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Relation Among Foreign Direct Investment and Export: Evidence from Turkey

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Abstract

In this paper I shall examine causal relationship among foreign direct investment (FDI) and Export for Turkey. The paper analyze causal link between the variables that mentioned by using Vector Autoregressive Error Correction Model (VAR-ECM) and Co-integration Analysis over the period 1989-2016 with annual data. As forecasted, co-integration test shows that long-run relationship between Export and FDI in which there is only one co-integration vector in data. Error correction term has right sign so it provides evidence on long run impact from FDI to Export. Nevertheless, the result of Granger causality test is any no relationship between FDI and Export.

Keywords: Foreign Direct Investment, Export, Turkey

1. Introduction

The 1980s and 1990s, Foreign Direct Investment and Export have increased that didn't seen before in the World. Liberalization attempts of Turkey after 1980's have been year of acceleration in terms of export and foreign direct investment. Export-oriented approach(Alguacil, Cuadros, & Orts, 2002) has been preferred rather than import substitution as a policy. The export of technological products with high added value is a necessary step to break this vicious cycle. In addition, export is influential in attracting foreign direct investments(Bouras & Raggad, 2015). At the same time, the development of the country will cause foreign investors to come to our country. Papers about foreign direct investment and export in the literature have often searched causality relationship between other variables like economic growth, unemployment and import etc. Limited research about causality relationship between each other all of above mentioned subjects has motivated to write this empirical paper.

In the first section we refer to discussion about export and foreign direct investment relationship between each other. And then data and methodology will be described and empirical results will be analyze respectively. At the end of the study, the conclusion will take place.

2. Literature

One of empirical studies that have contributed literature to identify causality relationship between foreign trade and economic growth has provided by Gömleksiz et al. (2012). The paper that researched developing countries like Turkey, Brazil, India, China and Hungary between 2000-2010 years conclude that the effect of foreign direct investment on growth was positive and significant.

Using Granger causality and Co-integration theory Karagöz et al. (2006) found that relationship from export toward FDI based on time series analysis.

Alguacil et al. (2002) researched the relationship between trade, FDI and GDP in Mexico during the period 1980 to 1999. The result of their analyses shows the effectiveness of export oriented approach for the country.

Another research that used panel data to estimation the effect of FDI on economic growth in Turkey and 5 Turkish Republic between 1994-2010 years has issued by Gül and Kamacı (2012). As the result of the long term analyses have been detected not only a double-sided causality relationship from export toward growth but also one sided causality relationship from import toward growth too.

Delice et al. (2011) has demonstrated that FDI effected positive to export in the long run and between 2002-20011 years and no causality relationships between import and FDI in their empirical analysis that researching Turkey in 1992-2011 years.

The paper that was written by Ekinçi (2011) which analyze the FDI, economic growth and employment have provided convincing evidence in Turkey among 1980-2010 that double-sided causality relationship in the long term between FDI and economic growth. On the other hand FDI and employment has not been found a relationship between each other.

In Özcan and Arı (2010) studies, the determinants of FDI in 27 OECD countries between 1994 and 2006 were questioned using dynamic panel data analysis method and GMM estimation technique. As a result of the study, FDI was found to positively affect growth rate, infrastructure level and inflation. Openness and current account balance are negatively associated with FDI, as opposed to theoretically expected.

Bilgin and Şahbaz (2009) has provided an empirical examining to test growth hypothesis based on export in Turkey between 1987-2007 terms.

3. Data Set and Methodology

In this paper to assess the relationship between FDI and Export annual data in Turkey among 1989-2016 years has examined using VAR analyze. The data was obtained from the web site of Central Bank Of The Republic Of Turkey. VAR analyze is suitable for researching cointegration feature for these variables. Firstly variables were checked whether they were stable at the same level. Therefore Augmented Dickey and Fuller Unit Root Test (ADF) was used. And then Johansen co-integration test was applied on the variables. Wald Test, VAR-ECM and Granger Causality Test were applied respectively.

4. Empirical Results

4.1 Augmented Dickey and Fuller Unit Root Test (ADF)

Table 1 shows the ADF unit root test. According to the results, the null hypothesis that the first variants bear unit root is rejected at 0.05 percent level of significance. Thus, each variable is determined to be stationary at first degree.

Table 1. *ADF unit root test*

Null hypothesis: LFDI and LEXP has a unit root

Variables	ADF (constant) Level	ADF (constant) difference	
LFDI	-1.04 (0)	-4.57*	(1)
LEXP	-1.06 (0)	-3.72*	(1)

* denotes rejection of the hypothesis at the 0.05 level

4.2. Johansen co-integration test

The fact that the variables are stationary in their initial differences requires examining whether there is a long-term relationship between these variables. The findings of this study are summarized in Table-2. In the cointegration rank tests, a long-run relationship was found between the variables.

Table 2. *Johansen Cointegration Test*

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. Of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.460005	19.76108	17.98038	0.0585
At most 1	0.187128	4.972371	7.556722	0.2864

Trace test indicates 1 cointegrating eqn(s) at the 0.1 level

* denotes rejection of the hypothesis at the 0.1 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.1 Critical Value	Prob.**
None *	0.460005	14.78871	13.90590	0.0739
At most 1	0.187128	4.972371	7.556722	0.2864

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.1 level, * denotes rejection of the hypothesis at the 0.1 level,

**MacKinnon-Haug-Michelis (1999) p-values

4.3 Wald Test

The results obtained from the Wald test are shown in Table 3.

Table 3. VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: LEXP

Excluded	Chi-sq	df	Prob.
LFDI	0.060376	1	0.8059

Dependent variable: LFDI

Excluded	Chi-sq	df	Prob.
LEXP	5.224400	1	0.0223*

() denotes rejection of the hypothesis at the 0.05 level*

According to the results, there is a causality relation from Export to Foreign Direct Investment in accordance with the literature.

4.4 *Vector Autoregressive Error Correction Estimates(VAR-ECM)*

Table 4. Vector Error Correction Estimates

Standard errors in () & t-statistics in []

Cointegrating Eq:		CointEq1		
LFDI(-1)		1.000000		
LEXP(-1)		-1.347035 (0.15041)		
C		[-8.95559] 6.352802		
Error Correction:		D(LDYY)	D(LIHR)	
CointEq1		-0.627299 (0.20807) [-3.01479]	-0.014327 (0.05565) [-0.25745]	
R-squared		0.304660	0.064832	
Adj. R-squared		0.209841	-0.062691	
S.E. equation		0.445811	0.119235	
$D(LFDI) = C(1) * (LFDI(-1) - 1.34703461294 * LEXP(-1) + 6.35280185821) + C(2) * D(LFDI(-1)) + C(3) * D(LEXP(-1)) + C(4)$				
	Coefficient	Std. Error	t-Statistic	Prob.
CointEq1	-0.627299	0.208074	-3.014788	0.0064*

(*) indicate that the null hypothesis at the significance level of 0.05 is not rejected.

Table 4 shows the short-term effects of changes in the explanatory variables obtained from the first delays in VAR-ECM. The error correction term indicates the long term effect.

As shown in Table 3, while the explanatory variable is significant , short-term causality is present among variables, while at the same time statistical significance of the error correction coefficient that have negative sign indicates that there is a long-term effect.

4.5 Granger Causality Tests

Finally, in the Granger causality test in Table 5,

Table 5. Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LFDI does not Granger Cause LEXP	27	0.06038	0.8080
LEXP does not Granger Cause LFDI		5.22440	0.0314*

(*) indicate that the null hypothesis at the significance level of 0.05 is not rejected.

As expected the results show a causality from Export to FDI. But FDI does not granger cause Export. Because the effect of FDI on exports is reliant on variety trade types(Bouras & Raggad, 2015).

5 Conclusion

This study investigates causal relationship between foreign direct investment (FDI) that developing countries prefer it to other investments and export in Turkey. The empirical study estimates causal link between the variables that mentioned by using Vector Autoregressive Error Correction Model (VAR-ECM) and Co-integration Analysis over the period 1989-2016. As predicted, co-integration test shows that long-run relationship between FDI and Export in which there is only one co-integration vector in data. This paper finds uni-directional causality between from Export to FDI. Consequently, the direction of causal relationship between them indicates like EXP--> FDI at the end of the Granger causality test. Finally Export is influential in attracting foreign direct investments. At the same time, the development of the country will cause foreign investors to come to our country. The results of Econometric analysis are important for political decisions.

References

- Aktaş, C.. (2009), “Türkiye’nin ihracat, ithalat ve Ekonomik Büyüme Arasındaki Nedensellik Analizi ”, *Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 18(2), p. 35-47.
- Alguacil, M. T., Cuadros, A., & Orts, V. (2002). Foreign direct investment, exports and domestic performance in Mexico: a causality analysis. *Economics Letters*, 77(3), 371-376. doi:[https://doi.org/10.1016/S0165-1765\(02\)00150-7](https://doi.org/10.1016/S0165-1765(02)00150-7)
- Bilgin, C., & Şahbaz A. (2009) Türkiye’de Büyüme ve ihracat Arasındaki Nedensellik İlişkileri, *Gaziantep Üniversitesi Sosyal Bilimler Dergisi* 8(1): 177-198
- Bouras, H., & Raggad, B. (2015). Foreign Direct Investment and Exports: Complementarity or Substitutability An Empirical Investigation. *International Journal of Economics and Financial Issues*, 5(4).
- Delice, G. & Birol, Y. E., (2011) “Dolaysız Yabancı Sermaye Yatırımları Ve Dış Ticaret Bilançosu: Türkiye Üzerine Bir Uygulama”, *Uludağ Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 2, , pp. 1-28

- Demirhan, E. (2005) “Büyüme Ve ihracat Arasındaki Nedensellik İlişkisi: Türkiye Örneği”, *Ankara Üniversitesi SBF Dergisi*, 75-88 .
- Ekinci, A. (2011) Doğrudan Yabancı Yatırımların Ekonomik Büyüme ve İstihdama Etkisi: Türkiye Uygulaması (1980-2010), *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*,
- Gömlüksiz, M., & Alagöz, M. (2012). İktisadi Büyüme Olgusuna Ekonometrik Bir Yaklaşım: BRIMCH Ülkeleri Ve Türkiye Örneği, *SÜ İİBF Sosyal ve Ekonomik Araştırmalar Dergisi*, 24, ss. 121-144
- Gül, E., & Kamacı, A. (2012) “Dış Ticaretin Büyüme Üzerine Etkileri: Bir Panel Veri Analizi”, *Akdeniz Üniversitesi, Alanya İşletme Fakültesi Dergisi* , 3, 81-91,
- Karagöz, K. & Karagöz, M. (2006). “Türk Ekonomisinde ihracat ve Doğrudan Yabancı Yatırım İlişkisi: Bir Zaman Serisi Analizi”, *Abant İzzet Baysal Üniversitesi, Ekonomik ve Sosyal Araştırmalar Dergisi*, 3 (1), p. 117 – 126.
- Karagöz, K., (2007). “Türkiye’de Doğrudan Yabancı Yatırım Girişlerini Belirleyen Faktörler: 1970 – 2005”, *e-Journal of Yasar University*, 2 (8), 927 – 948
- Koyuncu, F. T.(2011) Doğrudan Yabancı Yatırımların İktisadi Büyümeye Etkisi: Türkiye İçin Bir Ekonometrik Analiz *Paper presented at EconAnadolu 2011: Anadolu International Conference in Economics II June 15-17, 2011, Eskişehir, Turkey.*
- Kiran, B. (2011). Causal links between foreign direct investment and trade in Turkey. *International Journal of Economics and Finance*, 3: 150 – 158
- Ozturk, I., & Acaravci, I., (2010). FDI, Trade And Growth In Turkey: Evidence From ARDL Bounds Testing Approach. *Argumenta Oeconomica*, 25(2), pp.95-115.
- Özcan, B. & Arı, A., (2010), Doğrudan yabancı yatırımların belirleyicileri üzerine bir analiz: OECD örneği, *Ekonometri ve İstatistik*, 12, 65-88