

PARADOKS EKONOMİ, SOSYOLOJİ VE POLİTİKA DERGİSİ

PARADOKS ECONOMICS, SOCIOLOGY AND POLICY JOURNAL

ISSN: 1305-7979

2017, Cilt/Vol: 13, Sayı/Num: 2 , Page: 57-70





Editörler / Editors in Chief

Doç. Dr. Elif KARAKURT TOSUN
Doç. Dr. Sema AY
Dr. Hilal YILDIRIR KESER

TARANDIĞIMIZ INDEXLER



Dergide yayınlanan yazılardaki görüşler ve bu konudaki sorumluluk yazarlarına aittir. Yayınlanan eserlerde yer alan tüm içerik kaynak gösterilmeden kullanılamaz.

All the opinions written in articles are under responsibilities of the authors. None of the contents published cannot be used without being cited.

Yayın ve Danışma Kurulu / Publishing and Advisory Committee

Prof. Dr. Veysel BOZKURT (İstanbul Üniversitesi)
Prof. Dr. Marijan CINGULA (University of Zagreb)
Prof. Dr. Recai ÇINAR (Gazi Üniversitesi)
Prof. Dr. Aşkın KESER (Uludağ Üniversitesi)
Doç. Dr. Sema AY (Uludağ Üniversitesi)
Assoc. Prof. Dr. Mariah EHMKE (University of Wyoming)
Assoc. Prof. Dr. Ausra REPECKIENE (Kaunas University)
Assoc. Prof. Dr. Cecilia RABONTU (University "Constantin Brancusi" of TgJiu)
Doç. Dr. Elif KARAKURT TOSUN (Uludağ Üniversitesi)
Doç. Dr. Emine KOBAN (Gaziantep Üniversitesi)
Doç. Dr. Ferhat ÖZBEK (Gümüşhane Üniversitesi)
Doç. Dr. Senay YÜRÜR (Yalova Üniversitesi)
Dr. Zerrin FIRAT (Uludağ Üniversitesi)
Dr. Murat GENÇ (Otago University)
Dr. Hilal YILDIRIR KESER (Uludağ Üniversitesi)

Hakem Kurulu / Referee Committee

Prof. Dr. Hamza ATEŞ (Kocaeli Üniversitesi)
Prof. Dr. Veysel BOZKURT (İstanbul Üniversitesi)
Prof. Dr. Marijan CINGULA (University of Zagreb)
Prof. Dr. Recai ÇINAR (Gazi Üniversitesi)
Prof. Dr. Kemal DEĞER (Karadeniz Teknik Üniversitesi)
Prof. Dr. Mehmet Sami DENKER (Dumlupınar Üniversitesi)
Prof. Dr. Bülent GÜNŞOY (Anadolu Üniversitesi)
Prof. Dr. Ömer İŞCAN (Atatürk Üniversitesi)
Prof. Dr. Vedat KAYA (Atatürk Üniversitesi)
Prof. Dr. Sait KAYGUSUZ (Uludağ Üniversitesi)
Prof. Dr. Aşkın KESER (Uludağ Üniversitesi)
Prof. Dr. Serap PALAZ (Balıkesir Üniversitesi)
Prof. Dr. Ali Yaşar SARIBAY (Uludağ Üniversitesi)
Prof. Dr. Abdülkadir ŞENKAL (Kocaeli Üniversitesi)
Prof. Dr. Veli URHAN (Gazi Üniversitesi)
Prof. Dr. Sevtap ÜNAL (Atatürk Üniversitesi)
Prof. Dr. Sevda YAPRAKLI (Atatürk Üniversitesi)
Prof. Dr. Uğur YOZGAT (Marmara Üniversitesi)
Doç. Dr. Gül ATANUR (Bursa Teknik Üniversitesi)
Doç. Dr. Tülin ASLAN (Uludağ Üniversitesi)
Doç. Dr. Sema AY (Uludağ Üniversitesi)
Doç. Dr. Arzu ÇAHANTİMUR (Uludağ Üniversitesi)
Doç. Dr. Ceyda ÖZSOY (Anadolu Üniversitesi)
Doç. Dr. Elif KARAKURT TOSUN (Uludağ Üniversitesi)
Doç. Dr. Doğan BIÇKI (Muğla Üniversitesi)
Doç. Dr. Canan CEYLAN (Uludağ Üniversitesi)
Doç. Dr. Elif ÇOLAKOĞLU (Atatürk Üniversitesi)
Doç. Dr. Kadir Yasin ERYİĞİT (Uludağ Üniversitesi)
Doç. Dr. Mithat Arman KARASU (Harran Üniversitesi)
Doç. Dr. Emine KOBAN (Gaziantep Üniversitesi)
Doç. Dr. Burcu KÜMBÜL GÜLER (Kocaeli Üniversitesi)
Doç. Dr. Ahmet MUTLU (Ondokuz Mayıs Üniversitesi)
Doç. Dr. Nilüfer NEGİZ (Süleyman Demirel Üniversitesi)
Doç. Dr. Veli Özer ÖZBEK (Dokuz Eylül Üniversitesi)
Doç. Dr. Ferhat ÖZBEK (Gümüşhane Üniversitesi)
Assoc. Prof. Dr. Cecilia RABONTU (University "Constantin Brancusi" of TgJiu)
Assoc. Prof. Dr. Ausra REPECKIENE (Kaunas University)
Doç. Dr. Abdülkadir ŞENKAL (Kocaeli Üniversitesi)
Doç. Dr. Gözde YILMAZ (Marmara Üniversitesi)
Doç. Dr. Senay YÜRÜR (Yalova Üniversitesi)
Yrd. Doç. Dr. Aybeniz AKDENİZ AR (Balıkesir Üniversitesi)
Yrd. Doç. Dr. Cantürk CANER (Dumlupınar Üniversitesi)
Yrd. Doç. Dr. Ersoy SOYDAN - Kastamonu Üniversitesi
Yrd. Doç. Dr. Oğuzhan ÖZALTIN - Süleyman Demirel Üniversitesi
Dr. Murat GENÇ (Otago University)
Dr. Enes Battal KESKİN (Uludağ Üniversitesi)

TRADE OPENNESS, FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH: AN EMPIRICAL STUDY OF TURKEY

TİCARİ AÇIKLIK, DOĞRUDAN YABANCI YATIRIMLAR, ENFLASYON, İHRACAT, İTHALAT VE EKONOMİK BÜYÜME: TÜRKİYE ÜZERİNE AMPİRİK BİR ÇALIŞMA

Doç. Dr. Mehmet ÇINAR
Uludağ Üniversitesi, İİBF
Ekonometri Bölümü

Ndzembanteh Aboubakary NULAMBEH
Uludağ Üniversitesi, İİBF
İktisat Bölümü

ABSTRACT

The causal effects of trade openness, foreign direct investment and economic growth is verified empirically using the Turkey time series data for the period 1974 to 2015. Numerous tests have been conducted to find out this effect for instance the ADF and Philips Perrons tests, designating that all the variables are non-stationary in level but after the first difference they became stationary. The Johansen tests of co-integration put indicates the presence of a long-run association amongst the variables with all the long-run coefficients significant at 5% level. The Granger causality tests indicate unidirectional causality from economic growth, exports, and inflation to trade openness, inflation, foreign direct investment and imports to per capita income. Similarly, the result also indicates the existence of bidirectional causality running between exports and per capita income, trade openness and per capita income and finally imports and per capita income. The results of variance decomposition display that export is the main variable causing trade liberalization in Turkey, denoting that exports oriented strategy should be stimulated.

Keywords: Trade openness, growth, inflation, foreign direct investment, exports, imports, per capita GDP.

ÖZET

Bu çalışmanın temel amacı, 1974-2015 dönemi için ticaret liberalizasyonu, doğrudan yabancı yatırım, enflasyon, ihracat, ithalat ve ekonomik büyüme arasındaki nedensellik yönünü ampirik olarak araştırmaktır. Birim kök testleri, tüm değişkenlerin ilk farkının durağan olduğunu göstermektedir. Eştleme testi değişkenler arasında uzun dönemli bir ilişki olduğunu ortaya koymaktadır. Nedensellik testleri, tek yönlü nedenselliği göstermektedir. Varyans ayrıştırmasının sonuçları, ihracatın, ticaretin serbestleşmesine neden olan ana değişken olduğunu göstermektedir; bu durum, ihracata yönelik politikaların teşvik edilmesi gerektiğini göstermektedir. Bu sonuçlar kısmen, Türkiye'deki ticaret liberalizasyonunun, 1989'dan beri sermaye hesabı liberalizasyonu yaşayan doğrudan yabancı yatırımlar yoluyla kişi başına büyümeye ve ihracata bağlı olduğuna işaret etmektedir.

Anahtar kelimeler: Ticari açıklık, Büyüme, Enflasyon, Yabancı doğrudan yatırımlar, İhracat, İthalat, Kişibaşı GDP.

1. INTRODUCTION

Turkey is a nation positioned at the crossroads of international trade with proximity and strategic position to the developing energy producing region in the Caspian and Central Asia. This country is characterized with a strong and dynamic market equipped with a set-up of developed infrastructures and a solid competitive work force. Agriculture plays a major role to the economy and this is witnessed from its contributions to the country GDP and employment. This sector is considered as the backbone of the economy since it employs more than 1/3 of the active population and its GDP shares are above 10%. The service sector also plays an important role considering the fact that more than half of those employed are in the services sector. The industrial sector is not left out since it employs about 18% of the active population. However, looking at the unemployment data of Turkey, the rate is around 10% as of the year 2015, showing that much still have to be done in narrowing down this gap. The tourism sector is of great important to the economy of Turkey. In 2012, this sector generates revenue of above 30 billion USD with capital and financial inflows accounting to about 17 billion USD. According to the findings from the World Banking (2016), Turkish economy has been growing significantly until 2014 with GNP and GDP increasing at a rate of 8.5% and GDP 8.9% respectively. However, in some situation slow growth in Europe and the fading geopolitical environment in its neighborhood have impacted exports, investment and growth negatively (Blecker, 2009). Although few studies have been carried out to look at the impact of trade openness on economic growth in Turkey and elsewhere, many of these studies came out with conflicting results. Some pinpoint positive relationships while others indicated that these two variables are negatively related. Considering the fact that the recent last year's failed coup led to a great decline in business and investor confidence in Turkey couple with the depreciation of Turkish Lira, a study is therefore needed to find out whether liberalizing the economy of Turkey will have any positive impact on growth. Consequently, the central objective of this research is to find out whether liberalizing the Turkish economy can stimulate growth and thus redresses some of the above mentioned problems. Specifically, the objectives are: To explore the linkage between trade openness, foreign direct investment, inflation, and Turkey's economic growth. Likewise, the direction of causality amongst the variables will also be studied. The first section is the introductory remarks, followed by the literature review. The next section is the specification of the model, mode of estimation, results, discussion, and the conclusion.

2. REVIEW OF LITERATURE

2.1 Foreign Direct Investment and Economic Growth

Numerous studies are conducted to substantiate the relationship between foreign direct investment and economic growth and most of these studies indicate the existence of a long run relationship among the above mentioned variables. A recent study carried out by Hussain & Haque (2016) using yearly time series data to validate the relationship amongst foreign direct investment, trade openness and economic growth displays that trade and foreign investment impacted economic growth positively. By looking on how foreign direct investment fuels growth, the authors conclude that the Bangladesh government should bring in policies that will upkeep growth and limit the obstacles for capital inflows to the country. Dogan (2013) as well pinpoint the presence of a significant relationship between foreign direct investment and economic growth in Turkey. It was recognized that more devotion and favourable investment climate should be establish in Turkey in other to draw foreign direct investors into the countries. Kim & Pang (2008) scrutinize the influence of foreign direct investment inflows to South Korean economy and their findings designate a robust and positive relationship between foreign direct investment and economic growth. Their aftermath also pinpoints that human capital, employment and export might have stirred the Korean growth. It was however perceived that domestic investment have no significant consequence on the Korean growth. Zekarias (2016) explores the association between foreign direct investment and Economic growth of East African economies using the panel data of 14 selected countries. It was witnessed that FDI compressed growth positively by acting as a catalyst in stimulating growth especially in East African countries.

However, other studies point out that foreign direct investment has no impact on economic growth. A research by Nahidi and Badri (2014) to inspect the link between FDI and economic growth in Turkey displays that in the long run, no relationship exists between the two variables. The authors settled that the inconsequential result might have aroused due to the fact that most of the goods that firms invest to Turkey are mainly mergers and acquisitions. Thus, policies should be designed to pool novel foreign direct investment from overseas. Considering the incompatible result, the authors went extra to split the sample into low and high income countries but parallel result was realized.

2.2 Trade Liberalization and Economic Growth

Kar, Nazlioglu and Agir (2014) study the causal effects among financial development, economic growth and trade liberalization. By engaging the monthly data of Turkey from January, 1989- November, 2007, a bi-directional causality arises between trade liberalization and economic growth. Thus liberalizing the Turkish economy will effect growth positively. Likewise, Wajahat and Azrai (2015) conducted a study to confirm the linkage between economic growth and trade liberalization in Pakistan for the period 1980-2010. The finding displays that the dual variables are negatively related. Based on the outcome, it was settled that the negative impact achieved might be owing to the fact that most of the goods Pakistan trades are not in their final forms but mostly raw materials. Abdull Saeed and Ali Hussain (2015) also achieved a similar result in Kuwait. That is by looking at the influence of trade openness on the economic growth, it was resolved that financial deepening plays a role in contributing to trade growth, financial development and trade openness.

Mercan and Gocer (2013) explore the causal link mostly in developing countries notably Brazil, Russia, India, China and Turkey (BRIC-T) using panel data for the period 1989 to 2010. It was perceived that for the above mentioned countries, trade openness upset growth positively with statistical significant. It was confirmed that upturn in openness through exports strategies will stimulate

economic growth. Asghar & Hussain (2014) studies the causality effects economic growth, financial opening and trade liberalization for the year 1721-2012 in Oman. Based on their outcome it was recommended that Oman need to reform their financial reform policies due to the fact that financial opening plays a role in contributing to financial development. Thus, the Sultanate of Oman should encourage its trade linearization policy. Bayar (2016) scrutinises the influence of economic liberty and openness on economic growth of European transitional economies for the year 1996-2012. A long run relationship between the variables was obtained. Likewise a negative relationship between economic growth and financial improvement was also realized but this was due to the fact that the financial sector of these economies might not have been industrialized fully to impact growth positively.

2.3 Inflation and Economic Growth

There is great diversity attained in literature by looking at the association amid inflation and economic growth. For the case of Turkey, Cuma Bozkurt (2014) inspects this liaison between economic growth and inflation and came out with a significant result. However, an undefined result was perceived between the Turkey's growth and inflation during the period 1999.2 – 2012.2 by using monthly data. Ozturk and Karagoz (2012) examine the connection between inflation and economic growth. It was resolved that for the case of Turkey, a negative relationship is obtained for the period 1971-2009.

Jayathileke and Rathnayake (2013) explore the short and long term dynamics for the three Asian countries and came out with diverse result for the period 1980-2010. For the case of Sri Lanka, a long and significant result was obtained whereas an insignificant result came out for the case of China and India. However, a unidirectional causality running from economic growth to inflation was perceived in China with negative and significant relationship within the short run. For the case of Africa specifically Nigeria, Izuchukwu and Patricia (2015) displays that in recent year a strong relationship exist between inflation and economic growth for the period 2000-2009. In their study, exchange rate is perceived to have waves the Nigerian economic growth positively and based on their findings; it is commended that the monetary policies aimed at steadying the exchange rate be strengthened with more effective control and regulatory framework.

3. Model Specification

It is hypothesized that real trade openness is determined by economic growth, inflation, foreign direct investment, imports, export and per capita growth. Our model will be specified as;

$$LRTO_t = \alpha_0 + \alpha_1 LRGDP_t + \alpha_2 LINFL_t + \alpha_3 LRFDI_t + \alpha_4 LRM_t + \alpha_5 LRX_t + \alpha_6 LRGDPPK_t + \epsilon_t \quad (1)$$

Considering the equation above, LRTO is log of real trade openness, LRGDP is the log of gross domestic product, LRINF is the log of real inflation, LRFDI is the log of real foreign direct investment, LRM is the log of real imports, and LRX is the log of real exports while LRGDPPK is the log of real per capita growth. Likewise, α_i ($i = 0,1,2,3,4,5,6$) are considered as the parameters of the estimated model and are projected to be positive. Moreover, α_0 is a constant term and ϵ_t is the white noise whereas subscript t is the time period. According to Engle and Granger (1987), equation (1) is inscribed as the error-correction model (ECM) given by,

$$\Delta Z_t = \alpha_0 + \lambda ECT_{t-1} + \sum_{j=1}^k \alpha_i \Delta LRTO_{j-i} + \sum_{j=1}^k \beta_i \Delta LRGDP_{j-i} + \sum_{j=1}^k \theta_i \Delta LRINFL_{j-i} + \sum_{j=1}^k \theta_i \Delta LRFDI_{j-i} + \sum_{j=1}^k \delta_i \Delta LRM_{j-i} + \sum_{j=1}^k \theta_i \Delta LRX_{j-i} + \sum_{j=1}^k \theta_i \Delta GDPPK_{j-i} + \mu_t \quad (2)$$

Where $Z = \{LRTO, LRGDP, LRINFL, LRFDI, LRM, LRX, LRGDPPK\}$, D is the first-difference operator, k denotes the number of lags of the explanatory variables, and ECT is the error-correction term generated from the Johansen multivariate process, and μ is the disturbance term.

The data used in this study are the secondary time series data for the period 1974 to 2015. All the data were collected from World Development Indicators online and all are in current local currency, transformed to real terms by deflating them with Turkish GDP deflator. It is also imperative to note that trade openness is taken as a proxy by summing exports and imports and dividing the result by GDP ($TO = (X + M)/GDP$).

4. Estimation Technique

One of the central postulation underlying the Classical Regression is that the variables must be (covariance) stationary, displays a mean reversion which fluctuates around a constant long run means with a finite variance that is time-invariant. When a time series is Non-Stationary, it disrupts at least one of the above assumptions and therefore the regression results could be false. We shall scrutinize the stationary properties of the time series: real trade openness, real GDP, real inflation, real foreign direct investment, real imports, real exports, and real per capita income, using the Augmented Dickey-Fuller (ADF) test Dickey and Fuller (1979) and Phillips-Peron test (1988). In most cases, the Johansen and Juselius (1990) tests is conducted to validate the co-integrating properties of the variables due to its fittingness. In condition where the variables are co-integration, the *ECM* will be assessed to study the short-run and long-run dynamics of the model. Likewise, Engle and Granger (1987) noted that before proceeding to test for co-integration, all variables should be incorporated of the same order. The unit roots test as noted shows that all the variables are non-stationary at level but become stationary at first difference. That is *LRTO*, *LRGDP*, *LRINFL*, *LRFDI*, *LRX*, *LRM* and *LRGDPPK* are all $I(1)$. Therefore, the long-run relationship between the variables is verified by smearing the Johansen-Julius co-integration test having two likelihood ratios (LR), the trace statistics and Max-Eigen tests. Considering the fact that all the variables are integrated of the same order $I(1)$ the co-integration test is piloted. In case of a long run relationship between the variables, the Granger causality tests will be conducted based on *VECM*.

The Granger causality test is employed to scrutinize the causal relationship between the variables and bearing in mind the fact that all the variables are co-integrated; *ECM* is assessed to find out the short-run and long-run dynamics in the model. It is vital to note that the *ECTs* are derived from the co-integrating vectors which are gotten from the Johansen's multivariate test technique. It should be remembered that the *ECT* model is a modified version of the *VAR* also known as the restricted model. Likewise, the *ECT* is known as the adjustment term and will help to bring any variables that deviate from the equilibrium in the long-run.

5. Results and Discussion

The results of Augmented Dickey Fuller (ADF) test and Philips Peron (PP) tests are shown in Table 1 for both tests without trend and with trend in level and first difference. The lag length one of all the variables were selected using the Akaike's Information Criteria (AIC). The results signpost that the null hypotheses of the presence of unit root in level for all the variables is established at the 5% level of significant. This displays that the selected variables are non-stationary in level but become stationary at first difference at 1% level. This provides room to conduct the co-integration test. The results in

Table 2 pinpoint that the null hypothesis of no co-integration among the variables is rejected as the Maximum Eigen value and trace statistics designate that the variables are co-integrated at least at 5% level of significant. Likewise, the results suggest that there exist only one co-integrating vector. The trace and maximum Eigen value statistics suggest that there is one long run relationship among the variables as the null hypothesis $r=0$ is rejected at 1% level. This point toward the conclusion that the variables *RGDP*, *RINFL*, *RFDI*, *RM*, *RX* and *RGDPPK* impact trade liberalization (*RTO*) of Turkey in the long run.

Table 1. Results of Unit Root Test

Test in Level				
Variable	ADF		PP	
	No Trend	Trend	No Trend	Trend
LRTO	-1.273502	-2.595357	-1.289581	-2.304450
LRGDP	-0.390789	-3.201690	-0.366946	-3.330124
LRINF	-0.398798	-1.139194	-0.418204	-1.569900
LRFDI	-1.699934	-1.882182	-1.836829	-1.631779
LRGDPPK	-0.132599	-2.781595	-0.081865	-2.876201
LRM	-0.793223	-3.465957	-0.601442	-3.192053
LRX	-1.036520	-1.684358	-1.038060	-1.684358
First Difference				
Variable	ADF		PP	
	No Trend	Trend	No Trend	Trend
ΔLRTO	-4.638583*	-4.630914*	-5.526726*	-5.736169*
ΔLRGDP	-6.445747*	-6.358395*	-6.615857*	-6.703456*
ΔLRINFA	-5.252890*	-5.207457*	-5.235136*	-5.187116*
ΔLRFDI	-8.225429	-8.630365	-8.225429*	-8.606168*
ΔLRGDPPK	-6.393671*	-6.349716*	-6.410974*	-6.479412*
ΔLRM	-5.783189*	-5.705747*	-7.824547*	-8.117955*
ΔLRX	-4.020757**	-4.072785**	-5.950334*	-6.133620*

Notes: The values in the table are t-statistics, * and ** designate significant at 1% and level 5%

The assessed long-run coefficients of all the variables in Table 2 show correct signs as projected from economic theory except economic growth and foreign direct investment having a negative sign. All the other variables are positively related to trade openness. Precisely, a 1% increase in GDP and foreign direct investment decreases trade openness in Turkey by 1.09% and 0.01% respectively. On the other hand, a 1% increase in inflation, exports, imports and per capita income expands Turkey trade openness by 4.83%, 0.49% and 0.42% respectively. Finally, a 1% increase in per capita income increases trade openness by 0.33%.

This result is in line with the study directed by Faridi (2012) and Wajahat and Azrai (2015). In their papers, a negative and significant relationship was concluded between trade openness and economic growth. The negative relationship between these variables might be due to the fact that most of the goods Turkey exports are raw material exports as a substitute of final exports. A study by Al-Yousif (1999) also point out a long run relationship between trade openness, exports, imports and economic growth.

Table 2. Results of the Johansen-Julius Co-integration Tests

Null Eigen Value	Test Statistics				
		Trace		Maximum Eigen Value	
		Statistics	5% CV	Statistics	5% CV
r = 0	0.742645	149.6476*	125.6154	54.29192*	46.23142
r ≤ 1	0.529320	95.35570	95.75366	30.14311	40.07757
r ≤ 2	0.470864	65.21259	69.81889	25.46036	33.87687
r ≤ 3	0.359613	39.75222	47.85613	17.82732	27.58434
r ≤ 4	0.246468	21.92490	29.79707	11.31936	21.13162
r ≤ 5	0.180914	10.60554	15.49471	7.982638	14.26460
r ≤ 6	0.063469	2.622902	3.841466	2.622902	3.841466

Long run equation:

$$LRTO = 0.33LRGDPPK - 1.09LRGDP + 4.83LRINFLA - 0.01LRFDI + 0.49LRX + 0.42LRM$$

(0.17740) (0.11768) (0.00218) (0.00215) (0.02224) (0.02803)

Notes: * denotes rejection of the null hypothesis of no co-integration at 1% of significant. The values in parenthesis^b are standard errors.

The VECM residuals are engaged to carry out the Granger causality test. Table 3 presents the results of Granger causality tests. The results advocate that the variables: real exports, and real inflation, real GDP and real per capita GDP cause trade liberalization in Turkey for the short-run period without a feedback while real imports, real foreign direct investment never cause real trade openness in the short run. The results of the VECM indicate the direction of Granger-causality between the variables for the period studied. However, it does not provide us with the long term properties of the system Masih and Masih (2001).

Table 3. The Results of Granger Causality Tests

Dependent Variables	ΔLRTO	ΔLRGDPPK	ΔLRGDP	ΔLRINFL	ΔLRFDI	ΔLRX	ΔLRM	ECT ^b
ΔLRTO	--	18.392 [0.001]*	19.694 [0.001]*	4.635 [0.031]**	1.901 [0.168]	10.239 [0.001]*	3.587 [0.058]	-7.728* (-6.095)
ΔLRGDPPK	1.232 [0.001]*	--	1.696 [0.001]*	0.796 [0.001]*	0.132 [0.001]*	1.076 [0.001]*	1.179 [0.001]*	1.072* (2.153)
ΔLRGDP	1.264 [0.261]	0.340 [0.510]	--	0.778 [0.378]	0.127 [0.722]	1.104 [0.294]	1.216 [0.270]	1.071** (2.151)
ΔLRINFL	0.180 [0.671]	0.719 [0.396]	1.010 [0.295]	--	1.276 [0.259]	0.247 [0.610]	0.352 [0.553]	-2.488** (-0.597)
ΔLRFDI	0.253 [0.615]	0.513 [0.474]	0.527 [0.468]	1.617 [0.203]	--	0.430 [0.512]	0.510 [0.443]	-10.924 (-1.358)
ΔLRX	5.002 [0.025]	17.827 [0.001]*	17.974 [0.001]*	5.272 [0.022]**	5.112 [0.024]**	--	1.698 [0.193]	-5.310* (-3.818)
ΔLRM	2.052 [0.152]	5.872 [0.015]**	5.710 [0.163]	2.687 [0.101]	0.538 [0.463]	3.056 [0.080]	--	-6.918 (-3.723)

Notes: *and ** denotes significant at 1% and 5% significance level, respectively. ^bThe figure in the parenthesis (...) denote as t-statistic and the figure in the squared brackets [...] represent as p-value.

The examination of the dynamic interactions among the variables in the post-sample period is piloted by using the variance decompositions analysis. The response to real trade openness (LRTO) will be decomposed to a one standard deviation innovation in the variables economic growth (LRGDP), inflation (LRINFL), foreign direct investment (LRFDI), imports (LRM), exports(LRX) and per capita GDP (LRGDPPK) within the twenty year periods.

The results of the variance decomposition in Table 4 demonstrate that in the first period, 100% of the variance in real TO is explained by itself. In the 10th period, the variation in real TO is explained by real GDP at 8.86%, real inflation at 5.15%, real FDI at 4.12%, real imports at 14.31%, real exports at 41.35% and real per capita income at 9.20%. In the 20th period, the variation in real Trade openness is enlightened by real growth 9.94%, real Inflation 2.25%, real foreign direct investment 6.68%, real imports 12.41% and real exports 44.46% and per capita income 18.23%. The result advocates that in the long-run, real exports is the most determinant of trade liberalization in Turkey, followed by real per capita GDP, real imports and economic growth.

Table 4. Decomposition of Forecast Error Variance of LRTO

Period	LRTO	LRDGP	LRINFLA	LRFDI	LRM	LRX	LRGDPPK
1	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	80.53427	2.350835	7.139576	0.131250	3.648781	5.265638	0.929649
3	49.34567	2.730577	11.96389	1.660791	10.34012	21.94541	2.013538
4	35.75132	6.701263	10.56997	3.428153	11.73192	28.90325	2.914130
5	29.43204	7.823244	8.909397	3.871465	13.26854	32.83818	3.857126
6	25.38349	8.030210	7.838421	4.276067	13.95792	35.59756	4.916333
7	22.53475	8.252099	6.979345	4.350829	14.24054	37.67380	5.968642
8	20.34848	8.478403	6.284272	4.335969	14.33250	39.16255	7.057815
9	18.52383	8.660291	5.679003	4.232962	14.38064	40.39379	8.129481
10	17.01512	8.862050	5.152987	4.122917	14.30523	41.34670	9.195008
11	15.77619	9.035891	4.684769	3.977026	14.19158	42.09925	10.23528
12	14.72867	9.186365	4.274602	3.828216	14.03529	42.69029	11.25657
13	13.83490	9.319144	3.910510	3.671076	13.85729	43.16154	12.24555
14	13.06331	9.440199	3.587705	3.516354	13.65940	43.52787	13.20515
15	12.39128	9.546886	3.299747	3.362724	13.45482	43.81470	14.12985
16	11.79999	9.643378	3.042791	3.214839	13.24376	44.03417	15.02108
17	11.27730	9.729711	2.812604	3.072019	13.03200	44.19959	15.87677
18	10.81169	9.807466	2.606195	2.935912	12.82076	44.31970	16.69828
19	10.39492	9.877217	2.420629	2.806203	12.61268	44.40313	17.48522
20	10.01975	9.940196	2.253569	2.683344	12.40844	44.45580	18.23891

6. CONCLUSION

This study is conducted to survey the factors causing trade liberalization in Turkey within the period 1974 to 2015. Several statistical tests are engaged like the Johansen tests of co-integration. This test suggests the presence of a long-run relationship among the variables and significant at 5% level. Specifically, exports, imports, inflation, and per capita income positively influence the trade openness of Turkey while the impact of GDP growth and foreign direct investment on trade liberalization is negative. It is pinpointed that a 1% increase in GDP and foreign direct investment decreases trade openness in Turkey by 1.09% and 0.01% respectively. Similarly, a 1% increase in inflation, exports and imports expands Turkey trade openness by 4.83%, 0.49% and 0.42% respectively. Finally, a 1% increase in per capita income increases trade openness by 0.33%. The Granger causality tests designate unidirectional causality moving from Turkey GDP, exports, and inflation to trade openness and from inflation, foreign direct investment and imports to per capita income. Equally, the result indicates the existence of bidirectional causality between exports and per capita income, trade openness and per capita income and finally imports and per capita income. From the findings one can settle that the per capita income of Turkey is very important in causing trade liberalization and is also a significant variable for the measurement of economic growth of a country. The variance decomposition results also advocate that, real export is the most important variable that impacted trade liberalization in Turkey, suggesting that Turkey is following an exports-led growth model. From the findings it is recommended that Turkey should focus on the development of the exports sector to promote and sustain growth.

REFERENCES

- Abdull Saaed, Afaf, and Ali Hussain, Majeed (2015), "The Causal Relationship among Trade Openness, Financial Development and Economic Growth: Evidence from Kuwait", *Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB)*, Vol. 4, No. 1, pp. 1385-1413.
- Al-Yousif, Yousif (1999), "On The Role Exports In The Economic Growth Of Malaysia: A Multivariate Analysis", *International Economic Journal*, Vol. 13, No. 3, pp. 67-75.
- Asghar, Nabila and Hussain, Zakir (2014), Financial Development , Trade Openness And Economic Growth In Developing Countries Recent Evidence from Panel Data. *Pakistan Economic and Social Review*, Vol. 52, No. 2, pp. 99-126.
- Bayar, Yılmaz (2016). "Impact of Openness and Economic Freedom on Economic Growth in the Transitional Economies of European Union", *South-Eastern Europe Journal of Economics*, Vol. 1, pp. 7-19.
- Blecker, Robert A. (2009), "Long-Run Growth in Open Economies : Export-Led Cumulative Causation or a Balance-of-Payments Constraint ?", *American University Department of Economics Working Papers*, No: 2009-23.
- Bozkurt, Cuma (2014), "Money , Inflation and Growth Relationship : The Turkish Case", *International Journal of Economics and Financial Issues*, Vol. 4, No. 2, pp. 309-322.
- Chude, Daniel Izuchukwu, and Chude, Nkiru Patricia (2015), "Impact Of Inflation On Economic Growth In Nigeria (2000-2009)", *International Journal of Business and Management Review*, Vol. 3, No. 5, pp. 26-34.
- Dickey, David A. and Fuller, Wayne A, (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association*, Vol. 74, No. 366, pp. 427-431.
- Dogan, Eyüp (2013), "Foreign Direct Investment and Economic Growth : A Time Series Analysis of Turkey, 1979-2011", *Çankırı Karatekin University Journal of the Faculty of Economics and Administrative Sciences*, Vol. 3, No. 2, pp. 239-252.
- Engle, Robert F., and Granger, Cleve. W. J. (1987), "Co-Integration and Error Correction : Representation, Estimation , and Testing", *Econometrica*, Vol. 55, No. 2, pp. 251-276.
- Faridi, Muhammad Zahir (2012), "Contribution of Agricultural Exports to Economic Growth in Pakistan", *Pakistan Journal of Commerce & Social Sciences*, Vol.6, No. 1, pp. 133-146.
- Hussain, Muhammed Ershad and Haque, Mahfuzul (2016), "Foreign Direct Investment, Trade, and Economic Growth: An Empirical Analysis of Bangladesh", *Economics*, Vol. 4, No. 7, pp. 1-14.
- Jayathilleke, Pradana M. Bundala and Rathnayake, Rathanayaka M. Kapila. Tharanga (2013), "Testing the Link between Inflation and Economic Growth: Evidence from Asia", *Modern Economy*, Vol. 4, No. 2, pp. 87-92.
- Johansen, Soren and Juselius, Katarina (1990), "Maximum likelihood Estimation and Inference on Co-integration-witth Applications to the Demand for

- Money”, *Oxford Bulletin of Economics and Statistics*, Vol. 52, No. 2, pp.169-210.
- Kar, Muhsin, Nazlıoğlu, Saban, and Ağır, Hüseyin (2014), “Trade Openness, Financial Development , and Economic Growth in Turkey : Linear and Non-linear Causality Analysis”, *Journal of BRSA Banking and Financial Markets*, Vol. 8, No. 1, pp. 63–86.
- Kim, Kyuntae and Bang, Hokyung (2008), “The Impact of Foreign Direct Investment on Economic Growth: A Case Study of Ireland”, *Korea Institute for International Economic Policy Working Paper*, No. 08-04.
- Masih, Rumi and Masih, Abdul M. M. (2001), “Long and Short Term Dynamic Causal Transmission Amongst International Stock Markets”, *Journal of International Money and Finance*, Vol. 20, No. 4, pp. 563–587.
- Mercan, Mehmet and Göçer, İsmet (2013), “The Effect of Financial Development on Economic Growth in BRICT Countries: Panel Data Analysis”, *Journal of Economic & Social Studies*, Vol. 3, No. 1, pp. 199-216.
- Nahidi, Mohammedreza Mohammadvand and Badri, Arash Ketabforoush (2014), “The Effect Of Foreign Direct Investment On Economic Growth”, *International Journal of Management, Accounting, and Economics*, Vol. 1, No. 2, pp. 176–185.
- Özturk, Nurettin, and Karagöz, Kadir (2012), “Relationship Between Inflation and Financial Development : Evidence from Turkey”, *International Journal of Alanya Faculty of Business*, Vol. 4, No. 2, pp. 81–87.
- Wajahat, Ali and Azari, Abdullah (2015), “The Impact of Trade Openness on Economic Growth of Pakistan: 1980-2010”, *Global Business and Management Research: An International Journal*, Vol. 7, No. 2, pp. 120–129.
- Zekarias, Seiko Minota (2016), “The Impact of Foreign Direct Investment (FDI) on Economic Growth in Eastern Africa: Evidence from Panel Data Analysis”, *Applied Economics and Finance*, Vol. 3, No. 1, pp. 145–160.