels are higher in terms of absolute value, series are stationary, which means that LNREXP and LNREER series are I(0). The t-statistic values calculated for LNRGDP series in levels was found to be lower than critical values in table in proportion to ADF and PP tests in terms of absolute values, while it was found to be higher than critical table values in first differences. It means that, in proportion to ADF and PP tests, LNRGDP series is stationary at first difference, thus LNRGDP series is I(1).

The maximum length of lag in present study was taken to be 8, and the number of lag was determined to be 1 according to SBC. After determining the optimal length of lag regarding the unlimited error correction model, then the cointegration relationship between the variables was examined using bounds test. The results of bounds test are presented in Table 3.

Table 3. Bounds test results

Bounds Test	**Critic Limits**	
F Statistic = 6.9555	**Bottom Limit**	**Top Limit**
5%	3.9502	4.9842
10%	3.2740	4.2477

According to Table 3, the F-statistic value which is calculated was found to be 6.9555; since it is higher than top critical limits of table, the cointegration relation between the variables was determined. After determining the cointegration relationship, the coefficients of long-term relationship based on ARDL model were calculated. The estimation of ARDL (1,0,0) model is presented in Table 4.

Table 4. Long-term ARDL Model Estimations (1,0,0)

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LNREXP(-1)	0.46662	0.11007	4.2394[0.000]
LNREER	-0.82197	0.49518	-1.6600[0.101]
LNRGDP	0.45618	0.36712	1.2426[0.218]
INPT	6.8019	6.6289	1.0261[0.308]
Definitive Tests		**Statistics**	
A:Serial Correlation		1.8471[0.764]	
B:Functional Form		10045[0.751]	
C:Normality		33.4232[0.000]	
D:Heteroscedasticity		16837[0.682]	

A: Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

In Figure 2, the CUSUM and CUSUMQ test results indicting the consistency of model are presented. As a result of CUSUM and CUSUMSQ tests, it was determined that the residuals of model were found to be within the limits, and that the parameters were consistent.

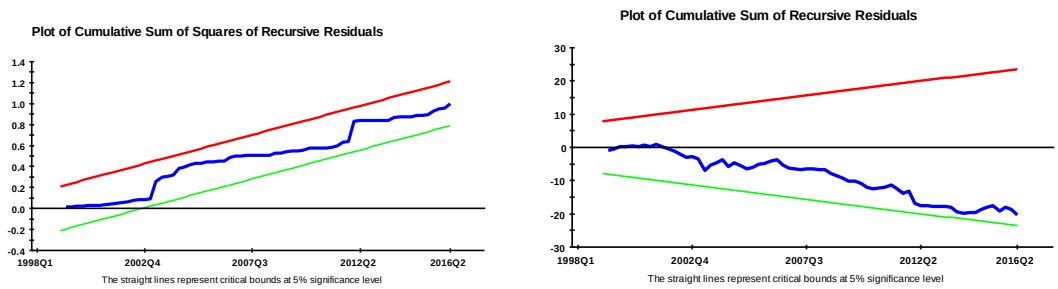

Figure 1. Plot of Cusum of Squares and Cusum Tests

Long-term coefficients calculated using ARDL (1,0,0) model are presented in Table 5.

Table 5. Long-term Coefficients of ARDL(1,0,0) Model

Estimated Equilibrium LNREXP = f(LNREER, LNRGDP)		
Regressor	**Coefficient**	**T-Ratio[Prob]**
LNREER	-1.5411	-1.9306[0.058]
LNRGDP	0.85527	1.2263[0.224]
INPT	12.7525	1.1002[0.275]

According to the results of estimations of ARDL model in Table 5, the coefficients of LNREER and LNRGDP variables are non-significant at significance level of 5%. At

significance level of 10%, significant and negative relationship between LNREER and LNREXP was determined. 1% increase in LNREER decreases LNREXP by 1.5411%.

The estimations about short-term relationship via ARDL method based on error correction model are presented in Table 6.

Table 6. Results of Error Correction Model based on ARDL (1,0,0) Approach

Dependent variable is dLNREXP		
Regressor	**Coefficient**	**T-Ratio[Prob]**
dLNREER	-0.82197	-1.6600[0.101]
dLNRGDP	0.45618	1.2426[0.218]
ecm(-1)	-0.53338	-4.8459[0.000]

Given the ECM coefficient, it can be seen that the value of coefficient is negative and significant as expected. ECM indicates that 53% of an imbalance in short-term will be recovered in next period. At significance levels of 5% and 10%, dLNRGDP and dLNREER are statistically non-significant.

4. Conclusion

The relationship between the Turkey's hazelnut export to Germany and real effective exchange rates was examined using quarterly data for the period of 1996-2016. First of all, the stationarity of series was examined. For the stationarity analyses, the ADF and PP tests frequently used in literature were utilized; according to the results of stationarity analyses, LNREER and LNREXP series were found to be I(0) and LNRGDP series was found to be I(1). Following the stationarity analysis, the cointegration relationship between the series being stationary at different levels was examined using bounds test developed by Peseran et al. (2001). According to the bounds test results, a cointegration relationship was found between the Turkey's hazelnut export to Germany and real effective exchange rates.

Finally, by using ARDL method, the short- and long-term relationships between Turkey's hazelnut export to Germany and real effective exchange rates were analyzed. According to the results of ARDL model, as expected, real effective exchange rates negatively and significantly (at significance level of 10%) affects the Turkey's hazelnut export to Germany in long-term. The long-term coefficient of real effective exchange rates was found to be -1.5411 at significance level of 10%. It means that 1% increase in real effective exchange rates in long-term will decrease the hazelnut export by 1.5411%. In short-term, however, the coefficient of real effective exchange rates at significance levels of 5% and 10% were found to be statistically non-significant meaning that there is no significant relationship between real effective exchange rates and hazelnut export to Germany. ECM coefficient was found to be negative and statistically significant. ECM coefficient of -0.53338 means that 53% of imbalance in short-term will be recovered in next period.

Determination of the effects of exchange rate policies on the destination change in Turkey's hazelnut export is the subject of another study. But, under the lights of empirical results obtained in present study, it might be concluded that the under-valued exchange rate policy would be useful in increasing the Turkey's hazelnut export to Germany. It should be remarked that the real effective exchange rate is not the sole factor of export, and other factors influencing the export should be considered while determining the policy to increase the

export. In present study, it is aimed to provide the policy-makers with more detailed information regarding the effects of real effective exchange rates on the export through the example of hazelnut export to Germany.

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THE RELATIONSHIP OF CO_2 EMISSION AND ECONOMIC GROWTH IN BRICS-T COUNTRIES: A PANEL DATA ANALYSIS

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Abstract

In this study, in order to study the relationship between economic growth and CO_2 emission, using the data of economic growth, CO_2 emission, and energy use of BRICS - T countries (Brazil, Russia, India, China, South Africa, and Turkey), according to Pooled Mean Group Estimator-PMGE, it was found that both long and short term parameters of energy use and GDP were significant. In long term, an increase of 1 % in energy use and GDP raises CO_2 in the rates of approx. 1.22% and 1.13%, respectively. In short term, these coefficients ranges in 0.34% and 0.55%. The results of Dumitrescu Hurlin general causality test points out that there is a two way relationship between all variables.

Keywords: Economic Growth, CO_2 Emission, BRICS - T Countries

1. INTRODUCTION

In 1960s, featuring the negative aspects of economic growth such as pollution, urban severity, crowdedness, and other negative externalities, they became interest focus. However, as a result of continuation of high rate economic growth, Rome Club introduced the discussion "Limits of Growth" regarding that extinctions may be experienced in resources. In this study of Rome Club, it was emphasized that economic growth should be slowed down (Bruvoll and Medin, 2003: 27-28).

World Commission on Environment and Development Commission within United Nation published the report titled "Our Common Future", in which the interrelation of environment and development is examined, in 1983. This report emphasized the points such as eliminating poverty, equally distribution of benefit obtained from natural resources, population control, struggle with pollution, and use of environmental friendly technology that are necessary to be able to provide sustainable development (Yenigün, 2011).

Especially since the early 1990s, climatic changes, global warming, and environmental deterioration have become a common issue. While the emission of CO_2 gas is indicated as the cause of environmental deterioration, the relationship between the gas of interest and economic growth has formed a contradictive state (Arı and Zeren 2011: 37).

The view that environmental pollution will increase along with economic growth and that it will decrease after reaching a certain income level is termed as Environmental Kuznets Curve in the literature (Başar and Temurlenk, 2007: 1). Environmental Kuznets Curve, formed by Kuznets (1955) based on economic growth and income inequality, was shaped in the light of the study of Krueger (1991) examining the relationship between air quality and economic

growth as well as the study of Grossman and Krueger (1995) revealing the relationship between income and various environmental indicators.
In the study, in order to reveal the relationship economic growth and CO_2 emission, literature was reviewed and dynamic panel data analysis covering the period of 1990-2011 was conducted on BRICS – T (Brazil, Russia, India, China, South Africa, and Turkey) countries.

2. LITERATURE

Begum et al. (2015), in Malaysia, in order to reveal the effect of economic growth, energy consumption, and population increase on CO_2 emissions, carried out an econometric analysis. Analyses results indicated that in the period of 1970-1980, the decrease in CO_2 per capita and increase in economic growth were experienced, while in the period of 1980 -2009, an increase in CO_2 emission as well as economic growth occurred. In addition, it was concluded that while in the long period, there was positive effect of energy consumption and economic growth on CO_2 emission, the same effect was not of interest on population increase.

Joo et al. (2015), in Chili, for the period of 1965-2010, studied the causality relationship between energy consumption, CO_2 emission, and economic growth, utilizing time series analysis. As a result of analysis, it emerged that there was one directional causality from CO_2 emission to economic growth.

Magazzino (2015), dealing with the period of 1971-2006, attempted to reveal the relationship between economic growth, energy use, and CO_2 emission for Israel. According to the causality results, it was suggested that real gross domestic product caused both to energy use and CO_2 emission.

Aytun (2014), for the period of 1971-2010, studied the relationship between CO_2 emission, economic growth, energy consumption, and educational level in 20 countries by means of co-integration and panel vector error correction model. The results obtained showed that the shape of Environmental Kuznets Curve was in the form of inverse U. In addition, in the long period, it was revealed that there was a causality from the rates of economic growth, energy use, and schooling to CO_2 emission

Gao and Zhang (2014), in order to reveal the relationship between electricity consumption, economic growth, and CO_2 emission, applied the methods of panel co-integration and panel vector error correction modelling to a group consisting of 14 Sub-Saharan Countries for the period of 1980-2009. The findings showed that the shape of Environmental Kuznets Curve was in the form of inverse U: In addition, according to the causality tests, it emerged that there was the bidirectional relationship between economic growth and CO_2 emission.

Lee and Brahmasrene (2014), in order to reveal the relationships between communication technologies, CO_2 emission, and economic growth, using the data belonging to the period of 1991-2009 of 9 countries member to ASEAN, carried out panel data analysis. In the analysis results showed that there was a long termed equilibrium relationship between the variables. In addition, it was suggested that besides that there was an opposite directional strong relationship between CO_2 emission and economic growth, there was also the bidirectional relationship.

Omri et al. (2014), utilizing the data belonging to 54 countries, for the period of 1990-2011, in order to reveal the causalities between CO_2 emission, foreign direct investment, and economic

growth, applied the dynamic simultaneous panel. The results showed that there was a one – directional causality from CO_2 emission to economic growth in the other regions except for Middle East, North Africa, and Sub-Saharan.

Dam et al. (2013), in Turkey, using the economic data belonging to the period of 1960-2010, analyzed the relationship between economic growth, energy consumption, and greenhouse gas emissions by means of the method of the dynamic least squares. In the light of results, it was introduced that CO_2 emission first decreased, as income per capita increased; later, that emissions showed an increase, as income increased; and, in the continuation of process, after a certain point, that income per capita continuing to increase would reduce CO_2 emissions.

Omri (2013), in order to reveal the relationship between CO_2 emission, energy consumption, and economic growth, applied simultaneous equation panel. In the analysis, in which the data of 14 MENA belonging to the period 1990-2011 were used, it turned out that there was the bidirectional causality between economic growth and CO_2 emission.

Arı and Zeren (2011) analyzed the relationship between CO_2 emissions and income per capita by means of panel data analysis belonging to the period 2000-2005 of Mediterranean in the context of Environmental Kuznets Curve. According to the analysis results, it was introduced that in the early stages of economic growth, economic growth would increase; however, after a certain income level, that while economic growth was continuing, CO_2 emission would decrease. Later, it was stated that CO_2 emission would begin to increase again along with the increase in income.

Saatçi and Dumrul (2011), for the period of 1950-2007, in order to reveal the relationship between environmental pollution and economic growth in Turkey, applied unit root and co-integration analyses containing structural breakage. According to the results of analysis, it was reached the finding that there was a long termed relationships between environmental pollution and economic growth together with breakages.

3. DATA, MODEL AND METHOD

In this study, the relationship between CO_2 emission, GDP and energy use was analyzed for the countries of Brazil, Russia, India, China, South Africa and Turkey (BRICS-T) in the scope of the period 1990-2011, using dynamic panel data methods (Pooled Mean Group Estimator-PMGE) and Mean Group Estimator-MGE).

3.1. Definition of Data and Variables

The variables used in testing the relationship between CO_2 emission, GDP (Gross Domestic Product), and energy use are as seen in Table 1. In the study, CO_2 emission (LNCO2) was specified as dependable variable; Gross Domestic Product (LNGDP) and energy use (LNENUSE) as explanatory variables. The variables were included in the model in logarithmic form.

Table 1: Dataset

Variables	Definition of Variables
CO_2 Emission (Million Metric Ton)	It is carbon dioxide emission resulted from a total of energy consumption
GDP (With the prices of February 2015, billion $)	GDP is defined as total value of final goods and services, either produced by the citizens of that country or the other countries in a certain period within the borders of country. In calculation of GDP, three different techniques are used as the methods of expenditure, income, and production. GDP, in the literature of economics, is accepted the most important indicator of economic growth.
Energy Use (million equivalent oil per fixed purchasing power parity based GDP)	Energy use states primary energy use before transforming into the other final use energy. This data is obtained by adding the import and stock variables into domestic production and subtracting oil supply made for the ships and airplanes engaging in international trade

Resource: 1. U.S. Energy Information Administration. *International Energy Statistics.* http://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=90&pid=44&aid=8;

2. World Bank. *World Development Indicators.* http://databank.worldbank.org, Access Date: 01.06.2015.

3.2. Model and Method

In the study, in BRICS-T countries, in the estimation of the long and short termed relationships between CO_2 emission, GDP, and energy use, the estimators PMGE and MGE will be utilized. While testing the relationships between these variables, in order to reveal which estimator produces more accurate results, long term homogeneity will be tested by using Hausman test.

While PMGE, developed by Pesaran, Shin and Smith (1999) allows for short term dynamics to become different between countries, it constricts long term relationships in such a way that it will be homogenous. PMGE, with its heterogamous short term dynamics, is based on Auto Regressive Distributed Lag-ARDL model.

$$\Delta(\tilde{m}_{it} - \tilde{p}_{it}) = \emptyset_i(\tilde{m}_{it-1} - \tilde{p}_{it-1}) + a_1\tilde{y}_{it} + a_2\tilde{r}_{it} + \sum_{j=1}^{p-1} \lambda_{ij}\,\Delta(\tilde{m}_{it-j} - \tilde{p}_{it-j} +) \sum_{j=0}^{q-1}(\delta_{ij1}\Delta\tilde{y}_{it-j} + \sum_{j=0}^{q-1}(\theta_{ij1}\Delta\tilde{y}_{it-j}) + \mu_i + \varepsilon_{it}$$

In the model, $\emptyset_i$ denotes error correction parameter; λ_{ij}, coefficients of lagged dependent variable (scalars); $\delta_{i,j}(k \times 1)$,coefficient vectors; index i, the number of country; r, time; q, optimal lagging length; and u_{it}, the term error. That error correction factor is negative valued and statistically significant shows that short termed deviations between co-integrated series will disappear in the long period and that series will reach equilibrium in the long period (Nautz and Rondorf, 2010: 13).

When correlation matrix taking place in Table 2 is looked at, while there are relatively high and positive correlations between CO_2 emission and energy use and GDP (0.66 and 0.71, respectively), between energy use and GDP, there is low and negative correlation (- 0.01).

Table 2: Correlation Matrix

Variables	$LNCO_2$	LNGDP	LNENUSE
$LNCO_2$	1.0000	0.7161	0.6661
LNGDP	0.7161	1.0000	-0.0141
LNENUSE	0.6661	-0.0141	1.0000

In econometric applications, that non-stationary series are kept fixed to regression may cause a possible dummy relationship between series. In view of this, whether or not the variables dealt with the study are stationary were tested by using first generation panel unit tests (Levin, Lin and Chu-LLC, Im, Pesaran and Shin-IPS and Augmented Dickey Fuller-ADF) and the results are presented in Table 3. According to this, the variable "LNENUSE" is stationary in the case of "with constant and trend" of LLC test, while, the variable "LNGDP" of IPS test. It was generally accepted that series are not stable and, taking the first difference of series, they were made stationary.

Table 3: Unit Root Tests

Unit Root Test	Levin, Lin and Chu				Im, Pesaran and Shin W-stat				ADF			
Variable	With Constant		With constant and trend		With Constant		With constant and trend		With constant		With constant and trend	
	Statistics.	Prob.	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.	Statistics	Prob.
LNCO2	0.42	0.665	-1.13	0.128	1.99	0.977	-0.87	0.190	7.82	0.798	15.2	0.229
LNGDP	0.91	0.821	-1.06	0.144	4.16	1.000	-1.41*	0.08	6.08	0.912	17.8	0.121
LNENUSE	0.14	0.559	-1.47*	0.069	1.47	0.929	-1.06	0.144	7.78	0.801	16.5	0.167
FIRST DIFFERENCE												
LNCO2	-8.69	0.000	-7.88	0.000	-8.41	0.000	-7.52	0.000	79.3	0.000	64.3	0.000
LNGDP	-5.25	0.000	-4.76	0.000	-5.10	0.000	-4.04	0.000	47.9	0.000	36.09	0.000
LNENUSE	-6.44	0.000	-5.69	0.000	-6.52	0.000	-5.14	0.000	60.9	0.000	45.3	0.000

* Denotes that statistical value is significant.

The results of co-integration relationship between series, taking their first differences, made stationary take place in Table 4. In Pedroni co-integration test, in the cases either with constant or with constant and trend, according to 6 out of 7 tests, there is co-integration between series. Kao test was accepted as significant and it was seen that there was a long termed relationship between series.

Table 4: Panel Co-Integration (Pedroni) and Kao Tests

	With Constant		With Constant and Trend	
Statistics	**Statistics**	**Probability**	**Statistics**	**Statistics**
Panel v-Statistics	-0.612774*	0.7300	-2.259886*	0.9881
Panel rho- Statistics	-5.255291	0.0000	-3.410989	0.0003
Panel PP- Statistics	-14.09343	0.0000	-20.28475	0.0000
Panel ADF- Statistics	-9.605750	0.0000	-11.21622	0.0000
Grouprho- Statistics	-4.757641	0.0000	-2.893261	0.0019
Group PP- Statistics	-16.65782	0.0000	-23.34123	0.0000
Group ADF- Statistics	-10.82805	0.0000	-10.70482	0.0000
Kao Test				
t-statistics		**Probability**		
-5.8464		0.0000		

*Coefficient is insignificant.

After identifying that there was a long termed relationships between series, the direction and coefficients of short and long termed relationships between variables can be estimated by means of the predictors PMGE and MGE. In this direction, panel vector error correction model can be formulated as follows:

$$\Delta LNCO_2 = \emptyset_i LNCO_{2_{it-1}} + \beta'_{i1} LNGDP_{it} + \beta'_{i2} LNENUSE_{it} + \sum_{j=1}^{p-1} \lambda_{it} \Delta LNCO_{2_{it-1}} + \sum_{j=0}^{q-1} \delta_{ij1} \Delta LNGDP_{it-j} + \sum_{j=0}^{q-1} \delta_{ij1} \Delta LNENUSE_{it-j} + u_{it}$$

In the model, $\emptyset_i$ denotes error correction parameter; λ_{ij}, coefficients of lagged dependent variable (scalars); $\delta_{i,j}(k \times 1)$, coefficient vectors; index i, the number of country; r, time; q, optimal lagging length; and u_{it}, the term error. That error correction factor is negative valued and statistically significant reveals that short termed deviations between co-integrated series will disappear in the long period and that series will reach equilibrium in the long period.

The relationship between LNCO2 and LNGDP and LNENUSE was estimated by the estimators PMGE and MGE and, in order to identify which of these predictors reveals better results, Hausman Test, which test long termed homogeneity, was applied. The findings obtained are presented in Table 5. Chi square value of Hausman test is not significant and H_0 hypothesis not rejected. That is, the PMGE produces correct results and long term parameters are homogenous. On the other hand, since error correction parameter is less zero, it is significant; hence, there is a long termed relationship between variables.

Table 5: The Results of PMGE and Hausman Tests

D. CO_2	**Coefficient**	**Standard Error**	**z statistics**	**P > | z |**	**%95 Confidence range**	
Ec LNGDP	1.129366	.0121619	92.86***	0.000	1.105529	1.153203
Ec	1.217519	.0303643	40.10***	0.000	1.158006	1.27703

LNENUSE						2
SR Ec	-.5891287	.1463	-4.03***	0.000	-.8758713	-.302386
LNGDP D1.	.5472602	.264673	2.07**	0.039	.0285107	1.06601
LNENUSE D1.	.3380834	.199398	1.70*	0.090	-.0527296	.7288963
Constant	-17.83955	4.433839	-4.02***	0.000	-26.52971	-9.149384
HAUSMAN TEST						
Hausman Test: $\chi^2(2) = 1.84$ **Prob>**χ^2 **=** 0.3994 **Log Probability:** 297.3125 **Number of Observation (n):** 124						

*** p<0.01, ** p<0.05, * p<0.1

Error correction parameters also shows the speed of short term deviations, resulted from not being stationary of series, to reach equilibrium in the next period. According to this, about 59% of unbalances forming in a period will get better in the next period and it will be provided it to approach to the long term equilibrium. Either short (0.34 and 0.35, respectively) and long term (1.22 and 1.23) parameters of the variables LNENUSE and LNGDP are significant. It can be expressed that the findings overlap with economic expectations. In the long term, increase of 1% in energy use and GDP increases CO2 in the rates of about 1.22% and 1.23%, respectively. In the short term, these coefficients range as 0.34% and 0.55%.

In terms of unit effects, as seen in Table 6, in the country group considered in the long term, the coefficients belonging to error correction parameters of Russia, India, China, South Africa, and Turkey were found significant. In view of this, in the mentioned countries, between CO_2 remission, energy use, and GDP, there is a long termed relationship.

Table 6: Long Term Confidents Belonging to Countries [a]

Countries	**D.lnco2**	**Coefficient**	**Standard Error**	**Z Statistics**	**Probability**	**[95% confidence interval]**	
__ec[a]	**lnGDP**	1.129366	.0121619	92.86***	0.000	1.105529	1.153203
	lnENUSE	1.217519	.0303643	40.10***	0.000	1.158006	1.277032
BRAZIL	**__ec**	-.0560133	.1381313	-0.41	0.685	-.3267458	.2147192
	lnGDP D1.	1.32212	.3302498	4.00***	0.000	.6748427	1.969398
	lnENUSE D1.	.6889029	.28696	2.40**	0.016	.1264716	1.251334
	_cons	-1.728596	4.236767	-0.41***	0.683	-10.03251	6.575316
RUSSIA	**__ec**	-.7240128	.219581	-3.30***	0.001	-1.154384	-.293642
	lnGDP	.2435448	.285105	0.85	0.393	-	.8023413

	D1.		5			.3152517	
	lnENUSE D1.	.1662928	.349895	0.48**	0.635	-.5194888	.8520743
	_cons	-21.9283	6.645417	-3.30***	0.001	-34.95308	-8.90352
INDIA	**__ec**	-.4572247	.1419646	-3.22***	0.001	-.7354703	-.1789791
	lnGDP D1.	1.431257	.3866564	3.70***	0.000	.6734245	2.18909
	lnENUSE D1	1.122688	.4429285	2.53**	0.011	.2545641	1.990812
	_cons	-13.75996	4.281509	-3.21***	0.001	-22.15157	-5.36836
CHINA	**__ec**	-1.139569	.1352027	-8.43***	0.000	-1.404561	-.8745764
	lnGDP D1.	.0753296	.1621869	0.46	0.642	-.242551	.3932101
	lnENUSE D1.	-.2597436	.1633888	-1.59	0.112	-.5799799	.0604926
	_cons	-34.53727	3.952217	-8.74***	0.000	-42.28347	-26.79106
SOUTH AFRICA	**__ec**	-.4812129	.2081277	-2.31**	0.021	-.8891357	-.0732901
	lnGDP D1.	.019917	.3590978	0.06	0.956	-.6839017	.7237358
	lnENUSE D1.	.1431009	.2428223	0.59	0.556	-.332822	.6190238
	_cons	-14.55388	6.293302	-2.31**	0.021	-26.88852	-2.219232
TURKEY	**__ec**	-.6767393	.2119952	-3.19***	0.001	-1.092242	-.2612363
	lnGDP D1.	.1913922	2844303	0.67	0.501	-.366081	.7488654
	lnENUSE D1.	.1672592	.3404939	0.49	0.623	-.5000966	.834615
	_cons	-20.52929	6.427146	-3.19***	0.001	-33.12627	-7.932317

[a] **:** Represents error correction parameter . *** p<0.01, ** p<0.05, * p<0.1

In the study, it was researched whether or not there was a causality relationships between series. In this scope, conducting Granger and Dumitrescu Hurlin panel causality tests, the results are presented in Table 7. According to the results of Granger causality test, in the country group forming sample, there are the bidirectional relationship between energy use

and CO_2 emission, GDP and CO_2 emission, while there is one way relationship between energy use and GDP from GDP to energy use. The results of Dumitrescu Hurlin points out that there is a two way relationship between all variables considered in the study.

Table 7: Panel Causality Tests

GRANGER			
Null Hypothesis	**Observation**	**F-Stylistics**	**Probability**
LNENUSE is not Granger cause of LNCO2	124	9.76433	0.0022
LNCO2 is not Granger cause of LNENUSE		5.66749	0.0188
LNGDP is not Granger cause of LNCO2	124	6.63275	0.0112
LNCO2 is not Granger cause of LNGDP		3.63458	0.0590
LNGDP is not Granger cause of LNENUSE	126	3.63000	0.0591
LNENUSE is not Granger cause of LNGDP		0.22811	0.6338
DUMITRESCU-HURLIN			
Null Hypothesis	**W-Statistics**	**Zbar-Statistics**	**Probability**
LNENUSE is not homogenously the cause of LNCO2	2.61881	2.07221	0.0382
LNCO2 is not homogenously the cause of LNENUSE	3.43320	3.20417	0.0014
LNGDP is not homogenously the cause of LNCO2	5.02966	5.42319	6.E-08
LNCO2 is not homogenously the cause of LNGDP	4.71497	4.98579	6.E-07
LNGDP is not homogenously the cause of LNENUSE	5.05911	5.49660	4.E-08
LNENUSE is not homogenously the cause of LNGDP	5.47262	6.07434	1.E-09

4. CONCLUSION

In the literature, the relation between CO_2 emission and economic growth is a continuously discussed issue. There are some problems, especially environmental problems, such as high urbanization, intensive energy use, and misuse of natural resources the economic growth brings together in terms of country.

In this study, in order to study the relationship between economic growth and CO_2 emission, the data belonging to the period 1990-2011 of economic growth, CO_2 emission, and energy use of BRICS-T countries (Brazil, Russia, India, China, South Africa, and Turkey) were used. GDP was taken as indicator of economic growth. PMGE, the parameters of the variables LNENUSE and LNGDP in either long term or short term is significant. In the long term, the increase of 1% in GDP increases CO_2 emission in the rate of about 1.22% and 1.13%, respectively. In the short term, these coefficients range in 0.34% and 0.55. It is possible that the findings are in the same direction with the economic expectation. In the country group, deal with the long term in terms of unit effects, the coefficients belonging to error correction parameters of Russia, India, China, South Africa, and Turkey were found significant and it was revealed that there was a long termed relationship between CO_2 emission, energy use, and GDP in these countries. In addition, in order to research whether or not there is a causality between series, Granger and Granger and Dumitrescu Hurlin panel causality test were

conducted. According to the results of Granger causality tests, there was a two way relationship between energy use and CO_2 emission and between GDP and CO_2 emission, while there was a one way relationship between GDP and energy from GDP to energy use. The results of Dumitrescu Hurlin points out that there is a two way relationship between all variables used in the study.

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THE IMPACT OF BILATERAL INVESTMENT TREATIES (BITS) AS A POLITICAL RISK MITIGATOR ON ATTRACTING FOREIGN DIRECT INVESTMENT (FDI)

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Abstract

This study tries to explore the role of BITS as a type of International Investment Agreements (IIAS) on protecting cross- border investment and global operation businesses. The study asks whether or not BITS mitigate political risks among countries solicitous of this type of agreements and whether they stimulate FDI to host countries. Several efforts have presented in this field of study through examining many variables that affect the relationship between BITS and FDI. This study reveals about the different results have extracted in this field of literature.

Keywords: Risk Management, International Investment Agreements (IIAs), Foreign Direct Investment (FDI)

Introduction

In 21st century world trade, the policies and rules underpinning investment and trade which consider barriers to entry have become the rules of international trade in an effective way (Global Agenda Council on Global Trade and FDI, 2013). The regulatory and legal environment of countries have a great role in shaping the trade and investment decisions. Many nations have embraced the amount of liberalization stated in Regional Trade Agreements (RTAs) and International Investment Agreements (IIAs), while others found it contradicted with their main Foreign Direct Investment (FDI) rules and conditions and adopted protectionist measures in their Bilateral Investment Treaties (BITs) against it, for example, Japan is one of the nations that have strict barriers to foreign entry.

Multinational enterprises around the world face different types of risks especially in nowadays dynamic and unstable environment, these risks may be outside the control of multinationals caused by fluctuations in economic variables called Macroeconomic Risks. Another type of risks facing the majority of firms operating across national boundaries called Political Risks or Policy Risks which arise from policy reversal or more generally from policy actions of host governments, this type of risks is the core subject of this review study. The third type of risks is Competitive Risks arising from the unpredictable reactions of competitors (competitors' responses). The last type of risks called Resource Risks arising from the adoption of strategies that require resources in which organizations are unable to acquire it (Ghoshal, 1987).

The literature of international trade and political science and economics provide conflicting results for the claimed relationship and connection between BITs and FDI, many moderating and mediation factors such as political environment of host countries, the structure of political institutions in host countries, equitable domestic institutional systems, population, location, GDP, levels of domestic investment and many other antecedents have taken in consideration to better determine the magnitude of the conditional relationship between BITs and FDI (Yackee, 2007; Tobin and Ackerman, 2011).

Political Risks' Meaning

Although political risks of international business received wide academic interest, it still a new term and has not limited meaning, because it has been described in different studies based on different implications of its unwanted consequences. But, political risks most commonly defined as government (usually host country) interference with business operations (Kobrin, 1979), another representative definition of political risks presented by Waston and Sorge, 1972 states that political risks arise from national governments' actions to prevent business (foreign investment) transactions, reverse policies in a way that contradict with their agreements with foreign investors, or confiscate (seizing) foreign investors properties partially or totally specially through coups in which the new in power political force may place a radical socialist system and expropriate foreign investors assets. Another cluster of authors defines the term political risk as environmental factors such as political instability or direct violence represented in constrains on foreign investment operations such as expropriation and confiscation, discriminatory taxation, unequitable treatment, and the like. In accordance to all the presented perspectives of political risk definition, we can define it as a combination of risks that are under the control of governments such as policy changing represented in changing exchange and interest rates, prices, import restrictions, expropriation, domestic arbitration, and risks that are unpredictable and out of the control of governments such as revolutions and political changes, labor strikes, and terrorism, that harm the normal circumstances of foreign investors to continue their business, attain profits, or maintain their market share in host countries.

The Political Risks of Global Business

The economic policies of nations are highly related with their political institutions in which the political systems can enhance the stability of countries' economic policies and let foreign investors to have perceptions about how the future economic and political conditions will become in the host countries, these perceptions determine investors decisions because political institutions' ability to provide credible commitment to economic policies in host countries is the most important element affecting foreign investors decisions. Accordingly, many nations are competing to provide better and better "market- friendly" policies for multinational enterprises (MNEs) to attract high levels of FDI flows.

The majority of studies presented in the literature of international investment, political risks of global business, and foreign direct investment illustrate that MNEs prefer to invest in countries with less policy risks (Holburn and Zelner, 2010).

After the economic crisis of 2008, many affected countries signed agreements with the International Monetary Fund (IMF) in an attempt to attain the required capital for recovering their financial problems. IMF conditions tie the lent loans to the availability of specific economic policies such as "market friendly" policies and policy stability. IMF conditionality expected to have a positive impact on the flows of FDI to countries under IMF program, but the opposite usually happens because IMF conditions caused protests and violence that lead to political and social instability in low and middle- income countries. As a result, we can say that the loans governments receive it from IMF may increase policy stability in these countries but, in the other side, it rises violence and political instability which lead multinational enterprises to step back from investing in these countries.

Foreign Investors' Decisions and Political Risks

Understanding different aspects of political risks and integrating it to investment decision-making consider a fundamental expertise for foreign investors that somewhat protect their assets and efforts to go waste. Foreign investors, through the process of decision making, confront big challenges represent in their capabilities to associate the probability of occurring a specific event (risk) with its outcomes. This logical judgment may be successful in case of systemic domestic risks which relate to the domestic institutional system of host countries and could be predicted from reviewing the subsequent behavior of host country or analyzing the statistics of its past experience. But in the case of unpredictable events, decision-makers neither predict the probability of occurring these risks nor their possible outcomes such as wars, terrorism, revolutions.

Uncertainty is usually subjective which realizing the likelihood of occurring certain events in such circumstances need a combination of many non-cognitive skills, information, and data that form perceptions enable foreign investors to slightly predict occurring some risks. Many empirical studies in the literature of international trade examine different environmental factors particularly political instability and market size which these two factors had the most significant impact on FDI flows. A cross-sectional study done over 62 countries by Kobrin in 1976 analyzed the impact of seven economic, social, and political factors on US manufacturing FDI flows. He concluded that the overall impact of all studied environmental factors on FDI was 64%, whilst market size and the prior exports of US took the biggest portion of this impact and record high significance over political instability. This result might not be the same if this study apply in one of the developing countries, because US as a developed country provide high levels of protection for foreign investors in their legislations and policies, which lead investors to concentrate on their environmental analysis more on market size and other factors helping them to maximize their market share and profits over than political issues (Kobrin, 1979) Kobrin, 1978 found that interstate conflicts have a significant impact on FDI practically when these conflicts estimate to have unfavorable outcomes for foreign investors such as changing government policies (Korbin, 1978).

Changing leadership either formally through election or through coups and revolutions considers one of the most perilous political risks facing foreign investment particularly in developing countries, this risk usually arise from host countries and threaten multinational enterprises investing in these countries as well as, harming FDI flows to such countries. But we might see the occurrence of this risk from home countries, this case is obvious now after Donald Trump take over US presidency in which he repeatedly promise US people in his debates to break the international investment treaties between US and China to draw back the American- base technological multinational enterprises investing in China. This leadership change estimate to affect FDI inflows and outflows with China because the importance of China's outflow with US which ranked at third place in both 2014 and 2015, the total investment of Chinese multinationals in US records $15.7 billion in 2015 a 30 % increase from 2014 (Hanemann and Gao, 2016), most of this investment was through 103 merges and acquisitions (M&A) deals worth $14 billion, in the other hand this leadership change may also affect the American multinationals investing in china such as Apple co. in which the price of its new generations of iphone estimate to increase to more than $1300 if it start to produce in US.

The Structure of Political Institutions and Political Risks

The literature of international investment devoted an exaggerated attention to the fiscal competition among countries to attract FDI by lowering taxation levels (Jensen, 2006), while the impact of political institution structure on FDI remain under-development in the literature and an obvious contrast can be found about the impact of democratic and authoritarian political institutions to attract FDI.

Most scholars interested in studying the impact of various political institutions on FDI flows declare an availability of positive linkage between domestic political institution and high levels of FDI, this derivation came out from the reality of associating balanced movements and policy changing with democratic systems and their role in activating policy stability. Policy stability encourages multinational corporations and allow them to plan for their investment, analyze the macroeconomic environment more accurately, and make investment decisions according to the predicted information and forecasted data (Jensen, 2003, 2006).

Some efforts in the literature devoted toward the study of multinationals preferences to invest in dictatorships, but this area of study has not concluded serious results and remain under development. The main idea that these studies based on is the desire of some multinational enterprises to bargain with authoritarians because of the low levels of leader turnover in these countries which provide policy stability, as well as arranging opportunities for foreign investors even if is not the favor of their countries' domestic growth and development but usually lent personal interests to authoritarian leaders whom have substantial influence over governments.
Jensen 2006 declared that multinational investors prefer to invest in democratic nations over authoritarians for three basic reasons:

1- Democratic nations are more transparence in their legislations and affairs, and offer clear information. This transparency allow multinational firms to invest confidently in democratic nations over than authoritarian regimes.
2- The author clarifies the role of representation in attracting FDI in democratic countries. Representation means that foreign investment countries can influence democratic host countries through lobbying their preferred conditions, while it seems not existed in authoritarian countries. In this case, democratic nations try to provide favorable legislations to foreign investment in balance with their domestic.
3- Credibility is the third mechanism offered in Jensen's 2006 study, credibility means the ability of political institutions of host countries to deal with rises political risks in favor of the multinational enterprises. Democratic nations consider credible systems because the political institutions of these countries create incentives for their governments to provide political stability that attract FDI balanced with their domestic investment. Democratic nations prove their credibility through the subsequent commitment to signed agreements in these countries (Allee and Peinhardt, 2011).

The quality of political and diplomatic relations between home and host countries is the most important factor affecting foreign investors decisions, the political risks that related to each pair of these countries and interstate political relations called Idiosyncratic Risks, while that related to domestic institutional system which are more common to investors called Systemic Domestic Risks. A study performed in 2007 by Desbordes and Vicard analyzed data collected from 30 OECD countries and 62 non- OECD countries found that diplomatic relations significantly affect FDI flows, but this relationship can be mitigated by the entry of BITs. It

means that BITs have an important indirect impact on FDI flows over the impact of interstate political relations (Desbordes and Vicard, 2007; Neumayer and Spess, 2005).

As the political and legal environment of many developing and transition economies are weak and unstable, investors desiring to invest in these countries seek to have tailored alternative rules that protect their property rights and reduce the systemic domestic and idiosyncratic risks facing them (Tobin and Ackerman, 2003), BITs consider one of the most effective elements of securing the legal phenomenon of foreign investment , resolving disputes between the host and home countries through the International Center for the Settlement of International Disputes (ICSID), facilitating the access of financial resources (UNCTAD, 1998), and fulfilling policy credibility by transition and developing countries.

BITs and FDI

Singing agreements between foreign investors and host countries are complex processes and are not free of mutual criticism. Multinational enterprises and host countries both suffer from a little trust of the rights and obligations reliability that have been agreed on previously (Tobin and Ackerman, 2003) which usually caused by the deterioration of the diplomatic relations between home and host countries (Desbordes & Vicard, 2007). No one can ignore the existence of such troubles among the contracting parties, as each side seek assurances and interest that guarantee achieving their goals that should balance with the goals of the side.

BITs are general frameworks between two (host and home) countries imply a band of rules that ensure Foreign investment Protection. These agreements are usually set by host countries that facilitate the negotiations of FDI, and have relatively similar provision unless some differences in the way of provided protection, capital flow, repatriation of profits, the equivalent treatment of domestic and foreign firms, etc., BITs also differ from each other in excluding investment in particular sectors or areas such as telecommunication industry.

Although BITs have unlimited interest for all countries interested in attracting FDI, some of these countries might not be cautions enough about BITs negative consequences if it has not been prepared carefully in the way that guarantee balanced interests for the host and home countries, but instead it may harm the national industry of host countries and lead them to loss sovereignty over their domestic investment disputes. Counties fear of losing the sovereignty over their internal activities and policies through the restrictions that many BITs drafts include it, lead many host countries to refuse signing these BITs, the US BIT with Honduras in the early 1980s was exact example on this case in which Honduras refused signing a $ 5 billion investment BIT because it included clauses violated to Honduran legislation.

In general, US and several European BITs try to decrease the greediness of many foreign investors caused by host countries' race to the bottom (RTB) attract them, as well as the leverage of host countries over foreign investors through prohibiting investment performance requirements that usually affecting the investment decisions of multinationals int favor of host nations. Repatriation of profits is an example of investments performance requirement in which some treaties' clauses enable host countries in economic emergency times to delay foreign investors' repatriation of profits. Despite the advantages and disadvantages appeared from signing BIT agreements between host and home countries, but it still consider a very powerful mechanism of internationalizing the commercial law as a way of reducing the disputes between contracting sides.

The history of signing first BITs goes back to the end of 1950s in which Germany took the lead in this area when in concluded an agreement with Pakistan in 1959 after a massive suffer from losing approximately all of its foreign investment after world war II (Salacuse & Sulivan, 2005), while some authors trace their roots to the friendship, commerce, and navigation (FCN) treaties that US concluded the over countries as a tool of improving its foreign relations. Although the opinions of scholars vary about the availability of significant relationship between BITs and FDI, the number of signed BITs is increasing dramatically year after another, this growth in BITs numbers prove the importance of these agreements, the number of formed BITs were 75 by the end 1960s, then they rose to 176 and 389 by the end of the 1970s and 1980s respectively. The most rapid growth of BITs signed worldwide were between 1990s and 2002 which arrived 2181 BITs, and the vast majority of them were concluded between developed and developing countries (Neumayer & Spess, 2005) at the aim of providing certain standards of treatment or better treatment for the foreign investors over the domestic investors.

The main purpose of concluding BITs particularly in developing countries is guaranteeing certain standards of treatment and creating incentives for host countries government to complicate policy reversal and maximize policy stability for foreign investors. These provisions are fundamental factors to bypass some problems facing developing countries such as “hold-up” or “dynamic inconsistency”, this problem arises in the host countries that have promised foreign investors an equitable treatment in their domestic legal rules to promote the, but once the foreign investors established and have sunk significant capital in operation, the host country begin to expropriate their assets through changing the regulations, pricing, taxing, and the like (Coleman, Davidson, low & Pryce, 2012), because of that, foreign investors cannot trust the host countries domestics legal rules and prefer to attain protection through international legal binds and arbitration represented in BITs.

As a result, we can say that BITs are important elements for protecting foreign investment that currently have not much alternatives unless few agreements of regional free trade such as North American Free Trade Agreement (NAFTA) and World Trade Organization’s (WTO) Agreement.

BITs usually conclude between developed and developing countries, it could be seen formed between two developing countries or two developed countries as well, such as BITs between Egypt and Morocco, and between United States and Japan (Salacuse et al, 2005).

Establishing international business or investment in developing countries usually needs concluding agreements such as BITs that guarantee certain levels of protection for foreign investors, because the political and economic policies in these countries are unstable and usually controlled by governments’ sovereignty, but the case of Brazil is exception to this estimation. Although Brazil is one of the developing countries (Poulsen, 2010) that bogged down by an ongoing instability in its political and economic situation, and nowadays is witnessing a leadership transition which Brazilian people forced president Dilma Rousseff to step down and allow her vice president to take over the position as interim president (Flannery, 2016), it attract large levels of FDI without any BITs. The absence of BITs did not impede the plentiful flow of foreign investment to Brazil. Many studies such as Unite Nations Conference on Trade and Development (UNCTAD) return the reason behind this much investment to Brazil to the quality of its domestics policies and regulation that provide standards favorable to foreign investors.

Reviewing different perspectives of international trade literature induce us to consider many other environmental factors in consideration rather than policy stability as Brazil has a population more than the population of other South American countries combined (Infante, 2015), this lead us to think that market size and population have significant impact on foreign investors decisions to invest in certain location.

FDI in 21st Century

FDI consider a powerful and major form of international capital transformation among nations and enhance their economic growth prosperity and development through creating jobs, promoting knowledge, exchanging information and expertise, transferring technology, increasing the productivity in different sectors, modernizing the domestic industry and increasing employment levels.
FDI witnessed a dramatic increase at the end of 20th century and more accurately between 1980 and 1990 which it has tripled. FDI as a form of transforming the international capital has become the most efficient entry strategy to international business (IB) over the licensing, franchising, turnkey operations, etc.(Froot, 1993).

The advancement in FDI that the world witness it nowadays is a consequence of the first step taken by US to move oversea post world war II. At that time, US firms were advanced in technology that let them access foreign markets even to achieve competitive advantages as a first or to obstruct competitors' access, then it dramatically turned from a home for many multinational firms to a host for foreign multinationals specially European, Canadian, and Japanese-based multinational enterprises which the person sometimes can feel that, these foreign multinationals have a control over certain assets in US more than its based enterprises.

The 21st century's FDI characterized by some different features than it was before. FDI's development, through the time, represented in many surges, each surge occurs in a certain industry such as Japanese automobile production which let Japanese multinationals more powerful as foreign investors and have a control over assets in the host countries. This surge of industry lead US inflows and Japanese outflows to explore across all industries and become larger and faster in growing. FDI also differs in the way of establishing the business. In the past, multinationals were establishing investment in host countries from the base by themselves, this way of business was a role and called greenfield investment which was $766 billion in 2015 (UNCTAD, 2016), but nowadays the majority of foreign investors are establishing their investment in host countries through mergers and acquisitions (M&A) which facilitate financing businesses.

In 2015, FDI flows reached highest level since the financial crisis of 2008 which became $1.76 trillion a 38 % increase from 2014, however it still 10% less than it was in 2007 which records highest levels of global FDI flow ever. A dramatic increase in cross-border M&A from $432 billion in 2014 to $721 billion in 2015 was the fundamental factor behind this FDI rebound. In accordance to the fragile global economy, weak aggregate demand, and falling MNE profits, FDI expected to decrease in 2016, this expectation took place as it has been illustrated in OECD, 2016 which the global FDI flows record $793 billion in the first half of 2016 a 5% decline compared to the second half of 2016 (OECD).

Conclusion

Many authors interested in economic literature illustrate that only successful governments are changing their policies in accordance to the volatile political and economic circumstances in

an attempt to adjust their policies in the way that much with the international agreements such as Bilateral Investment Treaties (BITs) and International Investment Agreements (IIAs). As a result, we can say that the political institutions capable of providing credible commitments to international investment policies and multinationals corporations will be more effective in attracting FDI. Democratic institutions usually create incentives for their governments to backtrack or renegotiate policies in a way that oppose the favor multinational enterprises, these incentives usually consider key elements for achieving policy stability. Although policy stability has been generally agreed on to have a positive impact on FDI flows, multinationals look at it negatively when it relates to governments under IMF programs due to the political and social effects caused by perceived loans such as violence and protests.

Many theoretical perspectives have been presented in the literature of international investment such as "Ownership, Location, and Internalization (OLI) framework" presented by John Dunning which studied these three factors as key elements affecting the decisions of multinational firms to invest abroad or not. Many other theoretical models have been developed by a number of scholars interested in multinationals decisions to invest abroad such as "vertical" firms, "horizontal" firms, and the knowledge-capital model. Although these theoretical frameworks and models are strong tools for understanding the multinationals perceptions to invest abroad, they still shallow to answer the most critical question of foreign investment: what features should host countries have to attract FDI? Because FDI remains a totally firm-level decision which, as many other scholar thought, it affected more and more by the political conditions of host countries, and the credibility of nation's political institutions that represented in the creative incentives for their governments make policy reversal more difficult and maximize levels of policy stability. Also it is important to illustrate the importance of the commitment and subsequent behavior of governments signing BITs on FDI inflows. Governments that are more committed to comply BITs are more favorable to multinational enterprises, BITs are very important international frameworks that guarantee certain standards of treatment for multinationals especially in developing countries because they can successfully overcome the political interference and regulatory sovereignty of host countries to expropriate foreign investors, assets and reach the international arbitration.

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DO PRESS RELEASES PROVIDE NEW INFORMATION? THE CASE OF BRITISH PETROLEUM'S DEEPWATER HORIZON OIL SPILL

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Abstract

This study evaluated the informational content of press releases and press conferences using the British Petroleum's 2010 Deepwater Horizon oil spill incident in which the company gave 52 press releases or press conferences in the 87-day event. The results show that, on average, the market reacted negatively to the news releasing events (press releases or press conferences). The average abnormal return was -0.67% with a t-value of -4.573 which was significant at the -0.01 (two-tailed test). This suggests that new releasing events contained new information which was perceived to be detrimental to the company. Contrary to the popular myth that "there is no news as bad news", there is indeed "bad news", at least, in the world of investment and corporate finance.

1. Introduction

The objective of this study is to evaluate the informational content of press releases or press conferences using the British Petroleum's 2010 Deepwater Horizon oil spill incident as a case study. The study is important because a major event such as the Deepwater Horizon oil spill has provided researchers in information economics an opportunity to rigorously analyze two popular myths surrounding public information and communication – namely, (1) "there is no news as bad news", and (2) "corporate press releases and news conferences are no more than a gimmick". If the first assertion is true, then news on bad events should not negatively impact companies, and in fact, on the contrary should help them. On the other hand, if the second assertion is true, then corporate press releases and news conferences amount to no more than a waste of resources – time and money.

The Deepwater Horizon Oil spill, which occurred in the Macondo Prospect in the Gulf of Mexico in April, 2010, was the largest accidental oil spill in the United States (Robertson and Clifford, 2010; Hoch, 2010; National Response Team, 2011). British Petroleum (BP) which was primarily responsible for the environmental disaster tried without much success, through initial press releases/news conferences, to implicate two other companies - Halliburtan and Transocean as co-culprits (see Bates, 2010; Weber, Kunzelman and Cappiello, 2010).

BP, in an unprecedented move, held or released a total of 57 new conferences/ press releases during the crisis that lasted for 87 days. Ostensibly, these events were to keep the public

informed, but critics dismissed them as "damage control" or "PR gimmick" given the company's inability to truthfully provide simple pertinent information such as the flow rate during these news conferences or in press releases (see Robertson et al., 2010). The flow rate was important because it gives the public an idea of how much damage was taking place and what to expect.

To test the informational content of the press releases or press conferences held by British Petroleum during the crisis, we used the event study technique (Samuelson, 1965; Fama, 1965, 1970), a well-received technique in finance, and data from the BBC (British Broadcasting Communication) timeline chronicle.

2. Data

Several different news media covered events surrounding the spill on daily basis, given the significance of the oil spill, however, we chose to use the BBC's timeline chronicle of events because we feel it was thorough and objective. We collected the dates (for example 04/20/10, 04/22/10, 04/23/10 etc) of the 52 days that BBC reported that BP made a press release or held a press conference.

3. Methodology

To test the informational content of the press releases and press conferences, we treated BP's the press release or news conference of each day as an event. We arbitrarily treated the days where a press release was issued and a news conference was held as one event, but we noticed less than four of such instances.

We extracted the daily market returns data from CRSP tapes (Center for Research in Security Prices, University of Chicago) and analyzed the effects of news releases and press conference on BP's the market value using the event study methodology (Fama *et al.,* 1969; Brown and Warner, 1985). We treated the press release or a news conference on each day as an event, and used the market model which is based on the argument that the expected returns on any asset in the market is linearly related to the contemporaneous return on the market portfolio (see Koku et al., 1997) such that

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

Where,

R_{it} = random return on asset i

α_i and β_i are parameters,

$R_{m,t}$ = return on the market portfolio, and

$\varepsilon_{i,t}$ = residuals, and

$$\varepsilon_{i,t} = R_{i,t} - \alpha_i - \beta_i R_{m,t} \quad (2)$$

The event-study methodology is based on the *efficient market hypothesis* and the *rational expectations theory* which argue that the asset prices in the market quickly adjust to incorporate publicly available information in order to establish market prices (Fama *et al.,* 1969). The market quickly re-establishes equilibrium after incorporating information in the market, thus the residuals ($\varepsilon_{i,t}$), as indicated in equation 2 above, under such a condition should not be significantly different from zero. As such, a significant residual deviation from zero is indicative of unexpected news in the market.

We estimated the parameters of equation [1] using a linear regression over a period starting from 220 trading days to 15 trading days before t0, the day that press release was given or a press conference was held. Seven of the events were dropped because of they were either non-trading days or because of correlation problems. We used the parameters to forecast expected returns for a period of 15 days prior to t0 and measured the informational content of the press release or the news conference by subtracting the actual returns from the forecasted returns. We divided each excess returns by the estimated standard deviation to correct for variance and computed the two-tailed t-test for each event.

4. Results and Conclusion

The results show that, on average, the market reacts negatively to bad news. The myth that "there is no news as bad news" is simply just that - a myth, and not grounded in facts. Furthermore, the results do not support the proposition that press releases or press conferences are simple gimmicks or damage control mechanism. If that was what they were intended to be in the case of BP, then they were not particularly effective as evidenced in the negative abnormal returns. An argument could still be made that perhaps the negative abnormal returns could have been worse in the absence of the press releases or news conferences, however, we have no way of testing that argument.

There was significant negative abnormal return on event date t0, the day of a press release or a news conference. The average AR was -0.67% with a t-value of -4.573 which was significant at the -0.01 (two-tailed test). The results suggest that the information events (press releases and news conferences) that BP made did in fact reveal new information that was detrimental to the company which the market quickly incorporated in BP's stock prices.

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The Effects of Digital Economy on Productivity: a Dynamic Panel Data Analysis

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Abstract

Digital economy has been a hot topic in recent years. It puts knowledge into the epicenter of the production process and builds an efficient production system by employing information and communication technologies. Smart factories are expected to dominate future production trends and increase productivity with aspects such as cyber-physical systems, cloud computing, big data, and internet of things. In this study we examine the determinants of productivity growth in G7 economies with a special focus on digital economy. In this respect, we employ the Generalized Method of Moments (GMM) estimator proposed by Arellano and Bond (1991) using data over the 1995-2014 period. It is found that digital economy significantly improves productivity where the magnitude differs greatly among individual countries. Traditional determinants such as education, health and R&D also have a positive effect on productivity. Our results indicate that promoting digital economy is an effective way to stimulate productivity growth and have important implications for policy makers.

Keywords: Digital Economy, Productivity,

1.Introduction

Digital economy which has been in the public interest since the 1990s, leads to transform the ways of production and economy conducted. Social media, smart phones, big data, the progress of these technological trends change the production technique and global economy. In the digital economy households, consumers, employers and companies demand and supply shaping with the new technological trends (Uhl and Gollenia, 2014). Digital economy has some significant components such as; *Information and Communications Technology (ICT)* , *internet of the things*, *big data*, *smart manufacturing*, *e-commerce* and *cyber-physical systems (CPS)*. Digital economy infrastructure supports production and makes it more productive (Shaw, 2005)
Recent innovations in ICT technologies of telephone and cable networks and wireless transmission have made it possible to transfer and share larger files faster such as music files, movies and software products. The rise of the Internet access and broadband speed had a dramatic impact on industry and productivity. Software programs , information goods, data that are distributed through the Internet which constitute the software side of the digital economy (Peitz and Illing, 2006)

For measuring the contribution of digital economy to economic growth, the most important issue is calculating the digital economy. One of the significant components of digital economy is ICT. Thus, ICT investment contain ‘‘investments in both computer and telecommunications, as well as related hardware, software and services’’ (Farhadi at al,

2012.). ICT investment leads to technology transfers to the firms and increases total factor productivity. The investments in ICTs, effects on employment and wages are positive. Broadband access stimulates job creation and improve the technological skills of employees (Atasoy, 2011)

"Big *data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze In the digital economy, big data is processed using advanced analytics tools to generate information in many different sector*s" (Chambers, at al,2012). Big data is used to improve the quality of medical treatment, to increase crops yield, to improve the flow of traffic on highways, and to understand customers' needs. Trillions of bytes data have been transferred around the world for decades for most big firms.

Internet of things (IoT) is meaning the "things connected to the internet has become part of our daily life. Recently IoT technologies are used in smart houses, smart factories, smart agriculture and more on. These technologies improve industrial manufacturing processes, enable building smart factories, reduce operational cost and improve human safety in industrial areas. From an economic point of view, increasing productivity through IoT applications and sustainability are significant and will influence the use of IoT technologies in the industry, on a larger scale, in the coming years. (Friess and Vermesan, 2013)

Smart manufacturing increase the flexibility of production. Smart production stores information about its production history and monitor the process of the production. In smart factories the process of the manufacturing is digitalized and data transfer between the smart machines, employees and suppliers. Smart manufacturing technology depends on Radio-frequency identification (RFID) and cyber-physical systems which aim to increase the production smaller sizes according to customer demands(Uhl and Gollenia, 2014).

Before analyzing the effects of digital economy on productivity , we must look over the ICT statistics (table 1and graph 1). Mobile-broadband networks (3G or above) reach 84% of the global population but only 67% of the rural population. According to 2015 numbers total number of global M2M (machine-to-machine) connections are nearly 200 million.. The countries with the highest M2M penetration rates are highly industrialized, advanced economies, including the Northern European countries of Sweden, Norway, Finland and Denmark (ITU, 2016)

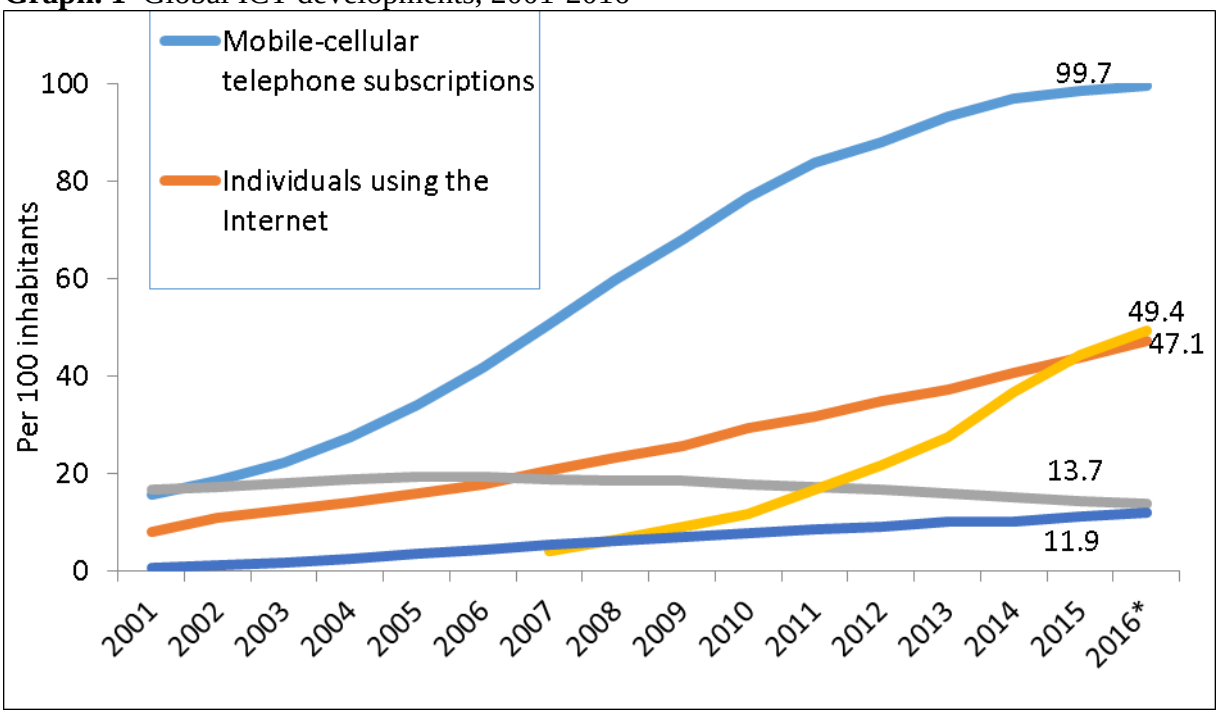
Table. 1 ICT developments in Developing and Developed Countries 2001-2016

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016***
Fixed-telephone subscriptions										
Developed	44,8	44,3	45,5	44,6	43,4	42,2	40,8	39,7	38,5	37,3
Developing	13,0	12,8	12,4	11,9	11,5	11,2	10,6	9,9	9,3	8,8
World	18,8	18,5	18,4	17,8	17,2	16,7	15,9	15,1	14,3	13,7
Mobile-cellular telephone subscriptions										
Developed	102,0	107,8	112,1	113,3	113,5	116,0	118,4	122,7	125,7	126,7

Developing	39,1	49,0	58,2	68,5	77,4	82,1	87,8	91,4	93,0	94,1
World	50,6	59,7	68,0	76,6	83,8	88,1	93,1	96,8	98,6	99,7
Active mobile-broadband subscriptions										
Developed	18,5	27,5	36,6	44,7	56,8	66,4	74,0	80,9	87,1	90,3
Developing	0,8	1,6	3,0	4,5	8,3	12,4	17,4	27,5	35,3	40,9
World	4,0	6,3	9,0	11,5	16,7	21,7	27,3	36,7	44,2	49,4

Source : ITU World Telecommunication / ICT Indicator Database, 2016* is estimated by ITU.

Graph. 1 Global ICT developments, 2001-2016



Source : ITU World Telecommunication / ICT Indicator Database, 2016* is estimated by ITU.

We examine the importance of digital economy on productivity, using the Generalized Method of Moments (GMM) for a panel of 4 24 OECD countries from 1995-2014 . The next section provides a brief review of the literature on the effects of digital economy on productivity, and analysis section defines the data, method and empirical analysis. The final section summarizes empirical results and conclusions.

2. Literature Review

Jorgenson et al (2008) examined the share attributable to ICT in US growth performance in terms of Total Factor Productivity(TFP) increased from 43% for the period 1971-1995 to 59% for the period 1995- 2000. For the post-2000 period, Jorgenson et al. (2008) estimate that the contribution of investment in ICT capital to growth fell and that TFP growth in the ICT producing sector went down (from 0.58 for the 1995-2000 period to 0.38 for the 2000-2006 period. Brynjolfsson and Hitt (1995) found that IT is large and statistically significant

even after controlling for individual firm differences in multifactor productivity during 1988-1992.

Crandall at al (2007) estimated the effects of broadband penetration on both output and employment, over the 2003-05 period using state level data. Crandall at al (2007) demonstrates that telecommunications has been important, and is consistent with the earlier finding that ICT in general has produced measurable benefits. Yilmaz and Dinc (2002) concluded telecommunications infrastructure promotes productivity growth in service sectors, based on a state-level study of the United States.

3. Data and Methodology

In the empirical part of our study, we analyze the effects of digital economy and R&D on productivity. Digital economy is one of the main pillars of industry 4.0 with components such as cloud computing, internet of things, virtual reality, and big data. Since these are fairly new in the literature and data are scarce we use natural logarithm of internet users per 100 people and R&D expenditures to GDP ratio as proxies for digital economy. Our dependent variable is natural logarithm of GDP per hour worked (PPP-adjusted, constant prices) which incorporates capital goods, commodities, economies of scale, organization structure and technical advancement. We also use foreign direct investments to GDP ratio, natural logarithm of health expenditures per capita (PPP-adjusted, constant prices), tertiary enrollment ratio and foreign trade volume to GDP ratio as additional regressors. All of our data are obtained from the World Bank except GDP per hour worked data which are obtained from the OECD. Table 1 denotes the descriptive statistics.

Our data set covers annual data from the 1995-2014 period for 24 OECD countries (Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korea, Mexico, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Turkey, the U.K., and the U.S.). According to the World Bank classification, the data set includes 7 emerging and 17 advanced economies. Considering the heterogeneous nature of our data set we define a dummy variable to control for cross-country differences. The dummy takes value of 1 if it is an advanced country and 0 if it is an emerging country. Since factors such as technological advancement, health, foreign direct investment are affected by a country's development level, interaction variables (which are obtained by multiplying the dummy variables with the variables of interest) allows us to distinguish between development level differences[33]. For example, multiplying health expenditures per capita with the dummy variable shows us whether productivity gets affected by health expenditures differently in advanced and emerging economies.

Table 2: Descriptive Statistics

Variable	Obs	Mean	St. Dev.	Min	Max
Trade Openness Ratio	480.0	83.1	39.8	16.7	209.1
Health Expenditures Per Capita	480.0	2445.5	1563.5	180.2	9402.5
LN(Health Expenditures per Capita)	480.0	7.6	0.7	5.2	9.1

[33] For example, multiplying health expenditures per capita with the dummy variable shows us whether productivity gets affected by health expenditures differently in advanced and emerging economies.

Internet Users Per 100 people	480.0	46.5	30.2	0.1	96.3
LN(Internet Users Per 100 people)	480.0	3.3	1.3	-2.5	4.6
FDI/GDP ratio	480.0	4.5	7.7	-16.1	87.4
GDP Per Hour Worked Index (2010=100)	480.0	90.5	12.7	47.9	109.4
LN(GDP Per Hour Worked)	480.0	4.5	0.2	3.9	4.7
R&D Expenditures/GDP Ratio	480.0	1.7	0.9	0.3	4.3
Tertiary Enrollment Ratio	480.0	53.5	17.5	14.6	113.5

In the study we employ a dynamic GMM estimator which was intoduced by Holtz-Eakin et al. (1988) and advanced by Arellano and Bond (1991). Since our data set includes variables such as FDI, trade openness, and R&D expenditures which are often regarded endogenous, they may be correlated with error terms. Dynamic panel GMM estimators solve the endogeneity problem by adding lagged values of dependent variable as regressors and independent variables as instruments to the regression. Furthermore, as our data set has a short T and a relatively long N, GMM estimators which has superior properties under these conditions steps forward as a suitable estimator. Finally, the GMM estimator solves the autocorrelation problem caused by including the lagged value of dependent variable as a regressor by differencing the lagged value of the dependent variable.

The derivation of the Arellano-Bond estimator is denoted below:

$$y_{it} = \alpha_i + \sum_{j=1}^{p} \rho_j y_{it-j} + \beta X_{it} + u_{it} \qquad (1)$$

Equation (1) is the standard dynamic panel estimator. α_i is the time-invariant unobserved individual effects, y_{it} is the dependent variable, y_{it-j} is the lagged dependent variable, X is the vector of independent variables, and u_{it} is the error term. If we include only one lag of the dependent variable as a regressor and take the first-difference of both sides, fixed effects are eliminated and we get equation (2).

$$\Delta y_{it} = \alpha_i + \rho \Delta y_{it-1} + \beta \Delta X_{it} + \Delta u_{it} \qquad (2)$$

$$z = \{y_{it-1}, y_{it-2}, \dots\dots, y_{it-n}, X_{it-1}, X_{it-2}, \dots\dots, X_{it-m}\} \qquad (3)$$

The Arellano-Bond estimator estimates equation (2) by using the GMM instruments denoted in equation (3). The specification we use in our analysis is shown in equation (4).

$$\Delta GDPPHW_{it} = \alpha_0 + \alpha_1 \Delta GDPPHW_{it-1} + \alpha_2 \Delta INT + \alpha_3 \Delta GERD + \alpha_2 \Delta HEALTH + \alpha_2 \Delta ENROLLMENT + \alpha_2 \Delta TRADE + \alpha_2 \Delta FDI + \Delta u_{it} \qquad (4)$$

where GDPPHW is GDP per hour worked, INT is internet users per 100 people, GERD is gross R&D expenditures to GDP ratio, HEALTH is health expenditures per capita, ENROLLMENT is tertiary enrollment ratio, TRADE is trade openness ratio, and FDI is

foreign direct investments to GDP ratio. We also include interaction variables which are obtained by multiplying the dummy variable stated above with health expenditures, foreign direct investments and R&D expenditures. These variables will help us to test whether the effects vary among advanced and emerging countries.

In our model education and health are represented by tertiary enrollment ratio and health expenditures per capita. Since education and health are the main pillars of human capital and human capital is generally associated with productivity increases in the literature, we expect to find positive coefficients for tertiary enrollment ratio and health expenditures per capita. We also expect to find positive coefficients for internet users per 100 people and gross expenditures on R&D to GDP ratio which are used as proxies for digital economy. It is widely accepted that information diffusion and interactions between economies contributes to productivity. In this respect, the coefficient of FDI to GDP ratio is expected to be positive whereas the coefficient of trade openness is indeterminate as it includes both exports and imports. In the next section we discuss the estimation results.

3.1.Estimation Results

Table 2 denotes the results generated by the Arellano-Bond estimator. The interaction variables are excluded in specification (1) and included in specification (2). Accordingly, internet users per 100 people which is used as a proxy for digital economy has a positive and significant coefficient. A ten percent increase in internet users is expected to increase GDP per hour worked by 0.15 percent. This indicates that advancements in digital economy contribute to productivity. Nevertheless, R&D expenditures to GDP ratio, another proxy variable for industry 4.0, draws a different picture. Contrary to our expectations it has a negative and significant coefficient indicating that a 1 percentage point increase in gross R&D expenditures to GDP ratio will lead to a 7.9 percent decrease in productivity. On the other hand, it can be argued that some countries may use public R&D funds ineffectively due to structural problems such as corruption, weak institutions, inequality and injustice. Since these problems are often observed in less developed countries, it may be a good idea to consider the effect of R&D expenditures for advanced and emerging economies separately. As mentioned in section 1, we define a dummy variable to classify countries as an emerging or advanced country according to the specification used by the IMF. Then we multiply this dummy with R&D to GDP ratio and include it as an additional regressor to decompose the advanced-emerging country effect. Accordingly, the interaction term for R&D expenditures has a positive and significant coefficient. This shows that advanced countries implement efficient R&D policies and could stimulate productivity positively by increasing R&D expenditures. This result also urges emerging economies to improve their institutions in order to build a more effective R&D program.

As mentioned above, we expect health expenditures to affect productivity positively. In parallel with our expectations, health expenditures per capita is significant with a positive sign. On the other hand, the interaction term for health expenditures is found negative. This indicates that productivity decreases with health expenditures in advanced economies. It can be argued that human capital is already abundant and people are healthier with a high life expectation in advanced countries. So, the policy of stimulating productivity by increasing health expenditures is not effective in advanced countries. Tertiary enrollment ratio, the second variable to proxy human capital, has a positive effect on productivity. Accordingly, a 1 percentage point increase in tertiary enrollment ratio raises GDP per hour worked by 0.12 percent. Since the coefficients of education and health proxies are positive and significant for

emerging countries, they could enjoy productivity surge along with increasing human capital investments.

We include FDI to GDP and trade openness ratios in the model to control for information and knowledge spillovers. In the model without the interaction terms trade openness ratio has a positive and significant effect on productivity. However, in the second model where the interaction terms are included, the coefficient of trade openness is negative and barely significant at 10 percent level. This indicates that spillovers from trade is only beneficial for emerging countries. FDI to GDP ratio, our second variable to control for spillover effects, is insignificant in both specifications. The results point that trade is a more effective way to boost productivity rather that foreign direct investments for emerging economies.

Table 3: Arellano-Bond Estimator Results[34]

	(1)	(2)
L.GDPPHW	0.682***	0.634***
	(0.0329)	(0.0410)
INT	0.0151***	0.0163***
	(0.00224)	(0.00235)
GERD	-0.0416***	-0.0787***
	(0.00837)	(0.0156)
DUMMY*GERD		0.0569***
		(0.0198)
HEALTH	0.00000814**	0.0000394**
	(0.00000384)	(0.0000171)
DUMMYHEALTH		-0.0000327**
		(0.0000161)
ENROLLMENT	0.00116***	0.00127***
	(0.000357)	(0.000350)
TRADE	0.000997***	0.00136***
	(0.000164)	(0.000229)
DUMMYTRADE		-0.000636*
		(0.000335)
FDI	-0.000385	-0.000513
	(0.000311)	(0.000318)
DUMMYFDI	0.000305	0.000547
	(0.000375)	(0.000388)

[34] All the variables in the model are I(1). However, as the Arellano-Bond estimator uses first differences of the variables in the model stationarity is not a concern.

CONSTANT	1.298***	1.481***
	(0.128)	(0.164)
N	432	432
Wald Test	13,634.74	2,020.78
p-value	0.0000	0.0000
A-B Serial Correlation Test (First Order)	-2.5043	-2.4522
p-value	0.01	0.01
Sargan's p-value	0.1685	0.2259

4. Conclusion and Policy Implications

In this study, we analyze the effects of digital economy and R&D on productivity. First, we give information on industry 4.0 and discuss its possible channels to affect productivity such as cloud computing, internet of things, and virtual reality. Then we analyze the determinants of productivity with a special focus on digital economy by employing the Arellano-Bond estimator for 24 OECD countries using data covering the 1995-2014 period. The dependent variable we use is the natural logarithm of GDP per hour worked as it incorporates capital goods, commodities, economies of scale, organization structure and technical advancement. Since digital economy is fairly new in the literature and data are scarce we use natural logarithm of internet users per 100 people and R&D expenditures to GDP ratio as proxies for digital economy. We also use foreign direct investments to GDP ratio, natural logarithm of health expenditures per capita (PPP-adjusted, constant prices), tertiary enrollment ratio and foreign trade volume to GDP ratio as additional regressors.
It is found that internet users per 100 people contributes to productivity significantly. However, R&D expenditures to GDP ratio, another proxy variable for industry 4.0, draws a different picture. The effect of R&D expenditures on productivity is positive for advanced countries and negative for emerging economies. It can be argued that some countries may use public R&D funds ineffectively due to structural problems such as corruption, weak institutions, inequality and injustice. This result urges emerging economies to improve their institutions in order to build a more effective R&D program. It is also found that education and health, the main pillars of the human capital investments, are effective to boost productivity especially in emerging economies. Finally, we found that trade openness significantly contributes to productivity whereas the effect of FDI to GDP ratio is insignificant.

Our findings highlight the importance of productivity gains from digital economy and industry 4.0 and provide important policy implications for policy makers, especially in developing countries. Accordingly, improving indicators of digital economy such as the number of internet users as well as human capital investments such as education and health provide productivity gains for emerging economies. However, increasing the R&D spending does not affect productivity if the country has weak institutions. Therefore, improving institutions should be in the agenda of policy makers in emerging economies in addition to increasing R&D expenditures.
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AN INVESTIGATION THE RELATIONSHIP BETWEEN THE EXCHANGE RATE VOLATILITY AND TOURISM RECEIPTS FOR TURKISH ECONOMY

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Abstract

Turkey has special coasts, touristic, historical and geographic facilities. So tourism has special importance for Turkish economy, current account deficit is serious burden for Turkey economy in recent years. Tourism receipt is an important tool for balancing the deficit and also there are several positive externatilities of tourism for Turkey economy. In this paper, exchange rate volatility and tourism receipt relationship is analyzed by theoratically and emprically for the period of 2009M1-2016M9. Exchange rate volatility is calculated by ARCH type model. After analyzing of series traditional unit root tests, the cointegration relationship between the volatility and tourism receipt is investigated by the help of The Bound Test approach and long term relationship is computed by ARDL model. According to results, tourism receipt is positively affected by exchange rate level while exchange rate volatility negatively affects the tourism receipt. But exchange rate volatility is statistically insignificant.

Keywords: Tourism Income, Exchange Rate Volatility, Bound Test, ARCH.

1. Introduction:

Turkey has tough times in recent years both political and economic meaning. The Problems arises from political issues such as terrorist attacks in southeast boundries, uneasiness in Middle East, Syrian political situations, immigrant problems, Russian conflicts, problematic relationship with EU. Besides its' charming natural and historical beauties, tourism demand for Turkey has exhibited a volatile performance in recent years because of political, economic and financial concern. Although there are several economic determinants' of tourism demand, security problem creates main concern about it.

With this study, it's aimed to determine the relationship between Exchange rate volatility and tourism receipts' of Turkey. This relationship is based on the trade and Exchange rate volatility. In this relation, volatility in Exchange rate can be perceived as a risk factor and uncertainty for economic future. Thus tourism demand reshaped by the line with risk perceptions. Hovewer political unstability affects the tourism destinations and preferences. So the factors beyond economic determinants can change the countries' tourist potentials.

Tourism is multidimensional concept. It has social dimension about lesuire time and savings, but it has also economic dynamics for example exports, budget and tax revenues, employment opportunities, investment and consumption expenditures (Aktaş et al. 2014).

Tourism is heavily service-based sector and it provides enormous income for all economies. This sector has lots of variations such as sport, cultural, health, historical tourism dimensions. Thus investors preference to share huge budget for tourism. Tourism is a good chance for developing countries to balance their deficit and it is a good choice to provide gains. Tourism sector benefits can be specified as acceleration in development, extension in revenue, increment in foreign Exchange, employment facilities, and tax revenues. So tourism positive externalities on lots of sectors and we can say it has a multiplier effect on economy.

As the meaning of tourism, Turkey has some privileges, because it has special coasts, surrounded by sea on three sides, hosted diffirent civilizations (Romans, Byzantine and Ottoman Empires) that prodives cultural and historical gift to Turkey for higher touristic demand. There is serious rivalry between the countries which have similar touristic characteristics such as Spain, France, Greece, Italy and Turkey. To compete these countries, it must be right and enough investment in touristic facilities. However, beyond the investment problem, Turkish tourism sector needs to cope with its' interior problems to compete its' rivals such as security concerns, interior and outer conflicts, political problems with neighbours etc. Advertisements of Turkish tourism sector are also crucial factor for the aspect of development to tourism demand. It must be believed that Turkey is a safe country to travel and it has a nice tourism quality.

After Bretton Woods Collapses, exchange rate uncertainty increased and its volatility. Applying liberal programs and globalization causes to increase foreign trade after 1980s. Tourism sector investment is growing rapidly and thus tourism demand and also tourism receipts have increased recently. Thus changes in excange rate level affect the tourism demand(Çağlar,2003). By the help of these changes, exchange rate and tourism relationship being examined heavily in related literature. Tourism sector can be seen as a remedy lots of economic problem for developing countries and so as a developing country, it'll be examined this relationship for Turkey economy with this paper.

Account deficit problem is the main concern of Turkish economy in recent years. She's coping with this problem since long time ago. Tourism receipts are an opportunity to balance this deficit. However it is affected by exchange rate volatility. The main purpose of this paper is to analyse the effects of exchange rate volatility on tourism receipts.

In this paper, the effects of exchange rate volatility on Turkey's tourism receipts will be analyzed by the help of co-integration analysis and error correction model. Datas are covering the monthly data from January 2009 to September 2016. Firstly related literature review is examined, and then the data and methodology are mentioned and findings and conclusion will be submitted the last part.

2. Theoritical Backround:

General impacts of volatility can be summarized as: it's accepted as an indicator for macroeconomic instability and uncertainty. It causes to distrupting resource allocation, decreasing foreign investment, decreasing economic growth and employment level. On the contrary, in a the stable macroeconomic conditions provide; low and stable current account deficit, Not real exchange rate loss, higher economic growth rate and incentive to new investment decisions. So volatility in Exchange rate level is unpleasant action for the economic actions.

Main argument behind the tourism receipts and volatility relationship is based on the exchange rate and foreign trade relationship. If exchange rate volatility increases, foreign trade decreases according to risk perception. So the same logic is valid about the relationship between the tourism receipts and exchange rate volatility. When exchange rate level increases, local tourism costs become cheaper and tourism demand increases. Thus total tourism receipts accelerate. On the contrary, if exchange rate level decreases, local tourism becomes costly and tourism demand also decreases (Şen and Şit, 2015).

There are various determinants that affect the tourist arrivals and tourism receipts. These factors can be economic, social, political, endogenous and exogenous. The main socio-economic determinants of tourism demand can be summarized as; (Agiomirgianakis (2012); Garin-Munoz (2000) and Patsouratis, et. al. (2005), Anderson and Van Wincoop,2003: Gallego et al,2010:30))

- ✓ Cost of living in target country and relative cost of living differences between the countries,
- ✓ Transportation costs and distance of travelling route,
- ✓ Quality of touristic facilities,
- ✓ Language, traditions, attitudes towards to tourists,
- ✓ Market size (GDP) and economic development of host country,
- ✓ Inflation of local country,
- ✓ Availability of labour and labour costs,
- ✓ Availabilty of natural, cultural, social and hictorical facilities,
- ✓ Real exchange rate level and macroeconomic uncertainty,
- ✓ Security concerns inside and near boundries.

There are several crucial benefits of tourism sector to economy. Tourism helps to decrease balance of payment deficit. Tourism sector is a source of employment creation. This sector is dominantly consisting of service sector and also satisfies the unemployed persons' job needs. Tourism provides exchange to economy and thus tourism remarkably affected by exchange rate fluctuations (Demirel et.al.,2013:117).

Tourism is multidimensional and socio-economic concept. It has social dimension about leisure time and savings, but also it has economic dynamics. These are summarized as; it increases the export and tax revenues, balances the budget deficits, provides new employment opportunities, makes contributions the investment, increases the total consumption level and enchances the interactions between the cultures (Aktaş et al. 2014).

3. Literature Review

According to empirical studies, different results obtained from many papers. Some papers found negative result between Exchange rate and tourism receipts while others had positive and also some papers couldn't found any relation between them. These results can be explained by the help of methods, data, period, countries' tourism and economic Dynamics that used in their analysis.

Tourism demand and exchange rate volatility relation is theoretically based on the foreign trade and exchange rate relationship. Foreign trade is negatively affected by exchange rate volatility according to theorical and empirical studies (Clark (1973), Hooper and Kolhagen (1978), Kenen and Rodrik (1986), Koray and Lastrapes (1989), Dellas and Zilberfarb (1993), Arize (1997), Mckenzie (1999), Clark et.al.(2004) Takaendase et.al. (2005), Öztürk(2006)).

Bahmani and Wang (2007), Byrne et.al.(2008), Altıntaş and Öz (2010), Özdemir and Ordu (2013). Thus similar relationship is valid for the tourism receipts and related literature review is as follows and summarized at Appendix.1.

When we looked at the related empirical literature, we can classify the studies according to their results. The studies that found negative relation and co-integration relationship between the exchange rate level, volatility and tourism receipts. These are summarized as Webber (2001), Garin-Munoz and Perez-Amaral's study (2000), Eilat and Einav (2004) Demir and Toker (2012). However some emripical studies couldn't reach any significant relationship between them. These are Eugenio-Martin and Morales (2004) Mervar and Payne (2007), Demirel et.al.(2013). Detailed literature review is submitted the Appendix.1.

4. Data And Methodology

It's used monthly data covering the period from 2009:M1 to 2016:M9. Tourism receipts includes the international tourist expenditures in Turkey. Exchange rate variable captures the producer price index based real effective exchange rate.

Exchange rate variables are obtained from Turkey Central Bank database system. Tourism receipts captured from TurkStat, Central Bank, Ministry of Culture and Tourism. In the empirical model; Tourism receipt (TRCP) is explained by exchange rate and it's volatility parallel with the existing literature. For exchange rate volatility (VOL), conditional heteroscadasticity of ARCH type models are calculated.[35]

In the empirical modelling, TRCP is explained with exchange rate level and its' volatility in accordance with the related literature.

Empirical analysis is started with the stationarity analysis. Ng Perron tests are used for this purpose. Co-integration relationship between the variables investigated by the help of Bound test approach that proposed by Peseran et. al (2001) and superior properties than conventional co-integration models after stationarity control. When series are different level of stationarity, we can simply use the Bound Test in order to analyse cointegration relationship (Pesaran et al. 2001; Narayan and Narayan, 2004). The co-integration checking, the long and short run elasticities between variables are calculated by ARDL model in the following section.

5. Results

5.1 Stationarity Analysis

We used Ng-Perron test in order to determine stationarity level of series. As Ng-Perron test has more powerful features than other tests such as ADF and PP tests. According to Ng-Perron test results LTRCP series is found I(1) and VOL series also are found I(0).

[35] ARCH type model for real exchange rate is chosen as the best performed model in this study. Conditional variance is obtained from ARCH model is used as an exchange rate volatility variable for the model. Comparison for estimated coefficients and model forecasting performances are not presented here in order to keep the study compact. The model results could be obtained from the authors, if needed.

5.2 Cointegration Analysis

Unrestricted Error Correction Model (UECM) should be set up in order to use Bound test after the stationarity control. Thus UECM model specification for this paper is set up as in equation (1).

$$\Delta LTRCP_t = a_0 + \sum_{i=1}^{m} a_{1i}\Delta TRCP_{t-i} \sum_{i=1}^{m} a_{2i}\Delta LER_{t-i} + \sum_{i=1}^{m} a_{3i}\Delta VOL_{t-i} + a_4 LTRCP_{t-1} + a_5 LER_{t-1} + a_6 VOL_{t-1} + \mu_t \quad (1)$$

In equation (1); m represents lag number.[36] It's checked the co-integration relationship by using the F test and null hyptesis established as $H_0 = a_5 = a_6 = a_7 = a_8 = 0$ after the determination of lag number for the UECM model. When we compared the calculated F-statistic that retrieved from UECM models' critical levels in Pesaran et al. (2001), the estimated F statistics is bigger than the upper bound. So we can reject the null hypothesis of no co-integration. If the estimated F statistics is smaller than the bottom bound, there can't be co-integration relationship between the variables (Narayan and Narayan, 2004). If the calculated F statistics is among the boundries, the result can be assumed as inconclusive (Karagöl et.al.,2007).

Table 1: Bound Test

K	**F statistics**	**Critical Value at %5 Significance Level**	
		Bottom Bound	Upper Bound
2	13.08001	3.79	4.85

According to Table 1, F statistics is greater than the upper bound of the critical values, and the null hypothesis of no co-integration is rejected. As a result, we found a significant long run cointegration relationship between the variables.

5.3. ARDL Model

The long and short run static relationship between the variables will be analyzed with ARDL model after the co-integration control. ARDL models' of our study is presented as in equation 2.

$$LTRCP_t = a_0 + \sum_{i=1}^{k} a_{1i} LTRCP_{t-i} + \sum_{i=1}^{l} a_{2i} LER_{t-i} + \sum_{i=1}^{m} a_{3i} VOL_{t-i} + \mu_t \quad (2)$$

The best ARDL model is selected as ARDL(2,1,0). k, l, m and n symbolizes the lag numbers in eq.2. The estimated long and short term coefficient using ARDL (2,1,0) model are shown in Table.2. Error terms in ARDL model has no serial correlation, heteroscedasticity and misspecification problems according to diagnostic check results that can be seen in Table.2.

Table.2 ***ARDL (2,1,0) Model's Long And Short Term Coefficients***

ARDL (2,1,0) Model's Long Term Coefficients		
Variables	**Coefficients**	**t Statistic**
LKUR	1.199361	3.470441
VOL	-109.98163	-0.372895
C	4,471167	0,653004*

[36] Maximum length is accepted as 5 and according to Akaike and Schwarz criterions lag number is accepted as 1 in this paper. And also it's examined whether or not autocorrelation problem through LM test in UECM model which formed with 1 lag number, autocorrelation isn't defined with 1 lag number.

ARDL (2,1,0) Model's Error Correction Coefficient		
Variables	**Coefficients**	**t Statistic**
ECMT(-1)	-0,063026	-3,210411
ARDL (2,1,0) Model's Diagnostic Checks		
X^2_{BG}	1.861[0,80]	
χ^2_{WHITE}	0.782[0,37]	
X^2_{RAMSEY}	1,151[0,15]	

X^2_{BG} , χ^2_{WHITE}, X^2_{RAMSEY} are accordingly shows autocorrelation, heteroscadasticity and Ramsey tests. Probability values are in brackets.

Note: *%1,**%5 shows significance level.

According to long term coefficients obtained from ARDL (2,1,0) model, exchange rate level have positive effect on tourism receipts, while exchange rate volatility has negative effect on it, however it's not statistically significant. The results are sutiable for the related literature. Error correction coefficient is calculated as -0,06 and it shows the deviation from short and long run equilibrium.

6. Conclusion

Tourism sector is growing and beneficial sector which has lots of solutions to economic problems such as exchange deficit, balance of payments, employment need etc. Tourism secter is affected by socio-economic variables. So exchange rate level and its' uncertainty affects the tourism demand and also tourism receipts of countries.

In this study, the relationship between exchange rate volatility and Turkey's tourism revenues was examined. As an econometric model, firstly exchange rate volatility has been estimated with the ARCH approach; then, the relationship among tourism revenues was investigated by including error correction model. It's used monthly data covering the period from 2009:M1 to 2016:M9. Tourism receipts includes the international tourist expenditures in Turkey. Exchange rate variable captures the producer price index based real effective exchange rate.

According to the results obtained from the model, exchange rate level have positive effect on tourism receipts, while exchange rate volatility has negative effect on it, however it's not statistically significant. The results are sutiable for the related literature. Error correction coefficient is calculated as -0,06 and it shows the deviation from short and long run equilibrium. These results shows that exchange rate level is a crucial determinant of tourism receipts for Turkey, however exchange rate volatility hasn't got any importance about it. We can assume that the other factor which affects the tourism demand is much more dominant than the volatility.

APPENDİX.1 Related Literature Review

Author(s)	Country(ies)	Period	Variables	Methods	Results
Webber (2001)	Avustralia	1983:1-1997:4	Foreign tourism demand and exc.rate	Johansen and Engle& Granger procedures	A change in ER explains the %50 of tourism demand in the long run.
Salman (2003)	Sweden	1980:1-1998:12	Tourism demand, income, price, ER Chernobil nuclear accident dummy, 1991 Gulf War dummy	Co-integration analysis	Income, ER and consumer price index are effective for the aspect of international touristic demand.
Eugenio-Martin and Morales (2004)	Latin American Countries	1985-1998	Economic growth and tourism receipts	Panel Data analysis	Between the ER, PPP and tourism receipts has NOT significiant relationship.
Dritsakis (2004)	Greece	1960:I-2000:IV	Real GDP, REER and international tourism receipts	VAR model	There is a long run relationship between the RER and international tourism receipts.
Patsouratis vd. (2005)	Mediterrian Countries	1990-2004	Income index, host countries' price index, rivals' price index and ER (Spain, Portugal and Italy)	Panel Data Anlysis	It's determined that main determinant for Greece's tourism demand are price index and ER.
Mervar and Payne (2007)	Crotia	1994-2004	Tourism income and ER	ARDL Analysis	RER doesn't have any effect on tourism demand according to results.
Özçelebi (2009)	Turkey	1992:01-2009:03	Tourism expenditure, Real GDP and RER.	Vector Error Correction Model	There is not a significiant relationship in the short run. Hovewer there is a significiant long run relationship between the Real GDP, ER and tourism expenditures.
Arsad and Johor (2010)	Malaysia	1999:1-2008:9	Relative prices, ER, Trasportation costs, Relative costs of	Co-integration analysis	When devaluation and relative costs of rivals' destinations have positive effects on tourism inflows, transportation cost increment has negative

			rivals' destinations and tourism demand		one.
Uğuz and Topbaş (2011)	Turkey	1990:1-2010:12	RER, Volatility and tourist demand	Johansen Cointegration Analysis	There is a significiant and long run relationship between the tourism demand, ER and ER volatility.
Demir and Toker (2012)	Turkey	1980-2010	Tourist arrivals, RER, Volatility, Trade volume, 1994-2001 Shock dummies	VECM Analysis	It is found that tourism demand was affected negatively by ER volatility in the short and long run. However it wasn't affected by financial crises.
Demirel et al(2013)	Turkey	1994:1-2006:4.	Real Exchange Rates and the uncertainty, number of tourists	Cointegration Analysis	With respect to the uncertainty in real exchange rates, the uncertainty does not have any effects on the number of tourists, except for France.
Cheng et.al. (2013)	USA	1973-2010	RER and tourism receipts.	VAR Analysis	Increment in RER affects the USA's tourism receipts
Aktaş et al, 2014	Turkey	2003:1-2011:12.	Effects of exchange rate volatility on tourism revenues.	Co-integration analysis	Exchange rate volatility has a negative effect on tourism revenues. Additionally, a weak relationship was detected in the long term between exchange rate and tourism revenues.
Agiomirgian akiset al.(2015)	Iceland	1990:1-2014:4.	ER volatility and Tourist arrivals	Co-integration analysis	There is a negative effect of volatility to tourists' arrivals for Iceland.
Şen and Şit (2015)	Turkey	2000:1-2012:12	*RER and Tourist receipts reel*	*Toda-Yamamoto and Bootstrap based Toda-Yamamoto cointegration analysis*	According to results, RER has a significiant effect on the Turkey' tourism receipts. And tourism receipts also affect the RER.

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RISK-SHARING BANKING: VIABILITY AND RESILIENCE

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Abstract

The present Islamic banking model is inherently fragile owing to its unmatched balance sheet which exposes the banks to various risks on daily basis. To mitigate the risks, similar to the conventional banks, Islamic banks operate on risk-transfer mode where risks are transferred to the counterparty or the public. Risk-transfer banking however induces negative behaviors such as excessive risk taking and socially unproductive financial intermediation. This paper proposes risk-sharing based banking model where the balance sheet are matched in terms of maturity, value, risk and materiality. The risk-sharing model is envisaged to provide the opportunity for Islamic banks to completely move away from risk-transfer banking mode. It offers greater stability, firmly anchors banking sector to real economy, has greater resilience to shocks, and capable of reducing financial oppression and predatory lending. As such, this paper undertakes an empirical investigation to illustrate the viability and resilience of risk-sharing model vis-à-vis the risk-transfer model. The methodology used is simulation of balance sheet and the results are stress tested.

Keywords: Risk sharing, risk transfer, balance sheet, simulation, stress test

1. INTRODUCTION

The present business model of Islamic banks is inherently fragile due to its unmatched balance sheet structure exposing the banks to daily liquidity and maturity risks. To mitigate the risks, the Islamic banks engage in risk-transfer based financial intermediation where risks arising from financial transaction are transferred or shifted to the counterparty or the public. At transactional level, credit enhancements or collaterals are common safety measures to mitigate credit/ liquidity risks. At institutional level, the Basel capital adequacy framework is widely adopted as mechanism to address asset impairments. At systemic level, deposit insurance and implicit/ explicit government guarantee schemes are meant to enhance the soundness of the banking system against sudden bank runs or shocks. At the same time, risk-transfer banking induces negative behaviors such as excessive risk taking and socially unproductive financial intermediation.

Risk-transfer model diverges away from the ideal Islamic banking which is premised on risk-sharing principles. Malaysia via the Islamic Financial Services Act 2013 (IFSA), the central bank's guidelines to ring-fence investment account and the internet-based investment account platform (IAP) are recent initiatives to promote risk-sharing finance. The adoption of the risk-sharing model could serve as the main differentiating factor for Islamic banks as the banks

completely move away from risk-transfer banking mode. The risk-sharing model could potentially create a new value creating asset class for Islamic banks and investors through real sector-linked investment intermediation. It may also offer greater stability and resilience than the risk-transfer model. In this regard, this paper undertakes an empirical investigation to compare the two models. The rest of the paper is organized as follows. Section 2 explains the data and methodology, Section 3 discusses the findings of the research, Section 4 reports the outcome of the stress testing and Section 5 concludes the research.

2. METHODOLOGY

This empirical investigation and simulation exercise involves a three-step process. Step 1 illustrates the profiles of the mismatched (risk-transfer banking model) and matched (risk-sharing model) balance sheet structure. Step 2 estimates the rate of return of the real sector. Step 3 makes a comparison on the potential profits generated under the two models. The procedures are further explained as follows.

2.1 Step One

The aim is to construct two stylized balance sheets of a representative bank (RB). Two sets of data are used – (i) financing representing the asset and (ii) risk bearing deposits namely the special investment account (SIA) and general investment account (GIA) representing liability. Data are sourced from the Bankscope comprising 16 Islamic banks in Malaysia for period 2007-2013. These data are then converted using the weighted average of each bank's balance sheet in proportion to the total industry to derive the balance sheets of the RB. The rationale for this exercise is to incorporate the balance sheet profiles of all Islamic banks without singling out any one of them. The detailed steps undertaken involved the following:

- Determining each bank's weights (w_i) by dividing its total assets and total liabilities with those of the respective industry's aggregates.
- Then each bank's weights are multiplied with its own total assets and total liabilities to derive its allocation of assets and liabilities.
- The representative bank's total assets and total liabilities are derived by adding the values of the 16 banks' weighted total assets and weighted total liabilities.

Next, the asset and liability are grouped into three time buckets (i) short-term with less than 1 year tenure, (ii) medium-term with 1 to 3 years tenure and (iii) long-term with more than 3 years tenure. The outcome of this is the balance sheet structure of the present Islamic banking model (risk-transfer mode).

The first balance sheet keeps the existing mismatched structure depicting the current risk-transfer model. The second balance sheet is re-configured based on a matched asset-liability structure to illustrate risk-sharing model. This exercise involves two fund management processes (1) asset-liability matching and (2) asset-real sector tagging. The asset-liability matching ensures that risks are mitigated by way of a one-to-one matching of the liabilities (deposits/investments) against the assets (financing) in terms of maturity, value and risk – the first three conditions for risk sharing (Mirakhor, 2015). The outcome of this is an asset-driven mobilization of resources. Investment ownership is represented by the individual acquisition of low-denominated securities that are tradable in secondary markets. Meanwhile, the asset-real sector tagging ensures that investment

intermediation between surplus and deficit unit of the economy is optimized; and that the financial sector is linked to productive economic activities. Such arrangements are necessary to achieve the fourth condition of risk sharing - materiality.

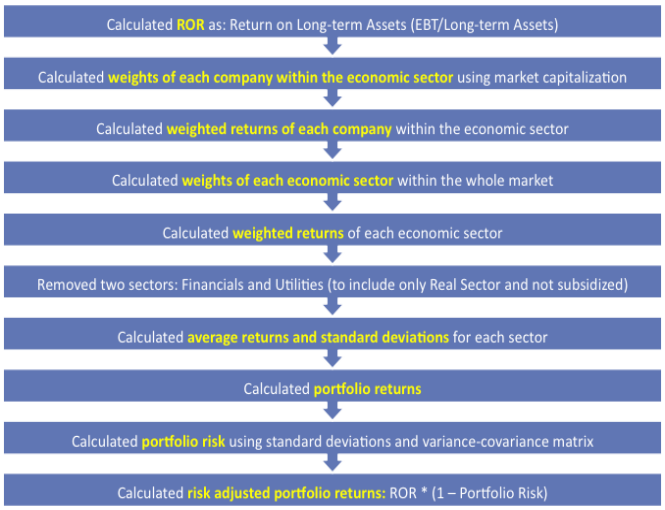
2.2 Step Two

The objective is to derive the rate of return (ROR) of the risk-sharing securities to visualize the prospect on investors' compensation. However, because there is presently no such market and instrument, a proxy (ROR of the real sector) is derived as follows.

- Obtaining all equities from Bursa Malaysia (Source: Thomson Reuters IEKON)
- Selecting only *Shari'ah* compliant companies with positive performances
- Extracting the ROR for selected companies and compute portfolio ROR
- Applying portfolio ROR to risk-sharing Balance Sheet

The outcome of this exercise is the ROR of the securities. The ROR estimation involved a 10-step procedure summarized in the following diagram.

Figure 1: Process for Estimating ROR



Source: Author's own

2.3 Step Three

The objective is to empirically prove that investment in real sector promises superior returns than the banks' interest rate-based returns. As an illustration, a comparison on the deposit and financing rates of Islamic banks (source: BNM Quarterly Bulletin) are made against the derived ROR of the risk-sharing securities. The differential rates would give an indication on how much the investors would have benefited should Islamic banks channel the SIA and GIA to the real sector. Similarly, the differential rates between the financing rates and the ROR of the real sector give an indication how much Islamic banks would have forgone on the upside potentials in the real sectors.

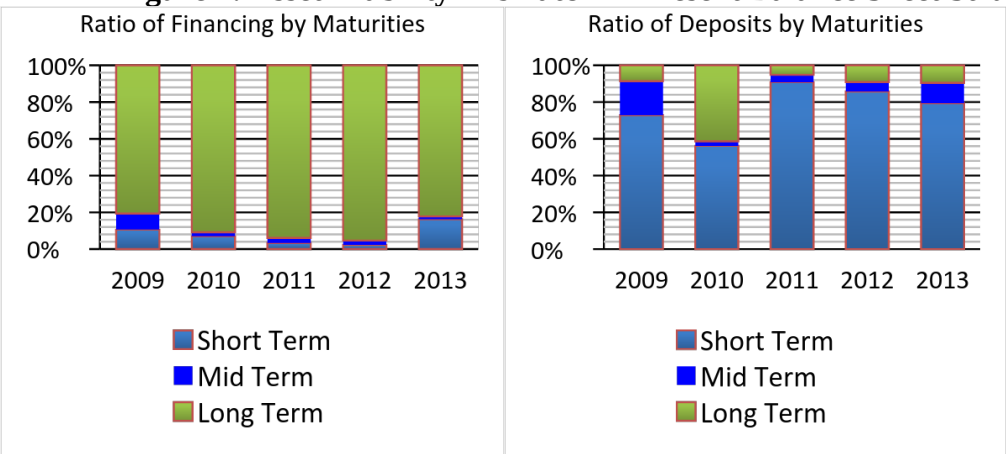
2.4 Limitation

The main limitation of this study is the unavailability of data for the ROR of real sector. In its absence, the Return on Long Term Assets was used as proxy hence rendering this study as a rudimentary illustration of an ideal risk-sharing banking model.

3. RESULTS

3.1 Balance Sheet Profiles

Figure 2: Asset-Liability Mismatch in Present Balance Sheet Structure



Source: Author's own

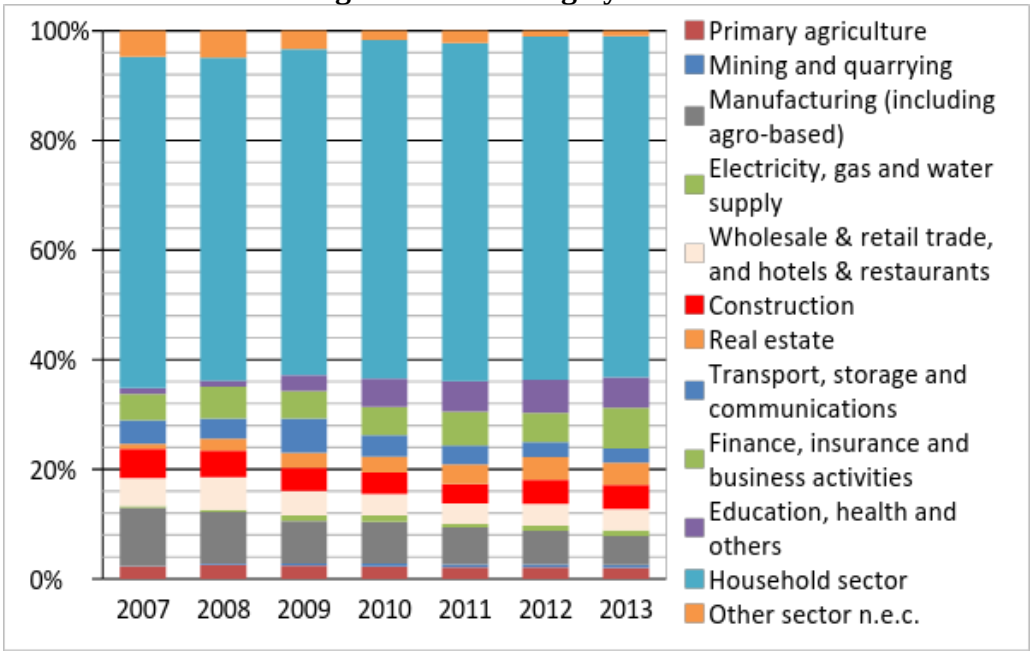
The analysis on the balance sheet structure under the risk-transfer banking model revealed several pertinent issues. The first observation was a strong evidence of maturity transformation of the asset and liability where Islamic banks are seen to "lend long and borrow short". Commonly known as an Asset-Liability Mismatch, this phenomenon is prevalent even in Islamic banking simply because the function of banking has been limited to taking deposits (which are short-term in nature) and making loans/financing (typically long-term). In the case of Islamic banking in Malaysia, about 80% of short-term SIA and GIA are channeled to 80% of long-term assets. This mismatched balance sheet structure typifies the banking model of risk-transfer system. Its main weakness is the inherent fragility to shocks, either by increased funding cost or sudden withdrawals which subject it to continuous exposure to liquidity, credit and market risks. In event of a sharp increase in interest rate, the impact can be significant.

Due to the inherent mismatch of assets and liabilities, banks need to continuously rearrange the assets and liabilities to obtain optimal returns while providing adequate liquidity and capital, as well as ensuring interest rate sensitivity characteristics of the bank's assets and liabilities are within the bank's risk appetite. This process of addressing the mismatch risks is called the Asset Liability Management (ALM).

The second observation is the persistent trend to over-concentrate on household financing, averaging about 60% of total Islamic banking financing. By concentrating on a certain sector, risks are being concentrated and hence not well diversified. As seen in Figure 3 below, this

financing preference matter-of-factly typifies the character of risk-transfer system. The high level of household credit could pose a threat to the stability of the overall financial system. It is worth noting that similar trend is also observed in many countries. It is believed that such trending has been influenced by the incentive structure of the present regulatory regime. The Basel capital requirements on risk-weighted assets induce preference for debt type of financing in the low or risk-free asset class. Households are a low risk asset class given the credit enhancement and safety net mechanism, even though household financing is generally less productive than enterprise/corporate finance. By engaging in household financing, Islamic banks virtually transfer all of their credit risk to the borrowers by having the financing to be backed by collateral and assigned wages. Because of this, Islamic banks are not incentivized to develop investment expertise and capability to deploy risk-averse risk-sharing to businesses. The untapped segments of the economy such as start-ups, budding entrepreneurs and SMEs thus remain underserved. Inadequate investments in productive activities would in the long run undermine the development of the economy.

Figure 3: Financing by Sectors

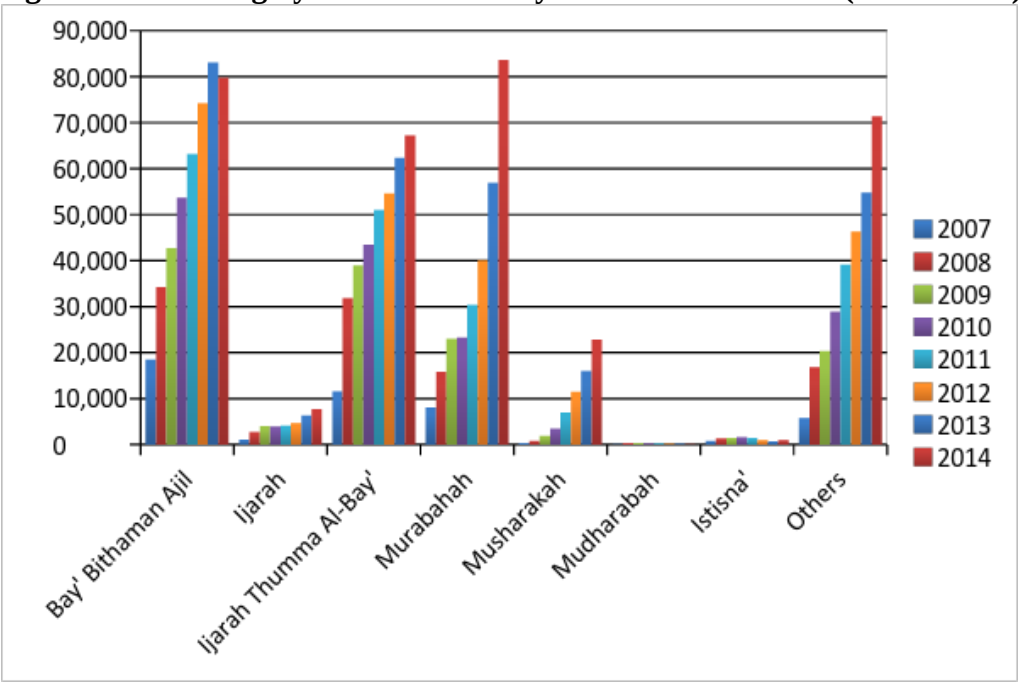


Source: Bank Negara Malaysia, Monthly Statistical Bulletin

As shown in Figure 4, the third observation is the dominance of debt-based contracts (*Bay' Bithaman Ajil* (BBA), *Ijarah Thumma al-Bay'* (AITAB) and *Murabahah*) as the main instruments for Islamic banking assets. In addition, hybrid contracts classified under others are showing an increasing trend. These are essentially pseudo-debt instruments designed to fit into the risk-transfer operating mode. On the other hand, equity based financial contracts (*Musharakah* and *Mudharabah*) are used minimally. This finding is in line with various studies such as by Ali (2010), Rosly (2007) and Ali & Ahmad (2006). Rosly (2007) noted that despite having the universal banking license, Islamic banks licensed under IBA 1983 had not pursued the non-traditional banking services such as insurance (*takaful)*, leasing (*ijarah)*, stockbroking *(wakalah)*, unit trusts *(wakalah-mudarabah)*, underwriting *(al-bay')* and equity *(musharakah)*.

The main reason for shying away from equity-based instruments is the lack of appetite for riskier assets. Such reservation stems from Islamic banks trying to emulate the business model of conventional banks (Askari et al, 2012). The domestic legal, regulatory, tax and accounting framework and Basel capital requirements seek to shift protection of depositor's principal to governments and induce a lack of appetite for risk-sharing instruments.

Figure 4: Financing by Contracts from year-end 2007 to 2014 (RM million)



Source: Bank Negara Malaysia, Monthly Statistical Bulletin

Debt finance is permitted in Islam provided that it is appropriately originated [i.e. through real economic activity] and structured [i.e. avoiding all elements of *riba*, *maysir* and *gharar*]. It should be emphasized also that a balanced usage of debt-and equity-based finance needs to be prescribed so as to ensure that the value proposition of Islamic finance is fully realized. This stance is confirmed by the Kuala Lumpur and Jeddah Declarations and other pronouncements (including evidence-based prescriptions from non-Muslim economists). Presently, debt-based instruments are used in almost all financing transactions, whilst the use of equity-based instruments is minimal. As a result, the real economy linkages of Islamic banking are tenuous. Financial instruments are priced based on the prevailing OPR and not based on the risk-reward profile of the underlying projects that are being financed. Because of the decoupling, financial instruments are often mispriced. In post GFC rate environment where interest rate is much lower than the return in the real sector, the credit spread adjustments rather than sharing in venture's real profitability is significantly higher.

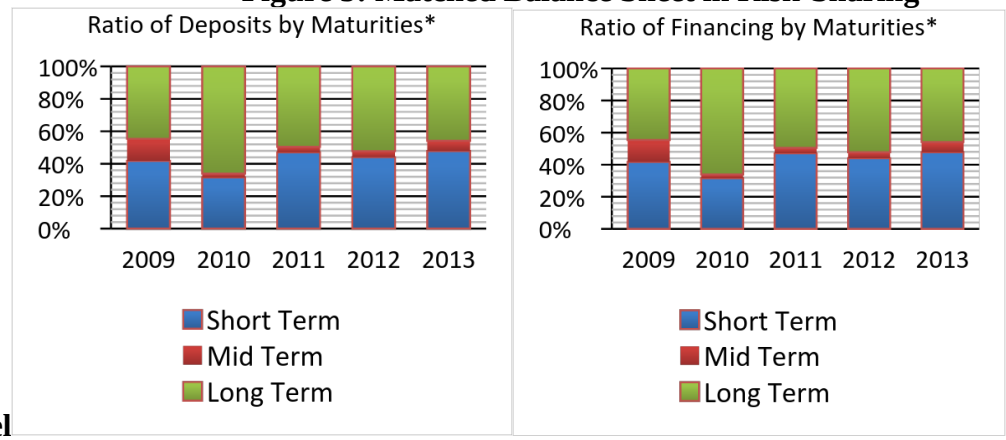
Furthermore, the over reliance on debt instruments also induces moral hazard on the part of banks as the financier. As risk-transfer returns are non-state contingent and collateralized, banks'

incentives to lend to the limit to maximize their leveraged-based returns leads to adverse selection problems and poor monitoring.

The implication of banking sector being heavily based on debt and by being the main conduit for money supply is that the whole economy and financial system have become highly leveraged, with high debt and low equity. In this scenario, the risk is completely shifted to the system as a whole, whereas the real sector bears all risks if the financial system collapses (Mirakhor, 2014).

Figure 5 below illustrates the simulation result of a matched balance sheet for risk-sharing model. Both the asset and liabilities are now matched in terms of materiality, maturity, value and risk. This effectively leads to liquidity, credit and market risks being avoided, hence the balance sheet is intrinsically more stable and less sensitive to external shocks. Also as financing is linked to the real sector, the size of financing will tend to correspond with the expansion of the real sector.

Figure 5: Matched Balance Sheet in Risk-Sharing



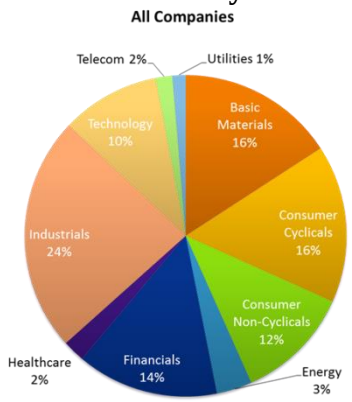
Model

3.2 Deriving Rate of Return (ROR) for Risk-sharing Securities

The following step is to derive the price of the securities. However as such a market price is not yet in existence, we have used a simplistic proxy based on the performance of actual companies listed in Bursa Malaysia represented by their rate of return (ROR). Since information on companies' ROR is not readily available, we manually estimated the ROR using the return on long-term assets (ROLA) of the *Shari'ah* compliant companies publicly listed at Bursa Malaysia selected as the proxy. ROLA is calculated as Net Income Before Tax (NIBT) divided by Long Term Assets. Prior to calculating the ROR, we first selected the companies.

Figure 6: Publicly Listed Companies on Bursa Malaysia Exchange (1999-2013)

Economic Sector	# of Companies
Basic Materials	142
Consumer Cyclicals	142
Consumer Non-Cyclicals	104
Energy	32
Financials	128
Healthcare	20
Industrials	212
Technology	89
Telecommunications Services	15
Utilities	12
Grand Total	896



Source: Thomson Reuters Eikon

A total of 896 companies representing all the 10 economic sectors in Malaysia were screened involving a two-layer filtering: (i) omitting companies with negative and greater than 100% ROLA for the whole 15 years, and (ii) companies with negative and greater than 100% ROLA for the last five years are omitted. After two rounds of filtering, 424 companies were finally selected.

We consider ROLA a fair proxy on the basis that they are typically the earning assets of companies. The estimated ROR based on ROLA was 20.98%. After adjusting to portfolio risk of 0.98%, the risk adjusted ROR was 20.77%. In order to check the reasonableness of the derived ROR, other estimations based on the return on total assets (ROA) and the pre-tax return on equity (ROE) were also made. The returns based on ROA and ROE were 12.48% and 19.50% respectively. In addition to these proxies, we also referred to other estimates of the real sector returns from secondary sources. The Morningstar reported that the average returns of the top 100 companies in the world are in the range of 15% (for 3-year average) and 14% (5-year average)[37]. Studies had proposed that the equity premium in Malaysia is in the range of 8 to 11% (Mirakhor, 2015). Meanwhile, AIBIM[38] in 2015 reported that the potential return of real sector estimated by the banking fraternity is in the range of 11 to 18%.

Table 1: Estimated Rates of Return of Real Sector

Proxy	ROR Estimation
Return on Long-term Assets (ROLA)	20.98%
Return on Total Assets (ROA)	12.48%
Return on Pre-tax Equity (ROE)	19.50%
Average Return of Top 100 Global Companies*	13% - 15%
Equity Premium in Malaysia	8 - 11%

[37] Bacha & Mirakhor (2015)

[38] AIBIM is the Association of Islamic Banking Institutions Malaysia

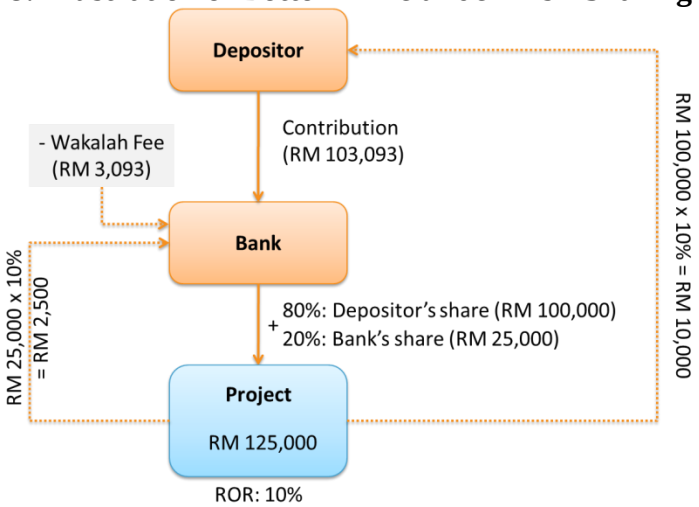
Return of Real Sector**	11 - 18%

Sources: * Morningstar, ** AIBIM

Based on the estimations of the ROR of the real sector by the above-mentioned proxies, it can be concluded that the real sector indeed offer higher return than what the present deposit rate and financing rates are offering (3-4% and 6-7% respectively in Malaysia as of June 2015). This conclusion therefore implies that should banks mobilize investment accounts to finance real sector activities through risk sharing, their returns would naturally be contingent on profits and thus at higher rates than the prevailing interest rate environment, leaving both depositors and banks better off. As mentioned above in the limitations, this is a simplistic approximation and adjustments would need to be made to incorporate differing risk/return profiles of the risk-sharing instruments especially given that they would have a differing tenure/duration to listed corporate returns.

3.3 Profit Comparison Between Existing Model and Illustrative Risk-sharing Model

Figure 8: Illustration of Bottom Line under Risk-Sharing Model



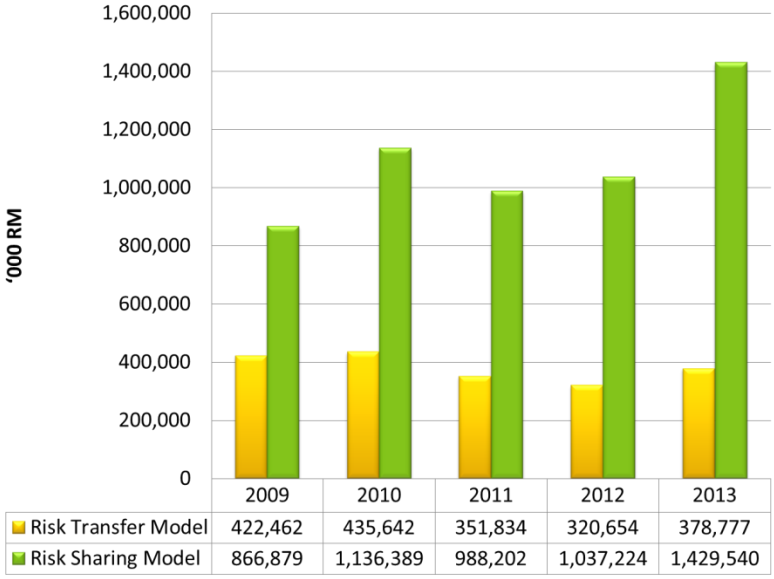
Sources: Author's own

The above diagram illustrates how the representative bank might enter into a project financing of RM125,000 based on risk-sharing principle. The financing is co-funded 80% by investment account holders (RM100,000) and 20% by the bank (RM25,000). Since the funding is premised on risk sharing, both co-owners of the projects are exposed to the upside and downside potential of the project. Since the bank originated the financing and manages the fund belonging to the investment accounts holders, it is entitled to a *Wakalah* fee, for example 3% of the contribution; this percentage-based fee is admittedly high relative to overall return rates in the economy and may generate undesirable incentives for banks in which case a fee-based on the cost of actual

services undertaken may be more appropriate from the perspective of this paper which promotes a model that incentivizes banks and their counterparts to undertake responsible risk-averse risk-sharing behavior. The co-owners will receive the return of their respective investment on a contingent ex-post basis from the project.

The following diagram compares the bank's potential earnings derived under risk-transfer and risk-sharing models. The results indicate that funders (investment account holders) have the potential to earn significantly higher returns by investing via risk sharing than through depositing. Meanwhile the bank has the opportunity to enjoy higher returns given the fee income and enhanced real sector-linked returns (not OPR linked). The higher returns represent the upside potential that entrepreneurs share with the investors in return for the financing of the business. The detailed balance sheets of both banking model are provided in the Appendix.

Figure 9: Banks' Margins: Risk Transfer vs risk Sharing Banking Models



As mentioned, this illustration is simplistic in nature given the limited scope of this paper. Further research would need to adjust for the different risk-sharing asset classes and their respective risk/return/maturity profiles, as well as for leverage in the real economy, to derive a more realistic estimation. Additional considerations would be extra costs in the banking sector due to the transition requiring an increased competency/skill level in bank officers as well as modeling possible "default" rates. Also consideration needs to be given to cost savings from employing Fintech and from reduced externalities (including regulation and capital buffers, deposit insurance, legal documentation etc).

4. STRESS TESTING

Stress testing was originally used at the portfolio level, to understand and quantify the risks to a trading book as a result of extreme movements in market prices. It is a form of simulation technique used to shock the asset and liability portfolios to assess their reactions to changing situations. In its simplest form, stress testing is a method to gauge how certain stressors will affect a company or industry. For an individual entity, stress tests help to formulate business

strategy and planning, for capital management, and to set risk appetite and limits. Over time, its scope of usage expanded from a risk management tool for a company to an early warning system for the policymakers in detecting potential vulnerabilities of an entire financial system or an economy to shocks (Jones, Hilbers and Slack, 2004).

In the context of this paper, a micro stress-testing technique is applied to test the sensitivity of risk-sharing banking model vis-à-vis the risk-transfer model in response to asset price volatility (i.e. ROR for risk sharing and overnight policy rate (OPR) for risk-transfer banking model). Hypothetically, we assume that sudden volatility in the OPR for the risk-transfer system and the ROR of the risk-sharing system would adversely impact the profitability of the banks. Trigger factors for funding cost volatility in the risk-transfer system are mainly due to monetary or fiscal policy decisions such as interest rate targeting, inflation targeting, exchange rate targeting or macroeconomic purposes.

In the case of Malaysia and most economies, a change in OPR has a direct impact on the financing rate of Islamic banks thus influencing their profit margin, even though banks' profitabilities are largely based on asset quality and net interest margin (negating the effect of the OPR). On the other hand, for the risk-sharing model, the OPR is no longer relevant as the [unlevered] ROR of real sector determines the bank's profitability together with value-added fee income. In this case, different trigger factors would influence the ROR volatility such as commodity/resource or stock market conditions, macroeconomic and political events, governance and strategy or environmental and natural disasters. Depending on the severity of the events, the change in ROR affects the cash flow of the projects being funded and returns to investors. The most important difference between the two is in the source and application; as OPR is derived from the financial sector and is ex-ante (and influencing profitability), while ROR is derived from the real sector and is ex-post (derived from profitability).

Based on these assumptions, the stress test simulates three scenarios to estimate the potential revenue declines triggered by changes in OPR for the risk-transfer model and ROR for the risk-sharing model. To this end, a baseline, adverse and extreme scenarios are constructed for 2013 with both models being shocked to one, two and three standard deviations. The table below shows the stress test result on the balance sheet of the current risk-transfer banking model.

Table 2: Depositor's Return and Bank's Margin: Current Model

MODEL	CURRENT MODEL (Risk Transfer)		
RISK[39] (%)	1.76	3.52	5.28
RISK ADJUSTED FINANCING RATE (%)	5.29	5.19	5.10

[39] represents the OPR volatility.

	Baseline	Adverse	Extreme
DEPOSITOR'S RETURN (RM)	83,118,891	583,118,891	583,118,891
Change in RM		-	-
Change in %		-	-
BANK'S MARGIN (RM)	378,777,437	361,544,766	344,312,096
Change in RM		(17,232,670)	(34,465,341)
Change in %		**(4.5%)**	**(9.1%)**

Deposit rates are fixed under each scenario. There are two reasons for this treatment: (i) to reflect the risk-transfer principle in the present model where risk and reward are not directly linked and the management of liabilities (SIA and GIA) is separated from the management of assets (financing), and (ii) the pre-IFSA practice of Islamic co-mingling investment accounts with other types of savings where Islamic banks often limited the exposure of depositors to rate changes to remain competitive to conventional banks, a form of displaced commercial risk, hence Islamic banks in Malaysia utilized profit equalization reserve (PER) mechanisms. The following diagram illustrates the stress test result on depositor and bank's revenues under risk-transfer model.

The stress test on the risk-transfer model shows that the bank's margin could decline by 5% or RM17 million when the volatility is doubled and a decline of 9% or RM34 million when the volatility is tripled. Indeed this can be translated into a significant risk to Islamic banks operating in a low financing rate environment. For instance, banks' margins could be negatively impacted (and ultimately earnings) if the central bank decides to cut the OPR as financing rates will be re-priced downward more than deposit rate.

Furthermore, the profit margin of our representative bank shows a downward trend over the period under study (from 3.76% in 2009 to 2.04% in 2013). A prolonged narrowing of profit margin could pose as a threat to the sustainability of Islamic banks. This in turn could have a reputational impact on the industry that has gained recognition as a mainstream mode of finance.

Table 3: Representative Banks' Margins in % for Period 2009 - 2013

YEAR	2009	2010	2011	2012	2013
REPRESENTATIVE BANK'S MARGIN (%)[40]	3.76	2.99	2.73	2.38	2.04

Source: Author's own

[40] Calculated as bank's margin divided by the total financing

A similar trend has been observed by a study by Abdul Kader Malim et al. (2014) on the profit margins of Islamic banks in the OIC countries for period 2005 to 2011. As indicated in the table below, their study found that the average profit margin of Islamic banks in OIC countries has been decreasing (from 4.14% in 2006 to 3.74% in 2011). Interestingly, the study also noted that in comparison with the OIC average, Islamic banks in Malaysia experienced a consistently lower profit margin throughout the period of study i.e. 3.16% in 2005 (OIC average: 3.90%) and 2.95% in 2011 (OIC average: 3.74%). This perhaps indicates the more stable, mature and competitive banking environment in Malaysia.

Table 4: Islamic Banks' Margins (%) in OIC Countries and Malaysia

	2005	2006	2007	2008	2009	2010	2011
Margins in OIC Countries	3.90	4.14	4.21	4.10	4.20	3.74	3.74
Margins in Malaysia	3.16	3.08	3.31	3.12	3.32	3.19	2.95

Source: Abdul Kader Malim et al., 2013

Under the risk-transfer operating model, Basel capital requirements are necessary to ensure Islamic banks have sufficient buffers to absorb any sudden volatility. In such debt-based system, studies argue that the greater proportion of debt tends to make banks more vulnerable to losses, given that debt capital has lower loss absorbency capacity than equity.[41] Such eventuality could be avoided if Islamic banks fully employ a risk-sharing banking model that offers straight pass-through and in-built loss absorbing and profit accreting mechanism.

The following paragraphs discuss the micro stress test conducted on the balance sheet of risk-sharing banking model. To this end, the earlier estimated ROR of 20.98% was treated as the baseline and was shocked at 2 and 3 standard deviations. As the bank is operating under risk-sharing principle, investment account holders would be exposed to any adverse impact of volatility. Since the investment account is a pass-through risk-bearing instrument, depositors fully absorb the impact of ROR declines and benefit from upsides as well. Compared with the current model where the bank absorbs the impact of volatility, the risk-sharing model spreads the impact amongst the investors thus upholding the risk-reward principle.

In both the adverse and extreme scenarios, the test results suggested that bank profitability is less sensitive to shocks than in the risk-sharing model with greater resilience. At 2 standard deviation the risk-sharing bank's profit declined by only 0.6% whereas the current model declined by 5%. At 3 standard deviation the profit margin declined by 1.3% compared to the current model which was far more exposed to a 9% decline. In short, the above micro stress tests suggested that in the event of adverse situations, risk-sharing model is more stable than risk-transfer model.

[41] IMF FSAP 2014 Stress Test on Malaysia, p. 15

Table 5: Depositor's Return and Bank's Margin of Risk-Sharing Model

MODEL	RISK-SHARING MODEL (ROR 20.98%)		
RISK (%)	1.00	2.00	3.00
RISK ADJUSTED ROR (%)	20.77	20.56	20.35
	Baseline	**Adverse**	**Extreme**
DEPOSITOR'S PROFIT (RM)	3,736,064,424	3,698,326,399	3,660,588,375
Change in RM		(37,738,024)	(75,476,049)
Change in %		**(1.0%)**	**(2.0%)**
BANK'S PROFIT (RM)	1,490,334,217	1,480,899,711	1,471,465,204
Change in RM		(9,434,506)	(18,869,012)
Change in %		**(0.6%)**	**(1.3%)**

Note: Depositor's profit is derived from 80% contribution of total financing. Bank's profit is derived from 20% own contribution and 3% *Wakalah* fee

Based on the above micro stress testing, the risk-sharing model offers advantages over the present risk-transfer model with a balance sheet that is less fragile owing to the matched assets and liabilities structure and the one-to-one tagging of the assets to the real economic project/activities. It saves the banks in terms of capital allocation on assets that are at risk, which the bank would otherwise have to provide under the present model. In terms of fragility, the stress test illustrates that the risk-transfer model is more fragile as it performs worse than risk-sharing in adverse situation. The finding concurs with Calomiris and Haber (2014) that the present banking system is indeed fragile by design.

From the government's perspective, the risk-sharing banking model has a more far-reaching agenda in inducing financial inclusion and creating incentive for asset building for low and middle income groups in the society. Furthermore, it requires no deposit insurance and lender-of-last-resort facility. These safety net mechanisms create unintended moral hazard for banks to over leverage and lose rigor in selecting high quality funding opportunities. The risk-sharing model also addresses the adverse selection and moral hazard issues, through the 'skin-in-the-game' requirement proposed by industry participants where banks need to co-own a percentage of securities issued for investment projects. In this study, the banks are proposed to fund and retain 20% of the total value of each project financed.

5. CONCLUSION

Investigation on balance sheets confirms the "lend long and borrow short" practice of Islamic banks in Malaysia. This exemplifies Islamic banks' practice of replicating and conforming to the

typical business model of conventional banks. The investigation also noted the high concentration of household financing (housing/mortgage, vehicle, credit card and personal financing). The positive incentives created for risk-sharing finance via IFSA, recent BNM guidelines for example, ring-fencing investment account and IAP have yet to make an impact in the industry. At the time of writing in October 2015, BNM is in the process of issuing policy documents that would ensure Islamic financial transactions truly reflect risk-sharing principles in line with Kuala Lumpur and Jeddah declarations.

The investigation also illustrates the balance sheet structure based on matched assets and liabilities. Such a structure offers greater stability and it firmly anchors the banking sector to the real economy in line with risk-sharing principles. It involves real-sector tagging (materiality) and one-to-one asset-liability matching in terms of value, risk and maturity. It promotes financial inclusion as the members of public can own low denomination tradable securities. Returns on these securities are derived ex-post from the actual performance of the underlying project. Under the current post GFC suppressed rate environment, this implies that Islamic banks and investors could realize additional revenues from the risk-taking model. Under this model, Islamic banks are better off performing active investment intermediation on a risk-sharing mode rather than merely operating substantively as borrowers and lenders. Islamic banks also would no longer faced with liquidity, market and credit risks. Challenges can be addressed by the "skin-in-the-game" requirement where banks co-own projects funded by the investment account holders of the banks, as is the best practice in the securitization industry.

The risk-sharing banking model operates on an asset-driven balance sheet management thereby ensuring that the financial sector grows in tandem with the economy, not creating bubbles (as it did in pre the GFC) or hold back growth (as it has in the post GFC). It eliminates financial oppression/repression and predatory lending as compensations to investors are determined by the actual performance of the real economic activities. This ensures prosperity is shared equitably amongst those who share the risks of any economic venture.

The micro stress test on the balance sheets also illustrate that risk-sharing banking is more resilient to rate shocks than its risk-transfer counterpart. In adverse scenarios, risk-sharing model exhibited a much lesser impact to the bank's margin owing to the pass-through mechanism. It also creates the incentive for Islamic banks from becoming over reliant on inflexible debt contracts (Mian and Sufi, 2014). Risk sharing also reduces operating cost to the bank in terms of the capital allocation on assets that are at risk, which the bank would otherwise have to provide under the present model.

The model however is an illustrative first step undertaken under certain time and resource constraints and as such suffers from some major limitations including, inter alia:

i. the unavailability of data for the ROR of the real sector;
ii. no estimate or adjustment was made for any leverage-based effects on the illustrative estimated ROR;
iii. no estimate or adjustment was made for differing risk and maturity profiles that would be present under the different asset tranches;
iv. no estimate or adjustment was made for any differential in "default" and recovery rates between the two models; and, importantly,

v. no estimate or adjustment was made for any costs differentials in terms of transition to and subsequent operation of a risk-sharing banking model, in terms of costs to banks (up-skilling bank officers, cost savings from Fintech), bank customers (in terms of greater alignment between funding and real activity) and externalities costs and savings.

Further research to explore the role of Fintech in furthering the advancement of Islamic finance is necessary to ensure the risks and transaction costs of market participants could be kept minimal. Fintech could potentially create value to the Islamic financial system such as in establishing trusted investor-entrepreneur matching platform, seamless financing/investment selection and funding processes, low-cost and efficient secondary markets for the trading of the risk-sharing securities, and transparent real-time project monitoring mechanism.

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APPENDIX 1: BALANCE SHEET AND BANKS' PROFIT: RISK-SHARING MODEL

DEPOSITORS' CONTRIBUTION	2009	2010	2011	2012	2013
Short Term	8,186,044	8,174,607	11,692,611	11,567,870	14,716,963
Mid Term	2,073,425	361,507	515,278	686,761	2,050,710
Long Term	966,791	6,018,620	664,660	1,226,578	1,776,264
TOTAL	11,226,259	14,554,735	12,872,549	13,481,209	18,543,937

BANK'S WAKALAH FEE	2009	2010	2011	2012	2013
Short Term	245,581	245,238	350,778	347,036	441,509
Mid Term	62,203	10,845	15,458	20,603	61,521
Long Term	29,004	180,559	19,940	36,797	53,288
TOTAL	336,788	436,642	386,176	404,436	556,318

BANK'S CONTRIBUTION	2009	2010	2011	2012	2013
Short Term	1,985,116	1,982,342	2,835,458	2,805,208	3,568,864
Mid Term	502,805	87,666	124,955	166,540	497,297
Long Term	234,447	1,459,515	161,180	297,445	430,744
TOTAL	2,722,368	3,529,523	3,121,593	3,269,193	4,496,905

TOTAL FINANCING	2009	2010	2011	2012	2013
Short Term	9,925,578	9,911,711	14,177,291	14,026,042	17,844,318
Mid Term	2,514,027	438,328	624,775	832,698	2,486,486
Long Term	1,172,234	7,297,577	805,900	1,487,226	2,153,720
TOTAL	13,611,840	17,647,616	15,607,965	16,345,965	22,484,524

RATES OF RETURN	2009	2010	2011	2012	2013
Short Term	19.50%	19.50%	19.50%	19.50%	19.50%
Mid Term	19.50%	19.50%	19.50%	19.50%	19.50%
Long Term	19.50%	19.50%	19.50%	19.50%	19.50%

DEPOSITORS' PROFIT	2009	2010	2011	2012	2013
Short Term	1,548,390	1,546,227	2,211,657	2,188,063	2,783,714
Mid Term	392,188	68,379	97,465	129,901	387,892
Long Term	182,868	1,138,422	125,720	232,007	335,980
TOTAL	2,123,447	2,753,028	2,434,843	2,549,971	3,507,586

BANK'S PROFIT	2009	2010	2011	2012	2013
Short Term	632,679	631,795	903,693	894,052	1,137,437
Mid Term	160,250	27,940	39,825	53,078	158,494
Long Term	74,721	465,164	51,370	94,799	137,283
TOTAL	867,650	1,124,899	994,887	1,041,929	1,433,215

APPENDIX 2: BALANCE SHEET AND BANKS' MARGIN: RISK-TRANSFER

DEPOSITS	2009	2010	2011	2012	2013
Short Term	8,186,044	8,174,607	11,692,611	11,567,870	14,716,963
Mid Term	2,073,425	361,507	515,278	686,761	2,050,710
Long Term	966,791	6,018,620	664,660	1,226,578	1,776,264
TOTAL	**11,226,259**	**14,554,735**	**12,872,549**	**13,481,209**	**18,543,937**

FINANGING	2009	2010	2011	2012	2013
Short Term	1,191,056	1,013,443	425,748	306,896	3,014,864
Mid Term	980,769	323,710	354,391	320,297	288,637
Long Term	9,054,435	13,217,581	12,092,410	12,854,015	15,240,436
TOTAL	**11,226,259**	**14,554,735**	**12,872,549**	**13,481,209**	**18,543,937**

DEPOSIT RETURNS	2009	2010	2011	2012	2013
Short Term	199,243	245,476	383,010	384,794	448,986
Mid Term	75,956	13,472	18,644	25,474	69,327
Long Term	35,378	240,969	27,294	49,034	64,806
TOTAL	**310,578**	**499,917**	**428,948**	**459,302**	**583,119**

FINANCING RETURNS	2009	2010	2011	2012	2013
Short Term	64,721	55,769	22,461	15,763	141,421
Mid Term	65,352	20,156	19,911	17,678	14,491
Long Term	602,967	859,634	738,410	746,515	805,984
TOTAL	**733,040**	**935,559**	**780,781**	**779,956**	**961,896**

BANK'S MARGIN	2009	2010	2011	2012	2013
Short Term	-134,522	-189,707	-360,549	-369,031	-307,565
Mid Term	-10,605	6,684	1,266	-7,796	-54,835
Long Term	567,589	618,666	711,116	697,481	741,177
TOTAL	**422,462**	**435,642**	**351,834**	**320,654**	**378,777**

APPENDIX 3: KUALA LUMPUR DECLARATION 2012

The Second Strategic Roundtable Discussion, jointly organized by the International Shari'ah Research Academy for Islamic Finance (ISRA), the Islamic Research and Training Institute (IRTI) and Durham University, met on 20th September 2012 in Lanai Kijang, Kuala Lumpur.

After lengthy deliberations on the issue of risk sharing, the participants acknowledged that the financial crisis which started in 2008 highlighted the fact that the most salient feature of the dominant conventional financial system is the transfer of risks away from financial institutions onto customers, governments and the public at large. Islamic finance is in a unique position to offer an alternative to the present interest-based debt financing regime that has brought the whole world to the edge of collapse.

Bearing this in mind, the second annual ISRA-IRTI-Durham Strategic Roundtable Discussion (2012) agreed on the following:

- The Shari'ah emphasizes risk sharing as a salient characteristic of Islamic financial transactions. This is not only exemplified in equity-based contracts, like musharakah and *mudara*bah, but even in exchange contracts, such as sales and leasing, whereby risk is shared by virtue of possession.
- Risk transfer and risk shifting in exchange contracts violate the Shari'ah principle that liability is inseparable from the right to profit.
- Sales must be genuine transactions in open markets.
- Although the Shari'ah recognizes the permissibility of debt, it is acknowledged that excessive debt has detrimental effects on society.

The recommendations of the Roundtable Discussion are as follows:

1. Governments should endeavour to move away from interest-based systems towards enhancing risk-sharing systems by levelling the playing field between equity and debt.
2. Accordingly, governments should increase their use of fiscal and monetary policies based on risk sharing.
3. Governments could issue macro-market instruments that would provide their treasuries with a significant source of non-interest-rate-based financing while promoting risk sharing, provided that these securities meet three conditions: (i) they are of low denomination; (ii) are sold on the retail market; and (iii) come with strong governance oversight.
4. There is a need to broaden the organizational structures beyond traditional banking models to formats such as venture capital and waqfs to fulfil the social goals and risk-sharing features of Islam finance.

Source: https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=kuala+lumpur+declaration+2012+ISRA

EMPLOYEES OF STRESS LEVELS, THE EFFECT OF JOB SATISFACTION: A FIELD STUDY

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Abstract

In this study, stress and the effects of these stresses on the academicians working in hospitals by taking the opinions related with the stress and job satisfaction of the academicians working in the health sector. Questionnaire method is used in the collection of the data. For the sampling of our study, academicians targeted which make duty in different department of hospitals in Konya city of Turkey. The number of the academic personnel working in hospitals is determined as approximately 180 persons. Accordingly, this study shall be carried out over 180 persons, the questionnaire number which is required to be made by considering the Sample Sizes (α= 0.10) table issued by Yazıcıoğlu ve Erdoğan (2004,) is determined as at least 93 with the sampling failure of ± 0.05. As the result of the examination, 113 questionnaire forms have been obtained. It is observed that the number of questionnaire which is obtained in this respect has the ability of representing the universe. The data which is collected through the scale has been recorded to SPSS 22.0 for Windows package program and the data has been analyzed. For variables, stress and job satisfaction grades; Correlation, T test, F test, simple linear regression analyses were made. The grade value of the five points Likert type items are collected in the questionnaires. The significance level of the research has been taken as $p<0,05$. The findings which are obtained as the result of the analysis have been commented by being converted into table in accordance with the research questions. As the result; the academicians working in hospitals always face with the stress in their professional lives. This decreases their job satisfaction. When the research- wide is considered, a correlation (relation) in negative and high level is seen between the stress and job satisfaction. No diversity of views is seen in whole demographic variables. In other words, their opinions in stress and job satisfaction factors are in the same direction.

Keywords: Stress, Stress Management, Job Satisfaction, Academician

1. INTRODUCTION

The behaviors of the individual against the negative feelings are closely associated with the stress concept. There both positive and negative effects of the stress. The positive results cause growth and development; the negative effects cause depression and retreat (Güler, 2006: 10). The stress word is the mixture of danger and opportunity words in Chinese. In the contrary of the wide belief, the stress is not always bad. It may be an effective incentive which embellishes the life

(Rowshan, 2000: 12). The negative stress occurs under a few or too much tension. The positive stress occurs in the cases where adequate tension is felt and a motivation is provided (Braham, 1998:46). Because successful persons turn their stresses into constructive energy and creative power (Rowshan, 2000: 12). For example, an operator who makes operation in operation room is so under pressure that his heart beats become so fast. They make a successful operation through stress. A surgeon who is loose and is not under pressure during the operation, is not preferred by anyone (Rowshan, 1998: 12).

In the first section of the study, the concepts and definitions related with the stress and works satisfaction are analyzed, in second and third sections a research which is made on the academic personnel in the hospitals working in health sector, is examined for determining the effect of the stress on the work satisfaction, in the last section the findings which are obtained in the questionnaire study, are tried to be evaluated.

2. CONCEPTUAL FRAMEWORK

The stress is a concept which is nearly confronted by everybody in daily life and professional world. Today, stress is perceived as a serious problem which is qualified as the disease of the modern community (Örücü and Demir, 1999: 59; Çelik, 2010: 229).

The stress concept originated from “Estrica” in Latin and from “Estrece” in old French. The concept has been used in 17th century as disaster, trouble, misery, sadness and fatality (Pehlivan, 1995: 5). In 18th century, the meaning of the concept changed and was used for persons, objects or spiritual structure in the meanings like stress, problem, pressure, power (Keser, 2014: 3). The stress has been for identified by Canadian Physiologist Dr. Hans Selye in 1950. According to Selye, stress is a general reaction given by the body against the pressures on it and he described these reactions as “General Adaptation Syndrome (Selye, 1986; Şimşek and Çelik, 2008: 328). Selye provided the wide usage of the stress as a science and discipline in the medical field today with the work titled “Stress” (Ceyhan, 2012: 108). In other words, stress has been identified as "physical and emotional reaction against the potential threats of the environment". This identification shows the insufficiency of the harmony between the individual and environment (Şimşek and Çelik, 2012:290). It is possible to gather the factors causing stress in two groups. These are individual stress sources and organizational factors (Balcı, 2000: 10).

The individual, who fulfill specific roles and tasks in business environment, is confronted with the "organizational stress" which arises from the organizational environment. This concept is also expressed as the work stress or occupational stress (Pehlivan, 1995: 11). The work stress is an issue which causes various costs for personnel and organization, effects the psychological and physiological health of the employees (Şimşek and Çelik, 2008: 330). The work stress may be caused by any reason in the organization. For example; the change in performing the work, change in technology, handover of the establishment, merger with another establishment, tension between the executive or colleagues of the individual may cause stress (Keser, 2014: 21). There may be different stress sources affecting the employees in an organization. Some of these sources may be listed as follows (Davis,1983: 442; Stoner and Fryer,1983: 34; Pehlivan, 2000: 26): The excess workload, limitation of the time, tight and close audit, the insufficiency of the authorization in meeting the responsibilities, insecurity of the political environment, uncertainty of the role, disharmony between the values of the organization and individual, frustration, role

conflict, concern caused by the responsibilities, working conditions, human relations and alienation.

The individual stress sources are; concern level, tolerance against the uncertainty, familial problems, excite level, economic problems, disappointment, futility of the professional life and the general changes in life (Çoşgun, 2006: 21).

The orientation of the employees in accordance with the objects of the organization and optimum of the performance depends on providing satisfaction from their works in sufficient level. The person deals with his work or activities related with the work in a mjor part of his life. Accordingly, the satisfaction obtained from the work, becomes one of the important indications in terms of the happiness of the person (Canik, 2010: 57).

The works have an important role in individuals' lives. The work satisfaction and significance given to the work by the employee, is very important for efficient and effective performance of the employee. There are many ways and methods for increasing the success and efficiency in the organizations. One of the most important effective ways for taking successful and efficient results in good and service production in the organization with bad working conditions is to satisfy the employee in terms of material and non-material aspects (Şimşek and Çelik, 2008: 361).

If the state of mind occurring at the end of the work experience of the employee is positive, this is identified as "work satisfaction", if the state of mind is negative, this is identified as "work dissatisfaction" (Bedük, 2010: 108). In other words, the work satisfaction may be identified as "the happiness which is provided by creating a work with the colleagues whom the employee enjoys working together with and the material benefits gained from the work". If the employee can see the presented work as perceptibly, this proud shall be a satisfaction source for the employee. (Şimşek vd., 2015: 202). The work satisfaction identifies the level of satisfaction which is felt due to the work and the significance and satisfaction level of the work (Çarıkcı, 2001: 162).

3. RESEARCH METHODOLOGY

The purpose of this research which is made in this section for measuring the relation between the stress and work satisfaction of the academic personnel working in hospitals of Konya, shall provide information about the hypothesis, object, method and findings of this research. The results gained in the research shall be evaluated for whether being significance statistically and it shall be examined whether the hypotheses are verified.

3.1. Method of the Research and Sample

The questionnaire method is used in the collection of the data of this research. For the sampling of our study, academicians working in different departments of hospitals in Konya are targeted. The questionnaire form consists of two section, in the first section, there are questions which aim to determine the demographic specifications of the participants. In the second section, there are questions which determine the opinions of the participants related with their stress and work satisfaction. The questionnaire form has been taken from the annex of the non-published master

thesis of Coşgun (2006). This study shall be carried out over 180 persons and the number of questionnaire which must be made by considering the samples size (α = 0.10) table issued by Yazıcıoğlu and Erdoğan (2004), is determined as at least 93 with the sampling error of $\pm$ 0.05. 113 questionnaire forms are obtained at the result of the performed examination. It is observed that the obtained questionnaire form number has the ability to represent the main mass.

3.2. Analyzing and Commenting the Data

The data which is collected through the scale has been recorded to SPSS 22.0 for Windows packaged software and the data has been analyzed. For the variables and the stress and work satisfaction points; correlation, t test, basic linear regression analyses have been made. The point values of the five point Likert type items have been collected in questionnaires.

The lowest and highest point interval of the stress scale; 15-26 Strongly disagree, 27-38 Disagree, 39-50 Indecisive, 51-62 Agree, 63-75 Strongly Agree. The higher point interval leads increase in stress experience level. The lowest and highest point interval of work satisfaction scale; 5-7 Strongly disagree, 8-10 Disagree, 11-13 Indecisive, 14-16 Agree, 17-20 Strongly Agree.

The higher point interval leads increase in stress experience level. The significance level of the research has been taken as $p<0,05$. The findings which are obtained as the result of the analysis have been commented by being converted into tables in accordance with the research questions.

3.3. Hypotheses of the Research

Hypothesis-1: The opinions of the academicians working in hospitals of Konya related with the stress, affect the work satisfaction as significantly;
Hypothesis-2: The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their ages;
Hypothesis-3: The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their genders;
Hypothesis-4: The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their marital status;
Hypothesis-5: The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their education status;
Hypothesis-6: The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their service period.

4. FINDINGS OF THE RESEARCH

Table 1, relates to demographic information.

Table-1: Frequency Distribution Table of the Participants

Variables	**Frequency (f)**	**Percentage (%)**
Age		
18-30 Years Old	44	38,9
31-40 Years Old	34	30,1
41 Years Old and Over	35	31,0
Gender		
Female	57	50,4
Male	56	49,6
Marital Status		
Married	83	73,5
Single	30	26,5
Education Status		
Bachelor	30	26,5
Post-Graduate	31	27,4
Doctorate	52	46,0
Service Period		
5-10 Years	39	34,5
11-20 Years	31	27,4
21 Years and Over	43	38,1
General Total	113	100 (%)

The research has been made on total 113 persons. % 38.9 of the ages of the participants are 18-30 years old, % 30,1 of the ages are 31-40 years old and 41 years old and over. The %50.4 of the genders of the participants is female and % 49,6 is male. The % 73.5 of the marital status of the participants is married and % 26,5 of the participants is single. The %26.5 of the participants is bachelor, % 27,4 post-graduate and % 46,0 doctorate graduate. % 34.5 of the service periods of the participants is between 5 and 10 years % 27,4 is between 11 and 20 years and % 38,1 is between 21 years and over.

The regression analysis results related with prediction of stress for the work satisfaction, are given in Table 2. R value represents the correlation between dependent variable and independent variable. The highness of this value shows that there is a close relation between the independent variable and dependent variable or the independent variable explains an important part of the change in the dependent variable.

In Table 2, R is 906) and it expresses a relationship between dependent variable and independent variable which may be considered as negative and important. R Square value expresses that the variance of % 82 in dependent variable is explained by the independent variable.

Table-2: Simple Regression Analysis Results Related with Stress and Work Satisfaction

Variable	*B*	*Standard Erroe*	*β*	*t*	*P*	*Dual r*	*Partial r*
Stable	*85,784*	*1,130*	-	*75,893*	*,000*	-	-
Stress	*-2,671*	*,118*	*-,906*	*-22,548*	*,000*	*-,906*	*-,906*
*R= ,906**		*R^2= ,821*		*F (1,111)= 508,415*		*p=,000*	

** Work satisfaction (Dependent variable) is stable*

As seen in Table 2, R^2 is, 821. It means that % 82 of the variance in dependent variable may be explained. With a simpler expression, to know the stress in predicting the work satisfaction enables prediction with the % 82 certain degree. When the dual and partial correlations between the predictor variables and dependent (predicted) variable, are examined; it is seen that there is a negative and high level (r=-,91) relation between the stress and work satisfaction.

When t-test results related with the significance of regression coefficients are evaluated; it is observed that the stress is a predictor on work satisfaction (significant). Under the light of all these expression, the stress gives a negative, high level and significant relationship with the work satisfaction points. Under the light of these findings *"The opinions of the academicians working in hospitals of Konya related with the stress, affect the work satisfaction as significantly…"* is supported. According to the regression analysis, the regression equality (mathematical model) related with the prediction of stress and work satisfaction, is given as follows (Y= 85,784-2,671.Stress).

The averages of academicians working in hospitals of Konya according to the age variable related with the stress and work satisfaction are given in Table 3.

Table-3: Anova Table Results According to Age Variable

Dimensions	Variable	N	$\bar{X}$	SS	F	P	LSD
Work satisfaction	18-30 Years old	44	9,16	3,93	,396	,674	-
	31-40 Years Old	34	8,85	3,50			
	41 Years Old and Over	35	8,43	3,33			
	Total	113	8,84	3,60			
Stress	18-30 Years old	44	60,27	11,43	1,182	,311	-
	31-40 Years Old	34	63,71	9,83			
	41 Years Old and Over	35	63,06	10,26			
	Total	113	62,17	10,63			

** The relation is significant in p<0,05 significance level*

The opinions of the academicians show distinctions according to the averages and dimensions. In addition to this, bilateral variance analysis (ANOVA) has been made for determining whether these differences between the averages of the academicians in terms of age variable are statistically significant. The significance level of the difference between the averages of the academicians in terms of age variable are found in Table 3.

When the descriptive statistics are examined, the scale reference interval in stress for academicians in all ages are as "agree" and "strongly agree". It is "disagree" in work satisfaction. The academicians working in hospitals in Konya, express that they have dense stress and this decreases their work satisfaction.
The age groups are in the same opinion in this issue. Under the lights of these findings *"Hypothesis 2: The opinions of the academicians working in hospitals of Konya related with the*

stress and work satisfaction, show significant distinctness according to their ages" are rejected in both dimensions.

The opinions related with stress and work satisfaction of the academicians working in the hospitals in Konya, are grouped according to gender variable and "independent two groups t test" is applied. T test results according to gender variable are given in Table 4.

Table-4: T Test Table Results According to Gender Variable

Dimensions	Variable	N	$\bar{x}$	ss	sd	t	p
Work Satisfaction	Female	57	9,16	3,80	111	,943	,348
	Male	56	8,52	3,40			
Stress	Female	57	61,68	10,97	111	,487	,627
	Male	56	62,66	10,35			

*The relation in p<0,05 significance level ,is significant

It is observed that the differences between the averages are not statistically significant. The highness of the significance (p values) degrees of t values more than %5 shows the non-existence of a significant difference related with this analysis. In a general expression, regardless of the genders of the academicians, their opinions related with work satisfaction and stress are in the same direction.

When the descriptive statistics are examined, the opinions of the male and females are "agree". In another words, the academicians working in hospitals of Konya, experience stress in dense level and this affects their work satisfactions negatively. However, regardless of their genders, their opinions are in the same directions.

Under the lights of these findings *"Hypothesis 3. The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their genders"* are rejected in both dimensions.

The opinions related with stress and work satisfaction of the academicians working in the hospitals in Konya, are grouped according to marital status variable and "independent two groups t test" is applied. T test results according to marital status variable are given in Table 5.

Table-5: T Test Table Results According to Marital Status Variable

Dimension	Variable	N	$\bar{x}$	ss	sd	t	p
Work Satisfaction	Married	83	8,53	3,47	111	1,533	,128
	Single	30	9,70	3,90			
Stress	Married	83	62,77	10,53	111	1,003	,318
	Single	30	60,50	10,89			

*The relation in p<0,05 significance level ,is significant

It is observed that the differences between the averages are not statistically significant. The highness of the significance (p values) degrees of t values more than %5 shows the non-existence of a significant difference related with this analysis. In a general expression, regardless of the

marital status of the academicians, their opinions related with work satisfaction and stress are in the same direction.

When the descriptive statistics are examined, the opinions of the married persons and single persons are "agree". In another words, the academicians working in hospitals of Konya, experience stress in dense level and this affects their work satisfactions negatively. However, regardless of their marital status, their opinions are in the same directions.

Under the lights of these findings *"Hypothesis 4. The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their marital status"* are rejected in both dimensions.

The averages of academicians working in hospitals of Konya according to the education status variable related with the stress and work satisfaction, are given in Table 6.

Table-6: Anova Table Results According to Education Status

Dimensions	Variable	N	$\bar{X}$	SS	F	p	LSD
Work Satisfaction	Bachelor	30	7,87	2,94	2,519	,085	-
	Post-Graduate	31	9,90	3,99			
	Doctorate	52	8,77	3,60			
	Total	113	8,84	3,60			
Stress	Bachelor	30	64,37	9,90	1,134	,326	-
	Post-Graduate	31	60,29	11,15			
	Doctorate	52	62,02	10,69			
	Total	113	62,17	10,63			

** The relation is significant in p<0,05 significance level*

The opinions of the academicians show distinctions according to the averages and dimensions. In addition to this, bilateral variance analysis (ANOVA) has been made for determining whether these differences between the averages of the academicians in terms of education status variable are statistically significant. The significance level of the difference between the averages of the academicians in terms of education status variable are found in Table 6.

When the descriptive statistics are examined, the scale reference interval in stress for academicians in all education status is as "agree" and "strongly agree". It is "disagree" in work satisfaction. The academicians working in hospitals in Konya, express that they have dense stress and this decreases their work satisfaction. The education status groups are in the same opinion in this issue.

Under the lights of these findings *"Hypothesis 5. The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their education status."* are rejected in both dimensions.

The averages of academicians working in hospitals of Konya according to the Service period variable related with the stress and work satisfaction are given in Table 7.

Table-7: Anova Table Results According to Service Period Variable

Dimension	Variable	N	$\bar{X}$	SS	F	p	LSD
Work Satisfaction	5-10 Years	39	9,49	4,00	2,519	,085	-
	11-20 Years	31	8,48	3,48			
	21 Years and Over	43	8,51	3,30			
	Total	113	8,84	3,60			
Stress	5-10 Years	39	60,15	11,73	1,134	,326	-
	11-20 Years	31	63,61	9,99			
	21 Years and Over	43	62,95	9,97			
	Total	113	62,17	10,63			

** The relation is significant in p<0,05 significance level*

The opinions of the academicians show distinctions according to the averages and dimensions. In addition to this, bilateral variance analysis (ANOVA) has been made for determining whether these differences between the averages of the academicians in terms of service period variable are statistically significant. The significance level of the difference between the averages of the academicians in terms of service period status variable are found in Table 7.

When the descriptive statistics are examined, the scale reference interval in stress for academicians in all service period is as "agree" and "strongly agree". It is "disagree" in work satisfaction. The academicians working in hospitals in Konya, express that they have dense stress and this decreases their work satisfaction. The service period groups are in the same opinion in this issue.

Under the lights of these findings *"Hypothesis 6. The opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction, show significant distinctness according to their service period."* are rejected in both dimensions.

5. RESULTS

A research is made for the opinions of the academicians working in hospitals of Konya related with the stress and work satisfaction and for measuring the stress of the academicians in hospitals through a significant literature scanning and a comprehensive field research and for measuring the effects of these stresses on the work satisfaction. When the descriptive statistics are examined, it is observed that the academicians do not have time for their private lives, the current legislation and bureaucratic obstacles affect their work lives negatively, non-existence of the merit system and they express an opinion such as agree and strongly agree on the stress lives arising from the non-existence of the notifications. On the other hand, they express that while working, they take orders from many executives and chiefs, the night work and shifts bother them. They express an opinion as disagree in the work satisfaction level due to this and similar issues. When the analytic statistical results are examined, it is found that there is a negative and

high level relation between the stress and work satisfaction. We may say that when the stress increases, the work satisfaction decreases and when the work satisfaction increases, the stress decreases.

In the findings of this research, it is found that the stress reference intervals of the academicians are stressful and they express agree and strongly agree to the points where they experience stress. The works satisfactions are in the direction of agree and strongly agree in dissatisfy, have no work satisfaction points. As the result of the basic linear regression analysis, it is found that %82 of the stress of the r square value is explained in the work satisfaction. A negative and high level correlation is observed among them. In the analyses made related with the age, gender, marital status, education status, service period, it is found that no diversity of views are observed in any of these variables.

As the result, the academicians working in the hospital are confronting with the stress in their work lives. This increases their work satisfaction. When the generality of the research is considered, a negative and high level correlation (relation) is observed between the stress and work satisfaction. No opinion differences are seen in all demographic variables. In other words, their opinions in stress and work satisfaction factors are in the same direction.

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THE EFFECT OF ETHICAL CLIMATE PERCEPTION OF TEACHERS TO THEIR ORGANIZATIONAL COMMITMENT: A SAMPLE PRACTICE

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Abstract

Nowadays, organizations are making an effort to minimize the problems that could affect productivity and performance by doing research on human behaviours. To investigate and analyse ethical climate and organizational commitment, which is the subject of the study, are important in terms of contribution of the organizations to this development. With the increase of competition in businesses, each factor of the organization has been required to be handled in a more detailed way. In particular, the human factor has become the key point of the success. A high ethical climate and high level organizational commitment is required also for those who work in education sector to increase their success and performance in the institutions they work. In this study, teachers' perception of ethical climate on organizational commitment was investigated. The sample of the research is consisted of the teachers who work in primary and high schools of 5 districts of Konya. 337 teachers from different schools participated in this study and a survey of 67 questions were applied to the participants. Obtained data analysed, tabulated and interpreted through statistical programs.
Keywords: Ethical Climate, Organizational Commitment.

1. INTRODUCTION

In today's business world where competition increasingly continues, the pace of the change fact has reached incredible dimensions. The priority target of the enterprises operating in this environment has been to be successful in global competition and maintain their existence in this way. This can only be realized with the businesses being aware of the characteristics that make them different from their competitors. At this point, the human factor has an undeniably great importance.

Ethical climate and organizational commitment, which is part of the organizational culture, also has an importance for schools. Especially the ethical climate practices which has a different place to determine the ways that can be applied in the solution of problems that include ethical practices provide power, confidence and role flexibility. The organizational commitment of employees is the effort put forth to achieve the organization/operation's goals and loyalty to the

organization. Thus, the role of organizational commitment is important to direct the employees to a purpose within the framework of organizational culture.

In this study, teachers' perception of ethical climate on organizational commitment was investigated. Primarily, the concepts of ethical climate and organizational commitment were emphasised. Following, the data which was obtained by applying a methodology intended for the reliability studies of the ethical climate and organizational commitment behaviour scale created by combining two separate studies analyzed and investigated through SPSS programme. The main purpose of this study is to determine the effect of the perception of the ethical climate of teachers on organizational commitment. For this purpose, the scales, developed to investigate ethical climate and organizational commitment behaviour on 337 primary and high school teachers who work in five different districts that selected from the province of Konya, were used. In the study, ethical climate principles were approached with egoism and helpfulness dimensions.

Organizational commitment was approached with emotional dimension, rational dimension and normative dimension. In result part of the study, the analyzes and results conducted on the data collected within investigation were explained in a detailed way and the obtained results in relation to performed analyzes were investigated. As a result, a meaningful and positive relationship was found between ethical climate and organizational commitment.

2. ETHICAL CLIMATE

2.1. Ethics and Climate Concepts

Ethics, whose emergence almost extends to the early days of history of humanity when evaluated on the basis of moral concept, is a concept that basically exists in the society all the time and questioned within the life. Especially, in recent years, it has been a concept that is mentioned and argued about it by every discipline. Nowadays, too, it became substantially questioned and investigated globally (Sabuncuoğlu, 2011: 1).

If the concept of ethics is explained; the word ethics comes from Greek and derives from the word 'ethos' which means 'character'. The concept of 'ethics' which derives from ethos , too, comes out with the investigation of moral principles and values by emphasising on ideal and abstract one. In this respect, ethics is more specific and philosophical based than common moral principles (Fromm, 1995: Yörükhan, 2015). As well as being reference values , principles and standards for people to determine how things should be done , ethics, at the same time , is a process and while taking a decision and applying in this process, actions should be taken by adhering to certain values (Sabuncuoğlu, 2011:2).

The concept of climate is originally a Greek word and means 'inclination', 'tendency'. Besides, it is used to express physical phenomenon's like heat, pressure and temperature. With its meaning in business literature, it expresses how 'climate' business members evaluates the internal and external environment of the organization (Haller, 1971:27; Büte, 2011: 172).

2.2. Ethical Climate

The concept of ethical climate which initially developed by Victor and Cullen (1988), serves many functions in the organizations. When ethical dilemmas occur in solving ethical problems of the individuals, the individuals in the organization seek an answer to question 'what should I do'.

Another function of it is to determine ethical problems of the individuals in the organization; in short, it is useful for diagnosing and evaluating the conditions of ethical climate individuals (Cullen, Victor and Parboteeah, 2003: 129).

Ethical climate takes an active role in evaluating the incidents the employees' faces in any situation and determining what is right and wrong. In this sense ethical climate is one of the important factors of organizational performance that shapes inter-organizational relationships and attitudes of workers. Therefore, it is very important to understand possible relationship between ethical climate of the organization and the attitudes of the workers (Elçi and Alpkan 2009: 299; Karadut, 2014: 12).

Ethical climate of an organization is consisted of established norms and applications that function as borders of what is right or wrong morally in the organizational context (Özgener, 2004; Tütüncü and Savran, 2007: 179-180). When faced with a decision-making situations which is important for other individuals in the organization, how an organization member should define the 'right' alternative, at least the one suitable to the organization's point of view? This information constitutes work climate and determines the formation of ethical behaviours on the work (Sağnak, 2005: 38; Tütüncü and Savran, 2007: 179-180).
The ethics concept in enterprises has become an intense need since the times modern businesses emerged and are accepted as discipline. Especially within modern-day business world where borders were removed commercially speaking, this interest has become intense. When considered the existence of the subjects that can be associated with ethics everywhere human exists, the enterprises which try to achieve their basis goals like profitability, sustainability and growth within the brutal competition environment started to question ethics and pursue their activities accordingly (Sabuncuoğlu, 2011: 29-30).

2.3. Ethics Climate Types

Three ethical approaches comprise the basis of ethical climate models in the leadership of Victor and Cullen. These approaches cover the ethical basis of egoism, helpfulness and principlism. The first approach is egoism. Egoism represents the organizational behaviour for both individual and organization that is in search of escaping from the punishment and rewarding. This often causes a climate where individual and organizational activity and cost activities are the primary target in terms of productivity. The second approach is helpfulness. This approach represents the behaviour that investigates employment in satisfactory good conditions for the members and that allows it. The main element of this approach is its being functional and democratic (Mill 2002; Akkoç, 2012: 47).

The helpfulness approach targets friendship, interpersonal relationship and encouragement to group commitment. . In this context, the third is principlism. This approach focuses on abstract, impersonal behaviour rules of conduct rather than individual or group satisfaction. When faced with an ethical dilemma organization norms suggest to be adhered to rules or standards in the decisions taken by the employees (Victor and Cullen, 1988; Akkoç, 2012: 47)

2.4. Ethical Climate Dimensions

Ethical climate of a company was actually defined, by theoretically grounding and after experimental researches, in the context of five dimensions as due diligence, law and codes, rules, benefit and independence. The due diligence dimension of ethical climate is related to the care to the employees, company and against the world. Law dimension is related to rules of conduct completely determined by the world. Rules dimension is related to rules of conduct accepted by the company. Benefit dimension covers the rules enacted by individuals' personal interest and the enterprise. Independence dimension is related to personal rules of an individual within acceptable behaviours (Neubaum, Mitchell and Schminke; 2004: 335-347; Tütüncü and Savran, 2007: 181-182).

3. ORGANIZATIONAL COMMITMENT

3.1. Conceptually Organizational Commitment

In his theory, Philosopher Adams, suggest that employees should squarely be appreciated and rewarded to be able to work with the high level of moral and motivation, to increase commitment of them to the organization, and to have a trust in the organization and superiors (Eren, 2014: 551).

Organizational commitment was explained by focusing on generally three subjects defined as a multidimensional concept. These are emotional commitment, continuity commitment and normative commitment (Sabuncuoğlu, Tüz, 2013: 70).

According to another definition, organizational commitment is defined as organization employees to believe, to adapt the objectives and values of the organization, to put an effort for organizational goals, to have a strong desire to stay in the organization (Bedük, 2012: 179).

3.2. Dimensions of Organizational Commitment

According to Allen and Meyer is a psychological state that connects individual to the organization. It is examined in three dimensions. These are emotional commitment, normative commitment and rational commitment (Bedük, 2012: 179).

3.2.1. Emotional Commitment

Behavioural commitment is based on socio-psychological perspective. It is related to past experiences of the individuals and process of dependency of them to the organization based on the adaptation state to the organization (Clifford, 1989: 144). According to Meyer and Allen behavioural commitment is a concept related to the issue of individuals to work too long in a certain organization and how they dealt with this issue. According to these authors, employees who show behavioural commitment are adhered to certain activities they do rather than the organization itself (Meyer and Allen, 1997; Çöl, 2015).

Emotional commitment is that employees connect to the organization emotionally; continuity commitment is that the employees connect to the organization by considering the cost of leaving the organization (Sabuncuoğlu and Tüz, 2013: 70).
Emotional commitment covers the emotional commitment of the wage earner to the organization, identification and integration of him/her with the organization. The wage earners who stays in the organization with a strong emotional commitment stay on the organization not because they need this, but they want this more themselves. (Meyer and Allen, 1991: 67; Doğan and Kılıç, 2015: 44).

3.2.2. Normative Commitment

Normative commitment is expressed as the employees feels connected to the organization as they have a sense of moral duty and a belief not to leave the organization (Meyer and Allen, 1997; Özdevecioğlu, 2003: 114). It is the commitment of the employee to the organization by feeling the obligation of staying in the organization (Sabuncuoğlu and Tüz, 2013:70).

3.2.3. Rational Commitment

It is a commitment that occurs with the feeling of losing the gains wage earner got as a result of the sacrifice within the work time in the organization after leaving the organization. It is continuing to work of individuals in an organization because of obligation.

3.3. Factors Affecting Organizational Commitment

3.3.1. Personal Factors

It can be examined under the heading of job expectations, psychological contract, personal characteristics in itself (Karasoy, 2014: 64-65).

3.3.2. Organizational Factors

There are many factors that enter into the scope of organizational factors. Some of them are the quality of work and its importance, management, wage level, organizational culture, organizational justice, organizational rewards, teamwork and career (Karasoy, 2014: 64-65).

3.3.3. Out of Organizational Factors

New job opportunities, professionalism, unemployment rate, the country's socio-economic status, the state of the industry (Karasoy, 2014: 64-65).

3.4. Organizational Commitment Results

The results of commitment to the organization can be positive or negative related to the degree of commitment. When organizational goals are not acceptable, the high degree of commitment of the members can accelerate the separation of the organization; when the goals are reasonable and acceptable, high degree of commitment is possible to result with effective behaviours. As regards to the results of organizational commitment, it is found that behavioural results are in the strongest connection with commitment. Of these, especially, job satisfaction, motivation, participation and desire to remain in the organization have a positive relationship with organizational commitment; job change and absenteeism have a negative relationship with organizational commitment (Balay, 2000: 45).

4. SAMPLE PRACTICE

4.1 Research Methodology

4.1.1. Research Objective

Objective of this research is to measure the effects of teacher's ethical climate on their organizational commitment.

4.1.2. Data Collection Process

Research samples are elementary and high school teachers who work in five different counties of Konya (Derbent, Hüyük, Yunak, Derebucak, Doğanhisar). Survey was used as a data collection tool, and 337 questionnaires were administered. The questionnaire used in the study consists of three sections.

4.1.3. Analysis Method

In the first section, 6 questions were asked about demographic characteristics of teachers (gender, marital status, education level, age range, work duration and branches).
In the second section, questions about measuring organizational commitment were asked. With this goal, 25-question organizational commitment survey which was quoted from Allen and Meyer's (1990) "The Measurement and Antecedent of Effective, Continuance and Normative Commitment to the Organization" articles. Turkish version of this scale was taken from İbrahim Cem Gültekin's (2004) "The Relationship between Organizational Commitment and Job Satisfaction" master thesis. The validity and reliability of the scale was checked by Gideon (Gültekin, 2004; Eser, 2007: 42). Employees were requested to mark relevant choices such as "Strongly Agree", "Quite Agree", "Somewhat Agree", "Barely Agree", and "Disagree" in the second part of the survey.
In the third section, a 36-statement scale which was suggested by Victor and Cullen (1993) and accepted as the most widely-used in order to specify ethical climate in the literature was used.

Turkish version of this scale was quoted from Eser's (2007) master's thesis named "Ethical Climate and Effects of Trust in Manager on Organizational Commitment". The validity and reliability of the scale was checked by Eser. Organizational communication questionnaire was developed as a result of literature review. Questionnaire participants were requested to mark the questions based on 5-Likert-type scale as "Strongly Agree", "Quite Agree", "Somewhat Agree", "Barely Agree", and "Disagree".

4.1.4. Research Hypothesis

Hypothesis 1: There is a significant and positive correlation between ethical climate and organizational commitment.
Hypothesis 2: There is a significant and positive correlation between Egoist Climate Type and Emotional Dimension of Organizational Commitment.
Hypothesis 3: There is a significant and positive correlation between the Emotional Subscale of Organizational Commitment and 3 dimensions (Egoist, Helpfulness and Principlism) of Ethical Climate.
Hypothesis 4: There is a significant and positive correlation between the Continuation Subscale of Organizational Commitment and 3 dimensions (Egoist, Helpfulness and Principlism) of Ethical Climate.
Hypothesis 5: There is a significant and positive correlation between the Normative Subscale of Organizational Commitment and 3 dimensions (Egoist, Helpfulness and Principlism) of Ethical Climate.
Hypothesis 6: Is there a difference between the individual working times according to Organizational Commitment, Ethical Climate and Sub-dimensions scales?

4.2. Research Method

Material design: In this research, statistical studies, and statistical analysis and review software package SPSS 15 was used. In general, frequency and average based on the data were provided. After this data was given, in order to decide on which type of tests to use for them, compliance with the normal distribution of the data was tested with Kolmogorov-Smirnov normality test. As a result of data normality and homogeneous heteroscedasticity, Parametric Tests will be consulted; otherwise non-parametric tests will be used. In case of normal distribution of data and uniform compliance is with variance, independent samples t test and one-way analysis of variance of the parametric tests (ANOVA) test will be used. Here, when the number of groups was two, two independent sample t test of parametric tests was used and when the number of groups is more than two and they are independent groups, ANOVA test was used, and for the correlation Pearson Correlation coefficient was used. Also, while finding out the mediating variable, Structural Equation Modelling and Sobel test were used.

4.3. Demographic Characteristics

Table 1: Gender Frequencies

Gender	Number (N)	Percentage (%)
Female	160	47,5
Male	177	52,5
Total	337	100,0

Table 2: Marital Status Frequencies

Marital Status	Number (N)	Percentage (%)
Married	207	61,4
Single	130	38,6
Total	337	100,0

Table 3: Age range of frequencies

Age Range	Number (N)	Percentage (%)
18-29	152	45,1
30-43	158	46,9
44-55	19	5,6
Over 56	8	2,4
Toplam	337	100,0

4.4. Analysis of Hypothesis

Hypothesis 1: There is a significant and positive correlation between Ethics Climate and Organizational Commitment.

	Organizational Commitment
Ethical Climate	r=0,502
	P value= 0,000

Pearson Correlation Test was made for the correlation between Ethical Climate and Organizational Commitment trust and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 50.2 %.

	Organizational Commitment		
Ethical Climate	Emotional	Continuation	Normative
Egoist	r=0,498 P value= 0,000	r=0,074 P value = 0,177	r=0,341 P value = 0,000
Helpfulness	r=0,504 P value = 0,000	r=0,093 P value = 0,088	r=0,407 P value = 0,000
Principlism	r=0,328 P value = 0,000	r=0,176 P value = 0,001	r=0,377 P value = 0,000

Pearson Correlation Test was made for Egoist dimension of the three dimensions of Ethical Climate and emotional sub-dimension of Organizational Commitment and as the P value is equal

to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 49.8%.

Pearson Correlation Test was made for Helpfulness dimension of the three dimensions of Ethical Climate and emotional sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 50.4%.

Pearson Correlation Test was made for Principlism dimension of the three dimensions of Ethical Climate and emotional sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 32.8%.

Pearson Correlation Test was made for Egoist dimension of the three dimensions of Ethical Climate and continuation sub-dimension of Organizational Commitment and as the P value is equal to 0,177<0,05, there is a meaningless correlation between them. Direction of the relationship is positive and was found to be 7.4%.

Pearson Correlation Test was made for Helpfulness dimension of the three dimensions of Ethical Climate and continuation sub-dimension of Organizational Commitment and as the P value is equal to 0,088<0,05, there is a meaningless correlation between them. Direction of the relationship is positive and was found to be 9.3%.

Pearson Correlation Test was made for Principlism dimension of the three dimensions of Ethical Climate and continuation sub-dimension of Organizational Commitment and as the P value is equal to 0,001<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 17.6%.

Pearson Correlation Test was made for Egoist dimension of the three dimensions of Ethical Climate and normative sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 34.1%.

Pearson Correlation Test was made for Helpfulness dimension of the three dimensions of Ethical Climate and normative sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 40.7%.

Pearson Correlation Test was made for Principlism dimension of the three dimensions of Ethical Climate and normative sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 37.7%.

There is a significant and positive correlation between Egoist Climate Type and Emotional Dimension of Organizational Commitment.

	Organizational Commitment
Ethical Climate	Emotional
Egoist	r=0,498 P value= 0,000

Pearson Correlation Test was made for Egoist dimension of the three dimensions of Ethical Climate and emotional sub-dimension of Organizational Commitment and as the P value is equal to 0,000<0,05, there is a meaningful correlation between them. Direction of the relationship is positive and was found to be 49.8%.

Is there a difference between the individual working times according to Organizational Commitment, Ethical Climate and Sub-dimensions scales?

According to findings that show p value is smaller than 0.05 in the above table, it was found out that working times have effect on organizational commitment and its sub-dimensions that are Emotional, Continuation and Normative (or in other words, there is a difference between working times in terms of organizational commitment and its sub-dimensions that are Emotional, Continuation and Normative). In order to specify from which working groups these values in which there is a difference between organizational commitment and its sub-dimensions Emotional, Continuation and Normative stem from, Post Hoc test was used and as a result, it was found out that employees who worked less than 1 year in Emotional sub-dimension had more points than the other employees. It is observed that employees who worked more than 25 years in the Continuation sub-dimension had more points than the other employees.

It was also observed that employees who work less than 1 year and more than 25 years in normative sub-dimension had more points than the other employees. In the organizational commitment scale, on the other hand, it was found out that employees who worked less than 1 year and more than 25 years had more points than the other employees. According to findings that show p value is smaller than 0.05 in the above table, it was found out that working times does not have effect on Ethical Climate and its sub-dimensions Egoist, Helpfulness and Principlism (or in other words, there is no difference between working times in terms of organizational commitment and its sub-dimensions that are Emotional, Continuation and Normative).

5. RESULTS

Today, one of the most important elements in an effective way of being able to achieve success in organizations is to realize high performance and increased productivity. If those who work in the business have high organizational commitment and perceive the ethical climate, they force their capacity in order to bring the highest level of performance and increased productivity as a result. Consequently, perceived ethical climate and possessed organizational commitment affects their perception about the organization and might lead to positive impact on their individual performance.

This research was conducted in order to determine the teacher's who work in education field assessment on ethical climate and organizational commitment and to find out the extent of the

relationship between the two. The population of the research consists of primary and secondary school teachers working in five different counties in the province of Konya. Sample is composed of 337 teachers who are working in the above-mentioned schools in different branches.

The scale developed to examine the ethical climate and organizational commitment behavior was used in the research. In the study, ethical climate was discussed in terms of principlism, egoism and helpfulness. Also, organizational commitment was examined in respect to emotional dimension, rational dimension and normative sub-dimension. As a result of the research and the analysis on ethical climate and organizational commitment, Pearson Correlation Test was conducted for the correlation between ethical climate and organizational commitment and it was found out that there is a meaningful and positive correlation between Organizational Commitment and Ethical Climate. Organizational commitment is a psychological factor that connects individuals to the organization, while ethical climate is one of the key factors of organizational performance that shapes the attitudes and working relationships within the organization.

When the Egoist dimension of three dimensions of ethical climate was examined with Helpfulness dimension, Principlism dimension and emotional sub-dimension of Organizational Commitment, it was found out that there is a meaningful and positive correlation between three dimension of ethical climate and emotional sub-dimension. Moreover, there is a meaningful and positive correlation between Egoist Climate Type and Emotional Dimension of Organizational Commitment.

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POSITION OF ENTRENRENEURSHIP IN THE FINANCIAL PERSPECTIVE 2007-2013. AN EXAMPLE OF CENTRAL POLAND

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Abstract

Regional entrepreneurship is closely linked to the development of the region. An important element of the EU regional policy is supporting the development of enterprises, especially small- and medium-sized ones, that constitute the core of a competitive economy. A major problem for the development of the SME sector in Poland even before the accession to the European Union was the lack of financial resources for implementation of development projects as well as limited access to information and external sources of financing. The consequence of this are the urrently existing low expenditures on investments and development of human resources, as well as poor cooperation with scientific and research units.

The goal of the work is to identify and assess the effectiveness of European Union's financial instruments in the years 2007-2013 which affected the creation of new enterprises, as well as their empirical verification, on the example of Łódzkie region (central region of Poland).
A part of the exploration of the research problem was the formulation of the following research question:

a) Did the EU funds used in Łódzkie region influence the development of entrepreneurship?
A preliminary analysis of the problem made it possible to pose the main research hypothesis, which assumes that the financial instruments of the European Union policy which are oriented at the development of entrepreneurship can have a positive impact on equalizing the level or pace of economic development of regions, although the effects of the impact of these instruments should be seen in the long run.

The main point of interest of this work was the development of entrepreneurship in Łódzkie region inspired by financial incentives within the financial perspective 2007-2013. Łódzkie Voivodeship is a region situated in the center of both Poland and Europe. Because of the very favorable location it is considered to be the region attractive for new domestic and foreign investments and for the development of entrepreneurship. The conducted analysis made it clear that unfortunately the region did not fully use this great opportunity. Entrepreneurship was growing within the EU programming period 2007-2013 - but the dynamics of these changes was not significant.

Keywords: entrepreneurship, regional development, regions, Poland, SMEs

1. Introduction

Entrepreneurship of the region is treated as a synonym for the sector of enterprises operating in the region. This is a narrow approach to regional entrepreneurship (Kola-Bezka, 2013, p. 52). The concept of regional (macroeconomic) entrepreneurship is intrinsically linked to the development of the region, which is done through the establishment of new enterprises, their gradual

development, the creation of new resources, markets, technologies, products and services, processes and transactions leading to the growth of their value (Lichniak, 2011 p. 11). The literature also indicates that regional entrepreneurship can be described as activities of the entities on the local territory leading to the creation of new enterprises in the area, which causes economic growth thereby increasing the standard of living of inhabitants, and also such actions of local authorities and communities linked to business, which stimulate the creation of new enterprises and the development of technical and social infrastructure (Saar, 2011, p. 12).

The goal of this work is to identify and assess the effectiveness of European Union's financial instruments in the years 2007-2013 which affected the creation of new businesses, as well as their empirical verification on the example of Łódzkie region (the central region of Poland).
As part of the exploration of the research problem the following research question was formulated:

a) *Did the EU funds, which were used in Łódzkie region influence the development of entrepreneurship?*

A preliminary analysis of the problem made it possible to pose the main research hypothesis, which assumes that *financial instruments of the European Union policy oriented at development of entrepreneurship can have a positive impact on the process of equalizing the level or pace of economic development of regions, although the effects of the impact of these instruments should be expected in the long run.*

The main research method used in this paper was the analysis of available literature on the use of EU financial instruments in the period 2007-2013 for the development of entrepreneurship, statistics of the Central Statistical Office, and statistical data from the Local Data Bank.

2. Operational Programs of the European Union supporting entrepreneurship in the sector of small and medium-sized enterprises

Polish enterprises are not competitive in the international market, most of them do not have the capacity necessary for the efficient functioning and operation in a competitive market filled with innovations. The European Union addressed the problems of Polish entrepreneurs by offering financial assistance in the form of aid programs. The EU aid programs are designed to enable enterprises to adapt to the requirements of the Single Market. The EU programs can be executed in the form of state aid or incentives for competitive activities in the European market.

In the years 2007-2013 the European Commission provided funding for implementation of regional development policy and regional entrepreneurship within the following Operational Programs:

A. Innovative Economy Operational Program;

The primary objective of the IE OP was economic growth and employment (Tkaczyński, Willa and Świstak, 2009, p.191). The program provided grant support for investments that fostered the creation of significantly improved products and the degree of innovativeness was assessed in

relation to a particular company. The main features of the project were: novelty and the degree of dissemination.

Innovative Economy Operational Program promoted innovations having possibly the greatest potential for dissemination and those which period of application was relatively short (Bajko, Jóźwik and Szewczyk, 2008, pp.177-179). The essence of the program was to support:

- small and medium-sized enterprises in the area of innovation,
- business environment institutions,
- scientific units providing high-quality services to enterprises,
- the development of the institutional environment of innovative enterprises (Dylewski and Others, 2009, p. 41).

IE OP was focused primarily on network projects, which required cooperation between entrepreneurs. Important in this approach were also the projects of strategic importance for the economy of the country and activating the unemployed. The main objective of the program was defined as: *The development of the Polish economy based on innovative enterprises* (Program Operacyjny Innowacyjna Gospodarka 2007-2013. Narodowe Strategiczne Ramy Odniesienia 2007-2013, 2007, p. 61).

The amount of public funds involved in the implementation of IE OP in the period 2007-2013 was determined at the level of 9,711.6 million Euro. That amount consisted of public funds from the European Regional Development Fund equalling €8,254.9 million (12,3% of the total Community funds involved in the NSRF) as well as funds from the Polish budget - amounting to €1,456.7 million (which accounted for 15% of the total allocation of public funds) (Siejda, 2007, pp. 42-44).

The largest resources within the Innovative Economy Operational Program for the years 2007-2013 were reserved for projects under priority 4 - investments in innovative enterprises. The expenditures for this purpose reached up to 38% of the program funds.

B. Human Capital Operational Program;

In order to counteract the negative effects of inefficient use of human potential in the Member States, the Commission adopted for implementation the Human Capital Operational Program (HC OP) as one of the main operational programs financed from EU funds in the years 2007-2013. The goal of the HC OP was to enable the use of human resources thanks to the growth of employment and the adaptation potential of enterprises and their employees, raising the level of education of the society, as well as reducing areas of social exclusion and support for the establishment of administrative structures of the state. The program covered the following areas:

- employment,
- education,
- social inclusion,
- development of adaptation potential of employees and enterprises,
- development of human resources in rural areas,
- construction of efficient and effective public administration at all levels,
- promotion of health of the labor resources (Human Capital Operational Program ..., 2006, p. 5).

▪

According to the guidelines contained in the NCS the total amount of funds that were allocated to the Human Capital Operational Program in the years 2007-2013 amounted to 14.43% of total funds allocated by the EU in order to achieve the objectives included in all Operational Programs (Siejda, 2007 p. 45).

Most of the HC OP resources were allocated for the implementation of the priority 6: Labour market open for all - which accounted for almost 20% of total funds. Noteworthy is the fact that this priority was carried out at the regional level as well as the priority 9 which takes second place in terms of the size of quotas under the HC OP.

C. Regional Operational Programs;

In the National Development Plan (NDP) for the period 2007-2013 regional programs managed by regional governments were indicated.

Regional Operational Programs are one of many tools for the implementation of the Lisbon Strategy and the priorities of EU regional policy. It should be noted that the ROP were included in the implementation of the National Strategic Reference Framework for the years 2007-2013 and were coordinated with activities undertaken in the remaining operational programs. Each of the sixteen operational programs has been established at the local level, according to the individual needs of individual voivodeships. However, all of them included support for the regional economy and entrepreneurship, which in turn would contribute to increasing the competitiveness of regions. The main objectives of the ROP were: *increasing regional competitiveness, promoting sustainable development through the creation of conditions for the growth of investments at regional and local level.* The main beneficiaries of assistance within ROP were local government units and entrepreneurs (Kuchlewski and Others, 2007, p. 288). The support within Regional Operational Programs covered:

- research and technological development, innovation and entrepreneurship,
- information society,
- environment,
- preventing and combating natural and technological hazards,
- tourism,
- investments in culture,
- investments in transport,
- energy investments,
- investment in education,
- investments in health and social infrastructure (Grewiński and Idzikowska 2006, pp. 164-165).

Regional Operational Programs are externally consistent with the assumptions of the NSRF. It was assumed that their emergence must be in accordance with the specified and adopted for implementation development strategy of the voivodship (Kudłacz and Reichel, 207, p. 29). Preparation of Regional Programs was the responsibility of the individual boards of provinces in cooperation with the Ministry of Regional Development. The boards of the voivodeship adopted Regional Operational Programs by means of resolution, which meant that transfering to local government the competencies regarding programming, implementation and financial realization

of the programs, monitoring and evaluation of these programs, as well as the possibility of consultations with officials from the European Commission in order to monitor the assistance of the EU.
Each voivodeship has different, individual needs, its own development strategy and therefore the Regional Operational Programs in each of them pursued a different development mission which also resulted in the size and structure of financing.

4. The development of entrepreneurship in Łódzkie region in the EU perspective 2007-2013

Łódzkie Voivodeship is a region with strong growth potential, conveniently located and having strong traditions of the textile industry. The textile industry, which for years the region was famous for, slightly lost its importance, although it still plays an important role in shaping the labor market. The economy of the region is dominated by industries with low value added, so even though the employed here account for more than 8% of the total employment in the industrial sector in Poland, they produce only 5.7% of industrial production of the country. Economic activity is concentrated in the city of Łódź and in Bełchatów County. These two counties account for about 45% of voivodeship's industrial production sold and for about 56% of the gross value of fixed assets of enterprises (Przegląd regionalny…, 2013, p. 27). At the end of December 2014 there were 239.6 thousand entities registered in Łódzkie region, i.e. 5.8% of the total number of entities registered in the country. Compared to the previous year the number of registered entities in the region increased by 0.7% (Podmioty Gospodarki Narodowej…, 2014, p. 3).

The enterprises operating in Łódzkie region - according to their organizational and legal form - are dominated, as in the whole country, by individuals engaged in business activities. The economic structure of Łódzkie region is similar to the national structure and thus approaches the more developed regions. Łódzkie presents the greatest saturation with companies owned by individuals. Their share over the analyzed years dropped by 5%, while national trends show an increase in the number of these entities.

Table 1: Entities by size classes per 1,000 inhabitants in 2004, 2008 and 2013.

specification	**2004**			**2008**			**2013**		
	0-9	**10- 49**	**50-249**	**0-9**	**10- 49**	**50-249**	**0-9**	**10- 49**	**50-249**
Łódzkie	89,6	3,9	0,8	89,7	4,3	0,8	89,6	3,8	0,7
Poland	**89,1**	**3,7**	**0,7**	**93,6**	**4,1**	**0,8**	**101,0**	**3,8**	**0,8**

Source: Own calculations based on: Local Data Bank, Central Statistical Office.

The size structure of enterprises in Łódzkie region is similar to the structure prevailing in the country. The data in the table indicate that the majority of companies operated in the group of micro-enterprises, which share in the analyzed period remained virtually unchanged (in 2013 their number dropped by 4.8% compared to the previous year, and for the whole country decreased by 1.6% in relation to the previous year (Działalność gospodarcza mikroprzedsiębiorstw…, 2014, p. 1). In comparison with the situation in the country the dynamics of their creation was lower than in the country.

Table 2: Structure of enterprises by number of employees, NACE section (2007) in the private sector in Poland and in Łódzkie region in 2013.

NACE section 2007	2013			
	Poland	%	Łódzkie	%
Section A - Agriculture, forestry, hunting and fishing	89745	2,27	4644	2,01
Section B- mining and quarrying	4346	0,11	299	0,13
Section C- manufacturing	366267	9,28	28368	12,27
Section D production and supply of electricity, gas, steam, hot water and air conditioning supply	7476	0,19	420	0,18
Section E Water supply; sewerage, waste management and remediation activities	11989	0,30	696	0,30
Section F Construction	477322	12,09	24460	10,58
Section G Wholesale and retail trade; repair of motor vehicles and motorcycles	1074379	27,22	68895	29,79
Section H Transportation and storage	252351	6,39	14583	6,31
Section I- activities with accommodation and food service	125670	3,18	5786	2,50
Section J Information and communication	116793	2,96	5728	2,48
Section K Financial and insurance activities	130916	3,32	7554	3,27
Section L activities Real estate	174548	4,42	6756	2,92
Section M Professional, scientific and technical	369751	9,37	369751	8,39
Section N- services business administration and support service activities	110260	2,79	110260	2,38
Section O Public administration and defense; compulsory social security	16472	0,42	1451	0,63
Section P Education	96858	2,45	5656	2,45
Section Q- health care and social assistance	204762	5,19	12033	5,20
Section R- cultural activities, entertainment and recreation	65559	1,66	3708	1,60
Section S and T - other services, and households as employers; households producing goods and providing services for their own needs	251823	6,38	15328	6,63
Section U extraterritorial organizations and bodies	213	0,01	1	0,00
Total	**3947500**	**100**	**231286**	**100**

Source: Own calculations based on: Local Data Bank, Central Statistical Office.

The structure of enterprises in the Łódzkie region in comparison with the country level presents an above average share of entities representing industrial sector. Although the economy has changed significantly as a result of political transformation, the share of this sector in Łódzkie is

still at a relatively high level. The largest part of private sector entities in the region is concentrated in the following sections: trade; repair of motor vehicles (68.8 thous. entities, i.e. 29.7% of the total), manufacturing (28,4 thous., i.e. 12.2%) and construction (24.4 thous., i.e. 10.5%).

In 2012 Łódzkie region had the highest increase in the country in production sold of the industry and in the growth of the number of national economy entities in the REGON register, which level has been stable until now. The climate for business development and investments is created by Łódź Special Economic Zone, industrial zones, industrial and technology parks operating in Łódzkie region. Well-developed network of business support institutions is conducive to the emergence of new business ventures in the region.

With the beginning of 2007 another period of implementation of European Union policy using the EU funds began. In the years 2007-2013 Poland was the biggest beneficiary of EU aid channeled through the Community cohesion policy. The use of funds by Polish beneficiaries was possible thanks to the National Cohesion Strategy (NCS) prepared by the government, which defined the priorities and scope of the use of Structural Funds and the Cohesion Fund under the European Union budget for the years 2007-2013. The use of the funds allocated for the years 2007-2013 was carried out through a number of operational programs, which were the basic documents identifying the objectives that should be achieved through the implementation of specific projects, and also with the support of EU funds, the state budget and private funds. Each program was divided into priority axes, which indicated what types of projects could be financed within them (Szymańska, 2008, pp 26-27).

The effects of the use of financial instruments, which were dedicated to the development of entrepreneurship should be seen in the basic measures of entrepreneurship. One of them is the number of newly registered enterprises.

Table 3: Newly registered in REGON entities of the national economy in the years 2009 and 2013 (thous.)

	agriculture		**industry**		**other**	
	2009	**2013**	**2009**	**2013**	**2009**	**2013**
Poland	4 002	4 425	81 107	79 551	264 547	281 511
Łódzkie voiv.p	203	279	5 394	4 479	16 719	16 885
% of Poland	5,1	6,3	6,7	5,6	6,3	6,0
2009=100 Poland	100,0	110,6	100,0	98,1	100,0	106,4
2009=100 łódzkie	100,0	137,4	100,0	83,0	100,0	101,0

Source: Own calculations based on the Local Data Bank, the Central Statistical Office.

The above table shows the entrepreneurship saturation level of Łódzkie region against national trends. The newly established enterprises in Łódzkie region represent approx. 6% of enterprises in the country, so it can be concluded that the level of entrepreneurship in Łódzkie region is not the highest. Due to the large share of agriculture in the economy of the region the most dynamic

development of new enterprises was observed in this section (there were 37% more of them established in 2013 compared to 2009).

Table 4: Total value of signed contracts for funding under: HC OP, IE OP, ROP Łódzkie Voivodeship (as of 31.12.2013).

	IE PO		**HC PO**		**ROP Łódzkie voivodship**	
	State budget	**EU support**	**State budget**	**EU support**	**State budget**	**EU support**
Poland	6,353,621,277.39	35,973,565,108.66	5,850,159,064.49	39,904,258,102.04	333,731,307.96	4,279,779,465.80
łódzkie	353,515,837.82	2,003,526,888.49	280,481,392.79	2,048,034,491.39	333,308,420.78	4,201,599,492.50
% of Poland	5.56	5.57	4.79	5.13	99.87	98.17

Source: Own calculations based on the Local Data Bank, the Central Statistical Office.

The above table shows the total value of signed contracts for funding under operational programs which purpose was primarily to support the economic development of the country. ROP of Łódzkie voivodship program was dedicated exclusively to Łódzkie region so its use in the region reached almost 100%. Relatively few contracts were signed within IE OP and HC OP. The total value of the projects was about 5% of the resources that Poland had at its disposal. It can therefore be concluded that the region did not fully use the opportunity created by the EU in the last perspective. Increased absorption of EU funds would undoubtedly affect the dynamics of the creation of new businesses in the long run.

Conclusion

In the programming period 2007 - 2013 the European Commission enabled Polish SMEs to benefit from various forms of assistance. These were primarily: trade liberalization, harmonization of business law, introduction of the principles of fair competition, simplification of tax systems, encouraging innovations, exports, as well as tax reductions and exemptions, financial aid or public procurement. These activities connected initiatives at the EU, national and regional level. In order to create competitive social and economic conditions European Union created the opportunity for the member countries to benefit from the financial measures in the form of EU funds. These measures are financial instruments that allow the implementation of policies supporting comprehensive development, strengthening cohesion, reducing disparities in regional development, as well as supporting restructuring and modernization of the economies of the Community. In economically less developed regions under the agreed terms SMEs can receive direct support. Structural funds in all regions were focused on: co-financing of business incubators, consulting projects, training and financing of SMEs (Lewandowska, 2008, pp. 24-26).

Łódzkie voivodship is a region situated in the center of both Poland and Europe. Because of the very favorable location it is considered as the region attractive for new investments, including foreign, and for the development of entrepreneurship. The region unfortunately did not fully

benefit from the huge chance it had. Entrepreneurship within the EU programming period 2007-2013 was developing, but the dynamics of these changes was not impressive.

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THE EFFECT ON MACRO ECONOMIC INDICATORS OF THE FINANCIAL CRISIS AS A PARADOX OF NEOLIBERALISM: THE CASE OF TRNC

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Abstract

This study appeared in the output formats of the financial crisis emerged as a dilemma of Neoliberalism After discussing the basic features of the financial crisis in the TRNC to the impact of macro-economic indicators were examined. Analysis of the cost of the output losses of the financial crisis, according to the results of experiences gained, the increase in the unemployment rate and volume of foreign trade, and in particular has shown itself as the decrease in the level of exports. In particular, arrangements made for the formation of a possible banking crisis in the banking sector is relatively reduced compared to previous periods. But the recent global financial crisis affecting the entire world economy in 2008 has reminded that it is essential, especially some of the structural reforms made in terms of the strength of the real economy.

Keywords: Neoliberalism, Great Depression, Financial Crisis, TRNC, Banking Sector

1. INTRODUCTION

Together with globalization movements experienced in the world and economic transformation, country economies faced with the different economic problems. These problems, in respect with their outsets, originate from the real dynamics of economies but in time, on the reasons such as the technological development and increase of the relative weight of the financial sector, brought together the increase of problems resulted from financial dynamics. When its historical past is experienced, the first economic crisis, whose effect is felt the most deeply, was 1929 Crisis, also known “Great Depression”. Until that time, liberal capitalist approach giving direction to economy in systemic way replaced with intervening capitalist system in time.

Following Great Depression experienced in 1929, the approach of “interventionist state” of Keynesian Economics School has begun to gain importance all over the world. As a result of these policies, in many countries, the role and functions of government in economy expanded. The new problems (chronic budgetary deficits, high tax load, inflation, etc.) the growth of government revealed directed economists to the searches for several new solutions. Beginning from 1960s and particularly the early 1970s, contemporary liberal thought schools arguing the main principles of classic liberalism have begun to become popular in the academic and politic circles.

In the periods of financial crisis, on the one hand, in currency/foreign currency markets and stock markets, while intensive fluctuations are experienced, on the other hand, in banking system, the

problem with non-returning credits can arise. In the final analysis, the problems under consideration can reach the dimensions threatening economic system. In macroeconomic meaning, financial crises are basically collected under four titles These are put in order as currency/ foreign currency crises, banking crises, debt crises, and stock market crises.

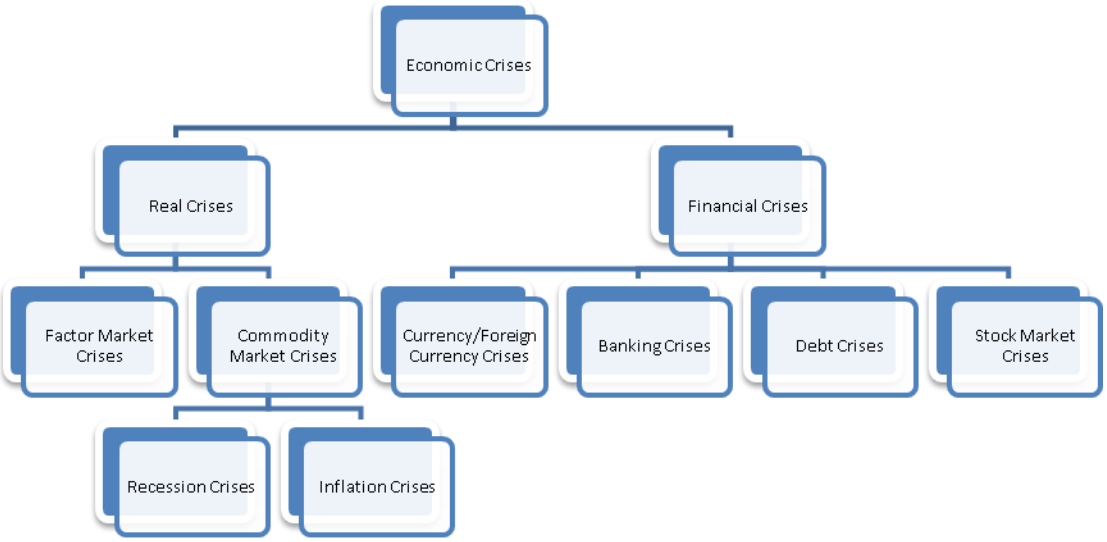
Although some features of crises appearing in the developing countries show difference from country to country, at the basic level, some common features financial crises bear are also existent. In general, the common features observed in the crises experienced are collected under the titles of "Ineffectiveness of Macroeconomic Policies", "Negativities in Global Financial Conditions" and "Disturbances in Domestic Financial Systemic Structure"
In this study, after dealing with the forms of emergence of financial crises, which is a dilemma of Neoliberalism and their basic features, it is aimed to reveal the effect of the financial crises on macroeconomic indicators in TRNC (Turkish Republic of Northern Cyprus)

2. SORTS OF FINANCIAL CRISES AND THEIR BASIC FEATURES

2.1. Sorts of Financial Crises

Crises emerging in an economy are considered under two titles as real crises and financial crises A basic classification regarding crises is shown in Figure 1.

According to Figure 1, while real crises are classified as factor market crises and goods market crises, goods market crises are divided into two as recession crises and inflation crises. Financial crises forming the scope of the study are considered under the titles of currency/foreign currency market crises, banking crises, debt crises, and stock market crises. Even though it does not take place in Figure 1, the crises emerging as a result of interaction of currency and banking crises are also termed as "twin crisis".
Figure 1: Classification of Crises



Source: Kibritçioğlu, 2001: 1.

Currency/Foreign Currency Crises: Currency/foreign currency crises are defined as shocks forming as a result of value loss of nominal exchange rate between 10 and 25% due to speculative attacks, excessive fluctuations in interest rates, falls in international reserves,

confidence loss to national money, and loss of central bank its control on exchange rate (Frankel and Rose, 1996: 2).According to another definition, currency crisis expresses an abrupt movement in exchange rate and a sharp change in capital flows. According to the definition of IMF, currency crisis is developments, which lead currency to be devalued and loss value in significant measure in markets, and, in turn, which obliges monetary authority to use foreign currency reserve in significant measure, as a result of speculative attacks going toward the foreign value of a national money (IMF, 1998: 74). Currency crises can also emerge in the cases, in which the fixed or half fixed standard of foreign exchange or in case of excessive dollarization.

Banking Crises: Banking crises are the crises, which emerge in case of unsuccessfulness or bankruptcies of banks, which fail to fulfill their obligations. Banking crises express a process, which is concluded with the intervention of government, in order to remove panic atmosphere forming as a result of depositors' running on the bank. According to another definition, due to loss of financial confidence, that savers run on the banks to withdraw their deposits; or, due to the fact that banks cannot fulfill their obligations for another reason, that public authority close the banks concerned, forces them to merge, nationalizes them, or makes significant of financial support are called as banking crisis.

Caprio and Klengebiel (1996) define banking crisis as disturbances in the capital structures of bank, in which reorganization cost are very high. According to Kaminsky and Reinhart (1999), if onset of bank crisis shows itself as excessive amount of withdrawal of banks deposits or money, the variations in bank deposits can point out that crisis periods start. However, since banking problems mostly emerge from disturbance of quality of assets, they can cause collapse in the prices of real estate markets and bankrupts in non-financial sector.
Banking system has an important role in the meaning of realizing the effective resource transfer to economy and making contribution to economy. In this framework, banking that has an effective structure should be encouraged with the legal arrangements. While banking crises generally appearing in the form of running on bank in the developing countries mostly result from the liabilities of balance sheet, banking crises seen in the developed countries generally result from the quality of bank assets (doubtful receivables, uncollectible loans, excessive fluctuations in the prices of immovable and movables) Development of banking system leads economies to be stimulated and, in case of removing legal constraints, new approaches to be developed in the way that banking system will make the source distribution in the system better (Abaan, 2002: 5-6).

That banking crises causes losses in both national and international level paved the way for carrying out the studies, in which early warning systems are discussed toward observing and predicting financial vulnerability. In the studies carried out, by examining the existence of indicators, which will able to predict and foresee the problems in financial system, whether or not the indicators are reliable and appropriate variables of early warning for the possible crises is studied (Rabe, 2000: 1; Gaytan and Johnson, 2002: 1).In banking crises, early warning systems, giving idea to policy makers about the weaknesses and vulnerabilities in system, enable policy makers to take the necessary actions in advance about reducing crisis risk (Bussiere and Fratszscher, 2002: 7). In the models, although the time of banking crises are not exactly predicted, it can be possible to identify the indicators, which likely increase financial unbalances (Borio and Lowe, 2002: 43-44).

Debt Crises: In case that a country cannot pay for its foreign debts belonging to the public and private sector, the problem that appears is called foreign debt crisis, while the case that appears is called domestic debt crisis in case that public cannot pay for its domestic debts. Foreign borrowing is a financing method, to which the countries of interest mostly refer in financing long term projects or in economic restructuring processes. Financing conditions (e.g. term, interest rate) are the most important factor in the emergence of foreign debt crises. Domestic borrowing is a financing method, to which is mostly referred, in order to eliminate short term public deficit and use it in financing the debts belonging to the previous periods. The case of default emerges as a result of macroeconomic instabilities and leads the countries concerned to face with debt crises. Debt crises generally appear in the form of rescheduling of debts and delaying liabilities due to the fact that governments experience about managing the domestic and foreign debts and finding new debt (Erdem, 2010: 120-121). In the mid-2009, the crises experienced in the countries taking place in Euro Zone in Europe (Greece, Spain, Italy) are of the examples of debt crises experienced in the recent past

Stock Market Crises: Stock market crises are defined in the form of that security markets show excessive fluctuation and exhibit fall due to the factors that are effective at the national or international level. In other words, it is a case of experiencing falls, which will lead to the significant economic losses in the prices of stocks which are processed in stock markets (Erdem, 2010: 121-122).

The great fall experienced in the values of stocks in the world markets on the date of October 19, 1987 can be shown as an example for stock market crises. On this date, Dow Jones Industrial Average, decreasing by 22%, lowered to closing point of 1738. 42. This decrease became the highest fall observed in a day since 1914 and overshadowed even stock market collapse in 1929. In order to study the collapse in the stock markets, Brady Committee was founded (Carlson, 2006: 13).

Twin Crises: The concept of twin crisis has been developed to express the crises emerging as a result of interaction between currency crisis and banking crisis. The crises of Chili 1982, Finland and Sweden 1992, and Southeast Asian 1997 are the most important examples of twin crises. Twin crises can actualize in the form of that a currency crisis leads to banking crisis or of that a banking crisis leads to currency crisis. In Chili, between 1979 and 1982, as a result of overvaluation of Peso in the face US $, Chili government allowed for Peso to be able to freely converted to Dollar. That a large majority of banks in Chili belong to the finance and production holdings, as a result of that Chili Government devalued Peso, led banking system to take extreme risk. Thus, as a result of monetary disturbances in the system, crisis emerging as monetary axis, accompanying a banking crisis, turned into a twin crisis (Stambuli, 1998: 15).

Gonzales-Hermosillo (1996) express that a banking crisis that can occur in economies, where financial system is weak, can also turn into a banking crisis and, thus, that a twin crisis can be experienced. In some cases, emergence of currency and banking crises can be almost simultaneous. In this framework, Kaminsky and Reinhart (1999) define twin crises as a process, in which banking crisis follows currency crisis in 48 hours.

2.2. Basic Features of Financial Crises

Some features of financial crises differentiate from country to country but some common features the financial crises posses at the basic level are also present. In general, the common features observed in the crises experienced are collected under the titles of “Ineffectiveness of

Macroeconomic Policies", "Negativities in Global Financial Conditions", and "Disturbances in Domestic Financial Systemic Structure".

Ineffectiveness of Macroeconomic Policies: Unsustainable macroeconomic conditions, which form danger from economic point of view, such as high inflation, public financing deficits, and overvalued exchange rate reveal instabilities playing role in the formation of financial crises. Especially expansionary monetary and financial policies, increasing credit volume, cause extreme swelling in bank borrowings and asset balloons to form. This process comes to an end with rising of price increases, which originate from the speculative movements in the movable and immovable investment, to the unsustainable level (IMF, 1998: 81). In order to be able to take under control the rising inflation as a result of expansionary policies, to improve the foreign balance, and to lower asset prices, applying tight monetary policies leads economic activities to become slower, experience difficulties in repayment of debt, and not to use loans borrowed efficiently enough (Özer, 1999: 45).

Especially in the developing countries, high inflation, inefficiency of public expenditures and not being able to a sustainable macroeconomic structure result in the continuously changing monetary and fiscal policies and, in such an environment, banks cannot realize financial mediation service efficiently enough (Eichengreenet al., 1997: 10).

Just as in fast growth depending on borrowing, the experience of sharp falls in GDP rate can also be accepted as very important indicator in banking crises (Hardy and Pazarbaşıoğlu, 1998: 25). Low growth rates, point out an intensive and abrupt constriction in the economic activities, weaken debt paying services of the debtors at home and can cause a systemic financial crisis to emerge together with increase of credit risk. In the expansion phase of conjuncture, due to increases in credit volumes and reverse selections in credit assessments, explosion of balloons in financial system provides a basis to the formation of a banking crisis (Evans et al., 2000: 11).

Fluctuations experienced in inflation rates, making difficult assessment of credit and market risks, increase portfolio risk. High inflation accompanied with high interest rates puts banks into trouble in fulfilling their liabilities in its maturity. Therefore, it can be said that there was a positive relationship between high real interests and banking crises (Demirgüç-Kunt and Detragiache, 1998: 104). While a fall in inflation rate, reducing nominal income and cash flow, negatively affects liquidity of financial institutes and their payment power, it shows how weak the traditional functions of banks are (Evans et al., 2000: 10).

In addition, the factors such as current deficits, fluctuations in exchange rate and interest rates, excessive increases in asset prices and credits, and unbalance of public finance also lead inefficiency in macroeconomic policies (for further information, see IMF, 1998; Goldstein and Turner, 1996; Eichengreen et al., 1997; Dornbusch, 2001).

Negativities in Global Financial Conditions: Since export goods of the developing countries generally consist of natural resources or agricultural products, because of disturbances in international terms of trade in these countries, shocks disturbing financial stability can emerge quicker (Mishkin, 1997: 68-69). Caprio and Klingeibel (1996) qualify at least 10% disturbance in terms of trade in pro- crisis period in 75% of developing countries experiencing banking crisis as one of leading indicators.

Negative shocks in the form of abrupt falls in the prices of export goods, affecting the profitability of the domestic firms, lead their abilities to pay for debts to decrease. This can also be concluded with the transformation of good credits in market to bad credit (Eichengreen et al., 1997: 11). In the face of the abrupt and large scale disturbance in international terms of trade, it is emphasized that the countries having the most probability to be caught banking crisis are the ones having minimum diversification of export goods (Evans et al., 2000: 10).

Structure and Vulnerability and Domestic Financial System: Non returning credits are seen as a basic problem in front of interest rates that is instrument for defending fixed exchange rate against speculative attacks. The reason for this is interpreted in the form that while capital outflow is experienced in low interest rates, in high interest rate, due to the fact that portfolio risk gets higher, this case lead to crisis. The problem with nonreturning credit regarding immovable and consumer credits in Thailand and capital market credits in Malaysia in 1997 can be shown as examples for this case (Eichengreen et al., 1997: 14).

Together with financial vulnerability and financial instability, definitions over borrowing gained a different dimension with Minsky. Minsky (1992) views financial vulnerability as a natural feature of financial system and defines it sensitivity to crisis. The concept of financial vulnerability accounts for why economy is inclined to crisis and internally vulnerable. In addition, there are three determinants of vulnerability level in financial system. These are hedge, speculative, and Ponzi finance. Three determinants of interest are focused on whether or not cash incomes of economic units can meet liabilities of cash payments between the periods. In addition, with the motive of high profit, in cases, in which economies expand and conjuncture wave reached the peak level, hedge units are in the tendency to pass high risky, speculative, and Ponzi financing instruments and this state increases vulnerability. As a result, financial vulnerability depends on the weight of hedge finance in the financial structure of private sector. If the weight of speculation and Ponzi financing is more than the weight of hedge financing, vulnerability becomes high, in other words, the probability of financial crisis is high. (Minsky, 1992: 7).

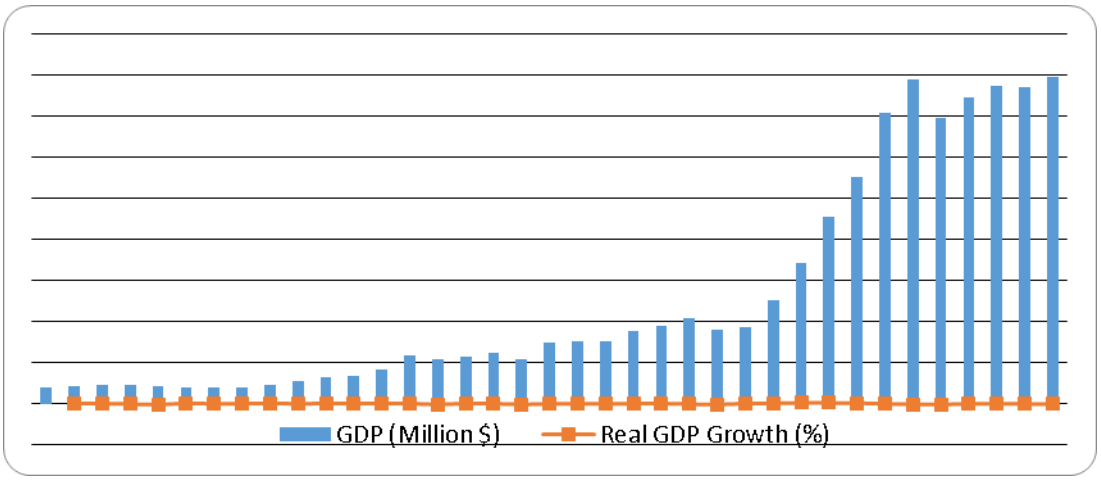
3. DATASET AND METHOD

In this study, datasets used in the analyses were compiled from the publication titled Economic and Social Indicators 2013, published by Monitoring and Coordination Department of State Planning Organization, Turkish Republic of Northern Cyprus (DPÖ, 2015). In analyzing the effect of financial crises on macroeconomic indicators in economy, datasets were utilized regarding GDP, GDP Real Growth Rate, Unemployment Rate, Foreign Trade Balance, and Tourism. In the analyses, the data belonging to the period of 1977-2013 were used. The reason for considering this period is that it has the most comprehensive and actual data regarding TRNC economy.

4. ANALYSIS RESULTS

In our analysis, first of all, the effects of financial crises on the national income and real growth rate were dealt with. In this scope, analysis results take place in Figure 2.

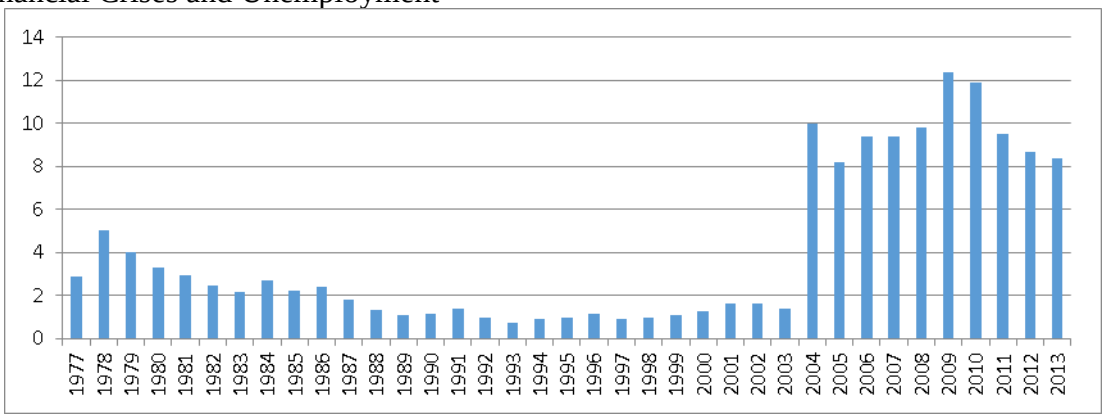
Figure 2: Financial Crises and National Income



When Figure 2 is examined, it is seen that TRNC economy was obliged to negatively grow in the years of 1981, 1991, 2001, 2008 and 2009. Especially in 2008, the negative effect of crisis experienced in US was clearly seen in the years of 2008 and 2009 and the effects concerned continued until 2013.

Another area, in which crises showed their effects is employment. In the period considered in Figure 3, in TRNC economy, unemployment rates are summarized.

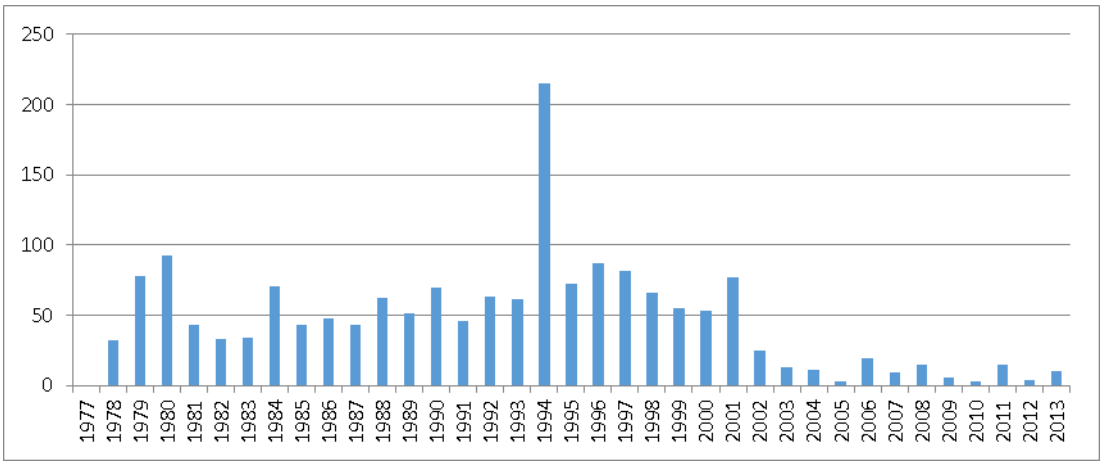
Figure 3: Financial Crises and Unemployment



According to Figure 3, it is seen that there is no a noticeable unemployment in TRNC economy until 2003. In the period considered, after 2003, serious increases were experienced in unemployment rates and, in 2009, it reached the highest level with 12.4%. According to this, especially the crisis experienced in 2008 affected employment in TRNC in negative direction.

Another effect of financial crises is price stability. In this scope, the effect of financial crises on the prices in TRNC economy was analyzed and the results were summarized in Figure 4.

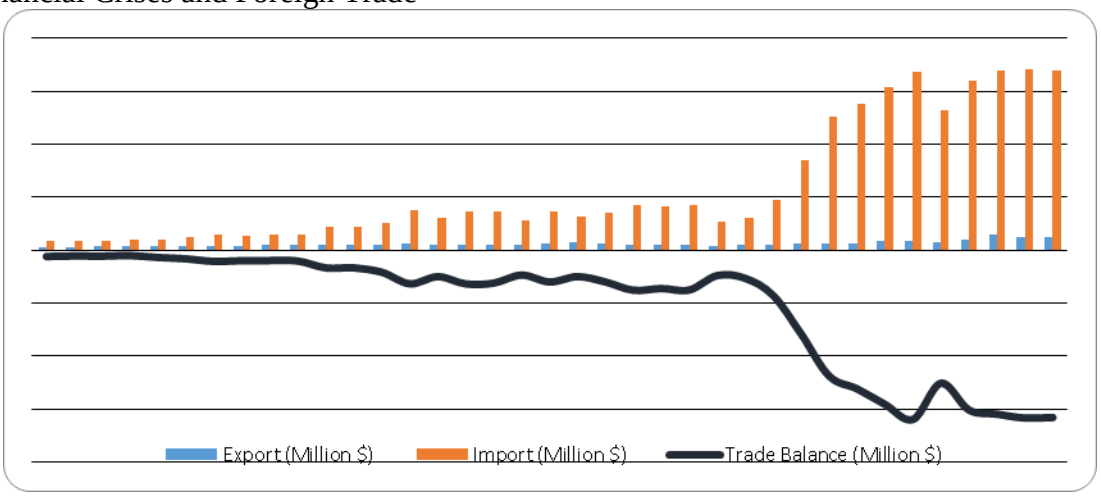
Figure 4: Financial Crises and Inflation



When Figure 4 is examined, in the period considered, until 2001, chronic inflation was experienced in TRNC economy. (Çoban, 2016: 402). In this period, in 1994, the highest inflation rate was met and prices increased 2.15 times compared to the previous period. In the emergence of this rate, it is considered that the crisis experienced on the date of April 5, 1994i in Turkey, with which TRNC is in close relationship, has an important effect.

Another important effect of financial crises is on foreign trade. In the period considered, the data on foreign trade of TRNC economy were arranged in Figure 5.

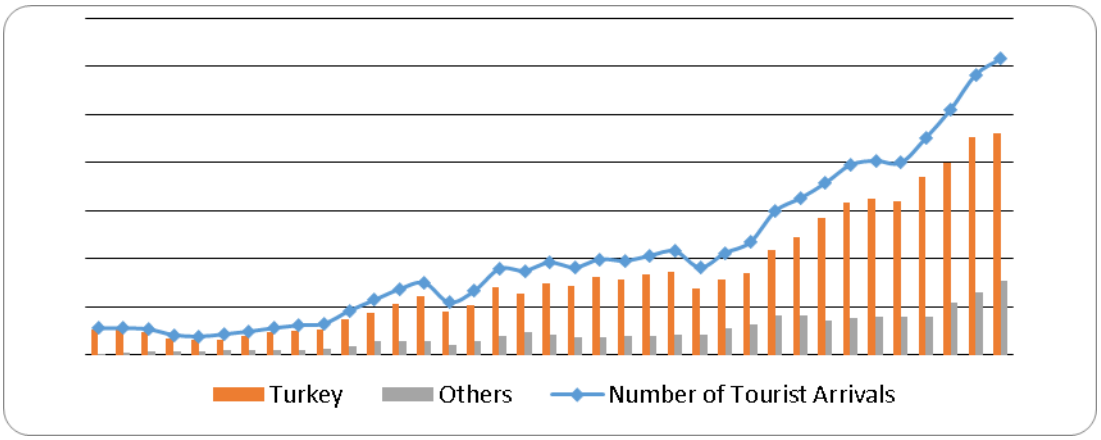
Figure 5: Financial Crises and Foreign Trade



When Figure 5 is examined, export, which was at the level of $ 24 million in 1977, rose to $ 121 million in 2013. According to this, in the period considered, the export of TRNC increased about 5 times. On the other hand, import, which was $ 82 million in 1977, rose to $ 1.7 in 2013 i.e. increased about. 20 times. As will be also understood from the figure, especially beginning from 2003, the gap between export a and import enlarged in the negative direction and reached the highest level during and after 2008, when financial crisis was experienced and its effects continued.

TRNC, especially toward tourism sector, has an important factor equipment private sector. Therefore, in the scope of financial crisis, when the numbers of tourists arriving to TRNC are examined, the results taking place in Figure 6 were reached.

Figure 6: Financial Crises and Tourism



When Figure 6 is examined, in the years of 1981, 1991, and 2001, when the negative effects are seen, it was identified that the number of tourist arriving in TRNC decreased in the significant rates. This identification overlaps with the results summarized in Figure 2 and, depending on the decrease of interest, in these years, national income also fell in the significant rates. However, beginning from 2001, significant decreases were experienced in the number of tourist coming from both Turkey and other places; this number, which was 113 thousand in 1977 rose to 365 thousand in 2001 and, finally to 1.2 million in 2013. According to these data, it was concluded that TRNC tourism sector was not affected from the crisis experienced in 2008.

CONCLUSION AND DISCUSSION

In this study, after the ways financial crises emerge and their basic features are dealt with, it was aimed to introduce the effect of financial crises on macroeconomic indicators in TRNC. In the analyses, in which the datasets regarding GDP, GDP Real Growth Rate, Unemployment Rate, Inflation Rate, Foreign Trade Balance, and Tourism were utilized, the data belonging to the period of 1977-2013 were used.

According to the analysis results, because of crises experienced in the years of 1981, 1991, 2001, 2008, and 2009, it was identified that TRNC economy grew. Especially in 20085, the negative effects of crisis experienced in US was clearly seen in 2008 and 2009 and the effects of interest continued to 2013. When the issue of employment is examined, it was identified that there was no noticeable unemployment until 2003 in TRNC economy and, after 2003, that serious increases in unemployment rates were experienced and, in 2009, it reached the highest level with 12.4%. When inflations rates are taken into consideration, in TRNC economy, it was seen that chronic inflation was experienced until 2001, in 1994, the prices increased 2.15 times compared to the previous period. When the foreign trade figures are examined, beginning from 2003, it was identified that the gap between export and import enlarged in the negative direction and, during and after 2008, when financial crisis was experienced and its effects continued, that it reached the highest level. Finally, it was concluded that in TRNC, tourism sector downsized in the years of

1981, 1991, and 2001 when the negative effects of crises were seen; however, beginning from 2001, depending on the increase in the number of tourist from both Turkey and the other countries, it was not affected from the crisis in 2008.

In this study, the data published by Monitoring and Coordination Department of State Planning Organization, Turkish Republic of Northern Cyprus were utilized. In the next studies to be carried out on crisis and TRNC economy, moving from the data to be compiled at the sectorial level, the efficiency and productivity analysis can be conducted.

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IN THE WORLD AND TURKEY, EXPERIENCES OF FINANCIAL CRISIS: A COMPARISON ON THE AXIS OF FINANCIAL CRISIS MODEL

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Abstract

Beginning from the early 20th century, world economies entered a rapid change process. In this process, the unbalances emerging especially in the equation of total production and total consumption revealed the economic problems in countries and nor solving these problems brought crises together with it. The crises of interest are classified under different titles in respect with its main resources.

Together with the increase of the tendency of financial liberalization, the movements of uncontrolled and easy borrowing, especially Latin America, reached the dimensions treating all economies of countries. These developments experienced from financial point of view caused financial crisis experiences to be experienced in many developing and developed economies in respect with the various periods. According to the studies carried out, it was observed that a crisis was experienced one time per 19 months on average.

The aim of this study, especially passt-1990 period, is to reveal the features of financial crises experienced in the world and Turkey and comparatively analyze the crises concerned in the light of the models developed toward accounting for the crises. According to the results of analysis, empirical literature was shaped in the framework of the approach of logit and probit models toward predicting crisis probability, suggested by Frankel and Rose (1996); the studies carried out on the origin and spread of crisis, in the leadership of by Sachs et .al (1996); and statistical studies carried out by Kaminsky et al. (l998) and as known “signal approach”.

Keywords: Financial Crisis, Financial Liberalization, Turkey Economy, Signal Approach

1. INTRODUCTION

That financial sector gains importance in time has brought together with it acceleration of transformation processes of negativities, resulted from the real dynamics, into financial crises. Oil shocks experienced in 1970s increased oil incomes of some countries and accelerated their short time credit movements. Together with development of financial markets, the vulnerability level of economies increased much more and markets became more sensitive to the changes -especially unexpected changes- experienced. Together with the increase of financial liberalization tendencies, uncontrolled and easy borrowing movements reached the dimensions threatening all countries, particularly Latin American countries. These developments experienced from financial

point of view led financial crisis experiences to be gained in economies of many developed and developing countries in respect with the various periods. According to the studies carried out, it was observed that on average, one crisis was experienced every 19 months in the world.

Crises experienced play key role, for after the process they appear, in the sense of being able to understand and predict the possible crises. Models and approaches, shaped in the axis of the features crises contain, shed an important light on crisis literature. The model dealt with crisis literature are generally toward studying the causes and origins of crises experienced and identifying the indicators and signals that will have an early warning quality regarding the next crises.

In this study, a comparison of the selected financial crises experienced in the world and Turkey on the axis of crisis model developed was carried out. In the selection of crises included in the study, post 1990 period, in which financial system shows development and liberalization process is effectively felt, was taken into consideration.

2. THE CONCEPT OF FINANCIAL CRISIS

In the literature on financial crises, a number of definitions take place. These definitions are basically shaped in the framework of two approaches. The first of them is monetarist approach emerging in the leadership of Friedman and Schwartz, while the other one is the approach shaped in the leadership of Kindleberger and Minsky, which evaluates the subject in more eclectic dimension. Friedman and Schwartz (1963), among the pioneers of monetarism, associated financial crises bank panics. Monetarists particularly emphasized the existence of a strict relationship between momentary supply and economic activity. According to them, the sharp falls in asset prices and unsuccessfulness in the business world will not always cause the formation of a bank panic. The cases not causing a sharp constriction in monetary supply is called as pseudo crisis by Schwartz (1986). Schwartz, in these cases called pseudo crisis, on the reason for that an intervention to be made by government may cause negative results such as high inflation, noted that this kind of interventions were unnecessary.

In eclectic approach developing as opposite view to Monetarists, Kindleberger (1978) and Minsky (1972) dealt with financial crises in the broader meaning. According to their views, financial crisis not only include bank panics but also falls in asset prices, unsuccessfulness of large financial and non –financial institutes, deflation and disinflation, disturbances in foreign currency markets or the other similar combinations. When dealt with this large dimension of it, government actions are seen important in coping with financial crises. Despite all of these, that second view do not have a clear model characterizing financial crises and a marked systematic view regarding how government interventions should be in preventing financial crises caused this approach to be criticized. In view of this, Schwartz (1986) criticized the eclectic view in his study and argued that monetarist approach (an approach viewing banking crises as consisting of bank panics) is successful in its own narrow frame (Mishkin, 1996: 2-3).
Bordo (1986) defined financial crisis as change in expectations, worry that financial institutes will go bankrupt and, in this framework, increase of attempts to transform immovable and non-liquid assets to cash just as in especially recently experienced mortgage crisis.

3. FINANCIAL CRISIS EXPERIENCE FROM THE WORLD

Depending on systematic changes and changing world conditions, after 1970s, crises emerge more frequent and based on the different origins. According to the study by Krugman (1997), when the numbers of crises experienced until now are regarded to and all of small and large crises are considered, it is understood that a crisis appears every 19 months. It is possible to state the major financial crises experienced until arriving from 1970s to 1990s as United Kingdom Banking Crisis in December 1973, Herstatt crisis in June 1974, International Debt Crisis in, August 1982, Bond Crisis in December 1986, Stock Market Crisis in October 1987, and saving and debt crisis experienced in US in the early 1980s (Davis, 1992:167).
It is possible to classify the major crises, which are experienced after 1990, some part of which has global impacts, and which is treated in crisis literature as follows;
- European Exchange Rate Mechanism (ERM) Crisis emerging in 1992-1993
- Latin America Crisis emerging in 1994-1995.
- 1997 Southeast Asian Crisis
- 1998 Russian Crisis
- 1999 Brazilian Crisis
- 2007-2008 ABD Mortgage Crisis

Among these crises, global financial crisis, which emerges as dilemma of mortgage crisis in US, recently experienced, and whose effects spread all over the world has a great importance. The presence of US and the other countries, which cannot fully get rid of its effects, is an indicator of how large dimensions this crisis has. It is also possible to say that the crises the courtiers such as Greece, Italy, and Spain experienced, which arise as a result of troubled processes of European Union, especially Euro Zone, can be added to these crises.

3.1. 1992-1993 European Exchange Rate Mechanism (ERM) Crisis

In June 1992, that Denmark preferred the option veto for Maastricht Agreement, in which decision was made on monetary union of European Union, led the presses on exchange rates in European Exchange Rate Mechanism to increase. After this development, the thought that Lire will be firstly supported due to budgetary deficits of Italy resulted in realizing speculative operations on Lire That speculative attacks also realized in Finnish and Swedish economies give result and that Italian Lire is devalued at the rate of 7%, not being able to endure to the presses, shifted attention of speculators to British Pound this time. That speculator George Soros, recognizing the probability of devaluation of Pound in pulling trigger of the crisis, takes a short position of apron. $ 15 billion in the form of short term credits, as a result of attacks toward British Pound, led the interest rates in United Kingdom to rise in the rate of 5% a day, despite intensive intervention of Bank of England on September 16, 1992

Exchange rate mechanism in European monetary system has become a corner stone in determining the monetary policy strategies in Europe, beginning from 1979. The system was turned from an adjustable peg system into a system, in which capital movements and controls on them are removed and which is characterized as stable target regions. In 1988 7 member countries (Germany, France, Netherlands, Belgium, Denmark, Luxemburg, and Italy) locked their currencies to German Mark (DM) with adjustable peg system. Fluctuation margin of each member country was determined as ±2.5%. Spain was included in the system in 1989; United Kingdom, in 1992; and Portugal, in 1996 with profit margin of ± 6%. Beginning from the early

1987, that the gaps of exchange rates, interest rates, and inflation rates between member countries rapidly decreases and especially the belief that exchange rate stability will continue increases accelerated capital flows to these countries. In the countries (United Kingdom, Spain, Italy), which later include in the system, continuously grow in high rates since 1987, and in which relatively high inflation is experienced, tight monetary policies made interest rates more than the other ERM countries. These high interest rates encouraged foreign capital flows and prompted countries to borrow from the countries, whose borrowing interest is low, especially Germany, and invest in these countries. In this medium, in which about a flow of $ 300 billion is under consideration, overvaluing in the currencies of interest led current balances to disturb.

Following merging of West and East Germany, in Germany, both growth rates and inflation rates rose and interest rates increased. In this period, in which German Marc revalues compared to Dollar, current deficits increased. Albeit Mark does not nominally gain value compared to the other ERM currencies, that inflation in Germany is higher than the other countries in the system enabled Mark to gain value in real terms. In this case, while the ERM countries should react, devaluating currency or going toward more deflationist policies, increase of unemployment, in fear the inflation and unemployment increases, they do not go toward these policies and go toward keeping exchange rate fixed revealed that there were some contradictions between these countries in terms of targets of monetary policies. In addition, in accordance with Maastricht Agreement, the term that the countries will not make devaluation for two years, in the meaning of not limiting capital movements, led to some troubles.

In this period, when the reliability of ERM is questioned, especially in Italy and United Kingdom, foreign currency reserved significantly melted. United Kingdom, in the day called “Black Thursday”, lost all foreign currency reserves. Finland was obliged to leave its money to fluctuation. In September 16, United Kingdom withdrew from ERM. Albeit Germany announced that it lowered interest rates, fluctuations and devaluations continued. As a result of this, in August 1993, monetary band in ERM were enlarged from 5% (± 2.5 %) to 30%. (± 15%)

According to Krugman, ERM crisis has four basic direction having importance. First of these is the role of George Soros in onset of crisis. Soros was among the leading people, who will make maximum benefit from that fixed exchange rate become dysfunctional. He was in a short position in a credit in value of $ 15 billion before crisis. The second is that ERM crisis shows that foreign currency reserves are rarely effective in preventing crisis in the world, capital mobilization is high, because, before crisis, both British and Italian Central Banks became the most important examples of that sufficient quantity of foreign currency reserves are not rather effective in preventing crises. The third is that crisis is viewed as unexpected event from financial markets, because interest gaps between target currencies did not enlarge too much until one month before crisis i.e. August 1992. The fourth is that economies of all countries leaving ERM arrived a better position almost from every aspect after leaving the system. Especially in United Kingdom, without occurring any increase in inflation rate, unemployment rate significantly decreased (Krugman, 1996: 357).

The first of the factors generating ERM crisis is that interest rates of European countries, which are high compared to especially in US rates, attract foreign capital to this stable region; overvaluation of country currencies; and increase of current deficits. The second is that with relatively loose fiscal policies applied in Europe before crisis, the results of tight monetary policy

are effective. Interest rates kept high for attracting foreign capital that is necessary to finance current deficit restricted investment volume and led to recession. In addition, this state also caused the other European countries locking their money to German Mark to be led to recession with impositions of Germany in the direction of their fitting to these tight monetary policies. In the framework of all of these factors, ERM crisis is a monetary crisis as a result of fixed exchange rate, overvalued currencies, financial liberalization, contradictory policies, and speculative behaviors in international capital markets (Cobham, 1996: 588).

3.2. Mexican (Tequila) Crisis

Mexico, among Latin American countries, on the date of December 20, 1994, obliging to devalue Peso, its national monetary unit, faced to a financial crisis and this crisis resulted in a great economic collapse (Edwards, 1995: 35-36). In Mexican economy, which has a stable economic structure until 1970s, in 1970s, the rise experienced in oil prices increased the oil income of the country and led to a serious disturbance in fiscal discipline. The need for additional resource occurring in budget, bringing with it the expansionary policies, increased public debts and, in view of this, the monetary unit of the county became more valuable and capital escapes began to abroad. Public debts that rapidly increase first led to collapse of financial system and, following it, of exchange rate regime (Dornbusch et al., 1994: 261-262).
In Table 1, in the period of 1955-1993, economic performance of Mexico is presented.

Table- 1: 1955-1993 Period Mexican Economic Performance

Dönem	Kişi Başına GSYH (%)	TÜFE (%)
1955-1972	3,1	3,9
1972-1981	3,6	20,6
1981-1988	-2	86,2
1988-1992	1,5	21,1
1993	-1,2	9,7

Source: Dornbusch et al., 1994: 256.

As seen in Table 1, before 1994, when tequila crisis was experienced, growth rate actualized at the level of - 1.2%. On the other hand, beginning from the period 1981-1988, it is seen that a fall was provided in CPI and currency likely significantly experienced a value increase
This crisis experienced at the end of 1994 not only impacted Mexican economy but also spread to Latin American counties, especially Argentina, in the short time (Tequila effect). Mexican crisis erupted about two years later from the process i.e. July 1992, in which domestic economic growth is experienced and privatization process of Mexican financial sector (Wilson et al., 2000: 292). The main reason for the crisis experienced in Mexico in 1994, with the effect of positive conjuncture in the late 1980s and the early 1990s, is that very short term hot money coming to the country begin to go out from the country in the framework of revalued exchange rate, high current deficit, fall in private savings, and expectations in the direction of political stability. In the period 1990-1993, private capital inflow to the country rose to the level of $ 72.5 billion. When entered 1994, nobody predicted any crisis. Otherwise, at the end of 1993, together with approval of access to NAFTA in American Congress, the expectations related to foreign capital increased much more. However, with the panic atmosphere forming toward the end of 1994, foreign currency reserves of the country regressed from $ 26 billion to $ 6 billion. That a great

devaluation follows this event caused financial crisis to form (Dorukkaya and Yılmaz, 1999:1127)

3.3. Russian Crisis

Russian economy experienced two important foreign currency crises in the years of 1994 and 1998. In the crisis experienced in the years of 1993-1994, the support provided by IMF was met by the partial stability efforts and, albeit financing budgetary deficits by minting method initially entered the tendency of decrease, it returned to its old in a short time. In this period, that Russian Central Bank try to meet the finance needs of its own government and the governments of USSR era became considerably heavier burden of bank. When inflation reaching 20% in monthly basis is added to the public deficits reached to 20% of GDP, on the date of November 11, 1994, that Russian Ruble is devalued in the rate of 20% emerged as an unavoidable phenomenon (Szczurek, 2003: 124).

Economic troubles experienced at the beginning of 1997 in Russia began to become heavier in 1998 and an economic crisis was experienced, which was concluded with devaluation of Ruble-Dollar corridor from I Ruble = 6 Dollar to 1 Ruble = 9.5 Dollar, limitation of capital movements through foreign currency, and announcement of moratorium for 90 days. Albeit the roots of this crisis date to the previous times, it can be said that short term capital movements have an effect on the formation of crisis. Compared to the crisis experienced in 1994, the formation of 1998 Crisis is based on more different conditions. First of all, while exchange rate left to the fluctuation in band exhibits a more stable structure compared to the first crisis, in pre-crisis period, nominal exchange rate of Ruble gained value by 65% in the period between the last months of 1995 and June 1997. It can be said that this case emerged as a result of oil prices, capital flows, and stability programs. Among these three factors, the one having the least effect are oil prices. Albeit oil prices increased in the rate of 25% in the mentioned period, in Russia, terms of trade showed a development around 8%, depending on oil prices. It is expected that capital outflows actualizing at a record level like $ 26.7 billion in 1996 have a devaluation effect on exchange rate not revaluation. In the sample of Russia, the effect of capital out flows financed the factors such as current account surplus and public borrowings, on international reserves became limited. In 2006, while international reserves decreased only USD 1.9 billion and the press of this on the real exchange rate actualized low at the negligible level. Thus, we can say that the primary reason for revaluating in the real exchange rate is stability program. As typically will be seen in stability programs based on exchange rate policies, keeping fixed exchange rate in a narrow band to reduce inflation, since inflation will fall slower than exchange rate, will lead real exchange rate to be revalued. If we give an example for Russia, inflation rate, which was 200% in 1994, in 1995, fell to the level of 131% and, in response to this, nominal exchange rates lost value in the rate of 31% (Gurvich et al., 2004: 8).

3.4. Southeast Asian Crisis

Many studies on 1997-1998 crises were carried out in the process following Russia, Brazil, and Argentina crises. Most of these studies are focused on the reasons underlying crises , and on why 1997 -1998 crisis were not predicted and prevented, while the crises of 1992 -1993 European Exchange Rate Mechanism and 1994-1995 Mexican and Latin American, which will constitute an example from the previous periods were experienced Moussalli, 2008: 1-2).

In 1996, despite developments signaling a certain degree, 1997-1998 financial crises were later called as invisible crises by the countries later exposing to the effects of crises. About monetary crises, academic specialists, analysts, debt rating agencies, and even IMF and Asian Development Bank (ADB) not only cannot predict the crises but also did not make any prediction regarding any basic economic or financial disturbance. The reason underlying the way this crisis cannot be predicted is the table, where there are Asian -5 economies (Indonesia, Malaysia, Philippines, South Korea, and Thailand) in terms of traditional macroeconomic bases. The general economic view of Asian -5 economies is in the form of;

- High saving and investment rates
- Strong growth
- Middle level inflation
- Budgetary surplus or low budgetary deficit
- Limited public debts
- Significant foreign currency reserves, and
- Sustainable net capital inflows

Such a course has been one of the most important reasons making difficult the prediction of crisis. In the period, when Asian Crisis continued, it is seen that international economic and financial structure is also observed in normal course. In 1997 period, except for Japan, it is observed an environment, in which the other developed countries grew at the reasonable levels; that high increases were experienced in international trade; and stability was provided in world goods market (Kaufman et al., 1999: 35).

Regarding the transition process of the period 1997-1998, the change Asian -5 economies and especially growth performance show is extremely important in terms of understanding crisis.

Table 2 summarizes this situation.

Table- 2: ASEAN-5 Economic Growth Performance, 1996-1998

	1996	**1997**	**1998**
Indonesia	8,0	5,0	-13,7
Malasia	8,6	7,8	-6,8
Phillipinnes	5,7	5,1	-0,5
South Korea	7,1	5,5	-5,8
Thailand	6,7	-0,3	-8,0

Source: IMF, 1999.

In Table 2, with moving from growth performances in pre- crisis period, it is seen that it is extremely difficult to predict crisis. Financial crisis, which begins in February 1997 and first spread to the region economies, then to the world, as a result of Thailand devalued Bahr in the rate of 40%, currency unit, has an important place in the world crisis literature. That it is understood that foreign currency reserves Thailand Central Bank making declared as $ 30 billion are in fact about $ 1 billion formed one of the reasons for devaluation. Another reason is that Central Bank continuously mints to finance $ 8 billion transferred to the mediatory institutes and organizations in difficult position by Fund of Developing Fiscal Resources belonging to the government. This crisis again made a current issue the problem of management and supervision of international financial system and the dimension of speculative capital movements to lead to crises. In not being able to be predicted such a crisis, the role of that before crisis, there is mot

any problem in the real economies of the countries suffering from crisis is large. In the countries of the region, it is observed that foreign capital enterprise was encouraged before crisis. On the other hand, it was observed that foreign capital going toward the countries such as South Korea, Indonesia, Thailand, Malaysia, and Philippines had an important place in short term debt of the relevant countries. The effect of Asian crisis on the real sector, especially on the stocks of the firms, which are processed in stock markets, had been deep. After Asian crisis, in the stocks of the companies being in active in the region, important falls occurred. In 1997, while one share of Sampoerna, Indonesian Cigarette Company was about $ 6.75, it fell to 20 cent after crisis. While the capital of the same company was $ 6 billion, 18 months later from the crisis, it regressed to $ 200 million. On the other hand, while in the country, I Dollar = 2300 Rupee, then 1 $ = 14.000 Rupee had been. In general, as a result of crisis, in Hong Kong, Indonesia, South Korea, and Thailand Stock markets, capital loss capital loss emerging in 1997 reached the level of $ 200 billion (Faber, 1998:73).

3.5. 2007-2008 Global Financial Crisis

In 2007, due to trouble experienced in sub-prime credits in financial institutes in US, a crisis emerged, which first spread in US, then, all of European countries., and with contagion effect, all over the world. Crisis in US emerged after disturbances in subprime mortgage markets. The disturbance in these markets is a result of a process beginning 2000s. Technology balloon, which reached quite high levels and exploded in 2001, can be seen as the first step in the process. That is, with explosion of technology balloon, a number of technology company went bankrupt and underwent important losses; thus, the companies such as Merrill Lynch were obliged to pay for high indemnities. In order to remove the impacts of crisis and again raise decreasing demand, Federal Reserve System (FED), discounting interest rate beginning from 2001, lowered interest rates to the levels of 1%. After technology balloon exploded not only in America but also Europe, central banks, being concerned about that deflation will occur, lowered interest rates from 2001 to 2005 (Goodhart, 2008: 332).

2007 Global Financial Crisis also brought together with it new changes in terms of risk models. Bisias et al. (2012), in their studies, developed a broad model examination toward financial risk indicators. This model is the one, which only focuses on financial risk measurements, is toward measuring financial pressure, mostly contains sensitivity analyses, and refers to the systems such as early warning system Mishkin (2009), with moving from the theoretical and empirical findings regarding global crisis experienced, put in order 9 basic principles, which almost all central banks agree with, as follows:

- Inflation is an omnipresent monetary phenomenon.
- Price stability has important benefits.
- In the long term, there is no trade off between unemployment and inflation.
- Expectations has an important role in the determination of inflation and transfer of monetary policy to macroeconomic structure.
- According to Taylor rules, it is necessary to deal with interest rate together with high inflation.
- Monetary policy subjects to the problem with time inconsistency.
- Independence of central bank help the efficiency of monetary policy develop.
- In the core of the formation of results of good monetary policy, there is a strong commitment.

These principles, as stated in the studies of Goodfriend and King (1997), are the elements of "new neoclassic synthesis" and they are the principles, which many central banks employees and academics agree with before crisis (Mishkin, 2009: 68).
Global economic crisis led many economies in the world to enter a deep stagnation. The disturbances occurring within EU with 27 members, 17 of which use Euro and 10, their own money, together with global crisis, made survival of "Single Europe" ideal seriously questionable .While the regression of share of active population in total reduces potential growth in these countries, as a requirement of the principle "social state", it also led expenditures on pension and health system, whose control is difficult, to increase. While global economic crisis causes economic growth to rapidly regress, with the effect of crisis, unemployment rate rapidly increased.

4. EXPERIENCES OF FINANCIAL CRISIS FROM TURKEY

Turkish economy was exposed to the various crises in the various periods since announcement of republic. It is observed that the crises experienced in the periods following Second World War emerge in a surprising order. That is, Turkey experienced crises (1958, 1978, and 1998), which can be deemed important, toward the ends of every decades. These ten year cyclical quality of crises recalls an economic theory, which is -called "Juglar Waves" in the literature of cyclical fluctuations, and which identify fluctuated growths of mature capitalist economies (Kazgan, 2005: 4).

In Turkey, the crises experienced especially 1990s, produced significant negativities on economy. The major reasons of these crises experienced in Turkey is that an unsustainable domestic debt dynamic and unhealthy structure in fiscal system, especially public banks, and the other structural problems, cannot be united to a permanent solution. In addition to these, global qualified crises created instabilities in Turkey, although there was no remarkable crisis in the dynamics of economy. In Asian, Russian Crises, and financial crisis recently experienced, this case was witnessed.

In the early 990s, stability programs applied in Turkey were carried out toward the solution of problems we can put in order as reducing inflation, closing current account deficit, determination of interest rates and exchanges rate realistically, and etc. However, it was concluded with unsuccessfulness. The most important reason for this unsuccessfulness is that reforms cannot be necessarily implemented and, more importantly, politic economy axis institutionalism cannot be provided (Emsen, 2004: 87). These negative conditions obliged Turkey to apply two stability programs, which are IMF-origin. In this scope, two standby agreements were signed with IMF, the first of which was on the date of April 5, 1994 and the other, on the date of December 9, 1999.

4.1. 1994 Crisis

In 1994, Turkey, after an interval of 17 years, again faced with an economic crisis. That foreign finance possibilities of economy are thoroughly constricted and that foreign debt services become unsustainable, at the first look, show as if the crisis experienced in 1980 and 1994 Crisis are similar to each other in terms of onset of crisis. However, in terms of either the reasons leading to crisis and conditions reached in the peak point of the crisis or political and economic conjuncture,

where the world live, 1994 crisis is relatively different than 1980 crisis. 1994 crisis emerged together with an intensive crisis. Differently from 1980s, in 1994 crisis, there is a case, in which banking sector, non- banking private sector, and households are in debt and this debt is n terms of foreign exchange. In 1994 Turkey, as in 1980s, bringing freedom on the subjects of the exchange rate, interest, and prices, possibility to reform expired (Ekinci, 2001: 67).

Beginning from 1990, that public sector deficits rapidly rise caused public sector borrowing requirement (PSBR) to increase and the rate of PSBR/GDP exceeded the level of 10%. As a result of deficits resulted from current expenditures and transfer expenditures of public, the increasing need for debt was tried to be financed by domestic and foreign borrowing. The increase of total debt stock led the debt, capital, and interest payments to increase and especially domestic debts and domestic interest rates to rise. In fact, tax incomes come on running short of meeting even domestic debt service. In 1990, total domestic debts, whose share in GDP was 15.3%, reached the level of 17.9% in 1993 before crisis . In the same dates, the share of foreign debts in GDP realized as 30.8% and 44.1%,. Financing foreign debt payments with domestic borrowing left Turkey under a large domestic borrowing press in 1994, when crisis was experienced. Thus, total domestic debts reached TL 656 trillion and the rate of domestic debts to GDP rose to 18%, which is the highest level among developing countries. As a result of excessive increases occurring in the debts of public sector, that the debt becomes unsustainable showed itself with the crises experienced in December 1993 and April 1994. As a natural result of increasing resource need, interest rates significantly rose as well and reached the level of 89.2% from its level of 58.9% in 1990. In the years of 1990, 1991, 1992, and 1993, when considered that WPE (Wholesale Price Index) was 52.2%, 55.4%, 62.1% and 58.7%, respectively, it is evident that real interest has considerably risen in the recent years (TCMB, 1993). While that real interest is too high leads to a positive effect in short term fund inflow, they engendered crowding out effect on private sector investments. In order to prevent this state, the efforts to lower interest rates with the pressure from private sector also beginning from the mid-1993 formed one of the most important reasons for 1994 Crisis (Karluk, 2005: 411).

4.2. November 2000 and February 2001 Crisis

Turkey, on the dates of November 22, 2000 and February 21, 2001 met financial crises. It can be said what underlying these financial crises is the troubles of liquidity and demand of foreign currency. The difference of these crises from the previous crises is that these crises coincided with the periods, when comprehensive stability programs were applied. The crisis occurring in November 2000 is in a quality of continuation of 1994 Crisis and February 2001 is in quality of the second wave of November 2000. After 1994 Crisis, overvaluation of TL continued, foreign deficits increased and real interests rose. Together with Southeast Asian Crisis in 1997, and Russian Crisis in 1998, concern of hot money from Turkey thoroughly increased (Ertuna, 2001: 494).

On November 23, 1999, a standby agreement, which will be valid, beginning from the early 2000, was signed; on the date of December 9, 1999, an intention letter was sent to IMF and Central Bank declared monetary and fiscal policy of the year toward reducing inflation and sustainable growth. Three year program, which has three main legs as providing fiscal discipline in public sector, determining exchange rate with crawling peg previously determined, and accelerating structural reforms and privatization, was implemented in the period of 2000-2002.

The main target of program is to lower inflation to a one –digit figure at the level of 5.5%, reduce high real interest rate to a reasonable level, and provide the more effective and fair distribution of resources in economy at the end of 3 years period (Yıldırım, 2001: 26).

5. COMPARATIVE ANALYSIS

Financial crises experienced incorporate the different dynamics in respect with the period, in which they were experienced. Two basic model developed regarding the predictability of crisis before emerging are the leading indicators and signal approach.

In order to be able to predict financial crises, setting out from the crisis experiences previously experienced, the various indicators, which can posses have a quality of early warning, are used. These indicators used in preventing crises point out which factors causes the most to crises.

The factors increasing vulnerability in an economy can be put in order in the form of (IMF, 1998);
-Inconsistent macroeconomic policies
-Wrong applications of exchange rate,
-Foreign financial conditions (terms of trade, world interest rates)
-Structure and terms of capital movements
-Shifts in market expectations
-Weakness of financial sector, and
-Political factors

According to KLR model, known as signal model, each variable is analyzed and suitable threshold values are calculated. That any indicators go up threshold value or goes down threshold value is accepted as crisis signal. For overcoming the problem with determining threshold correctly, independent variable series is divided into percentage shifts. According to the direction of independent variable to affect dependent variable, the most suitable slice is determined as lower and upper threshold. For example, if slice of 10% will be used ,when lower threshold is determined, the case of falling below the slice of 10% is perceived as crisis signal, while upper threshold is determined, the case of going up the slice of 10% is perceived as crisis signal and the probability to experience crisis in the future 4 months can be predicted.

In KLR Model, with the deviation of PPD index by 3 Standard Deviation from the mean deviates, signal months obtained from the leading indicators are compared on Social Crisis matrix in Table 3.

Table- 1: Signal Crises Matris

Signal	There is a crises (in 24 month)	Theris no crises (in 24 month)
YES	A	B
NO	C	D

Source: Kaminsky and Reinhart, 1999.

In application, there are a number of studies using KLR models. Berg and Pattillo (1999) compared regression models with KLR Model and searched for an answer to question whether or not Asian Crisis can be predicted. The study results showed that KLR model was more successful in the prediction of Asian Crisis compared to the other ones. However, since the wrong signals in the model is more than the right signals, in determining the time of crisis in 1997, it was also stated that KLR Model is not reliable enough. However, in both models, in cases, in which high current deficit is n important risk factor; domestic credits are high; and the real exchange rare was overvalued; and M2 / Reserves Ratio increases, they stated that the possibility of monetary crisis to appear could show an increase.

Edison (2000) defined the crisis in the form of that national money undergoes to a sharp devaluation and that international reserves decreases and used KLR Model. Edison, differently from the other studies, increased the number of country and considered the regional differences. He utilized in the study the variables such as deviation in exchange rate, export and import values, foreign currency reserves, M2/Reserves, difference of the domestic and foreign deposit interest rates, industrial production index, bond prices index, M2 multiplier, domestic credits/GDP, real deposit interest rate, credit interest rate/deposit interest rate, M1 balance, and commercial bank deposits. Edison (2000), in order to be able to identify crisis months, taking weighted mean of the percentage variation in exchange rate and parentage in foreign reserves, formed a foreign currency market pressure index. Devaluation of national money and fall of reserves raise foreign currency market pressure index. That foreign currency market pressure index goes up the mean by 2.5 standard deviation (SD) was defined as crisis. The threshold value accepted as 2.5 SD was intuitively determined. As a conclusion of the study, it was observed that KLR model, also in cases, in which there is no crisis, may give the wrong signals. According to Edison, this case shows the weakness of model. KLR Model, as an approach of leading indicators, may be an alternative to probit models used by IMF. Edison emphasizes that this method having an advantage due to the fact that more variables are available, in case that variations in exchange rate as well as variations in interest rates and inflation rate is included in it, can give better results.

Goldstein et al. (2000) , for the period of 1970-1995, further enlarging the monthly basis indicators of 25 countries used by Kaminsky and Reinhart (1999) in predicting financial crises for the period of 1970-1995, made a prediction via signal approach. They suggested that in banking crises, the variables of real exchange rate, stock prices, monetary multiplier, production increase, and export indicators gave crisis signal, while in monetary crises, real exchange rate, stock prices, export, M2/reserves, and production increase are the indicators signaling crisis (Goldstein et al., 2000: 56).

Peng and Bajona (2008) attempted to predict the monetary crisis experienced by means of KLR Model, using the data of the period June 1991- November 2001 of Chinese economy. KLR Model became successful in predicting 1994 exchange rate fluctuations and August 1998 and May 1999 Asian Crises. However, China, due to capital supervisions it has applied and lack of convertibility, in Asian crises, did not experience a full monetary crisis. As a conclusion of the study, some suggestions are made related to the future policies of China regarding Asian crisis. First is that the weak structure of China in financial system and vulnerable structure of banks continue. Therefore, there is a need for rearranging banking system. Secondly, the awkward structure of government enterprises is criticized and emphasized that it is necessary to produce

policy toward this. Lastly, it is argued that foreign exchange regime of China is its distinctive feature from the other countries. Therefore, in case that China gives up its exchange rate policies, it is noted that it will have more vulnerable structure against crises.

Shi and Gao (2010), in their studies, in 2008 Crisis, utilizing the data regarding 13 countries (Chili, Euro, Zone, India, Island, Japan, Korea, Malaysia, Mexico, Pakistan, Russia, Vietnam, United Kingdom, and US), tested KLR Model. Export, credit interest rate, deposit interest rate, M2/reserves, production index, and bond prices index were found as indicators, whose success is the highest in preventing the crises. What underlying of that many researchers using KLR model use Dollar as currency is the assumption that American economy and the value of Dollar is stable. However, in some studies, with the use of SDR instead of $, analyses were repeated and it was put forward that the results founded were more successful than in the prediction of crisis.

In this study, among the crises included in the sample, ERM crisis is originally currency / foreign currency crisis. In Mexican economy, in 1970s, while the process beginning together with the rise experienced in oil prices, on the one hand, increases oil incomes of the country, on the other hand, it led to a serious disturbance in the fiscal discipline. As a result of this, in December 1994, Mexico, obliging to devalue its national currency unit, faced a financial crisis and this crisis resulted in a big economic collapse.

1998 Asian Crisis continued together with a banking crisis accompanying to monetary crisis. In this scope, this led a sort of crisis qualified as twin crisis to be included in the literature. In 2007, in the financial organizations, due to malfunction experienced in sub-prime credits, a crisis occurred, which especially spread to US, then, European countries, and with the contagion effect, all over the world. It is observed that the crises experienced in Turkey basically arise from not being able to apply the adequate reforms regarding financial system and weakness of the resistance against financial vulnerabilities.

CONCLUSION AND DISCUSSION

In post 1990 period, although the crisis experienced is seen to be resulted from the different dynamics, it is also to mention about some common features they basically show. Since the crises, collected under the title of “Three Generations” form as a result of its showing differences from the crisis concept before it in respect with the periods, it is possible for it to include the feature resembling to the previous generation. Approach of logit and probit models toward predicting crisis probability of empirical literature regarding crises, largely suggested by Franlel and Rose, was shaped on the axis of the studies on the roots and spread of the crisis in the leadership of Sachs et al. (1996) and statistical studies carried out by Kaminsky et al. (l998) and known “signal approach”

As a result of overvaluation of currency, depending on the demand of import, they examined the problem with being able to rotate the emerging debts in case of referring to foreign borrowing for financing import and the process continuing in the form of the problems that foreign trade deficits reach the extreme dimensions arise on the axis of first generation monetary crisis models. The process, in which speculative foreign currency attacks begin, central bank avoid interventions toward protecting reserves, and crisis is directed according to the expectations of economic actors was called as second generation monetary crisis and this model was used in explaining monetary

crises (e.g. 1992-1993 ERM crises) occurring in the developed countries. Finally, the models, which accept onset of crisis as expectation, put forward that this is followed by the problems experienced in banking sector and the problems resulted from international financial system, and which is developed to be able to account for 1998 Asian Crisis were called as third generation monetary crises.

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COMPARISON OF THE SOCIO-ECONOMIC DEVELOPMENT AND THE PISA RESULTS OF OECD COUNTRIES

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Abstract

The PISA test has been conducted over a period of three years since 2000 in many countries, both OECD countries and non-OECD countries. In this test, students in the 15-year-old group are asked questions about their "Reading Skills", "Mathematics literacy" and "Science Literacy" in their native language. Undoubtedly, the future of the countries is closely related to the success of the younger generations in the basic fields. Countries are planning to develop socio-economically. This study aims to compare the PISA scores and socio-economic development of OECD member countries.

Key words: OECD, PISA, Socio-Economic Development.

1. INTRODUCTION

Undoubtedly, the development of the countries and the increase in the level of welfare depend on the quality of the education given to the youth. The presence of quality education will bring society forward not only economically but also socially and culturally. The Organization for Economic Cooperation and Development (OECD), which is also a member of Turkey, has been conducting various tests with the Program of International Student Assessment (PISA) since 2000, for students aged 15 years in countries with and without memberships [1].

The aim of this study is to calculate the results of the PISA test in 2006, 2009 and 2012 for the OECD member countries by using the Data Envelopment Analysis method, which is the input of the Dependent Population Ratio, Gross National Income and High Technology Exports variables.

The PISA test is conducted so that each country can see the deficiencies in the education system and make the necessary adjustments, not for the countries to compete with each other. The questions asked in the PISA tests are not based on the curriculum shown in the school but on the responses to situations and problems that a student trained in his / her country until the age of 15 may face in daily life. In other words, a 15-year-old educated young person demonstrates how much he prepared for the rest of his life, even if he did not continue his education. The PISA test measures mathematics literacy, science literacy and reading comprehension.

2. DATA ENVELOPMENT ANALYSIS

Data envelopment analysis is a method developed to measure the relative effectiveness of decision-making units (DMU) [2]. The goal is to demonstrate how successful it is in converting the available inputs (resources) into the outputs of the DMUs. The input and output of DMUs must be the same and measured in all cases. Another advantage of DEA is that very different measurement units for input and output variables can be used at the same time [3].

The efficiency score for the k_{th} DMU is calculated as in Equation (1) when there are m inputs and outputs.

$$Efficiency_k = \frac{\sum_{r=1}^{s} u_{rk} Y_{rk}}{\sum_{i=1}^{m} v_{ik} X_{ik}} \qquad (1)$$

where

Y_{rk} : The amount of output produced by the DMU for r=1,…,s

X_{ik} : The amount of input used by the DMU for i=1,…,m

u_{rk} : The weight coefficient given by the DMU to the outputs for r=1,…,s

v_{ik} : The weight coefficient given by the DMU to the inputs for i=1,…,m

The constraints for Equation (1) are denoted as [2]:

$$Efficiency_k \leq 1 \,, (k = 1,2, \dots, n)$$

and

$$u_{rk} \geq 0, r = 1, \dots, s$$

$$v_{ik} \geq 0 \,, i = 1,2, \dots, m$$

In DEA, if a DMU's efficiency score is 1, it is efficient, otherwise it is not. There are generally three methods used in the DEA:

i. CCR (Charnes-Cooper-Rhodes) Method (1978)
ii. BCC (Banker-Charnes-Cooper) Method (1984)
iii. Additive Method

The first two methods have been used in this study. In the CCR method, there is a fixed yield according to scale assumption, while in the BCC method there is a changing-based yield assumption. Also, the BCC limit is always below the CCR limit. For this reason, the CCR efficiency score is less than or equal to the BCC efficiency score [4].

Moreover the results can be interpreted in two different ways in CCR and BCC models: input-oriented or output-oriented. In the input-oriented approach, it is aimed to minimize inputs to meet the same output level. In the output-oriented approach, the aim is to maximize the output value with the available inputs [5].

3. APPLICATION

The data used in the study are compiled from two different sources. The data sets for the Dependent Population, Gross National Income and High Technology Exports variables used as input variables in the study are obtained from the World Bank website [6]. The output variables, PISA Mathematics, Science and Reading comprehension variables are taken from the OECD [7].

Only OECD countries have been included in the study. 2006, 2009 and 2012 were taken as the working period. Because USA did not participate in the reading-comprehension part of the PISA test in 2006, there is not USA in results of 2006. Furthermore, in DEA, output-oriented CCR and BCC models are used. The results are given in Table 1.

When Table 1 is investigated, it is showed that Hungary, Korea Republic and Slovak Republic are efficient countries according to all periods and methods. While Estonia is not only efficient according to CCR method in 2012, it is efficient in all other periods and methods. According to the BCC method, Finland and Netherlands are efficient in all the years. Slovenia is efficient in 2006 and 2009, not 2012. On the contrary, Sweden is not efficient in 2006 and 2009 and is efficient in 2012. Similar comments can be made for other countries. Contrary to what is expected here, socio-economically developed countries such as USA, UK, France, Germany and Italy have never been efficient. Turkey is also one of countries that have never been efficient at any time.

Table 1: DEA Results

COUNTRIES	**2006**		**2009**		**2012**	
	CCR	**BCC**	**CCR**	**BCC**	**CCR**	**BCC**
Australia	0.893727	0.994235	0.868854	0.993308	0.841949	0.989521
Austria	0.854166	0.938732	0.796893	0.924969	0.812328	0.957448
Belgium	0.784106	0.948921	0.767526	0.949616	0.753619	0.969206
Canada	0.955896	0.99864	0.930846	1	0.900525	0.99973
Chile	0.91296	1	0.922601	1	0.882897	0.89848
Czech Republic	1	1	0.931903	0.979397	0.835557	0.958778
Denmark	0.796748	0.947557	0.748049	0.929394	0.739238	0.955625
Estonia	1	1	1	1	0.864367	1
Finland	0.901036	1	0.858362	1	0.76644	1
France	0.69407	0.903676	0.674325	0.921078	0.639545	0.940045
Germany	0.758367	0.918726	0.714448	0.945913	0.697854	0.964675
Greece	0.784565	0.889849	0.874793	0.923999	0.761149	0.925547
Iceland	0.88891	0.940154	0.865621	0.976244	0.78518	0.943764
Hungary	**1**	**1**	**1**	**1**	**1**	**1**
Italy	0.952598	0.995248	0.850858	0.96136	0.762926	0.994547
Israel	0.607551	0.836183	0.627704	0.893911	0.630638	0.925463
Ireland	0.742367	0.854594	0.729978	0.90564	0.759673	0.938596
Japan	0.757669	0.953943	0.709844	0.976632	0.691039	1
Korea, Rep.	**1**	**1**	**1**	**1**	**1**	**1**
Luxembourg	0.885508	0.951634	0.943433	0.957132	1	1
Mexico	0.55157	0.747178	0.582932	0.791653	0.637769	0.800948
New Zealand	0.831077	0.967994	0.80438	0.967702	0.742487	0.971511
Netherland	1	1	0.986629	1	0.898325	1

s						
Norway	0.78518	0.928798	0.787179	0.950898	0.804064	0.969895
Poland	0.87033	0.972928	0.89404	0.955683	0.990112	1
Portugal	0.961507	0.966621	0.977911	1	0.764189	0.942074
Slovenia	1	1	1	1	0.80204	0.926431
Slovak Republic	**1**	**1**	**1**	**1**	**1**	**1**
Spain	0.859094	0.913138	0.82828	0.923289	0.797452	0.934086
Sweden	0.782681	0.926814	0.746656	0.926874	1	1
Switzerland	0.868464	0.96996	0.848158	0.983623	0.869917	1
Turkey	0.71111	0.855994	0.810777	0.886986	0.78789	0.928781
United Kingdom	0.741898	0.913816	0.755942	0.927798	0.711267	0.944498
United States	*	*	0.731934	0.928502	0.699946	0.92669

4. CONCLUSION

As mentioned earlier, the PISA test is not done for countries to compete with each other. The aim of the test is to determine the deficiencies in the education systems of the countries and to go about them. When Turkey's 2006, 2009 and 2012 PISA results are examined, it is seen that there has been an improvement in recent years. However, success in terms of effectiveness still does not seem close. For this reason, the education systems in the countries which are efficient should be examined and necessary arrangements should be made. Scandinavian countries, such as the Czech Republic, Estonia, Finland, Slovenia, Sweden and Switzerland, seem to be active, according to different periods and methods. For this reason, we should first examine the education system in Scandinavian countries and make the necessary arrangements in our country and show our young people that we hope to develop our country the better chance of preparing for the future.

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OBSTACLES IMMIGRANTS FACED IN INTEGRATION TO LABOR MARKET: THE SAMPLE OF SYRIAN IMMIGRANTS IN TURKEY

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ABSTRACT

The integration of immigrants into the labor market in economic sense makes it possible for the immigrants to maintain their lives by earning their income.This labor market integration is extremely important for the fact that this integration paves the way for both immigrants and the native people to live together in peace and prosperily. With this in the mind, the aim of this study is to establish the obstacles which are encountered by the immigrants in the process of integration into host country labor market. For this purpose, primarly, these obstacles investigated by lliterature review. Then, the obstacles which are faced by Syrian immigrants living in Konya province have been determined by a qualitative study. The sample of this study consists of the Syrian immigrants (n=20) living in Konya province. For this study, Qualitative data was collected through semi-structured interview forms. As the conclusion, the most important obstacles appeared are as follows; wages lower than they deserve, remaining in the event of non-payment, abuse by employer in terms of excessive working hours and heavy working conditions, lack of work safety and continuity, abasement in the workplace envoriment, difficulties related to not knowing the Turkish language and not having the opportunity of practicing their profession, so having feeling of propertylessness. These obtacles are largely similar with the ones experienced by immigrants in other countries.

Keywords: Immigrant, Syrian Immigrants, Labor Market, Integration, Obstacles.

1. INTRODUCTION

Problems caused by the movement of immigrants, especially in the recent period, have not stood out so much on the agenda of world countries, both Turkey and Continental European countries. At the beginning of these problems, come socio-economic problems the countries that accept immigrants in large numbers face with. At the beginning of these problems, come socio-economic problems the countries that accept immigrants in large numbers face with.

In this context, it is clearly an essential requirement that the problems that may be caused because of participation of immigrants into the labor market must be minimized, ensuring effective and efficient participation of immigrants into the labor market and managing this process, in the long term, in order to ensure a positive contribution to the national economy.

2. THEORETICAL FRAMEWORK

2.1. Labor Concept

The population of a country is divided into two as the working age population (15-64 ages) and non-working age population. Those who are in the working age group, who desire to work and have the power are called as labour force. In a country, whole labor force is required to be working. Namely, it is desired to have full emploment, to have zero unemployment. We gain the amount of unemployed when we remove those who are employed from the labor force (Yavuz, 2012). "Labor force" is people at an age of either who are working at a productive work, or who are looking for a productive job, who can work. Unless otherwise stated, it is the age of 15 and over. The difficulty of finding a productive job is a phenomenon at the world level. Global forces -commerce, capital and cross-border movement of labor- have important effects on employment in the national economy (Çolak, 2010). Employment, economically, can be defined as operating of production factors or to make them operate in order to gain profit. It is discussed in this concept whether the production factors are used in the production of goods and services. However, while only a loss in economic sense is in question when the labor force remains idle through not being used in producing of production factors other than labor, labor force's staying out of production, in other words, unemployment accompanies socio-political issues too(Germir, 2012).

2.2. World Countries' Labor Force Structure

Countries throughout the world are divided into seven classes as developed, Central and Eastern Europe, former Soviet Union countries, other high-income countries, oil-exporting developing countries, middle-income developing countries, less developed countries. Turkey is among the middle-income developing countries. The most striking image related to the world labor force is the congestion poor countries. While 75% of rate in the labor force participation is in developing countries (Middle-income developing countries and less developed), less than 15% is in developed countries. China and India are home to 40% of the world's workers(Çolak, 2010).

2.3. Turkey's Labor Force Structure

Although a significant portion of employment in the agricultural sector in Turkey, the low level of labor productivity and the inability to create new job areas is also among the structural features of employment (Germir, 2012).

In the scope of labor statistics in September 2015 period made by Turkey Statistical Institute (TSI), across Turkey; while unemployment rate among age 15 and over was %10.3, among 15-24 age group it was 18.5%, and in 15-64 age group it was 10.5%, in the same period, the rate of unregistered workers was 34.8% (TUIK, 2015).

2.4. Labor Force Structure of Konya

As of 2013, in Konya and Karaman region constituting 3.2% of the population of Turkey, the employment rate with 46.4% is above the average of Turkey which is 45.9%. The unemployment rate is 4.7%, and is is lower than other regions. While it was observed that the services sector with 42.6% of the sector has the highest share in employment in Konya-Karaman region, he share of the agricultural sector 32.7%, and the share of the industrial sector is 24.7%. Between 2004 and 2013, when examining the change in the sectoral composition of employment over the years, it is observed that there has been an increase in the share of services and industrial sectors, and a significant decline is observed in agricultural sector (TUIK, 2014).

It is observed that, when analyzed by sector distribution, under the Labour Market Research Report involving a total of 3995 work in the private sector issued by Konya Provincial Directorate of Labour and Employment Agency between 16 March-30 April, the most places of business in manufacturing sector (1342), respectively, wholesale and retail trade (970), construction (637), transportation and warehousing (213).

The least business sectors are cultural, atr, entertainment and sports (11), water supply, sewage, waste management (8), electricity, gas, steam and air conditioning production and distribution(8). In businesses under the research, a total of 127 thousand 310 people work, 85.2% of employees were males, 14.8% are women (proportion of women in Turkey is 27.5'tir%). Within the research, the businesses were asked vacant jobs, 2828 vacancies were identified, and 57.9% of them in manufacturing, 20.4% in wholesale and retail trade, 7.2% is in construction sector (İşkur, 2015).

2.5. Obstacles The immigrants Face In Labour Market Integration

The labor market integration of immigrants has a great importance. Because their integration to the labor market will provide them with sheltering which they need, safety and self-sufficiency in the sense that they can maintain their lives (Brenke, 2015). Immigrants' integration to the labor market is extremely important for the reason that it provides a basis for them to live in peace and quiet with the natives of the countries they emigrate to and their social adaptation on cultural facts.

It should not be ignored that short-term expenditures made for the immigrants for housing and labor market integration are the investments for the future. In the long term, it will have a positive contribution of immigrants to the economy of the country they emigrate to (Fratzsch and Junker, 2015).

To be included in the society in which they emigrate represents a multidimensional and a very complex process. Immigrants can be involved in the community in which they emigrate in the context of social, cultural, political and economy. Migrants often face with unemployment in the labor market, they are obliged to accept low-paid and unskilled jobs (Ulukan, 2008).

Some researchers draw attention to that immigrants tend to concentrate in different business sectors compared to domestic workers in the USA. Immigrants tend to fill short-term manufacturing and daily work positions especially relatively low-paid and do not require higher

skills, but it seems that the longer the duration of their stay in the US, their participation in similar sectors and jobs with local workers is possible in the labor market (Abowd ve Freeman, 1991: 306.).

Immigrants' individual characteristics determine their occupational mobility and earnings. Human capital owned by immigrants (education, skills, work experience and knowing the language of the society in which they emigrate) affect the economic success in society they emigrate(Chiswick, 1978).

The smaller the cultural and linguistic differences among the natives with immigrants, in other words, the immigrants as they embrace the indigenous culture, and learn the language, differences in economic opportunities will disappear over time (cited in Portes and Zhou, 1992).
The effective factors in the participation of immigrants in the labor market are age and gender. According to available data, more than half of the immigrant job applicants are under the age of 34. However, the main factor is not to have necessary skills for the job such as to know the language. Over time, these obstacles faced by immigrants will tend to decrease, and employment opportunities will increase (Fratzsch and Junker, 2015).

An experimental study has revealed that an immigrant can have equal income to the domestic labor at the end of 15 years (Chiswick, 1978).

Educated immigrants are the preferred source of labor for employers. Immigrants are working in jobs below their skills in low quality jobs in the first. This case is observed particularly in periods when mass migration is experienced and intensive labor supply is needed. Unregistered and low-paid work is seen as a survival strategy. Intensely, they can get jobs in manufacturing, service and construction sectors (Ulukan, 2008).

According to Kömürcü's study (2011), immigrants should accept, adopt the city and the country in which they will live, and they should be aware that they are members of the place they live in.

Immigrants are solving their job problems through informal sector mainly. One of the best known works of the informal sector, construction labor stands out. Construction labor is a labor-intensive job. Namely, it is based on arm strength. It does not require education or a specific expertise. Thus, the construction labor is an important area of employment for immigrants. Although the sector provides unskilled, uneducated people and people who have no expertise in any area with a job, in time, specialisation may occur in some businesses within this sector. The research has denoted that more than half of the immigrants, when they first arrived, they started their working life as a construction worker, but over time, there has been work specialization among them in the construction industry (Uslu, 2012).

The vast majority of Syrian refugees in Lebanon find jobs in construction and agriculture sectors. They can mostly receive seasonal, short-term and the average monthly wage of 290 dollars without any formal employment contract. The said fee is approximately 40% lower than minimum wage of a Lebanese employee. As a result of the increase in the supply of unskilled labor, working daily wages of unskilled workers in Lebanon have decreased by 60% compared to the previous situation prior to the start of the Syrian crisis. Syrian immigrants have become more willing to work under lower wages, longer working hours. This case has led Lebanese, who didn't

want to give rein to Syrian refugees to get their jobs, to accept to work for lower wages and difficult working conditions (Cited in Lewis, 2015).

When the business relationship feature between employers and immigrant workers is analyzed, this relationship seems to be far away from the legal basis. The lack of legal basis of this relationship makes the immigrant workers bonded to the employee, immigrants are given jobs rather than domestic workers so that labor costs are reduced. Immigrant workers are made work very long hours during the day by force when necessary. For there is a large number of illegal immigrant workers wandering around unemployed, these put pressure on those who received the work, immigrant workers who are given a job are made for 1-2 months and are fired, and the post is filled with new ones immediately. These workers, who do heavy work very long hours during the day, are mostly paid less than the commitment wage, sometime they aren't paid at all(Akpınar, 2009).
A study made by Ekiz-Gökmen (2011) revealed that the immigrant women living in Marmaris generally work in guiding, tour operating, animation due to the touristic structure of the region, so that they provide cheap labor supply in the tourism sector, they are not paid properly while working in jobs that do not require a qualification, or they cannot get their wages on time, they were subjected to verbal and physical abuse, and they work unsecured under unhealthy conditions. Working in unskilled jobs in question far from the training they received leads immigrant women to become unqualified. The most important problem educated immigrant women face in the labor market is to become unqualified through being given work in low-skilled jobs with low wages.

According to the research Dedeoglu made (2011) in the province of Istanbul, Azerbaijani immigrants sustain their lives working in garment factories, and under favour of this labor supply, they are contributing to one of Turkey's most important sectors to become a global export champion. But this contribution results in that Azerbaijani immigrant women and children remain outside the social life, being an Azerbaijanese means working in apparel sector for half price, sometimes nonpayment of wages, and sometimes exposure to physical and verbal violence. The experience of migration experienced by the Azerbaijani families in Istanbul and social exclusion affect negatively not only adult immigrants but also the new growing generation. Exclusion from education and health services increase the risk of being faced with poverty and social exclusion of more needy children to these facilities again in the future.

In the labor market of Germany, the research on women workers in the cleaning sector, who emigrated from Turkey, shows that Turkish immigrant women have concentrated in cleaning sector, the immigrant women got jammed in the said sector, discrimination based on ethnicity and gender in the labor market occupied an important place, the cleaning sector is expanding and while profit rates are increasing, the same percentage isn't increasing in employment, the reason for this is the increasing levels of exploitation in in this sector based on low-wage immigrant labor force, and the work is getting intense day by day (Ünlütürk- Ulutaş, 2013).

2.6. Barriers Syrians Immigrants Face within Their Integration to Turkey Labor Market

"Arab Spring" term was first etched in our mind with the emerging of revolt movement against the government in Tunisia on 18/12/2010, then it became a term we encountered as a result of the

popular uprisings it caused in countries such as Egypt, Libya, Syria in the first place, Jordan, Algeria, Yemen and Lebanon, and unfortunately, after its negative effects for our country especially after the influx of refugees caused by the crisis and the developments in Syria.

Within the time from 15 March 2011 till today, as of 29 January 2016, about 2 million 582 thousand in Turkey, and 50.224 Syrian refugees are residing in the province of Konya(www.goc.gov.tr), and unfortunately, every day they lose a little bit of hope to return to their homeland.

The most important problems faced by Syrian refugees under protection in Turkey we come across are as registration, child protection, education, protection of women, health and labor market access issues. In terms of participation in the labor market, registered Syrians can apply to Labour and Social Security Ministry for a work permit in the sectors, business lines and geographical areas (like cities, districts, villages) the Council of Ministers will determine. In this regard, the legislation related to businesses and professions foreigners cannot work is reserved (Karaca ve Doğan, 2014).

Within the scope of Karaca ve Doğan's study (2014), the obstacles Syrian refugees faced in their integration into the labor market can be listed as follows:

-Difficulty in using the banking system of businessmen from Syria, other banks do not open accounts for Syrian refugees except a few banks,

- Strict regulations in front of performing their professions who have competence and ability to perform their specialty professions (pharmacy, dentistry, etc.), an immigrant who was educated at a university and received a diploma in pharmacy cannot perform his/her profession, or cannot work in a job related to the field, not to be allowed this by the legilation,

- Non-permanent (seasonal) working conditions that are unsecured, based on low wages, lack of job security experienced labor-intensive sectors such as agriculture, construction, storage,

- Negatively affected workers living in areas where the immigrants settled and working in seasonal jobs, after arriving Syrian workers, a decrease in daily paid wages, unrest and conflict environment caused by this situation between indigenous peoples with Syrian refugees,

- In order to enroll in professional chambers, Syrian investors need to be citizens of the Republic of Turkey, or they need to get a work permit from the Ministry of Social Security, permits given by the Ministry of Labor and Social Security are shorter than a year, and all these cause them not to enroll in professional chambers,

- In the absence of a work permit of Syrians, no one who has a profession or not can work, due to fear of retribution, the employers cannot have them work even if they need workers, thus, victimization of both the Syrians and the employers,

- Being forced to work of the Syrians with a little wage, and non-payment of wages after work, when directed to the police station, asked for a sworn interpreter by the police station, and a

hundred liras asked for the translation by the interpreter, Syrians' fear of the police, fear of deportation, and they cannot seek their rights because they do not have money,

- Syrians' demand to open a workplace earn their livelihood, those who open a place have to shut it because of the laws, or to be a victim being swindled as a result of enrolling onto a Turkish citizen,

- The number of Syrian women immigrants is more than the number of men, these women's will to contribute to the family economy in their spare time, but not having of sufficient opportunities for it,

- Syrians who want to establish a company or open a workplace do not know what to know and who to apply, victimization of these people by officials who have no iinformation on this issue directing them to different places,

- Many Syrian students cannot continue their education, because the course fee of TÖMER document for per person is more than at least a thousand liras, which is demanded while admission of Syrian youth who have not completed their university education to universities in Turkey,

- Syrian youths who don't have a profession are too many,

- Syrians are having communication problems because they do not know the Turkish language,

- In order to get deposit payment and commissions through making no contracts, with an excuse, realtors make Syrians leave their houses they rent, several families come together and live together due to the high rents and disturb the environment, the citizens complain about this,

The data obtained (Erdoğan, 2014) in the scope of field work done by Immigration and Hacettepe University Political Research Center can be listed as follows:

- The most important problem faced by Syrians in Turkey is about labor rights. Syrians who said that they want to be included in working life, and thus, being a burden to Turkey will be prevented, stated that the possibility of encountering labor abuse is increasing in case of illegal work.

- Syrians who are educated and have a profession stated that they want to go to a country in Europe, or countries such as Canada, the USA if they have an opportunity. As grounds to this, the emphasis that they don't have opportunities to establish a business in Turkey is often common.

- Syrians, who have been living in Turkey with aid or their own financial resources for a particular period of time, said that they want to take part in working life, and sustain their lives. This situation has bothered workers in the close region to the border. Due to the influx of cheap labor, discomfort of the local people, who feel under pressure of becoming unemployed, on this issue could turn into serious protests and even attacks.

- As it was expected, the rate of those who support the proposition of Turkish public "the Syrians are taking away our jobs" resulted in a very high rate like 68.9% in the provinces of the region (Adana, Gaziantep, Hatay, Şanlı Urfa). In regard to Syrian immigrants' working, the rate of those who support the proposition "Work permit on no account mustn't be given." is 44% in the region provinces.

Bureaucratic problems in obtaining a work permit are among the most common obtacles in the integration of Syrian immigrants into the labor market. Although the Regulation approved by the Council of Ministers on January 11, 2016 is seen as a remedy to overcome this problem, however, there is an argument that it will not be very effective. Under the said regulations; Syrian refugees will be able to obtain a work permit six months later after the regulation of temporary identity. They will be able to work in only the provinces they are registered. The number of Syrian workers in enterprises will not exceed 10% of the total number of employees. Preliminary permit will be sought from relevant ministries for those who will work for health and education sectors (www. mevzuat. gov.tr).

Syrian refugees in Turkey cannot yet substantially have opportunities to work at officially registered jobs. Therefore, the vast majority of Syrian immigrants are ready to work in unregistered jobs. This case gives many employers the opportunity to have Syrian immigrants work for low wages under unregistered economy conditions. In some cases, this wage may be down to 25% of the daily average. This fact gives an idea of the lives of Syrian immigrant in the labor market in Turkey (Man, 2015).

The unfair competition between the firms which have unregistered workers and which do not, from macroeconomic point of view, come to the fore as the high level of unemployment, other threats and risks related to the labor market. The need for money, for Syrian families, results in giving up sending their children to education, instead, routing them to work, the use of children as the supply of cheap labor is emerging as another negative situation. On the other hand, considering the subject from macro-economic point of view, an increase is seen in unemployment figures in Turkey. According to TUIK data, while unemployment figures in January 2011 was 8.8%, it increased to 11.3% in January 2015. The high rate of unemployment and the increase in the unemployment rate depends on the Syrians employment have the potential to pose a threat for the labor market in the later process (Tunç, 2015).

3. METHODOLOGY

3.1. Importance of the Research

This study has an importance which aims to determine the obstacles Syrian immigrants face with in the integration into the labor market, especially in the scope of controlling and well managing the influx of Syrian refugees emerged towards our country as a result of the Syrian crisis and increasing its impact day by day, in order to protect and maintain our country's socio-economic balance, social peace and security, in terms of enabling the adoption of measures for the obstacle in question, and preparing the ground for work to be done later.

3.2. Purpose of the Research

The purpose of this study is to determine the obstacles encountered by immigrants in labor market integration of immigrants in the country they emigrate. To that end, the literature on the research done in various countries which have accepted immigrants was scanned, and in particular, it is aimed to identify the obstacles encountered in integration into Konya labor market by Syrian immigrants living in Konya.

3.3. Scope of the Research

Syrian refugees residing in Konya constitute the universe of this research. Syrian immigrants who were randomly chosen among the students who are receiving Turkish courses by random sampling method (n=20) within Konya Metropolitan Municipality Vocational Courses (KOMEK) located in the centre of Konya province constitute the study group of this research. Considering the general demographic information about Syrian immigrants, while 65% of immigrants (n = 13) are females, 35% (n = 7) are males. Looking at the distribution by age of immigrants, there are 15% (n = 3) people in the 15 to 20 range, 20% (n = 4) people in the 21-25 range, 15% (n = 3) people in the 26-30 range, 20% (n = 4) people in the 31-35 range, 10% (n = 2) people in the 36-40 range, 5% (n = 1) people in the 41-45 range, and 15% (n = 3) people in the range 46 and over. Looking at the distribution of school they graduated from, 15% of immigrants (n = 3) graduated from primary school, 20% (n = 4) secondary school, 5% (n = high school), 5% (n = 1) two-year degree, and 55% (n = 11) are undergraduate degree. Looking at the distribution of marital status, 40% (n = 8) are married, 55% (n = 11) are single, and 5% (n = 1) are divorced. According to the immigrants' place of birth, they were born 15% = 3) in Damascus, 55% (n11) Aleppo, 15% (n = 3) Qamishli, 5% (n = 1) Rakka, 10% (n = 2) Basra. The dates of immigrants coming to Turkey, 55% (n = 11) 1 year ago, 35% (n = 7) 2 years ago, 10% (n = 2) 3 years ago came to Turkey (see; Table 1).

Table 1. General Demographic Information Related to Syrian Immigrants

		Frequency	**% Percentage**
Gender	Female	13	65
	Male	7	35
Age	15-20 age	3	15
	21-25 age	4	20
	26-30 age	3	15
	31-35 age	4	20
	36-40 age	2	10
	41-45 age	1	5
	46 age and over	3	15
Completed School	Primary School	3	15
	Secondary School	4	20
	High School	1	5
	Two-year degree	1	5
	Undergraduate	11	55
Marital Status	Married	8	40
	Single	11	55
	Divorced	1	5

Place of Birth	Damascus	3	15
	Aleppo	11	55
	Qamishli	3	15
	Rakka	1	5
	Basra	2	10
Date of Arrival in Turkey	1 year ago	11	55
	2 years ago	7	35
	3 years ago	2	10

When examining Syrian immigrants' demographic information relating to the labor market, 25% of immigrants (n = 5) are teachers, 5% (n = 1) are ironworkers, 5% (n = 1) are fashion designers, 5% (n = 1) are house painters, 5% (n = 1) are builders, 5% (n = 1) are home decorators, 10% (n = 2) are students, 5% (n = 1) are physiotherapists, 5% (n = 1) are accountants, 5% (n = 1) are hairdressers, 5% (n = 1) are Veterinaries, and 20% (n = 4) do not have professions. Considering the situation of Syrian refugees in Turkey to practice their professions, while only 25% (n = 5) of them can perform their professions, 75% (n = 15) cannot. When we look at the distribution of migrants according to their employment status, while 45% (n = 9) are working, 55% (n = 11) do not have jobs. Their monthly income is 20% (n = 4) are in the range 500-1000 *Turkish Lira*-TL(163-326), 25% (n = 5) are 1.000-1.500 TL(326-489) (range, and 55% (n = 11) do not have regular incomes (See. Table 2).

Table 2. Syrian Immigrants' Demographic Information Related to Labor Force

		Frequency	**% Percentage**
Profession	Teacher	5	25
	Ironworker	1	5
	Fashion Designer	1	5
	House Painter	1	5
	Builder	1	5
	Home Decoration	1	5
	Student	2	10
	Physiotherapist	1	5
	Accountant	1	5
	Hairdresser	1	5
	Veterinary	1	5
	Doesn't have a profession	4	20
Can They Practice the Profession in Turkey?	Yes	5	25
	No	15	75
Do They work in Any Jobs?	Yes	9	45
	No	11	55
Monthly Income	500-1.000TL *(163-326)*	4	20
	1.000-1.500TL (326-489)	5	25
	Has no regular income	11	55
The reason for coming to Turkey	Safety / Safety of Life	6	30
	War	10	50
	Economy / Unemployment	4	20

3.4. Method of the Research

Qualitative data related to this study was collected through a semi-structured interview form developed by the researcher from the interviews with Syrian immigrants (n = 20) going to KOMEK Turkish learning course located in the centre of Konya province in January 2016. The interviews were held with the immigrants who voluntarily accepted to be interviewed (n = 20), these interviews were implemented with the questions prepared and developed by the researcher for the purpose of the study. During this study, the following 2 questions prepared and developed by the researcher for the purpose of the study were asked to the Syrian immigrants.

1- What are the main problems you encounter while working in the business environment?

2- What are the main problems you faced while finding a job?

Qualitative data obtained during this research was obtained by the researcher using the semi-structured interview technique from the qualitative research techniques. The reason to use the interview method during this research is to try to gather information listening to the immigrants as the primary source on the subject. Because of language problems, assistance was received from the KOMEK Turkish Course lesson teacher for a better understanding of the questions. During the analysis of qualitative data related to the research, content analysis and comparison techniques were used the by researcher constantly. According to what Merriam (1998) stated, all qualitative data analysis processes actually mean content analysis. The data obtained from interviews was compared with the literature on the subject area, and it was checked for accuracy. Later, the interviews were conducted with the immigrants subject to the research in the framework of the plan. The data obtained from interviews were compared with the literature about the subject area again.

4. RESEARCH FINDINGS

According to the findings, the most important obstacles encountered by Syrian immigrants in the integration into the labor market can be said as being worked for lower wages than they deserve, and experiencing the state of being unpaid, their exploitation by employers working in harsh conditions, the lack of continuity and safety at work, their humiliation in the working environment, encountering difficulties because they do not know the Turkish language, and experiencing the case of getting unskilled because they do not have the opportunity to practice their professions. The views of the Syrian immigrants who participated in this study about the obstacles they face in the labor market participation were given in details below.

*When the answeres given to the question "**What are the main problems you encounter while working in the business environment?**" were analysed;*

- 10 of the immigrants stated that they do not receive equal wages to Turkish employees, they are worked for lower wages than they deserve, and sometimes they are not paid by their employers. The views of immigrants in this regard are as follows:

V1: "I have been working for 3 months. Other employees' wages have increased, I am going on as I was. While the transportation cost was paid until last month, now they do not pay it. The employers' behaviors are good. I take care of 5 persons with my salary."

V3:"The working environment, human relations are good. While the Turks are paid more, I am paid less."

V4:" I am employed for a low wage. It is not equal to the other employees."

V8:" I want to assist my family but I don't think I will be able to get what I deserve. I worked as an apprentice in a welder's close to my house. I left two months later. I earned 20 TL (6,5$) or 5 TL (1,6 $) in a day depending on the job."

- Those who think that they were exploited by the employers employed under more pressure, in difficult conditions, uninsured, in the lack of safety conditions are 4. The views of immigrants in this regard are as follows:

V6:" Turkish workers are taking more wages. Our job is dangerous, but no insurance. The way of adressing is not appropriate; they call as "Syrian! Come here!" A piece of iron hit on my head, but they did not take me to hospital."

V7:" The boss does not treat us well. I am working at a difficult job, but the Turk came to my place is paid more than me. Our job is dangerous, but we do not have insurance."

V18:" The employers' behaviours to us are different, there is more pressure, and we cannot get what we deserve. They pay half salary or they do not pay at all."

- Those who think that they do not have a guarantee in the sense of continuity of work are 3 people. The views of immigrants in this regard are as follows:

V13:" There is no occupational safety and continuity. I cannot get my salary from UNICEF. In addition, my students cannot get diplomas."

V2: "I receive 100TL (32,6 $) weekly, payment is not made, they make me wait. I work overtime. I cannot communicate with my colleagues because I don't know Turkish. There is no occupational safety. They promise bu they do not make an increasement."

- Those who were humiliated by being exposed to ill-treatment by the employer in the workplace are 2 people. The views of immigrants in this regard are as follows:

V6:" Turkish workers are taking more wages. Our job is dangerous, but no insurance. The way of adressing is not appropriate; they call as "Syrian! Come here!" A piece of iron hit on my head, but they did not take me to hospital."

V7:" The boss does not treat us well. I am working at a difficult job, but the Turk came to my place is paid more than me. Our job is dangerous, but we do not have insurance"

- Those who have experienced difficulties because they do not know the Turkish language are 2 people. The views of immigrants in this regard are as follows:

V16:" I would like to teach, but I do not dare because I do not know the language. I could get my diploma recently because of the war."

- Those who can't practice their own profession and who think that they are being unskilled are 2 people. The views of immigrants in this regard are as follows:

V15:" I am an English teacher, but I'm working as a classroom teacher. I would like to work in my own field."

V20:" I cannot find a job as a veterinarian. I was offered jobs as sweet manufacturing and so on, but I did not accept. Salary is too low."

*When the responses of Syrian immigrants to the question "**What are the main challenges you are facing while finding a job?**" were analyzed;*

- 5 immigrants think that they are to be exploited by employers with low wages being employed in harsh works:

V3:" I cannot find a job related to my own profession. I couldn't get my payment when I worked for short times. I feel being exploited about payment. We couldn't get the deposit we had given the realtor, they didn't provide us with the house, we complained about them."

V5:" They employ us with low wages. They employ us at heavy work, they abuse us, they humiliate us. I do not want to work for/with someone else. I want to work as a teacher."

V7:" I am working for a low wage. It is more difficult to find a job in winter. I couldn't get what I had worked for, they didn't give me 500TL (163$) that I deserved."

V8:" Sometimes I couldn't get what I deserved for my work. Sometimes I couldn't get it at all. I wish to work at a good job, I would like both to work and finish my school."

V9:" Wages are too low. Sometimes associations and the municipality come home for reconnoitring. They cut they aid saying that I pay 500TL(163$) for the rent. When they see a bachelor Syrian girl, they want to marry her directly, but they don't want civil marriage. The municipality take our aid card saying that there are two people working at home. However, 5 people are working at some homes, but their cards are not taken."

- Those who think that they will not find a job in which they can practice their own professions are 3 people. The views of immigrants in this regard are as follows:

V4:" I cannot practice my own profession. I'm having trouble in finding rental housing. We encounter prejudices."

V11:" I do not have a graduation diploma. I'm not able to get my diploma from Syria.

If I can, I can work. I would like to do my profession, but it seems difficult. Syrians are not given houses. Rents are high. My father was the boss at work, he was also a foreman, but they employed him like a peon here. When they noticed that he is a foreman, they promopted him but his salary remained the same, he takes 1.500TL. (489$)"

- Those who do not want to work with someone with the thought that they will be humiliated are 2 people. The views of immigrants in this regard are as follows:

V5:" They employ us with low wages. They employ us at heavy work, they abuse us, they humiliate us. I do not want to work for/with someone else."

V9:" Some people look down on us. In fact, our lives in Syria are surperior than theirs."

- Those who said that they have difficulties in finding a job because they do not know Turkish are 2 people. The views of immigrants in this regard are as follows:

V12:" My goal is to continue my school after learning Turkish."

V15:" There is no job guarantee. I find it difficult to communicate because I don't know Turkish."

In summary, evaluating the findings above; it can be stated that Syrian immigrants receive less wages compared to Turkish workers, they work under more difficult circumstances, they do now receive their wages in some cases, they lack the job security and continuity, they have difficulties because of not knowing Turkish language in the business environment in which they work. It is noteworthy that unemployed Syrian immigrants do not want to work at hard works for low wages, they cannot practice their own professions, they don't want to be humiliated in the work environment, and they cannot speak Turkish language.

5. CONCLUSIONS AND RECOMMENDATIONS

It is observed that the obstacles in integration into the labor market immigrants face in different countries of the world are largely similar to the obstacles they face in the labor market participation in Turkey and in Konya province in particular. These are mainly that they can't speak the language they live in, the possibility of finding jobs in difficult conditions requiring more labor and working hours with loew wages compared to locals, the lack of security and continuity in their work, they are not able to reflect the personal qualities they have, and inadequate legal regulations that make it difficult for their participation into labor market.

When the responses Syrian immigrants gave to the question "What are the main problems you encounter while working in working environment?" are examined, under the qualitative study in Konya province intended for identifying the obstacles Syrian immigrants encounter in their integration into the labor market, most of the immigrants (10 of them) stated that they experienced being employed for lower wages than they deserve and non-payment of wages. The conditions of employment based on low wages such as agriculture, construction, storage experienced in labor-intensive areas in Karaca and Doğan's study (2014) have the qualities that support our findings. In addition, forcing Syrians to work for a low wage, and non-payment of

wages after work, the police station's requirement for a certified interpreter when they are directed to the police station, and the interpreter's demand for 100TL *(32,6$)* for interpretation, Syrians' fear of the police, the fear of deportation, and being unable to ask for their rights because they don't have money (Karaca and Doğan, 2014) also support the obtained results. Besides, Ulukan's view (2008) that "Immigrants often face with unemployment in the labor market, they are obliged to accept low-paid and unskilled jobs in order to maintain their lives." supports our findings.

Those who think that they will be exploited by being worked in harsh conditions are one-fifth of the immigrants (4 people). Akpinar stated (2009) that immigrant workers are worked long hours during the day by force if necessary. Because there are a large number of illegal migrant workers wandering around unemployed, these put pressure on those who are received to work. Hired immigrant workers are laid off after work for 1-2 months, and the post is filled with new one immediately. The view that "the employers mainly short-change these workers who they make them work long hours during the day and harsh work, and sometimes they do no payment at all" supports our findings.

Those who think that there is no continuity and safety at work are 3 people. The precarious, lack of job security, non-permanent (seasonal) employment conditions that are experienced in labor-intensive areas support our findings.

Those who think that they are humiliated in the working environment are 2 people. Dedeoglu's view (2011) that "Azerbaijani immigrant women and children are socially excluded, and they are sometimes exposed to physical and verbal violence, their migration experience and social exclusion influence not only adult immigrants but also the new growing generation, exclusion from education and health services increase the risk of being faced with poverty and social exclusion for the more needy children to these facilities" is in line with our findings.

Those who think that they have difficulties because they do not know Turkish language are 2 people. Chiswick (1978) described immigrants' knowing the language of the country they emigrate as human capital, in addition, the views that "as cultural and linguistic differences among the natives and immigrants decrease, as they learn the language, differences in economic opportunities will disappear over time" are parallel to our findings. (Cited by Portes and Zhou, 1992)

Those who think that they are getting unskilled through being unable to practice their own professions are 2 people. Ekiz-Gökmen's (2011) view that "being employed out of the training they have received and the quality they own cause immigrant women to be unskilled, causing educated immigrant women to be unskilled through being employed in low-skilled jobs with low wages is the most important problem they experience in the market." supports our findings.

The answers given to the question "What are the main problems you encounter while finding work?", most of the immigrants (5 of them) think that they will be exploited by the employer through being employed with low wages. According to Ulukan (2008), although low-paid work seems to be the survival strategy of immigrants, being obliged of Syrians to work with little wages and non-payment of wages after working raise the idea of not working in the present circumstances in some immigrants.

Those who think that they will not be able to find a job related to their professions are 3 people. The reason for this opinion is that their diplomas they received in their country are not valid in Turkey. Those who do not want to work for someone else with the opinion of being humiliated are 2 people. This view has come to the fore for those who have a certain social status in Syria, and have better financial opportunities. Those who say that they have difficulties in finding a job because of not knowing Turkish are 2 people. The ones who have this view think that KOMEK Turkish course will be useful to address this shortcoming of them.

In order to ensure a higher rate of integration of Syrian immigrants into the labor market, it is evaluated that;

- Beside the continuation of Turkish courses providing continuity, in particular, giving training for acquiring professional skills in order to find employment opportunities in manufacturing and in fields not requiring much expertise,

- Encouraging employers in order to be employ them in the open jobs in the manufacturing sector in Konya,

- Taking measure for employment in the agricultural sector in which a decline has been experienced in recent years in Konya,

- Making arrangements for those who can present graduation and training documents to do their professions,

- It would be useful to audit employers on job security and abuse issues.

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HEDGING OIL PRICE RISK BETWEEN OIL IMPORTER AND OIL EXPORTER COUNTRIES A CASE STUDY FOR TURKEY AND MEXICO

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Abstract

Substantial and unpredictable movements in oil prices could harm the macroeconomic performance of oil exporting and importing countries. Some countries try to take precautions against this exposure, yet solutions have not proliferated. This paper tries to propose a mitigation solution to the adverse effects of volatility in oil market. In this regard, macroeconomic effects of oil price changes on oil exporting and importing countries are outlined first. Then, a bilateral contract between Mexico and Turkey, two oil trading countries, is drafted. The hedge model in this contract is composed of a couple of different hedge strategies which are valued via Monte Carlo simulations. The performance of proposed hedge strategies with respect to the government revenues and expenditures are calculated through three years. Results show that zero-cost collar strategy might serve as an effective protection against oil price fluctuations for both countries.

Keywords: Hedging, Oil Price Risk, Monte Carlo Simulation

I. IMPORTANCE OF OIL PRICE RISK FOR OIL EXPORTING AND OIL IMPORTING COUNTRIES

Macroeconomic performance of oil importing and exporting countries depends significantly on the changes of oil prices worldwide. Economic growth, foreign exchange rates, interest rates, budget deficit and current account deficit which could be referred to as *Macroeconomic Key Performance Indicators* - KPIs have tended to fluctuate during the periods in which oil prices were volatile. Recent volatility in oil markets, once again, triggered concerns about the impact of oil price shocks on Macroeconomic KPIs around the world. In this section, importance of oil price volatility for oil exporting and oil importing countries will be analyzed. Turkey, a major oil importing country, has exogenous dependency in energy sector and upward fluctuations in oil price has adverse impact on Turkish economy. On the other hand, Mexico, a major oil exporter, will benefit from such a move. However, the reverse movement of the price will affect these countries the other way around. Changes in oil prices lead to significant real income shifts among oil exporters and oil importers suggesting that when the oil prices do not remain stable, at least one of the counterparty will gain at the expense of the other. [1]

In this context, Turkish economy and its vulnerabilities will be examined in line with oil price movements. Turkey is a developing country with total energy consumption of around 130 million

tones oil equivalent. GDP of Turkey is $735 billion and energy consumption is $26 billion. This means, with current crude oil prices (Brent $45/barrel), Turkey's energy expenditure is at its lowest with 4% of GDP since 2000s. Figure 1 shows how the oil price and total energy bill of Turkey behave concurrently. Figure 2 provides Pearson correlation results of ICE Brent yearly price averages (Y – axis) and Turkey's energy bill (X – axis). With an R score of 0.9739, there seems a significant positive relationship between price of oil and Turkey's energy bill. [2] Effects of oil price changes on GDP, current account deficit and interest & foreign exchange markets of Turkey are in order next.

First, high correlation between oil price and energy bill suggests that a rise in oil prices will increase Turkey's energy bill. As suggested in [3], increase in energy bill will potentially cause a decline in GDP growth. More specifically, lower oil prices improve household real incomes and non-oil corporate profits. This leads to increase in aggregate demand for consumer products. Decline in oil prices also relaxes the government budget. Hence, with lower oil prices, public and private sector will contribute the growth positively. On the other hand, higher prices in energy market increase energy bills of private and public sectors leading these parties to spend lower. While there are other variables that affect the growth in the long run, in the short run oil price increase has a negative effect on growth rates.[4] Interdependency of oil price and GDP can also be explained via transmission mechanism operating on two channels, namely demand and supply. From demand side, an unexpected increase in the price of imported crude oil reduces purchasing power of domestic households and the local income is being transferred to abroad. This causes a decline in aggregate demand. From supply side, during oil price increases, cost of production increases and hence aggregate supply shifts left. [5] In sum, during an oil price increase period, both the demand and supply decline and hence the growth of GDP suffers.

Second, Turkey's total imports including energy expenditures are higher than the total exports, which cause Turkey to experience a deficit in current account balance. Due to the this structural difference, Turkey is exposed to current account deficit increases during oil price hikes.

Third, with high oil prices and current account deficit, demand for foreign exchange to finance deficit increases. This causes TRY to depreciate and interest rates to increase. Mexico is a developing country with $1.2 trillion GDP and its oil production is 100 million tones. Mexico have traditionally funded more than one third of the government's spending by oil exports but with the declining oil prices and structural reforms, oil's contribution to government budget dropped to 20% which is still high enough to consider its effects. The dramatic declines in oil prices may have disruptive effects on growth, interest rates and foreign exchange currency as explained in [6]. The loss in oil revenues can strain government budget, and hence necessitate spending cuts or external borrowing.

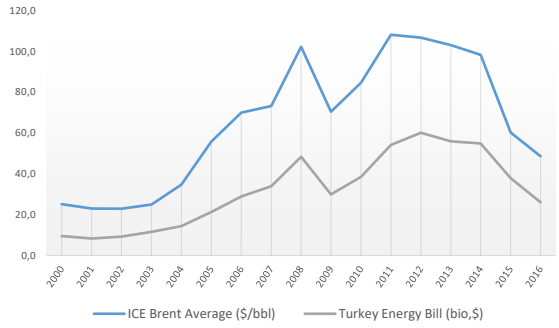

Fig. 1. ICE Brent Yearly Average Price / Turkey Energy Bill Amount

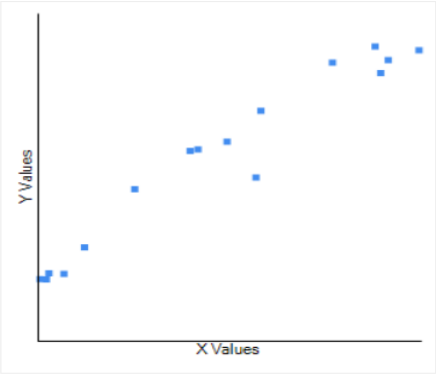

Fig. 2. ICE Brent Yearly Average Price / Turkey Energy Bill Amount - Pearson Correlation

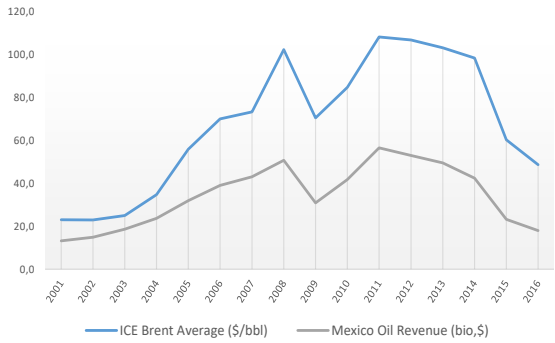

Fig. 3. ICE Brent Yearly Average Price / Mexico's Exports

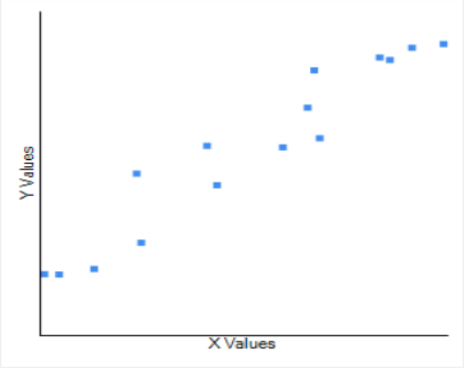

Fig. 4. ICE Brent Yearly Average Price / Mexico's Exports – Pearson Correlation

First, in case of spending cuts, government may increase taxes or decrease government spending which will increase the burden on economy. New tax rates or low public demand will affect the growth rate negatively. A price increase, conversely, will affect the economy via a transmission mechanism as follows. An oil price increase leads a wealth effect through revenue boost. Public and private parties consume more tradable and non-tradable products thanks to the income increase. On the other hand, increased consumption generates a scarcity of non-tradable goods and this boosts the price of non-tradable goods. According to these two channels, an oil price increase affect growth positively.

Second, in case of external borrowing, the cost of borrowing in low oil price market will be higher than the one in high oil price market. Financial institutions will charge extra spread due to the oil revenue loss. The cost of funding will increase not only for the government but also for all of the institutions in Mexico. Moreover, increase in interest rates, private investments and consumptions will decline which will result in a reduction in growth rate.
Third, in addition to the effects on growth and interest rate, declining oil revenue may cause depreciation in Mexico Peso. The decline in foreign exchange revenue will deteriorate the balance of payments and economy will require more foreign exchange reserves in low oil revenue times.

Figure 3 shows how the oil price and total exports of Mexico behave concurrently. Figure 4 provides Pearson correlation results of ICE Brent yearly price averages (Y – axis) and Mexico's

exports (X – axis). With an R score of 0.9610, there seems a significant positive relationship between price of oil and Mexico's exports. [7]

II. BILATERAL CONTRACT BETWEEN TURKEY AND MEXICO - A SOLUTION PROPOSAL

We believe that macroeconomic performance of both countries can simultaneously be improved regardless of the level of the volatility in the price of oil provided that a contract taking both the trade and risk management dynamics into account and ensuring better terms than those of risk market.

Such a contract can be superior to managing these risks in the risk markets individually since in the latter case, the country has to manage the market volume risk, financial cost of contract, counterparty risks and political risks separately. The contract between these countries provides a solution basically with real trade market, and this limits the risks of derivative markets which may disconnect from the real economy substantially.
In this study, a contract between these two countries is proposed in terms of the underlying asset, maturity, hedging instruments and hedging strategies.

- Underlying Asset: The ICE Brent Crude is the underlying asset due to the depth of volume, correlation with the abovementioned KPIs and availability of transparent price. Price of the underlying asset, ICE Brent Crude, is the average of relevant month.
- Hedging Maturity: At the inception, next 24 months will be fully hedged with monthly hedge contracts. Then, for the first year, at the end of each month, third year's exposure will be hedged monthly. In other words, first two years are hedged at the inception, and last year is hedged throughout the first year, making a total of three-years hedging period.
- Hedging Instruments and Strategies: No-Hedge strategy is the base (as is) case in which Turkey and Mexico will separately be exposed to market price changes. Second strategy fully hedges both exposures of both countries with futures priced via the model. Third strategy uses zero cost collar structures for full hedge.

Oil export revenue for Mexico and energy bill for Turkey are the variables on which the effects of proposed hedge strategies will be analyzed as a proxy for Macroeconomic KPIs defined in above sections.

III. HEDGE MODEL

Underlying asset have long followed a mean-reversion pattern from 1994 to 2000s but it changes to a Brownian motion process as of then as discussed in [8]. Hence, the model in this study is built on Brownian motion pattern. To this end, underlying asset follows below process:

$$dS_t = \mu S_t\, dt + \sigma S_t\, dW_t \qquad (1)$$

The solution to this Stochastic Differential Equation (SDE) is given by:

$$S_t = S_0 e^{(r_f - \frac{1}{2}\sigma^2)dt + \sigma dWt\sqrt{dt}} \qquad (2)$$

To generate asset prices, a path-dependent Monte Carlo simulation with 5,000 trials has been performed. In the simulation, daily prices are generated with following data:

- $r_f = 1.59\%$
- $\sigma = 28.50\%$
- $S_0 = \$45$ per barrel
- t = 1 days and T = 3 years
- Convenience Yield= 0
- Number of trials= 5; 000

For each month, 22 business days were assumed, hence in total prices for 792 business days for 3 years were calculated in each trial. Monthly averages were used to calculate collar structures consisting of call and put options with strikes generating zero-cost premiums. Future prices, on the other hand, are calculated based on:

$$F_t = S_0 e^{r_f dt} \qquad (3)$$

Given the simulation results, we have 36 monthly average prices of underlying asset, 36 zero-cost strategies, 36 future prices. These provide us with payout structures of no hedge, zero-cost collar, and future strategies. Payouts of these three strategies are calculated for the highest, lowest and mean price scenarios with respect to model-generated spot prices. The highest (lowest) price scenarios are formed by taking the highest (lowest) sum of 10 paths out of 5,000 trials. Mean price scenarios are formed in a similar manner. The aim to carve out these price scenarios is to demonstrate the effects of extreme cases on the Macroeconomic KPIs of both countries.

IV. RESULTS

As described above, the highest, lowest and mean prices generated via Monte Carlo for ICE Brent Crude is displayed in Figure 5. According to these results, last year (3rd year) averages of the highest, lowest and mean asset prices are $111.5, $22.1, $51.6 per barrel, respectively.

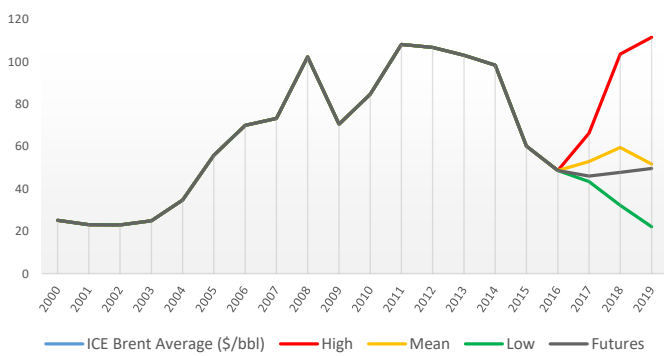

Fig. 5. ICE Brent Crude Yearly Average Prices

Instead of calculating cash-settle P&Ls for both countries in each strategy, we have directly shown the effects of the final strategy price on the Macroeconomic KPIs as the prices to be born in each strategy is the final price of purchasing (for Turkey) and selling (for Mexico). To be able to determine the level of Macroeconomic KPIs with each final strategy price, we need to estimate how the relevant indicators will behave.

To achieve this, regression analysis were performed. More specifically, energy bill of Turkey and oil export revenue of Mexico were regressed over Brent prices separately. The results of the regressions are as follows. Both regressions produce almost zero p – values, implying significant relationship.

Energy Bill of Turkey = -4.25 + 0.55 x ICE Brent
Oil Revenue of Mexico = 4.03 + 0.45 x ICE Brent

With these equations, energy bill of Turkey and oil export revenue of Mexico can now be estimated under the highest, lowest and mean price scenarios generated by above model for no hedge, zero-cost collar and future hedge strategies. The results of these strategies for Turkey and Mexico are given in Figures 6 & 7, Figures 8 & 9, respectively. As seen in the graphs, no hedge strategy exposes both countries to effects of volatile oil prices. On the other hand, future hedge strategy eliminates all the effects of volatility whereas zero-cost collar strategies provide a range whereby both countries can benefit from market movements upto strike levels and locks-in the strike level prices for the rest of price scenarios. Compared with futures hedge strategy, zero-cost collar strategy seems better fitting as it provides some room to benefit from market movements to both countries.

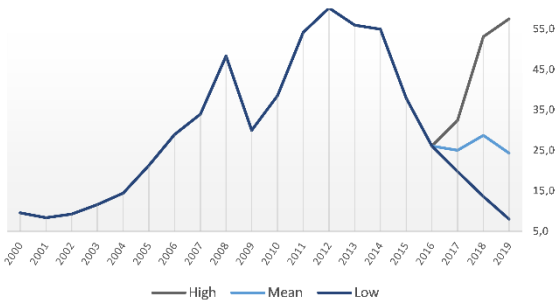

Fig. 6. No Hedge Strategy Results for Turkey's Energy Bill

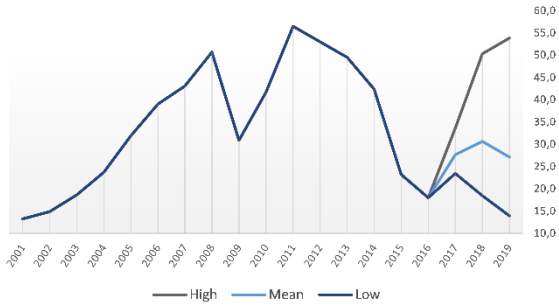

Fig. 8. No Hedge Strategy Results for Mexico's Oil Export Revenue

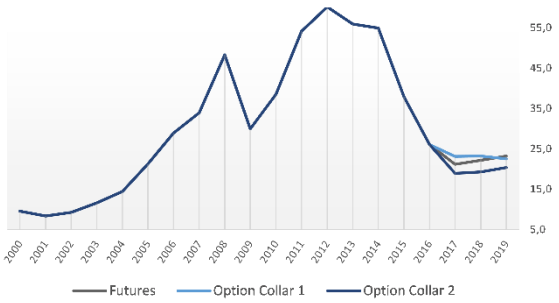

Fig. 7. Zero-Cost Collar and Futures Strategy Results for Turkey's Energy Bill

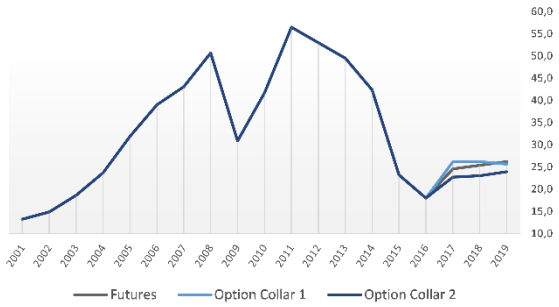

Fig. 9. Zero-Cost Collar and Futures Strategy Results for Mexico's Oil Export Revenue

V. CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE STUDIES

In this study, effects of oil price on macroeconomic performances of Turkey and Mexico are analyzed. Since macroeconomic performance of both countries are dependent heavily on oil price, volatility in the price of oil may deteriorate economic performance of the countries if unhedged.

To understand the effects of hedging oil price risk, a bilateral contract of a specific nature has been proposed. Monte Carlo simulation was used to price different hedge strategies and regression analysis were used to calculate the payout effects of hedge strategies on the Macroeconomic KPIs of both countries. The results suggest that both countries can benefit from zero-cost collar hedge strategies. Hedges will be put in place immediately at the inception for the first 2 years on monthly basis, and then will gradually be extended on a monthly basis to 3rd year during the first year.

Recommendations for future studies are outlined below:

- Pricing of the underlying is done with Brownian motion. For future studies, this method can be scrutinized by comparing with mean-reverting process.
- In this study, strikes levels of call and put options in zero-cost collars are near at the money (ATM) levels for all of 3 years. Strike levels can be adjusted to better reflect budget sensitivities of both countries. For example, range of the strike levels may be widened for each of the following 2nd and 3rd year. In the event that oil prices successively increase (decline) as opposed to oscillating, call (put) option will start and continue to work and exporting (importing) country will find itself in an unwanted position. A widening strike range, thus, provides both countries with improved market participation as compared with ATM strike levels in non-oscillating price movements. Furthermore, widened strikes will ensure sufficient time to execute structural policies without losing opportunities of market participation. Finally, call and put options in the zero-cost collar strategies are taken European. To better reflect the risk appetite of two countries, options with American barriers (kick-in, kick-out levels) might be studied.
- Risk free rate and volatility of the underlying are assumed constant. They could be stochastically modelled to better fit the changing dynamics of markets.
- Hedges are put in place in full amounts. Expected changes in the composition of Turkey's energy mix and Mexico's revenue structure over 3-year horizon could be reflected by adjusting the level of hedges.
- Convenience yield is assumed 0. Its effect on the price of the underlying and hence the hedge strategies could be further analyzed.
- A back-test can be performed to test the viability of the performance of the contract for both countries.

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EDUCATION LEVEL AND ECONOMIC GROWTH: THE EUROPEAN EXPERIENCE

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Abstract

This paper tried to investigate the nexus between economic growth and education level of the 14 selected European countries (Austria, Czech Republic, Finland, France, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and United Kingdom) over the period 1990 through 2013 on the yearly basis by exerting panel unit root tests, panel cointegration, panel fully modified ordinary least squares (FMOLS), panel dynamic ordinary least squares (DOLS), and panel causality test. In this paper as dependent variable, GDP has been employed as a gauge of economic growth. On the other hand, government expenditure on education as well as enrollment of student (primary and secondary) as measure of education level have been used as independent variables. Furthermore, capital and labor force have been exerted as control variables. The empirical results of FMOLS as well as DOLS demonstrate that government expenditure on education as well as number of enrollment of student have significant positive impact on economic growth. The results of common coefficient panel causality test determine that the relationship between enrollment and economic growth is bilateral causality. On the other hand, the findings of individual coefficient panel causality test depict that economic growth homogeneously causes both government expenditure on education as well as enrollment of student in uni-directional way.

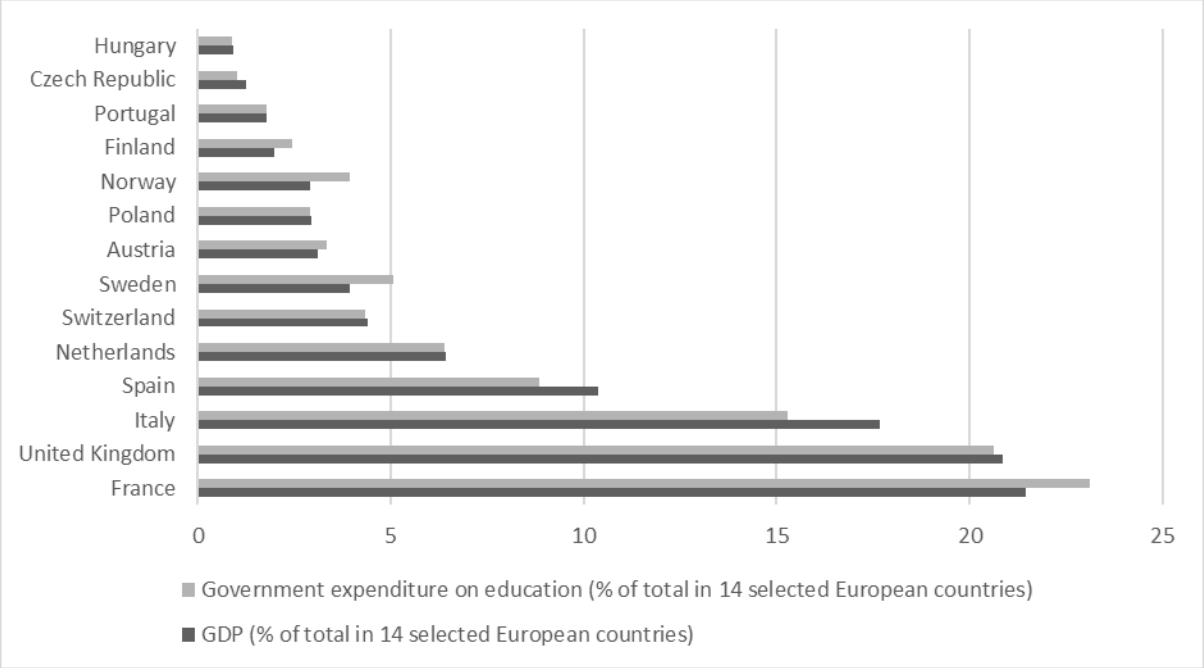
Keywords: Keywords: Education, economic growth, FMOLS, DOLS, panel causality test

1. Introduction

Amongst a few critical features of the advancement, the most vital role is played by schooling in a country. Basically, the short term economic objectives of a country is tried to direct by education short term strategies throughout consciousness project on welfare, environment, earning revenue, making life's standards as well as managing family size. However, these aims in the long term are associated with nation's productivity factor, advancement in human capital, growth in economic as well as advancement in socio-economic. Thus, people's efficiency, inventiveness, entrepreneurship and technology development is increased by education in some countries (World bank, 2010). According to Isola and Alani (2012), several developing nations

have tried to made remarkable development in certifying more availability of education which represented by advancement in literateness and rates of enrollment as well as better quality of schooling service.

Between European nations, investments of education primarily pay by government, with slighter fraction for private foundations of non-education sector, and also quite small for international companies. The government expenditure on education per student which is enrolled in the school (primary and secondary) and also GDP which are percentage of total of the 14 selected European countries depict in figure 1 over the period 1990 through 2013.



This diagram demonstrates that France has highest amount of government expenditure on education per student and Hungary has lowest amount. Due to the variety of these 14 European countries, the result of this study may extend to the whole of the European countries.

Based on the research which is done by Hanushek in 2005, one of the important issues for nations to get higher economic growth level is higher level of education. Empirical analyses claim that poor countries develop faster than rich countries in terms of cutting edge technologies since they have already been used and revolved by those rich countries. Although in order to utilize any advanced technology, professional administrators who could follow the leaders and learn from them seem to be needed which shows a country's human capital function. Recently,

the critical role of fundamental economic institutions and cognitive skills in the economic growth has been investigated in some studies. Education has positive relationship with labor force which results in higher productivity and a stable amount of output in economy. Furthermore, education has the ability to increase the innovative capacity of the economy through new findings in the areas such as technology and production, along with simplifying the process of spreading the latest knowledge of the technologies which leads to promoting growth.

The aim of the current study was to analyze the contribution of education to the economic growth of the selected European countries. The following purposes are the specific objective which are consistent with the main objective:

1- Create a relationship between education and GDP
2- Assess the amount of contribution education has on the labor force and capital
3- Investigate whether or not there is an ongoing relationship between education and economic growth

Since it has proven that education has a positive impact on economic advancement, three theories regarding this topic are going to be mentioned:

- The basic human capital approach states that overall workforce skills and capability through education and knowledge which make utilizing the current technology easier and more accessible and as a result economy will grow.
- The innovation approach claims that education helps establishing new ideas and technologies
- Knowledge transfer approach also states that education can be a tool to spread the knowledge in order to use it to create new and innovative technologies.

Even though the correlation between education and economic function has been sated, yet the causal relation and its direction have not been discovered. It could be the fact that there is no causality link between these two or economic growth can lead to a better educational achievement or more educated workforce increase the overall economic function. However, in a study by Patron and Vaillant (2012), it was claimed that the ratio of skilled-to-unskilled labor stock is considered as an essential factor to a stable economic growth.

2. Literature Review

In general, education and economic performance seem to be correlated. The firms can benefit from new economic opportunities through skilled forces which results in better economic performance and on the other side improved economic brings more educational resources. Furthermore, although the link between government expenditure and economic growth has been widely investigated, however it led to some inconsistency among the researchers. It has been claimed that government expenditure has a positive effect on economic growth. For example, Bhunia (2012) revealed that such an effect is through providing more facilities and equipment and services to schools. However, some other authors believe in a negative correlation between economic growth and government expenditure on education. In one study, Saad and Kalakech (2009) stated that in short-run the relationship between these two is negative but in long-run it is positive. Dastidar and Chatterji in 2015 in India found a different impact of education expenditure on economic growth based on education level such as primary, secondary and tertiary in public schools.

The result of researches in the last decade emphasize that societies need to improve educational policy to increase more growth. As Hanushek and Woessmann (2007, p.1) defined; "educational quality – particularly related to developing countries – is the key issue" in such a growth. Increased quality and quantity are the two main ways that education can be improved. In the quantity way, the hours of training enhance the different types of school achievements including reading, mathematics and science. In the quantity way, human capital productivity can be boosted in the long-run by increasing the quantity of education. In addition, more skilled labors cause better innovation and as a result improvement in the economy. Hanushek and Woessmann (2007, p. 24) in their book revealed that education plays a critical role in educating human capital, paving the way for more advanced research and also spreading the technologies. So according to Hanushek and Woessmann (2007) Students get more familiar with new technologies through schooling however they did not believe in any direct link between development and quantity of education.

Barro (1991) investigated the economic growth in a cross section of countries by using sample of 98 countries over the period 1960 through 1985. The results of his study demonstrate that enrollment of students in primary school as well as secondary school have significant positive

impact on GDP which represent that by increasing number of students in primary and secondary school level of GDP will go up. In another research which is done by Levine and Renelt (1992) about a sensitivity analysis of cross country growth regressions there are similar results. They found out that the enrollment rate of student in primary and secondary schools have significant positive influence on level of GDP. Mankiw et al., (1992) explored the economic theory to achieve determinants of economic growth by using annual data of almost all countries over the period 1960 throughout 1985 retrieved from real national account. The results of their study show that the rate of enrollment of student in primary and secondary school have significant impact on growth of GDP by exerting ordinary least squares.

According to preceding literature reviews it has been proved that government expenditure on education as well as enrollment of students have impact on level of economic. Based on previous scholars which mentioned above this study tried to investigate the relationship between economic growth and level of education.

3. Methodology

3.1 Sample of the Study

The data of this paper has been retrieved from World Bank data bank for 14 selected European Countries over the period 1990 through 2013. This panel data conducts 336 country- year observation. To achieve the end of this paper Eviews 9 has been employed.

3.2 Model Specification

In this paper five variables have been selected to demonstrate what is the nexus among level of education and economic growth in 14 selected European countries. Therefore, GDP as the dependent variable and government expenditure on education as well as enrollment of students as independent variables have been exerted. In addition, labor force and gross capital formation have been entered as control variables to avoid biasedness of coefficients. The panel framework model of this paper is as follow:

$$LNGDP_{it} = \beta_1 + \beta_2 LNGOV_{it} + \beta_3 LNENR_{it} + \beta_4 LN\,L_{it} + \beta_5 LNK_{it} + u_{it}$$

Where i changes from 1 to 14 refers to countries, t refers to years from 1990 to 2013, LNGDP is the natural logarithm of a proxy of economic growth, LNENR is the natural logarithm of number of students which enrolled in primary and secondary schools, LNLAB is the natural logarithm of Labor force, LNCAP is the natural logarithm of gross capital formation and u is error term.

3.3 The panel unit root test

For assessing the existence of unit root in univariate time series, the DF (Dicky Fuller) or ADF (Augmented Dicky Fuller) have been employed traditionally. However, these tests have been proven to have low power for rejecting the non-stationary under the null hypothesis and limiting distributions which are complicated and not well defined as well. Because of these disadvantages lots of attentions have been recently attracted to the investigating about unit root test. (FMOLS18). Using the information cross sectional will increase the power of the unit root test (Abuaf and Jorion ,1990). There are different types of tests such as Levin et al. (2002), LLC hereafter; Dickey and Fuller (1979, 1981), Breitung (2000), Im et al. (2003) (IPS hereafter), Maddala and Wu (1999) and Choi (2001) showing the use of Phillips and Perron (1988) mixed by Fisher (1932), and Hadri (2000) which have been used for testing the panel unit root test which their power is more than unit root tests employed for individual series. In this paper, we utilized Levin, Lin, Chu (LLC) as common root test and Im, Pesaran, Shin (IPS), Fisher-ADF and Fisher-PP to determine the order of integration for series in this study.

3.4 The panel cointegration tests

The panel cointegration test is expected to have as the same advantages in power that are presented as when testing unit roots in panel data. We conducted Pedroni (1999) method in the panel cointegration test to determine if there is possibility of long-run relationship between labor force, gross capital formation, government expenditure on education, enrollment in primary and secondary schools and GDP in their natural logarithm form.

The time series panel regression is regarded by Pedroni (1999) as follow:

$$\gamma_{it} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \ldots + \beta_{Mi} x_{Mi,t} + u_{i,t}$$

where m = 1...M are the number of explanatory variables which are potentially cointegrated; t = 1...T and i = 1...N. By employing the Dicky Fuller or Augmented Dicky Fuller for $\hat{u}$, it can be determined whether they are I (0) thereby the cointegration between these variables will be confirmed. For instance:

$$u_{i,t} = \rho_i \, u_{i,t-1} + \sum_{j=1}^{\rho i} \varphi_{i,j} \, \Delta \, u_{i,t-j} + v_{i,t}$$

He develops finite-sample properties and asymptotic distribution of testing statistics to test the non-cointegration under the null hypothesis in the panel. Heterogeneity is allowed in the tests among cross sections of the panel, in both the long-run and dynamic cointegration vectors. Two test types have been suggested by Pedroni. The first one which there are four statistics in it is on the basis of within group approach. They are panel rho-statistic, panel v-statistic, panel PP-statistic, and panel ADF-statistic. Under this approach the autoregressive coefficients through different cross sections are pooled for testing the unit root of estimated errors. The second type which Pedroni has proposed relies on the properties which are derived from between-group characteristics, which three statistics are included in this type. They are group PP-statistic, q-statistic and group ADF-statistic. The average of estimated coefficients which be calculated individually is the basis of these statistics.

3.3. FMOLS and DOLS

There are a lot of estimators available which include within-group and between-group estimators. For estimating the panel coefficients, investigators use panel FMOLS and panel DOLS as the most common techniques. Pedroni between- group overweighs within-group estimators because of some reasons. Pedroni's (2001) approach is implemented in this article.

Although comparing the accuracy of two tests is subjective, Maeso-Fernandez et al. (2006) noted “the FMOLS test provides more robust results than the DOLS test because fewer assumptions are needed”. On the other hand, Ouedraogo (2013), argues that “the DOLS is a more powerful method with disadvantage of lowering the number of degrees of freedom due to the leads and lags”.

According to Harris and Sollis (2003), to answer the question of whether DOLS or FMOLS is preferred, the empirical evidences have been conflicting. The type of empirical modelling, number of variables, amount of data used in the model, etc. matter too much and may play a crucial role in generating robust outcomes.

3.4. Panel Granger causality tests

Existing cointegration relationships among the variables also empower possibility of a causal nexus between the variables and their direction. The causality direction can change according to the test results.

4. Empirical results

4.1 Panel unit root

For investigating the integration degree of LNGDP, LNCAP, LNENR, LNGOV, and LNLAB the panel unit root tests have been applied. The table I shows the results for unit root test that associated with the full sample.

Table I: Unit root tests

	Level				*First differences*			
statistics	Levin, Lin & Chu	Fisher-ADF	Fisher-PP	IPS	Levin, Lin & Chu	Fisher-ADF	Fisher-PP	IPS
LNGDP								
τ_t	-0.1794 (0.4288)	37.9876 (0.0986)	14.8246 (0.9802)	-2.0297 (0.0212)	-9.6138* (0.0000)	96.7152* (0.0000)	103.443* (0.0000)	-7.1476* (0.0000)
τ_μ	0.0913 (0.5364)	5.7890 (1.0000)	6.2518 (1.0000)	3.8544 (0.9999)	-11.4705* (0.0000)	134.331* (0.0000)	136.333* (0.0000)	-9.4258* (0.0000)
τ	8.2210 (1.0000)	0.4771 (1.0000)	0.4813 (1.0000)	-	-11.7075* (0.0000)	166.886* (0.0000)	170.031* (0.0000)	-
LNCAP								
τ_t	1.1326 (0.8713)	41.4064 (0.0493)	37.5265 (0.1077)	-1.5850 (0.0565)	-11.1242* (0.0000)	121.831* (0.0000)	143.869* (0.0000)	-8.9108* (0.0000)
τ_μ	-1.6530 (0.0492)	20.9694 (0.8266)	15.9493 (0.9666)	1.2411 (0.8927)	-11.7137* (0.0000)	152.676* (0.0000)	170.246* (0.0000)	-10.5118 (0.0000)
τ	5.0280 (1.0000)	2.0058 (1.0000)	2.4753 (1.0000)	-	-14.4216* (0.0000)	210.929* (0.0000)	218.449* (0.0000)	-
LNENR								
τ_t	-2.5480 (0.0054)	22.7362 (0.7461)	21.8758 (0.7870)	-0.1213 (0.5483)	-5.0595* (0.0000)	73.8537* (0.0000)	77.3505* (0.0000)	-5.1531* (0.0000)
τ_μ	-3.7710 (0.0001)	50.2928 (0.0060)	36.0114 (0.1423)	-0.9981 (0.1591)	-5.6087* (0.0000)	95.2891* (0.0000)	91.3100* (0.0000)	-6.3605* (0.0000)
τ	0.3573 (0.6396)	39.0768 (0.0797)	44.1827 (0.0266)	-	-8.9419* (0.0000)	144.253* (0.0000)	137.462* (0.0000)	-

LNGOV								
τ_t	-3.0498 (0.0011)	47.3376 (0.0126)	44.9820 (0.0222)	-2.7750 (0.0028)	-11.8429* (0.0000)	138.628* (0.0000)	186.381* (0.0000)	-10.3893* (0.0000)
τ_μ	-4.2170 (0.0000)	71.3859 (0.0000)	74.9920 (0.0000)	-4.5813 (0.0000)	-14.5420* (0.0000)	187.099* (0.0000)	210.963* (0.0000)	-12.9421* (0.0000)
τ	1.3694 (0.9146)	10.9417 (0.9984)	12.5470 (0.9947)	-	-16.4997* (0.0000)	268.973* (0.0000)	282.523* (0.0000)	-
LNLAB								
τ_t	-1.7778 (0.0377)	46.3950 (0.0159)	49.6253 (0.0071)	-0.8760 (0.1905)	-6.9718* (0.0000)	76.6510* (0.0000)	89.2765* (0.0000)	-5.0374* (0.0000)
τ_μ	-0.7930 (0.2139)	24.0373 (0.6796)	12.8874 (0.9934)	3.7129 (0.9999)	-7.9047* (0.0000)	93.8609* (0.0000)	90.4667* (0.0000)	-6.5405* (0.0000)
τ	8.7811 (1.0000)	2.2951 (1.0000)	2.4770 (1.0000)	-	-6.2664* (0.0000)	95.5089* (0.0000)	108.153* (0.0000)	-

Note: (*) indicates that the estimated parameters are significant at the 1% confidence interval. Where τ_t refers to trend plus intercept, τ_μ refers to intercept, τ refers to without trend and intercept.

Regarding the results, it can be seen that the unit root is rejected at 1% level under the null hypothesis for all variables in their first difference whether trend and intercept are included or not while, it does not happen for them at their level. Hence all variables are integrated to the order of 1 I (1).

4.2 Panel cointegration test

After having established that LNGDP, LNCAP, LNENR, LNGOV and LNLAB are I (1), authors proceed to test if there exist a long-run nexus between them by exerting Pedroni's panel cointegration technique. The results of the panel cointegration tests are presented in table II which depicted seven various types of statistic that used to investigate whether there is cointegration or not.

Table II: Cointegration Tests for Panel Data for the EU-14 countries (1990-2013).

Methods	Within dimension (homogeneous)			Between dimension (heterogeneous)		
	Test	Statistics	Prob.	Test	Statistics	Prob.
Pedroni residual cointegration						
	Panel v-Statistic	0.443878	0.3286	Group rho-Statistic	2.124690	0.9832
	Panel rho-Statistic	1.012316	0.8443	Group PP-Statistic	-2.640641*	0.0041
	Panel PP-Statistic	-2.142567**	0.0161	Group ADF-Statistic	-2.931769*	0.0017
	Panel ADF-Statistic	-1.401388***	0.0805			

Note: (*), (**) and (***) indicate that the estimated parameters are significant at the 1%, 5% and 10% confidence interval, respectively

With the exception of the panel rho-statistic, group rho-statistic and panel v-Statistic for the full sample, all the other statistics reject the null hypothesis of no cointegration at the level of 10% for 14 selected European countries which are under the investigation.

4.3 FMOLS and DOLS

Table III represents the estimation results of FMOLS as well as DOLS which are exerted Pedroni's estimation technique based on yearly data over the period 1990 through 2013.

Table III: Panel (FMOLS) and (DOLS) Estimations for the EU-14 countries

Variable	FMOLS	DOLS
LNCAP	0.948303 (10814.54)*	0.962781 (89.29126)*
LNENR	0.124231 (1122.518)*	0.102304 (5.774116)*
LNGOV	0.417664 (80.91528)*	0.320191 (4.711139)*
LNLAB	0.016757 (248.6805)*	0.024407 (1.739043)***

Note: (*) indicates that the estimated parameters are significant at the 1% confidence interval.

The t-test statistic and the estimator for DOLS are with 1 lag and 1 lead. Table III presents that the range of long run elasticities is from_0.01 to 0.96 and have 1% of significance level, except for LNLAB in DOLS which has 10% in the significance level. It can be seen that the long run elasticity for all variables in this panel framework is inelastic and sign of coefficients is positive for both FMOLS and DOLS which moves with the expectations. Based on Ouedraogo (2013), the power of DOLS is more than FMOLS with disadvantage of losing more degrees of freedom because of the leads and lags".

4.4 Panel causality test

Table IV shows the short-run Granger causality results. The results are on the basis of annul data in a panel framework over the period of 1990 till 2013. The optimal lag structure of two years was used by employing Schwarz Bayesian. Criterion. The estimations of F-statistics in a common coefficient panel causality analysis indicate that there is only one bi-directional causality between enrolment and GDP and there is no causality relationship between GDP and government expenditure on education in short run. In summary, we can conclude that there is uni-directional causality from LNGDP to LNCAP, LNGOV to LNENR and LNENR to LNLAB

and another bi-directional relationship among LNCAP and LNENR. We adopted another approach by Dumitrescu and Hurlin (2012) with opposite assumption allows coefficients to be different through all cross sections by utilizing the granger causality test for each individual separately.

The Z-bar statistics in this output reveal that there is a uni-directional nexus from LNGDP to LNENR. In addition, LNGDP Granger- causes LNGOV at 10% confidence level. For other results we elicit bi-directional relationship between LNLAB and LNENR and LNCAP and LNGDP and uni-directional nexus from LNCAP to LNENR and LNGDP to LNLAB as well.

Table IV: Panel causality tests (lags = 2).

Granger causality test (common coefficient)			Granger causality test (individual coefficient)		
Pairwise Granger Causality Tests			Pairwise Dumitrescu Hurlin panel causality tests		
Null hypothesis:	F-stat.	Prob.	Null hypothesis:	Zbar-stat.	Prob.
LNENR does not Granger Cause LNGDP	3.03034	0.0498	LNENR does not homogeneously cause LNGDP	1.41350	0.1575
LNGDP does not Granger Cause LNENR	8.81632	0.0002	LNGDP does not homogeneously cause LNENR	5.67542	0.0000
LNCAP does not Granger Cause LNGDP	2.25220	0.1069	LNCAP does not homogeneously cause LNGDP	2.05259	0.0401
LNGDP does not Granger Cause LNCAP	3.81984	0.0230	LNGDP does not homogeneously cause LNCAP	6.79713	0.0000
LNGOV does not Granger Cause LNGDP	0.85280	0.4272	LNGOV does not homogeneously cause LNGDP	-1.37374	0.1695
LNGDP does not Granger Cause LNGOV	1.68685	0.1868	LNGDP does not homogeneously cause LNGOV	1.74563	0.0809
LNLAB does not Granger Cause LNGDP	0.23401	0.7915	LNLAB does not homogeneously cause LNGDP	1.61371	0.1066
LNGDP does not Granger Cause LNLAB	2.12226	0.1215	LNGDP does not homogeneously cause LNLAB	5.13465	0.0000
LNCAP does not Granger Cause LNENR	7.65550	0.0006	LNCAP does not homogeneously cause LNENR	5.04770	0.0000
LNENR does not Granger Cause LNCAP	2.96406	0.0531	LNENR does not homogeneously cause LNCAP	0.57613	0.5645
LNGOV does not Granger Cause LNENR	4.27606	0.0147	LNGOV does not homogeneously cause LNENR	1.13506	0.2563
LNENR does not Granger Cause LNGOV	0.89530	0.4096	LNENR does not homogeneously cause LNGOV	-0.00939	0.9925
LNLAB does not Granger Cause LNENR	1.09112	0.3372	LNLAB does not homogeneously cause LNENR	3.55293	0.0004
LNENR does not Granger Cause LNLAB	2.75993	0.0649	LNENR does not homogeneously cause LNLAB	9.51487	0.0000
LNGOV does not Granger Cause LNCAP	0.99944	0.3693	LNGOV does not homogeneously cause LNCAP	-0.55364	0.5798
LNCAP does not Granger Cause LNGOV	0.29911	0.7417	LNCAP does not homogeneously cause LNGOV	1.55355	0.1203
LNLAB does not Granger Cause LNCAP	0.09706	0.9075	LNLAB does not homogeneously cause LNCAP	1.50389	0.1326
LNCAP does not Granger Cause LNLAB	3.22303	0.0412	LNCAP does not homogeneously cause LNLAB	3.83343	0.0001
LNLAB does not Granger Cause LNGOV	0.17056	0.8433	LNLAB does not homogeneously cause LNGOV	1.04852	0.2944
LNGOV does not Granger Cause LNLAB	1.02902	0.3586	LNGOV does not homogeneously cause LNLAB	0.64464	0.5192

5. Conclusion

As it has mentioned above there is not too much studies around the nexus between educational level and economic growth to check for quantitative measures. Hence, in this paper it has been tried to present quantitative models like FMOLS and DOLS to determine the degree of affect and the direction of them in addition to these two models panel tests were used like cointegration tests proposed by Pedroni (1999), Granger causality and unit root tests to determine if the series are stationary. In this study we found a lung run relationship between the variables as a result of cointegration test based on Pedroni (1999) method. Also by running the Granger causality test it has been emerged that there is a bi-directional relationship among enrolment and economic growth as well as enrolment and capital in short run. There is unidirectional nexus from GDP to CAP, GOV to ENR, ENR to LAB and CAP to LAB in short run as well. It means that by focusing on number of enrolments policymakers can enhance the economic performance in short run. The FMOLS and DOLS models revealed the quantitative measures for the impacts of educational variables (enrolment and government expenditure on education) along with control variables (capital and labor) on the economic growth as well as the sign of their coefficients that by looking at them we can see the positive signs which support our expectations. That is, by augmenting the amount of any of these variables the GDP will increase proportionally in long run. This article provides very useful information for policymakers in these countries around the nexus among educational level and economic growth as well as between control variables and economic growth to formulate effectual policies about enrolment and government expenditure on education to move toward the maximum level of economic growth.

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THE NEXUS BETWEEN CO2 EMISSIONS, ECONOMIC GROWTH AND ENERGY CONSUMPTION: EMPIRICAL EVIDENCE FROM MINT COUNTRIES

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Abstract

Throughout past three decades, two challenging environmental issues for government are air pollution as well as global warming. The main cause of these problems is due to the fact that carbon dioxide (CO2) emissions is increased around the world. This paper tries to explore the nexus between CO2 emissions, energy consumption as well as economic growth in the MINT countries (Mexico, Indonesia, Nigeria, and Turkey) over the period from 1981 through 2013. For achieving the aim of this study, Pedroni residual cointegration test, panel fully modified ordinary least squares (FMOLS), panel dynamic ordinary least squares (DOLS) as well as panel causality test have been exerted. The results demonstrate that there is a positive significant long-term relationship between CO2 emissions with energy consumption as well as economic growth. Furthermore, the results also depict that energy consumption and economic growth homogeneously cause CO2 emissions and CO2 Granger-causes energy consumption and economic growth and CO2 have bidirectional causal relationship.

Keywords CO2 emissions, panel fully modified ordinary least squares, panel dynamic ordinary least squares, panel causality test

1. Introduction

MINT countries which is included Mexico, Indonesia, Nigeria, and Turkey, is among the most rapidly growing emerging economies in the world; in which Indonesia account for an average around 4% annual GDP growth from 2009 to 2013, Mexico has close to 33% GDP growth over the period 2009 to 2013 based on the year 2009, Nigeria makes up about 1.7 times GDP growth from 2009 to 2013 based on the year 2009, and Turkey has roughly 25% GDP growth over the period 2009-2013 based on the year 2009. Although, this growth makes an increase in consuming energy, there might be some unforeseeable impacts on the environment as well as sources of energy. During 2013, MINT countries energy consumption were remarkable according to their consumption in 1981. Due to global warming, climate change has happened which is a remarkable occurrence in last decades (Sarker et al., (2016). Carbon dioxide (CO2) which is one the environmental contaminant that leads to climate change account for just over

80% of the greenhouse gas (Foster & Bedrosyan, 2014). Therefore, it is meaningful to investigate the causal nexus among CO2 emissions, energy consumption as well as economic growth.

Over the past couple decades, there are a lot of research which empirically investigate the nexus among environmental contaminant with economic growth, and also energy consumption and economic growth (Pao & Tsai ,2010). Although, these debates still are vague and arguable. The first one is the Environmental Kuznets Curve (EKC) hypothesis which is depicted that an inverse U-curve as the nexus among environment and economic advancement since 1991 which suggested by Grossman and Krueger (1991). According to this hypothesis, there are two steps which shows that by increasing per capita income, environmental degradation starts to go up and rich a peak and after that point the relationship will be inverse. There are many researches that tested EKC hypothesis as a standard of the nexus among economic advancement and environmental contaminant (eg. Stern et al., 1996; Andreoni & Levinson, 2001; Yandle et al., 2004; Cole, 2004; Dinda & Coondoo 2006; Fodha & Zaghdoud, 2010; Saboori & Sulaiman, 2013; Jebli & Youssef, 2015).

Stern et al. (1996) investigated the association among economic growth and environmental degradation by using cross-section data of more than 100 countries over the period 1990 through 2025. The findings of their research demonstrate the cross section regression support the EKC hypothesis. Andreoni and Levinson (2001) proposed that the nexus between income and environment is rational. Yandle et al., (2004) in their research found out that this hypothesis depends on the country and other factors such as GDP and trade liberalization. In another study which is done by Cole in 2004, the findings demonstrate that GDP have significant positive relationship with environmental degradation. Dinda and Coondoo (2006) investigated the nexus among income and CO2 emission by exerting panel cointegration analysis over 88 nations between 1960 through 1990. They realized that there is a bi-directional association among income per capita and CO2 emissions. Fodha and Zaghdoud (2010) analyzed the nexus among the level of economic and pollution in Tunisia over the period 1961 through 2004. Times series cointegration as well as causality test were applied in their study and they found out that GDP has long run nexus with CO2 emissions. In addition, income per capita is the unidirectional

cause of CO2 emissions. Likewise, the results of the studies which were done by Saboori and Sulaiman (2013) as well as Jebli and Youssef (2015) depicted similar results.

The second kind of research tried to examine the nexus among economic advancement and energy consumption which claimed that by increasing development in economic the amount of consuming energy will go up. There are some preceding scholars which analyzed this association (eg. Cheng, 1995; Asafu-Adjaye, 2000; Aqeel & Butt, 2001; Paul & Bhattacharya, 2004; Lee & Chang, 2008; Apergis & Payne, 2009; and Ouedraogo, 2013).

Cheng (1995) tried to examine the association among economic advancement and energy consumption by exerting time series cointegration analysis and granger causality test on the sample of US data over the period 1947 through 1990. He realized that there is no association between level of economic and consuming of energy. In another study, Asafu-Adjaye (2000) suggested that there is inconclusive relationship between them. Paul & Bhattacharya (2004) investigated the same topic in India and found that there is a bi-directional causality between economic growth and energy consumption by applying granger causality test as well as Johansen cointegration technique. Therefore, it can be concluded that the results of these studies are ambiguous.

In recent years, two previous approaches have been merged into scholars to examine the relationship between environmental degradation, energy consumption, as well as economic growth simultaneously (eg. Ang, 2007; Soytas et al., 2007; Ang, 2008; Halicioglu, 2009; Gökmenoğlu & Taspinar, 2016).

Ang (2007) by applying cointegration as well as VECM techniques investigated the association among pollutant emissions, energy consumption and GDP over the period 1960 through 2000 in France. He found that the long term association among variables have existed. In addition, the results also demonstrate that there is an uni-directional causality among energy use and economic output. Likewise, Ang in another study in 2008 support these findings. Gökmenoğlu and Taspinar (2016) examined this association in Turkey by adding foreign direct investment as another independent variable and applying bounds test as well as Toda–Yamamoto causality test. The results of their study depicted that there is a bidirectional causality between CO2 emissions and FDI, as well as CO2 emissions and energy consumption.

However, this topic has not taken into account for MINT countries. In this regard this study is an attempt to remedy this limitation by focusing on comparing the relationships between CO2 emissions, energy consumption as well as economic growth in MINT countries.

2. Data and methodology

2.1 Sample of the Study

This paper has utilized the data from World Bank data bank MINT countries (Mexico, Indonesia, Nigeria and Turkey) during 1981 through 2013. This panel data conducts 132 country- year observations. To achieve the end of this paper Eviews 9 has been used.

2.2 Model Specification

Three variables have been selected to denote whether there is any relationship among energy consumption, GDP as a proxy of economy growth and CO2 emission. Therefore, CO2 emission as the dependent variable and the LNGDP and LNENG as independent variable have been introduced in this study. The specification for this panel framework model is as follow:

$$\mathrm{CO2}it = \beta_1 + \beta_2 LNGDP_{it} + \beta_3 LNENG_{it} + u_{it}$$

Where i changes from 1 to 4 refers to cross sections countries, t refers to years from 1981 to 2013, LNGDP is the natural logarithm of gross domestic product, LNENG is natural logarithm of energy consumption and u is error term.

2.3 The panel unit root test

Using DF (Dicky Fuller) Or ADF (Augmented Dicky Fuller) has some disadvantages in panel framework data because of the low power for rejecting the null hypothesis of non-stationarity of individual time series as well as limiting distributions which are not well defined. These disadvantages motivated researchers to search about different unit root tests (Alexiou et al., 2016).

By employing more information from the panel data together, the power of the test will be enhanced (Abuaf and Jorion ,1990). Different types of tests are suggested by different

investigators such as Levin et al. (2002), LLC hereafter; Breitung (2000), Maddala and Wu (1999) and Choi (2001) show the use of Phillips and Perron (1988) mixed by Fisher (1932), Im et al. (2003) (IPS hereafter), and Hadri (2000) which suggest a diversity of panel unit root test whose power is much more than traditional tests employed for individual series (Yorucu & Bahramian, 2015). In this article, we used Levin, Lin, Chu (LLC), Im, Pesaran, Shin (IPS), Fisher-PP and Fisher-ADF to specify if the series are stationary or not and determine the level of their integration.

2.4 The panel cointegration tests

The panel cointegration test is expected to have as the same attributes in power which are emerged as when testing the panel unit roots. We exerted Pedroni (1999) panel method for cointegration test to determine whether there is any long-run relationship among LNGDP, LNENG, and CO_2 emission.

The panel regression for time series is considered by Pedroni (1999) as follow:

$$\gamma_{it} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \ldots + \beta_{Mi} x_{Mi,t} + u_{i,t}$$

where m = 1, ..., M are the number of variables which are assumed to be potentially cointegrated; t = 1,...,T and i = 1,...,N. By exerting the Dicky Fuller or Augmented Dicky Fuller for $\hat{u}$, it could be examined whether they will be I (0) by which the cointegration among these variables will be derived. For instance:

$$u_{i,t} = \rho_i u_{i,t-1} + \sum_{j=1}^{\rho i} \varphi_{i,j} \Delta u_{i,t-j} + v_{i,t}$$

For testing the null hypothesis of non-cointegration in a panel framework, he developed asymptotic distribution and finite-sample properties for test statistics. Heterogeneity has been allowed in the tests between cross sections, in both dynamic cointegration vectors and the long-run. Pedroni (1999) proposed Two types of test. The first one which four statistics are included in it is based on within group approach. They are panel rho-statistic, panel v-statistic, panel PP-statistic, and panel ADF-statistic. The pooled autoregressive coefficient through different cross sections are used to test for stationarity of estimated residuals. Another type of test as the second type includes 3 statistics which are based on between group characteristics The statistics in the

second approach are group PP-statistic, group PP-statistic and group ADF-statistic. The basis of these statistics is the mean of estimated coefficients that are calculated individually.

2.5. FMOLS and DOLS

Among a verity of estimators available which include between-group and within-group estimators for estimating the panel coefficients, researchers mostly use panel DOLS as well as panel FMOLS. According to Harris and Sollis (2003) "the FMOLS, a non-parametric approach, examines corrections for serial correlation whereas the DOLS, a parametric approach, estimates lagged first-differenced terms. The lags, lead and contemporaneous values of the regressors are augmented when DOLS is used". Pedroni (1999) argues that between-group estimators carry more weight over within-group estimators.

Maeso-Fernandez et al. (2006) noted "the FMOLS test provides more robust results than the DOLS test because fewer assumptions are needed". From a different perspective, Ouedraogo (2013), argues that the DOLS model is better than FMOLS since it is more powerful method with disadvantage of lower degrees of freedom because of the leads and lags". Of course this comparison is subjective between these two models. Actually it depends on some specific circumstances such as amount of data, empirical modelling, number of variables and so on. and they can have crucial role in producing robust results.

2.6. Panel Granger causality tests

Existing cointegration relationships among the variables also empower possibility of a causal nexus between the variables and their direction. The causality direction can change according to the test results.

3. Empirical results

3.1 Panel unit root

The tests of unit root for panel framework data have been implemented to specify the degree of integration among CO_2, LNGDP and LNENG. Three specifications have been used for testing of unit root in the panel data. First one has both deterministic trend and intercept in it, second has just intercept and not deterministic trend and last one without any intercept and trend. The result

is presented in Table I. The LLC and Breitung t-tests, IPS w-test, and Fisher-ADF, PP chi-square tests were considered to examine the panel stationarity in data under the null hypothesis of non-stationarity. Table I shows that none of the statistics reject the null hypothesis at the level of variables while, all of them reject the null hypothesis at the first difference of all variables. Therefore, all variables are integrated with order of one, I (1).

Table I: Unit root tests

	Level				*First differences*			
statistics	Levin, Lin & Chu	Fisher-ADF	Fisher-PP	IPS	Levin, Lin & Chu	Fisher-ADF	Fisher-PP	IPS
CO2								
τ_t	-3.4628 (0.0003)	18.5362 (0.0175)	18.6871 (0.0166)	-2.3397 (0.0096)	-10.5424* (0.0000)	93.9044 (0.0000)	137.078* (0.0000)	-11.0742* (0.0000)
τ_μ	-0.44996 (0.3264)	13.7539 (0.0884)	13.7945 (0.0873)	0.1344 (0.5535)	-11.7435* (0.0000)	99.4331* (0.0000)	103.256* (0.0000)	-11.7110* (0.0000)
τ	1.80156 (0.9642)	3.99595 (0.8575)	3.88479 (0.8674)	-	-12.0906* (0.0000)	135.686* (0.0000)	155.167* (0.0000)	-
LNENG								
τ_t	-0.5738 (0.2830)	11.4815 (0.1759)	10.4535 (0.2346)	-0.6613 (0.2542)	-9.0373* (0.0000)	75.1962* (0.0000)	100.026* (0.0000)	-9.5960* (0.0000)
τ_μ	-1.3768 (0.0843)	3.6902 (0.8839)	3.4368 (0.9040)	0.6531 (0.7432)	-10.0175* (0.0000)	87.2227* (0.0000)	91.4772* (0.0000)	-10.2065* (0.0000)
τ	3.1581 (0.9992)	0.5609 (0.9998)	0.4175 (0.9999)	-	-10.3420* (0.0000)	103.916* (0.0000)	105.037* (0.0000)	-
LNGDP								
τ_t	-1.71049 (0.0436)	13.0702 (0.1095)	18.3712 (0.0186)	-1.3342 (0.0911)	-9.1373* (0.0000)	72.1270* (0.0000)	227.178* (0.0000)	-9.2462* (0.0000)
τ_μ	2.1585 (0.9846)	0.32649 (1.0000)	0.30467 (1.0000)	4.0617 (1.0000)	-9.2117* (0.0000)	76.5524* (0.0000)	79.0325* (0.0000)	-9.0855* (0.0000)
τ	3.9453 (1.0000)	0.1572 (1.0000)	0.1651 (1.0000)	-	-9.6094* (0.0000)	88.3816* (0.0000)	89.4190* (0.0000)	-

Note: (*) indicates that the estimated parameters are significant at the 1% confidence interval. Where τ_t refers to trend plus intercept, τ_μ refers to intercept, τ refers to without trend and intercept.

3.2 Panel cointegration test

As it is mentioned above, this step is to check for lung run relationship between CO2, GDP and ENG by using technique for cointegration proposed by Pedroni (1999) which have seven different statistics to check the possibility of cointegration. Based on Pedroni (1999) the first 4 statistics are based on within group whose name is mentioned as panel cointegration statistics while the other 3 of these statistics are based on between group whose name is group statistics.

Table II shows the results for panel cointegration test. The results of this test emerged in Table II indicate that all statistics reject the null hypothesis of no cointegration at 5% confidence level

except panel v-statistic. So that, there is a long run nexus between CO2, LNGDP and LNENG. The long run specification among these variables is obtained by FMOLS and DOLS which in following part it will be discussed.

Table II: Cointegration Tests for Panel Data for the MINT countries (1981-2013).

Methods	Within dimension (homogeneous)			Between dimension (heterogeneous)		
	Test	Statistics	Prob.	Test	Statistics	Prob.
Pedroni residual cointegration						
	Panel v-Statistic	0.032089	0.4872	Group rho-Statistic	-1.688048**	0.0457
	Panel rho-Statistic	-1.976518**	0.0240	Group PP-Statistic	-3.636519*	0.0001
	Panel PP-Statistic	-3.206761*	0.0007	Group ADF-Statistic	-3.202130*	0.0007
	Panel ADF-Statistic	-2.652181*	0.0040			

Note: (*), (**) and (***) indicate that the estimated parameters are significant at the 1%, 5% and 10% confidence interval, respectively

4.3 FMOLS and DOLS

The results for DOLS and FMOLS are in terms of panel yearly data over the period between 1981 to 2013 with 132 observations and these results are shown in Table III. The t-ratio for each variable is in parentheses. By looking at the table, it can be seen that all coefficients have positive sign as it is expected. As interpretation from FMOLS model we can see that by 1% increase in energy consumption the CO2 will increase by about 1.58 metric tons per capita while, by the same amount increase in GDP the CO2 will increase about 0.15 metric tons per capita. Like FMOLS, DOLS results show almost the same quantitative results and the same sign as our expectation. Along with Ouedraogo (2013), DOLS model has more power and as its disadvantage less degrees of freedom because of lags including in the model.

Table III: Panel (FMOLS) and (DOLS) Estimations for the MINT countries

Variable	FMOLS	DOLS
LNENG	1.580082 (2.267002)**	1.681893 (2.502056)*
LNGDP	0.147158 (3.614876)*	0.132667 (3.094573)*

Note: (*), (**) and (***) indicate that the estimated parameters are significant at the 1%, 5% and 10% confidence interval, respectively

4.4 Panel causality test

To determine the short run causality, the Granger causality test has been exerted using 2 lags based on Schwarz Bayesian whose results are presented in table IV. F-statistics in this table show just one unidirectional causality from CO2 to LNENG in short run. Another significant causal relationship in this table is between CO2 and LNGDP which is bi-directional and significant at 10% confidence level. The other approach that we used for causality test is presented by Dumitrescu and Hurlin (2012) is the method in which coefficients can change across the individuals by employing Granger causality separately for each individual cross section. The results represented with Z-bar statistics show two unidirectional nexuses. One of them is from LNGDP to CO2 and the other one is from LNGDP to LNENG. Based on this approach there is no causal nexus between CO2 and LNENG in short run and they don't granger cause each other.

Table IV: Panel causality tests (lags = 2).

Granger causality test (common coefficient)			Granger causality test (individual coefficient)		
Pairwise Granger Causality Tests			Pairwise Dumitrescu Hurlin panel causality tests		
Null hypothesis:	F-stat.	Prob.	Null hypothesis:	Zbar-stat.	Prob.
LNENG does not Granger Cause CO2	1.28714	0.2799	LNENG does not homogeneously cause CO2	0.34140	0.7328
CO2 does not Granger Cause LNENG	4.24627	0.0165	CO2 does not homogeneously cause LNENG	-1.08376	0.2785
LNGDP does not Granger Cause CO2	2.39562	0.0955	LNGDP does not homogeneously cause CO2	1.83861	0.0660
CO2 does not Granger Cause LNGDP	3.34330	0.0387	CO2 does not homogeneously cause LNGDP	0.97295	0.3306
LNGDP does not Granger Cause LNENG	1.38129	0.2553	LNGDP does not homogeneously cause LNENG	3.43165	0.0006
LNENG does not Granger Cause LNGDP	1.43924	0.2412	LNENG does not homogeneously cause LNGDP	1.38420	0.1663

4. Conclusion

The main aim of this study was to check for nexus among CO2 emissions, economic growth and energy consumption in MINT countries over the years between 1981 and 2013. To reach the aforementioned linkage we used unit root test, cointegration test, causality test and FMOLS and DOLS models in a panel framework data. Having a long run relationship for variables was construed from panel cointegration test by the output that specified a cointegration relationship between variables which means that they will move together in long run.

The result for causality which is derived by exerting Granger causality test showed a unidirectional causality from CO_2 to energy consumption and a bi-directional Granger causality between LNGDP as a proxy of economy growth and Carbon Dioxide emission in short run.

In addition to above we used FMOLS and DOLS models to determine the quantitative measures and signs. These models revealed that all coefficients in both models are positive. In fact, it indicates that along with upward growth in economy the carbon dioxide emission will increase as well. The same story is true between energy consumption and CO_2 emission. Moreover, it can be said that policies for consuming energy more efficiently may not effect on CO_2 emission in short run while it has been emerged based on this study that they move together in long run. Economic growth, on the other hand, cause pollution by increasing the CO2 emission. In addition, absence of any causal relationship between energy and GDP shows that MINT countries don't damage the economy by energy conservation.

The results in this paper can be utilized for the policymakers of these countries to use the useful information about the nexus between energy consumption and Carbon Dioxide emission as well as economic growth and CO2 to make better decision about the policies for energy consumption, GDP and climate in these countries.

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