

# The Impact of OECD Countries' Macroeconomic Factors on Turkey's Foreign Trade

Elif Guneren Genc<sup>1</sup> & Ozlem Deniz Basar<sup>2</sup>

<sup>1</sup> Department of Banking and Finance, Istanbul Commerce University, Istanbul, Turkey

<sup>2</sup> Department of Business Administration, Istanbul Commerce University, Istanbul, Turkey

Correspondence: Elif Guneren Genc, Ph.D., Department of Banking and Finance, Istanbul Commerce University, Istanbul, Turkey.

Received: March 10, 2017

Accepted: March 29, 2017

Online Published: April 26, 2017

doi:10.5430/rwe.v8n1p24

URL: <https://doi.org/10.5430/rwe.v8n1p24>

## Abstract

The purpose of this study is to investigate the makroeconomic effects of OECD countries, having a major economic share in the regional communities, in the scope of complex economic structure, and accordingly, to determine the effects of those on Turkey's exports and imports. For this purpose, Turkey's bilateral export and import volumes with OECD countries for the period of 1996 to 2014 were modelled by using these countries' macroeconomic time series variables and panel data sets. It was revealed at the end of the study that the most determinant macroeconomic factors concerning the increase in Turkey's import is the increase in per capita GNP in these countries. This variable is seen to be followed by these countries' urban population, export indices and the export increases of Turkey for these countries respectively.

**Keywords:** international trade, panel data models, OECD

**JEL Codes:** F10, C23, F02

## 1. Introduction

When the Turkish economy is reviewed within the period extending from the proclamation of the republic until today, it is seen that Turkey has been in a dynamic economic structure, in which various fluctuations, periodical crises, different economic policies, economic recessions and growth have been observed. The governments prepared various plans to reduce the adverse effects of wars, seasonal crises and economic fluctuations on Turkey's economy. Although the successful results of the decisions of these plans were occasionally obtained, sometimes, the desired results couldn't be achieved.

When Turkey's imports and exports are reviewed in general, it is seen that import and export volumes of Turkey were very approximate to each other until the 1950s, then gradually differentiated from each other in following years, especially since the beginning of the 1970s, Turkey had such foreign trade balance with negative tendency in general that import volume was more than the export volume. Although the import and export volumes of Turkey began to increase since the 2000s in general, its foreign trade deficit has constantly increased. In the 2000s when more than one crisis and breakage experienced globally, especially after the global crisis in 2008, both import and export declined, however, as of 2010, they started to rise again.

The main reasons for the increase in imports and exports in Turkey can be listed as follows: the need for the sales of the surplus production to the foreign markets after meeting the domestic demand; inability for production of some goods; failure to meet domestic supply; the intercountry production differences, causing productivity differences; the different consumer preferences, revealing the demand differences for domestic and foreign goods.

The sociological, economic and military events, periodically took place in the world, necessitated for communities to get together for making decisions and act mutually. The states finding a common ground kept together with various agreements, and established international communities that undertook missions with specific goals.

Taking part in these communities is very important both in terms of being able to have a voice in the decisions that the world countries will make, and to be able to benefit from opportunities that will arise.

Following the Second World War, the 1948 OEEC (The Organization for European Economic Cooperation) was established in order to eliminate the economic impacts of the war in compliance with the Marshall plan (OECD, 2016). This organization consisted of 16 countries, including Australia, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, Luxembourg, Hungary, Norway, Portugal, Sweden, Switzerland, Turkey and United Kingdom (CVCE - Innovating European Studies, 2012). In the same period, the United States and Canada supported this organization and the Paris Convention - Convention on the Organization for Economic Co-operation and Development was signed on 14 December 1960 with participation of these countries. With the agreement, OEEC became a worldwide organization and, accordingly, with the participation of a total of 20 countries on September 30, 1961, OECD (The Organisation for Economic Co-operation and Development) was officially established. The OECD's objective is briefly expressed as to develop policies that will enhance the economic and social welfare of people in the world (OECD, 2016). Turkey took part in the OECD countries in 1961, and attained the attribute of the constituent country. The countries that are the members of OECD as of April 19, 2016 are indicated in Appendix 1.

The three main objectives of the OECD, expressed in the first article of the Paris Convention, are as follows (Oktay, 2005):

- To provide the maximum development and employment in the member countries with their own resources while maintaining fiscal stability in these countries at the same time.
- To make contribution to the economic developments of the both member and non-member countries.
- To help the development of world trade within international commitments and in a non-discriminatory way.

The OECD annually offers indicators, supposed to have an effect on the economical developments of the member countries, by preparing reports with different headlines. Population is the primary factor affecting the economical development.

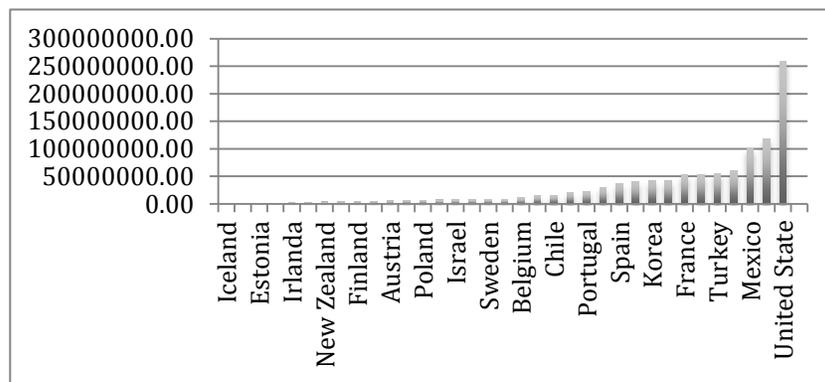


Figure 1. Urban population distributions of OECD member countries in 2011

As of the year of 2014, the country with the lowest urban population is indicated as Iceland. On the other hand, the country with the highest urban population is indicated as United State. When OECD members are reviewed in terms of the urban population averages, it is seen that Korea, Italy, France, United Kingdom, Turkey, Germany, Mexico, Japan and United State have population above the average urban population.

GDP perCapitaGrowth values is one of the most important criteria referring to the economic development of countries. The increase in this value indicates the growth of countries' economies as well.

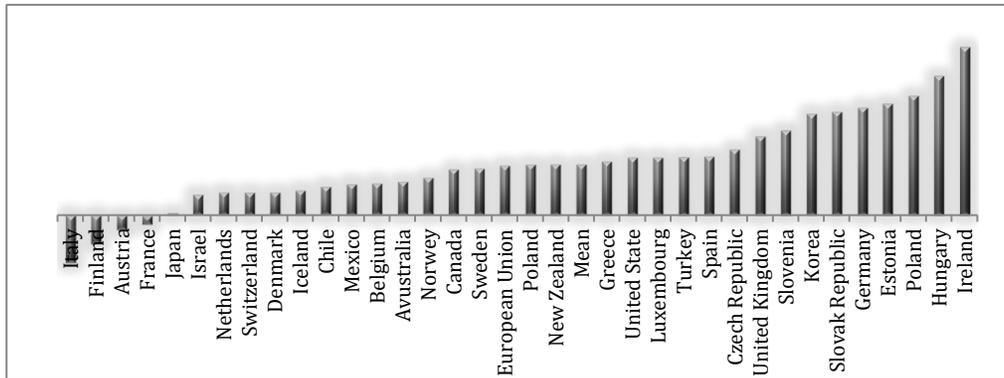


Figure 2. The rates of GDP per capita growth of OECD member countries in 2014

The graph regarding the rates of GDP perCapita Growth is indicated in Figure 2. It is seen that the growth of Italy, Finland, Australia and France, included in the OECD countries, was in the negative direction in 2014. On the other hand, the fastest growth was achieved in Ireland.

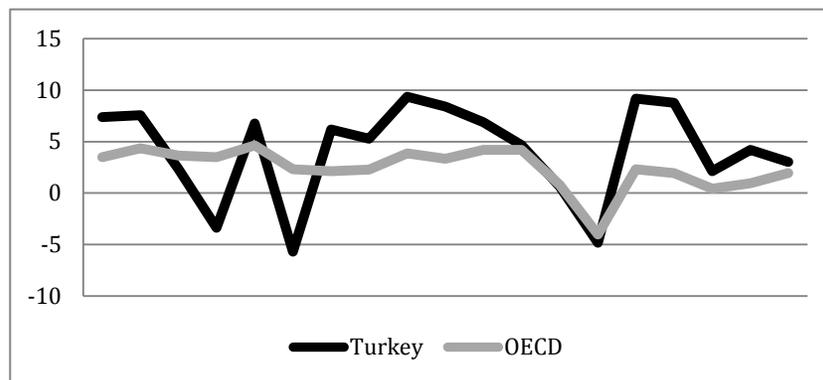


Figure 3. The comparison of OECD member countries with Turkey in terms of the average growth between 1996 to 2014

The graph of the comparison of the average growth of OECD member countries with Turkey between 1996 to 2014 is indicated in Figure 3. The growth rate of Turkey offers increase and decrease in different accelerations under the influence of various periodic crises. Due to the the global crisis experienced in 2008, the growth declined seriously in both the OECD member countries and Turkey, and soon after, as a result of serious economic reforms made, the growth has begun to accelerate positively again. It is seen that Turkey achieved more growth than the average growth of the OECD countries in 2014.

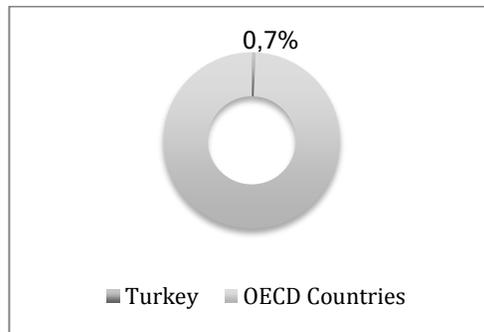


Figure 4. The rate of per capita GNP of Turkey in the OECD countries' economy as of 2014

It is seen in Figure 4. that as of the year of 2014, Turkey has a share of 0.7% in the OECD countries' economy.

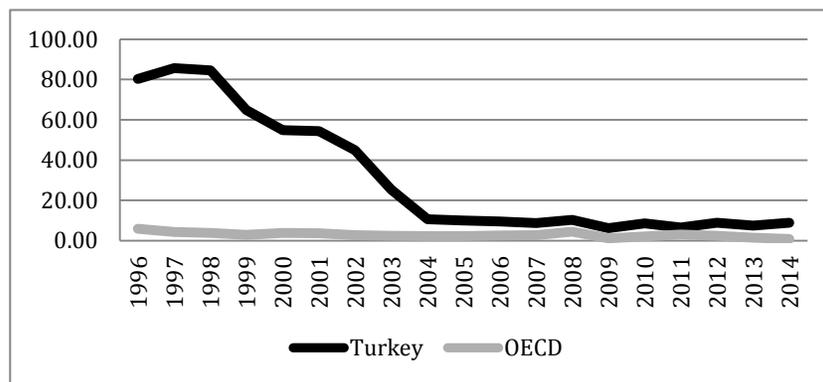


Figure 5. The comparison of the inflation rates of the OECD member countries with those of Turkey in the period between 1996-2014

The graph created for the inflation values of Turkey and OECD member countries for the period between 1996-2014, one of the important criteria for economic development, is given in Figure 5. The inflation rate which reached to its highest value for Turkey in 1997 during the related years has fallen rapidly since 2004 and became approximately more stable. Although the average inflation rate, always below 10% and have a declining trend for the OECD member countries, increased slightly due to the global crisis in 2008, decreased to below 1% as of the year of 2014.

In Figure 6, the average unemployment rates for OECD member countries between 1996-2014 were compared with the unemployment rates in this period in Turkey.

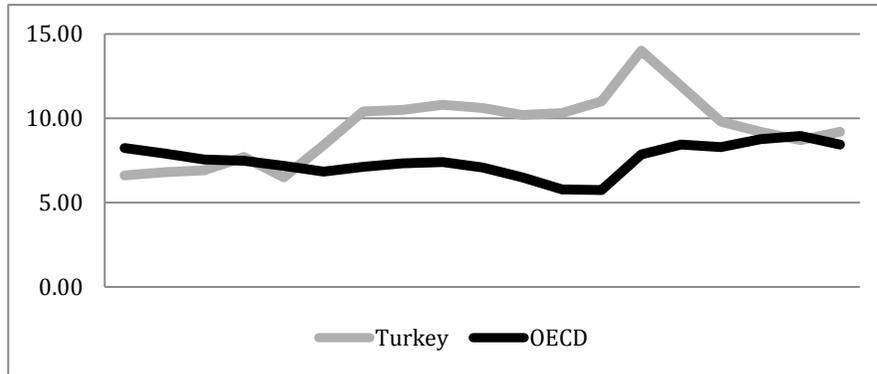


Figure 6. The Comparison of the Unemployment Rates of the OECD Member Countries with those of Turkey in the Period between 1996-2014

The Unemployment Rates in Turkey, increasing until 2009, declined seriously in the period between 2009-2013. From the date of 2013, an increase in the unemployment rates has been observed. The most serious increase in the unemployment rates of OECD countries appeared during the global crisis in 2008. This economic crisis, experienced almost all over the world, led the unemployment rates to increase seriously. It can be said for Turkey, of which unemployment rates were lower than the average unemployment rates of OECD member countries in 1996, to have unemployment rates above the average values except for the year 2000 in general.

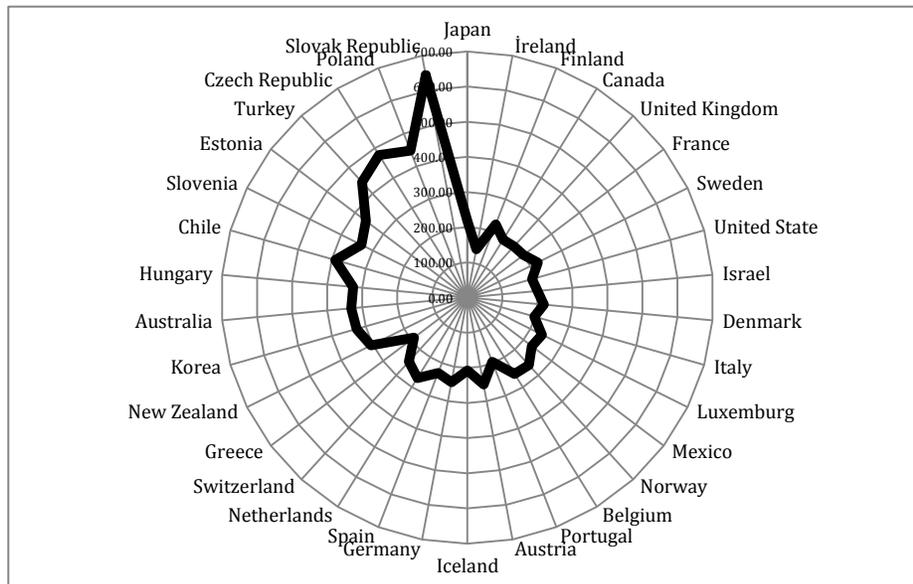


Figure 7. Import volume index distributions for OECD member countries

The interrelations of the countries can be indicated with the sizes in their import and export items. The graph created for the import volume index (2000 = 100) (import value index (2000 = 100)) calculated taking the year of 2000 as a basis is indicated in Figure 7. As seen in Figure 7, the countries with the lowest import index value for 2014 are Ireland and Greece. However, as can be seen in the graph, the import volume index for countries taking part between Finland and Switzerland ranges between 200- 300. The country with the highest import index value is Slovak Republic. Turkey, taking part in 400-500 band, has a greater index value than many OECD member countries', which suggests that Turkey's import volume is greater than many OECD member countries'.

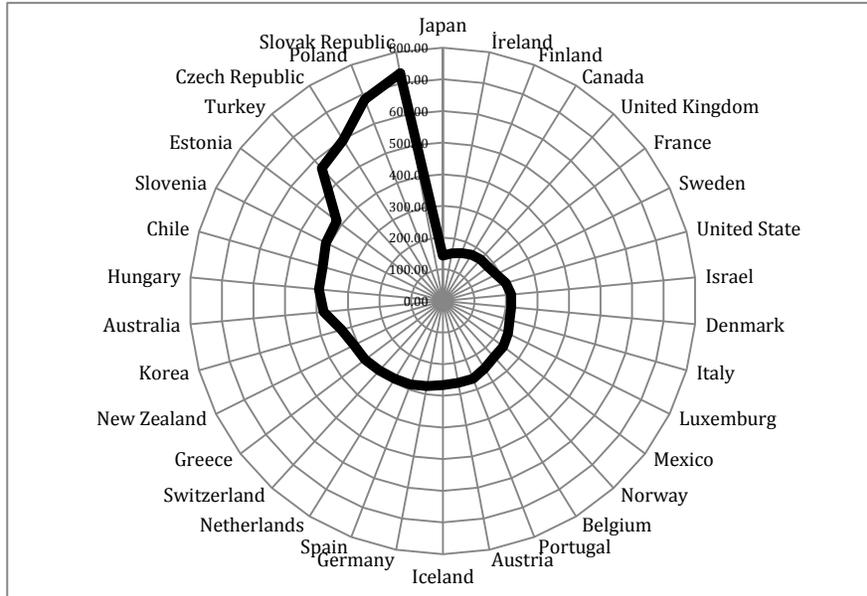


Figure 8. Export volume index distributions for OECD member countries

The export of the countries are of importance due to having a direct effect on the foreign policies and economic developments of countries. The graph of the export volume index calculated for OECD member countries as of the year of 2014 is indicated in Figure 8. As seen in Figure 8, the export volume index values for Japan, Ireland, Finland, Canada, United Kingdom, France, Sweden, United States, Israel, Denmark, Italy, Luxembourg, Mexico, Norway, Belgium, Portugal, Australia, Iceland, Germany, Spain take part in 100-300 band, which is a lower level than other countries'. The four countries with the highest export values are Slovak Republic, Poland, Czech Republic and Turkey. The export volumes of these countries are prominently higher than those of all other OECD member countries.

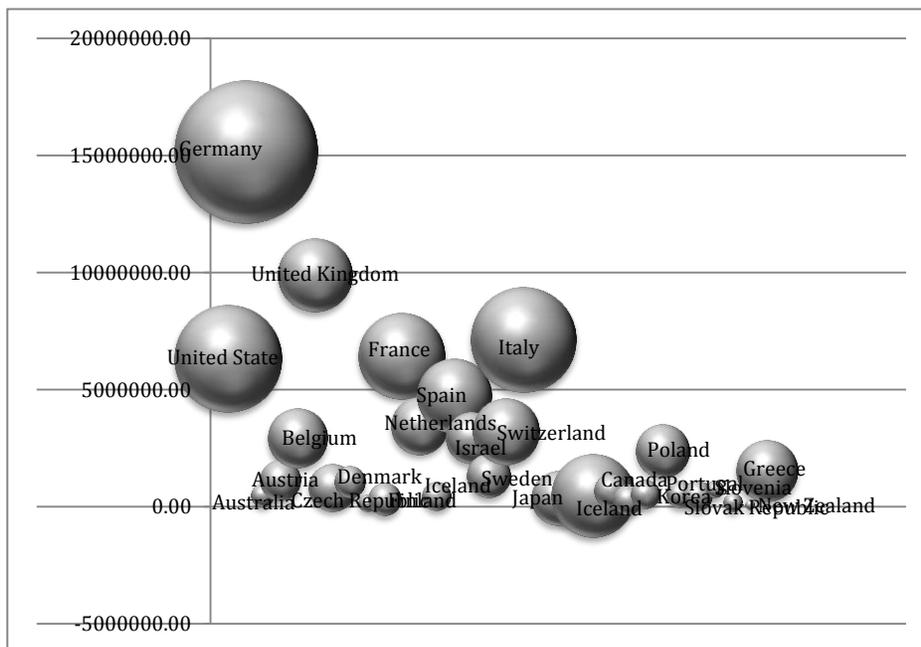


Figure 9. Export and import values of OECD member countries for Turkey

Turkey has an important place in the OECD member countries in terms of both its export and import volume. In order to be able to construe the interrelations economically, the import and export values of the relevant countries were identified and indicated by the distribution in Figure 9. In Figure 9, the horizontal axis indicates the alphabetical order of the countries, the vertical axis indicates the export volume of the relevant country with Turkey, the size of the each country's balloon indicates the import volume of the relevant country with Turkey. The countries to which Turkey exports at most are Germany, United Kingdom, Italy, France and United State respectively. However, the countries, from which Turkey imports at most are Germany, United States, Italy and France. The OECD member countries, from which Turkey imports at least are Iceland, New Zeland, Estonia and Slovenia respectively; those, to which Turkey exports at least are Iceland, New Zeland, Estonia, and Chile as distinct from the Turkey's minimal importation order. Accordingly, it can be said that the OECD countries, with which Turkey have minimal foreign trade relations are Iceland, New Zeland and Estonia.

## 2. Methodology

Panel data are created by gathering horizontal section observations of the units such as individuals, countries, companies, households in a certain period of time (Baltagi, 2005). While only one period-related information of many units are given in the horizontal section data models, on a periodic basis information of only one unit are given in the time series data models. In panel data models, the information on a periodic basis and that for units are used (Baltagi, 2005, p.6). Panel data models are becoming increasingly popular for the researchers for the reason that their capacities are higher than those of horizontal section series models or than those of time series models (Hsiao, 2003, p.3).

The data set that includes the observations of a number of individuals is called "Panel Data" or "Longitudinal Data". For this reason, the panel data observations include at least two dimensions. The first dimension is the horizontal section dimension, and its subscript is denoted by  $i$ , the second dimension is the time series dimension, and its subscript is denoted by  $t$ .

Since double subscripts exist on the panel data regression model variables, panel data models differ from the normal time series or horizontal section series regression;

$$y_{it} = \alpha + \beta x_{it} + \varepsilon_{it} \quad i = 1, \dots, N, \quad t = 1, \dots, T \quad (1)$$

Here,  $i$  denotes households, individuals, companies, countries, etc.,  $t$  denotes time (Guris, 2015, p.25). For this reason,  $i$  index denotes the horizontal section dimension,  $t$  index denotes the time series dimension.  $\alpha$  is the scalar,  $\beta$  is the  $i$ . observation on the  $K \times 1$  and  $x_{it}$ ,  $K$  explanatory variables.

$$u_{it} = \mu_i + v_{it} \quad (2)$$

Here,  $\mu_i$  denotes time- independent, unobservable, singular specific effect,  $v_{it}$  denotes the remaining distances.  $u_{it}$  denotes the idiosyncratic error term. The idiosyncratic error term is known as the error term in the panel data, and express the error both between duration and between units.

It is increasingly become widespread for researchers to perform studies in social sciences, and especially in the economy by using large scale micro econometric panel data sets. Performing studies with panel data sets is likely to result in possible regression mistakes as a result of violating the common independence hypothesis.

Working with standard errors that are resistant to the potentially unrecognised variance and covariance properties of both errors and data in order to ensure the validity of the statistical results in the studies performed has become a routine practice over time. Several approaches are available in the literature, aiming to obtain resistant standard errors. The first studies on resistant standard errors, carried out in the scope of the empirical studies concerning macroeconomic time series, were performed by Huber (1967), Eicker (1967) and White (1980). White (1980) suggested an approach that describes heteroscedasticity in horizontal section data. Later, White (1984) created a formula for the multivariate dependent variable. Fama and MacBeth (1973) proposed a method that calculates standard errors, resistant to the correlation between units in the same time period. Arellano (1987) proposed the one-way clustered resistive standard errors, well known in linear panel models. Wooldridge (2002) provided an overview for the practices of cluster methods. Hansen (2007) investigated the asymptotic properties of a resistive variance matrix estimator for the panel data set in case  $T$  value is higher.

Petersen (2009) compared these resistive standard errors, and proposed to use two-way clustered resistive standard errors for resistivity control. Gow, Ormazabal and Taylor (2010) found that two-way clustered resistive standard errors are required for a valid deduction in many accounting practices. On the other hand, two-way clustering method can be used for only specific and limited error structures.

Many studies in the literature deal with the clustering in only one dimension, while ignoring clustering in another dimension. The methods that control the clustering in one dimension generally undertake the independence in another dimension. However, when both cross-sectional correlation and autocorrelation are present, the one-way clustered resistive standard errors method identifies the incorrect structure. But, since the standard error will be calculated as smaller, the rejection probability of null hypothesis will increase in the hypothesis tests. Thompson (2011) and Cameron, Gelbach, and Miller (2011) proposed two-way clustered-resistive standard errors with the aim of taking mutual correlation into account, which will help to find a solution for this problem. This variance estimator allows for the horizontal section dependence since it is designed to produce a resistive deduction in the event of two-way unnested clustering.

Driscoll and Kraay (1998) used Driscoll-Kraay standard errors describing heteroskedasticity, autocorrelation, and the cross-sectional correlation of unrecognized form. Vogelsang (2012) Driscoll-Kraay created fixed  $b$  asymptotic approaches; Kiefer and Vogelsang (2005) created resistive standard errors in the context of cross-sectional correlation, compared to the standard normal asymptotic approaches.

**Driscoll and Kraay Standard Error**

Driscoll and Kraay (1998) firstly proposed heteroskedasticity, autocorrelation, and horizontal section dependency -resistant variance estimators by using the time series of the cross-sectional summations of the observations. The idea is to first combine all singular observations in each period, and then apply the summation of the heteroskedasticity and autocorrelation estimator to the time series. Firstly, it takes the potential cross-sectional relation into account, and secondly, it takes the potential autocorrelation of the data into account. For this reason, Driscoll-Kraay standard errors are also resistant to the cross-sectional correlation of the unrecognized form in addition to heteroskedasticity and autocorrelation, assuming that covariance is fixed and independence is poor on time dimension.

When a linear panel data model is considered;

$$y_{it} = \beta x_{it} + \varepsilon_{it} \quad i = 1, \dots, N, \quad t = 1, \dots, T \tag{3}$$

It is assumed that there is no relation between the regression variables  $x_{it}$  and  $\varepsilon_{it}$ . However,  $\varepsilon_{it}$  has a heteroskedasticity and horizontal cross-section dependency with autocorrelation. Under this assumption, the  $\alpha$  estimators achieved by the least squares method are consistent estimators:

$$\hat{\beta} = (X'X)^{-1}X'Y \tag{4}$$

The Driscoll and Kraay standard errors of the parameter estimates are obtained by taking the square roots of the diagonal elements of the asymptotic (resistive) covariance matrix.

$$Var(\hat{\beta}) = (X'X)^{-1}\hat{S}_T(X'X)^{-1} \tag{5}$$

Here,  $\hat{S}_T$  is defined as in Newey ve West (1987)

$$\hat{S}_T = \hat{\Omega}_0 + \sum_{j=1}^{m(T)} w(j, m) [\hat{\Omega}_j + \hat{\Omega}'_j] \tag{6}$$

$m(T)$  denotes the delay length for the autocorrelation, and is modified by Barlett weights.

$$w(j, m(T)) = 1 - j / (m(T) + 1) \tag{7}$$

It provides  $\hat{S}_T$  to be positive semi-certainty, and flattens the high level delays allowing them to take low weights in the sample autocovariance function. The  $\hat{\Omega}_j$  matrix with the dimension of  $(K+1) \times (K+1)$  is indicated as follows:

$$\hat{\Omega}_j = \sum_{t=j+1}^T h_t(\hat{\alpha}) h_{t-j}(\hat{\beta})' \tag{8}$$

and

$$h_t(\hat{\beta}) = \sum_{i=1}^{N(t)} h_{it}(\hat{\beta}) \tag{9}$$

(Hoechle, 2007, p.288) Here, it is seen that the sum of the singular time  $t$  moment conditions extends from  $h_{it}(\hat{\beta})$  to  $N(t)$ , and that  $N$  is allowed to change with  $t$ . With this arrangement made for the Driscoll and Kraay's (1998) original estimators, the estimators can be used even in unbalanced panels.

In this approach, the standard error estimates made on the basis of the horizontal section averages yield consistent results independent from the horizontal section dimension  $N$ . Besides, the standard errors obtained from the covariance matrix estimated by this approach are also resistive for very general forms of the spatial and periodic correlation.

### 3. Implementation

The purpose of this study is to investigate the macroeconomic effects of OECD countries, having a major economic share in the regional communities, in the scope of the complex economic structure, and accordingly, to determine the effects of those on Turkey's exports and imports. Turkey's bilateral export and import volumes with OECD countries were modelled by using these countries' macroeconomic time series variables and panel data sets.

For this purpose, the national efficiency and national efficiency components of countries, which are gross domestic product (GDP), per capita gross domestic product (PGDP), merchandise exports (MEXP), merchandise imports (MIMP), merchandise trade (MTRD), total labour force (LF), import index (IMPI), export index (EXPI), total reserve (TRES), urban population (UP), the ratio of employment to population (EP), corruption index (COR), crisis (D1), bilateral import (IMP) and export (EXP) variables with the countries, were all included in the analysis.

It was noticed that the variables included in the study should be fully available for the period between 1996 and 2014 for the OECD country group. Turkey's bilateral import and export values were obtained from Turkish Statistical Institute (TSI), the corruption index variable was obtained from Transparency International, other variables were obtained from the world bank. Since the units of measurement of the variables are different from each other, logarithmic data were used in the study. Turkey's import and export data were analyzed in the first part of the study. For this, Turkey's bilateral foreign trade statistics were arranged for the period between 1996 and 2014.

Table 1. Descriptive statistics for the OECD countries

Vrb.	Obs.	Mean	Std. E.	Min.	Max.
IMP	589	5.84	0.81	3.03	7.38
EXP	589	5.59	0.78	2.45	7.18
GDP	589	11.52	0.70	9.68	13.24
PGDP	589	4.38	0.31	3.53	5.01
MEXP	589	10.77	0.71	8.87	12.18
MIMP	589	11.01	0.60	9.30	12.38
MTRD	589	1.78	0.21	1.21	2.26
LF	589	6.83	0.62	5.18	8.21
EXPI	589	2.19	0.22	1.73	2.86
IMPI	589	2.18	0.21	1.71	2.81
TRES	589	10.40	0.67	8.32	12.11
UP	589	7.01	0.64	5.39	8.41
EP	589	1.74	0.05	1.59	1.88
COR	589	0.82	0.12	0.48	1.00

The descriptive statistics of the OECD countries between 1996 and 2014 are given in Table 1. 31 countries were included in the analysis. If we look from the viewpoint of the OECD countries, we see that the average GDP is 11.52 and that the US has the maximum GDP (13.24) among the OECD countries in 2014, but the country with the highest GDP per capita (5.01) is Norway in the years of 2012 and 2013. Regarding the period between 1996 and 2014, it is seen that Estonia is the country with minimal GDP per capita (3.53), and minimal export value index (1.73) in 1996. When Turkey's import volumes from OECD countries in this period is reviewed, it is seen that their average is 5.84, standard deviation is 0.81; the lowest volume importation (3.03) was carried out from Mexico in 1999, the highest volume importation (7.38) was carried out from Germany in 2013. When Turkey's export volumes to OECD countries in the same period is reviewed, it is seen that their average is 5.59, standard deviation is 0.78; the lowest volume exportation (2.45) was carried out to Norway in 2008, the highest volume exportation (7.18) was carried out to Germany in 2014. The lowest corruption index among OECD countries was identified in Mexico (0.48) in 2011.

The deviations from our assumptions were determined in our study performed with countries taking part in the regional and economical communities, of which panel data sets we use in our study. Since the standard errors will be

smaller in case the deviations from assumptions of panel data sets are ignored, the probability of the rejection of null hypothesis will increase in hypothesis tests. As a result of the studies we performed for the OECD member countries, we conclude that there are autocorrelation, heteroskedasticity, and horizontal section dependencies. For this reason, Driscoll-Kraay standard errors were used in our study for being resistant against the cross sectional correlation of the unrecognised form in addition to the heteroskedasticity and autocorrelation on the assumption that covariance stability and poor dependency are in existence on time dimension.

Table 2. The analysis results for importation from OECD countries

Dependent Variable:	IMP		
	Coefficient	Drisc/Kraay Std. E.	
C	0.7037	-0.4516	
EXP	0.3526	0.0532	***
PGDP	0.9757	0.1121	***
EXPI	0.5313	0.0872	***
UP	0.5588	0.0444	***
EP	-3.5545	0.5171	***
D1	-0.0349	0.0165	**
F (6,30)	6966.59	***	
R <sup>2</sup>	0.86		

Note: \*\*\*, \*\* and \* indicate significance at statistical levels of 1%, 5% and 10%, respectively.

As seen in Table 2, when our analysis' findings of Turkey's importation from OECD member countries examined, it is seen that the results obtained using six variables are statistically significant. The most significant positive effect is seen to arise from the per capita GDP (PGDP) in the OECD countries, which is followed by the urban population (UP) of the countries, and export value indices (EXPI) respectively. Another important effect is the appearance of Turkey as a significant variable in exportation (EXP) carried to the OECD countries. It was determined that the importation from OECD countries to Turkey increased with increasing exportation from Turkey to OECD countries. It was determined when the negative effects are reviewed that the employment rate (EP) and global crisis in 2008 (D1) caused the importation from Turkey to OECD countries to decrease.

Table 1. The analysis results for exportation to OECD countries

Dependent Variable:	EXP		
	Coefficient	Drisc/Kraay Std. E.	
C	3.2604	0.6581	***
IMP	0.4765	0.0860	***
PGDP	0.8752	0.1480	***
MTRD	0.3287	0.0934	***
UP	-0.8073	0.1120	***
LF	1.1058	0.1467	***

EP	-3.8775	0.6403	***
F (6,30)	2827.58	***	
R <sup>2</sup>	77.48		

Note: \*\*\*, \*\* and \* indicate significance at statistical levels of 1%, 5% and 10%, respectively.

As seen in Table 3, when our analysis' findings of Turkey's bilateral exportation to OECD member countries examined with macroeconomic time series, it is seen that the results obtained using six variables are statistically significant. It was determined that the Turkey' importation (IMP) from these countries had a positive affect on its exportation to these countries. The increase in OECD countries' total labour force (LF), in per capita GDP (PGDP) and in the share of the merchandise trade in GDP (MTRD) have an increasing effect on the Turkey's bilateral exportation (EXP) to these countries. The increase in the ratio of the urban population (UP) and the employment to the population in the OECD countries leads Turkey's bilateral exportation to these countries to decrease.

#### 4. Conclusion

Due to the fact that all country economies are affected from the events in the rest of the world by mutual trade and financial commitments; the macroeconomic effects took place in a country are associated with those took place in another countries, which reveals that countries' economic components are interdependent. Especially, expansion, or similar general regression, shrinkage, recovery within the structure of an integrated economic activity take place in countries' economies almost at the same time. On the other hand, due to the differences in the economic structure, development levels, systems and geographical characteristics; different characteristics and interactions can arise within countries and economic communities. The purpose of this study is to investigate the macroeconomic effects of OECD countries, having a major economic share in the regional communities, in the scope of complex economic structure, and accordingly, to determine the effects of those on Turkey's exports and imports. For this purpose, Turkey's bilateral export and import volumes with OECD countries for the period of 1996 to 2014 were modelled by using these countries' macroeconomic time series variables and panel data sets.

Considering in respect to the economic and social indicators, six macroeconomic variables were found to have an impact on imports and exports of Turkey. The macroeconomic variable affecting the increase in imports of Turkey at most was determined to be the increase in GNP per capita in these countries. This was followed by the countries' urban population, export indices, the increase in Turkey's export to these countries respectively. The increase in the ratio of the employment to the population in OECD country group, and the global crisis in 2008 caused Turkey's importation from these countries to decrease.

Turkey's bilateral export to OECD countries, especially Turkey's importation from these countries, an increase in total labour force of, per capita GDP of, and the share of merchandise trade in GDP of OECD countries were determined to have an enhancing effect on Turkey's bilateral exportation to these countries. The increase in the ratio of urban population and of the employed to the population in OECD countries decreases the bilateral export of Turkey to these countries.

When Turkey's bilateral foreign trade with these countries is examined, the availability of some similarities and differences were determined. The increase in per capita GDP in both models has an enhancing effect on Turkey's foreign trade with OECD countries. With the increase of the rate of the employment to the population in OECD countries, Turkey's import and export with these countries were found to decrease. As the export value index in OECD countries increases, Turkey's import from these countries increases, and as merchandise trade increases, Turkey's export to these countries increases. The increase in the employed population in OECD countries leads Turkey's bilateral import and export with these countries to decrease.

The increase in the urban population in OECD countries leads different results to appear in importation and exportation. While the increase in the urban population in OECD countries leads Turkey's import to decrease, it also leads Turkey's export to increase.

The global crisis in 2008 caused serious economical shrinkage in developed countries because of the globalization of the economy, and of the mutual movement of the financial market in all over the world. The level of importation of Turkey from OECD countries supports this situation. It was determined that although Turkey's importation was negatively affected by this situation, its exportation wasn't affected at all.

It was determined that the variables such as gross domestic product (GDP), merchandise exports (MEXP), merchandise trade (MTRD), import value index (IMPI), total reserve (TRES) and corruption index (COR) don't have any effect on Turkey's importation and exportation with these countries. As a result of all these, and considering that Turkey's importation is largely depend on its exportation, we conclude that the member countries in the OECD economic and regional country groups take part in an order which enhance their interdependency.

Especially it has been determined that Turkey is highly dependent on industrialized and developed countries in many respects and that it is heavily influenced by the macroeconomic effects in those countries.

## References

- Arellano, M. (1987). Computing robust standard errors for within-groups estimators. *Oxford Bulletin Of Economics & Statistics*, 49(4), 431-434. <https://doi.org/10.1111/j.1468-0084.1987.mp49004006.x>
- Baltagi, B. H. (2005). *Econometric Analysis of Panel Data*. 3. Baskı. Chichester: John Wiley.
- Cameron, A. C, Gelbach, J. B., & Miller, D. L. (2011). Robust inference with multi-way clustering. *Journal of Business & Economic Statistics*, 2, 238-249. <https://doi.org/10.1198/jbes.2010.07136>
- Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549–560. <https://doi.org/10.1162/003465398557825>
- Eicker, F. (1967). Limit Theorems for Regression with Unequal and Dependent Errors. In L. LeCam, & J. Neyman (Eds.), *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability* (pp. 59–82). Berkeley: University of California Press.
- Fama, E., & MacBeth, J. (1973). Risk, return and equilibrium: empirical tests. *Journal of Political Economy*, 81, 607-636. <https://doi.org/10.1086/260061>
- Gow, I., Ormazabal, G., & Taylor, D. (2010). Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review*, 85, 483–512. <https://doi.org/10.2308/accr.2010.85.2.483>
- Guris, S. (Ed.) (2015). *Stata ile Panel Veri Modelleri*. İstanbul: Der Yayınları.
- Hansen, C. (2007). Asymptotic properties of a robust variance matrix estimator for panel data when t is large. *Journal of Econometrics*, 141, 597-662. <https://doi.org/10.1016/j.jeconom.2006.10.009>
- Hoechle, D. (2007). Robust standart errors for panel regressions with cross-sectional depence. *The Stata Journal*, 7(3), 281-312.
- Hsiao, C. (2003). *Analysis of Panel Data*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511754203>
- Huber, P. J. (1967). The behavior of maximum likelihood estimates under nonstandard conditions. *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*, 221–233.
- Kiefer, N. M., & Vogelsang, T. J. (2005). A new asymptotic theory for heteroskedasticity-autocorrelation robust tests. *Econometric Theory*, 1130-1164. <https://doi.org/10.1017/s0266466605050565>
- Newey, W., & West, K. (1987). A simple, positive semi-definite, heteroscedastic and autocorrelation consistent covariance matrix. *Econometrica*, 55, 703-738. North-Holland, Amsterdam, 1247–1318. <https://doi.org/10.2307/1913610>
- OECD. (2016, July 01). Secretary-General's Report to Ministers 2016. *Secretary-General's Report to Ministers*, s. 11.
- OECD. (2016, July 17). *The Organisation for Economic Co-operation and Development (OECD)*. Received from The Organisation for Economic Co-operation and Development (OECD). Retrieved July 17, 2016, from <http://www.oecd.org/about/>
- OECD. (2016, July 23). *The Organisation for Economic Co-operation and Development*. Received from History of OECD. Retrieved July 23, 2016, from <http://www.oecd.org/about/history/>
- Oktay, N. (2005). *Introduction to Foreign Trade*. Eskisehir: Anatolia University.
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: comparing approaches. *Review of Financial Studies*, 22(1), 435-480. <https://doi.org/10.1093/rfs/hhn053>
- Thompson, S. B. (2011). Simple formulas for standard errors that cluster by both firm and time. *Journal of Financial Economics*, 99, 1-10. <https://doi.org/10.1016/j.jfineco.2010.08.016>

- Vogelsang, T. J. (2012). Heteroskedasticity, autocorrelation, and spatial correlation robust inference in linear panel models with fixed-effects. *Journal of Econometrics*, 166(2), 303-319. <https://doi.org/10.1016/j.jeconom.2011.10.001>
- White, H. (1980). Heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817-838. <https://doi.org/10.2307/1912934>
- White, H. (1984). *Asymptotic Theory for Econometricians*. Orlando, Academic Press.
- Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge: MIT Press.

Appendix 1. The list of OECD countries

<b>Countries</b>	<b>Countries</b>
Germany	Switzerland
United State	Italy
European Union	Ireland
Australia	Japan
Austria	Canada
Belgium	Korea
United Kingdom	Luxembourg
Czech Republic	Hungary
Denmark	Mexico
Estonia	Norway
Finland	Poland
France	Portugal
Netherlands	Slovak Republic
Iceland	Slovenia
Spain	Chile
Israel	Turkey
Sweden	New Zealand
	Greece