The Relationship between Foreign Trade and Economic Growth in Turkey

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Abstract

One of the indicators of growth is foreign trade. It has been commonly accepted by most of the economists that international goods and service movement brings out a positive impact upon the growth, increasing the production per capita. The objective of this study is to assess the relations of causality between import, export, and economic growth. The research includes the data dated between 1974 and 2011, obtained from the World Development Indicator database. Toda and Yamamoto (1995) causality analysis has been applied to the data. Related to the results of this study, a bidirectional significant relation has been identified between export and GDP while unidirectional significant relations have been noted with the trend from GDP to import and from import to export. Nevertheless, there is not any significant relation on the opposite trend from import to GDP, or from export to import.

Keywords: Import, Export, Economic Growth, Toda and Yamamoto
1. Introduction

While strictly-controlled foreign trade and foreign exchange regimes were implemented in Turkey during the period of time before 1980, within the scope of import-substitution programs maintained by high customs barriers; the liberalization process was launched in foreign trade through the stabilization program of January 24, 1980. Import could not have been conducted adequately before then due to insufficiency of foreign-exchange supplying commercial activities and upon adoption of the outward-oriented growth model that depends on export, import incremented in parallel with the development of export (Yalınpala, Çokgezen, 2010:10-18). 1990s was the decade that witnessed the liberalization of goods and capital movements as well as occurrence of frequent financial crises in the Turkish economy. In this period, a short-term increase of foreign capital inflow was noted as well as the free movement of goods; the mobility triggered financial crises in Turkey as in the entire globe. As a consequence of the crisis that broke out in Russia in the year 1993 and the foreign exchange crisis that occurred in Turkey in the year 1994, Turkish Lira was devalued and as a result, export increased whereas a considerable decline in import took place. Following the crisis in 1994, Turkish economy was exposed to two foreign financial crises in 1997 and 1998. The crises are respectively the Southeast Asian financial crisis in 1997 and the consequent Russian financial crisis in 1998. In 1998, the increase rate of export and import fell down. As a consequence, macroeconomic indicators such as economic growth marked decline in Turkey. In the aftermath of the decline of macroeconomic indicators, outflow of the foreign capital in Turkey paved the way to the financial crisis of the years 2000 and 2001. With the transition to the strong economy program established in cooperation with IMF and World Bank in 2001, attaining a surplus in foreign trade surplus by reduction of domestic demand was purposed. In this perspective, the increase rate of export that mounted until the year 2005, reentered into a process of decline under the impact of the global financial crisis in 2009.

Within the scope of this study, the relation of causality between import, export, and economic growth in Turkey – as a developing economy – has been analyzed. Import, export, and economic growth were discussed within the notional and theoretical contexts at the first chapter of the study. The second chapter of the study features the literature related to this field of economics. At the third chapter, a research has been carried out to seek for a potential relation of causality between the variables of import, GDP, and export related to the period of time between 1974 and 2011 in Turkey, by means of the causality analysis developed by Toda and Yamamoto (1995). In our study, the data referring to the variables have been obtained from the World Bank database. All of the variables used in analysis are real data (1998=100 base). The conclusions of the study have been featured at the final chapter.
2. Theoretical Contexts

The impacts of import and export on economic growth have been analyzed in several theoretical and empirical studies, and these studies put different results forward. The mercantilist doctrine attributed great importance to foreign trade, in other words; the international exchange process of capital accumulation, which is a notable requirement for economic growth (İşgüden, Akyüz, 1990: 3). For the classical economist Adam Smith, foreign trade enhances the productivity of global resources by international specialization and division of labour. In reference to the ‘Comparative Advantages’ theory of Ricardo, the essential factor in foreign trade is the priority of advantages in production. Classical theories are supply-oriented approaches depending on constant returns to scale and labor theory of value in perfect competition (Seyidoğlu, 2007: 24-35). On the other hand, the neo-classical theory incorporates elements of demand within the scope of foreign trade theory, through its opportunity cost approach (Ünsal, 2005: 111-120). The subsequently developed theories sought to overcome the deficiencies of the ‘Comparative Advantages’ theory. The models introduced by economists such as Heckscher (1919) and Ohlin (1933), Leontief (1954), Rybczynski (1955) are oriented to account for these deficiencies. Both the ‘Factor Endowment’ theory of Heckscher-Ohlin and other models try to clarify the inter-industry trade activities between the underdeveloped states and developing states.

Contemporary foreign trade theoreticians, notably Balassa (1966), Vernon (1966), Grubel and Lloyd (1975), Krugman (1990), tended to interpret the intra-industry trade activities between developed states by means of their empirical studies. Likewise, Helpman and Krugman (1985) argue that considerable part of the global trade activities are conducted between developed states which have similar level of factor endowment and technology. Another criticism on foreign trade puts forwards that the competitive environment inflicted by foreign trade leads to divergence of the market structure from perfect competition and decline in the resource productivity. A counter-view proposed by modern theories claim that imperfect markets caused by the competitive environment of foreign trade promote technological advances and economies of scale. In spite of the approach of classical theories to assume that foreign trade activities are conducted between states; virtually, foreign trade is practiced between enterprises in the real world. Similarly, Porter (1990) engaged in explaining foreign trade with real-world dynamics by means of the ‘Competitive Advantage’ approach.
According to Porter’s model, the corporations which can develop strategies of product differentiations, market segmentation, technological advance and economies of scale manage to attain competitive advantage (Porter 1998: 20).

### 3. Literature Review

Some of the studies that research the impacts of foreign trade on economic growth since the beginning of 1970s illustrate export-oriented models while others focus on import-oriented models. Whereas the relation between export and economic growth is presented in several studies, the direction of the relation is unclear. On the other hand; while economies undergo growth, import increases accordingly. In this respect, certain part of the studies emphasize on the relation between import and economic growth. Below, a literature review is listed related to import, export, and economic growth:

**Table 1: Literature Review to Indicate the Correlation between Import, Export, and Economic Growth**

<table>
<thead>
<tr>
<th>Writers</th>
<th>Methodology</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feder (1983)</td>
<td>The export-led growth model was examined by application of sectional data analysis in half-industrialized and underdeveloped states between 1964 and 1973.</td>
<td>The results of the study marked a significant relation following a trend from export to economic growth.</td>
</tr>
<tr>
<td>Balassa (1985)</td>
<td>The export-led growth model was examined by application of sectional data analysis in 43 different developing states between 1973 and 1978.</td>
<td>The results of the study marked a significant relation following a trend from export to economic growth.</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Methodology</td>
</tr>
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<td>-----------------</td>
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<tr>
<td>Esfahani</td>
<td>1991</td>
<td>Cross-sectional data analysis was applied for 31 different developing state related to three periods of time: 1960-1973, 1973-1981, and 1980-1986.</td>
</tr>
<tr>
<td>Baharumshah and Rashid</td>
<td>1999</td>
<td>The researchers examined the relation between export growth and income growth related to Malaysia by application of Johansen and VEC (vector-error correction) model, incorporating import.</td>
</tr>
<tr>
<td>Ramos</td>
<td>2001</td>
<td>The study examined the correlation between export, import, and GDP growth for Portugal using multivariate Johansen–Juselius (JJ) approach.</td>
</tr>
<tr>
<td>Alam</td>
<td>2003</td>
<td>Time-series analyses were applied for Brazil related to the time period between 1955 and 1990 and for Mexico related to the time period between 1959 and 1990.</td>
</tr>
<tr>
<td>Şimşek</td>
<td>2003</td>
<td>The causality relation between output growth and export growth in Turkish economy was examined by application of a co-integration and error correction model and use of Granger’s causality techniques. Furthermore, a sensitivity analysis based on impulse-response functions was conducted.</td>
</tr>
<tr>
<td>Tang</td>
<td>2006</td>
<td>This study reviewed the ELG hypothesis for China using import as an additional variable. He used both the ARDL and the JJ approaches.</td>
</tr>
<tr>
<td>Awokuse</td>
<td>2008</td>
<td>The study examined and emphasized on the role of export and import in trade and GNP growth in Argentina, Colombia, and Peru. Granger’s causality test and impulse-response functions were utilized to determine whether the growth in trade stimulates GNP or not (or the opposite direction).</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Description</td>
<td>Findings/Implications</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Gerni, Emsen, Değer (2008)</td>
<td>The correlation between import, export, and economic growth related to the monthly data for the period of time between 1980 and 2006 in Turkey was analyzed by means of Feder methodology and Granger’s causality test.</td>
<td>In respect of the estimation results of Feder’s growth equation, export has significant and positive impacts on economic growth. However; upon integration of the variable of import into the model, export became statistically insignificant. The results of Granger’s causality tests indicated that import is a key determinant of export.</td>
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<tr>
<td>Lee (2010)</td>
<td>The study dealt with the possibility of a short-term and long-term dynamic interaction between export, import, and income through a multivariate framework. Integration of import as a variable in the model provided a sounder understanding of the impacts of import on GNP.</td>
<td>The academic paper could not bring in evidence to support the export-led and import-led economic growth hypotheses in the long run. On the contrary; it managed to provide evidence for export-led economic growth, economic growth-led export, import-led economic growth, and economic growth-led import hypotheses in the short run. The study concluded that export and import are important for acceleration of economic growth in the short run for Pakistan.</td>
</tr>
<tr>
<td>Uddin, Khan, Alam (2010)</td>
<td>This study analyzed the causal correlation between export, import, and Gross Domestic Product in Bhutan, using Granger’s causality test and Co-integration Models for the years of 1980-2005.</td>
<td>The co-integration analysis reveals that there is a long-term equilibrium relation and Granger’s causality test puts forth that there is a unidirectional causal relation following the trend from export to import and GDP, and from GDP to import.</td>
</tr>
<tr>
<td>Amiri, Arshia and Gerdtham, Ulf-G (2011)</td>
<td>This study analyzed the linear and non-linear Granger’s causality between export, import, and economic growth in France for the years of 1961-2006 by means of Geo-statistical models.</td>
<td>Results reveal a long-term unidirectional causality following the trend from exports and imports to economic growth.</td>
</tr>
<tr>
<td>Hye and Bouhaker (2011)</td>
<td>The study examined the hypotheses of export-led growth, import-led growth, and external debt sustainability by referring to annual time-series data between 1960 and 2008 for the sample country: Tunisia. ARDL approach was utilized to detect the long-term correlation between export, import, GDP and to determine its direction. Moreover, the strength of the causality relation between the given variables was analyzed by means of Variance Separation method.</td>
<td>The results of the study put forward a unidirectional causality relation following a trend from export to economic growth besides a bidirectional causality relation between import and economic growth. Both export-led and import-led economic growth types are noted in Tunisia. Other the other hand, there is a bidirectional relation between export and import.</td>
</tr>
<tr>
<td>Hye (2012)</td>
<td>This study tested the ELG, GLE, ILG, GLI and foreign deficit sustainability hypothesis in China using annual data.</td>
<td>The results put forth a long-run relation between economic growth and exports, economic growth and imports, exports and imports.</td>
</tr>
<tr>
<td>Zang and Baimbridge (2012)</td>
<td>This article examined the relation between export, import, and economic growth for South Korea and Japan by using VAR model.</td>
<td>According to the results, three variables are co-integrated for both countries and there is a bi-directional causality between import and economic growth for both countries.</td>
</tr>
<tr>
<td>Aytaç and Akdoğan (2012)</td>
<td>The study examined the relation between foreign trade and economic growth in Turkey. It scanned the correlation between</td>
<td>A long-term causality relation between the variables was found in the study and it also marked a significant causality following the trend from export to economic growth.</td>
</tr>
</tbody>
</table>
In most of the analysis, export has a positive effect on the economic growth in accordance with the general theory. However, the results show differences according to the relevant period and the methods used. In some of the studies, the growth direction is towards the export. On the other hand, some studies catch attention to the effect of import on the growth. The results show the meaningful relationship between import and economic growth, making a reference to the importance of industrial goods and technological import. In addition, some studies emphasize the export’s dependence on import in the relationship between export and import.

Although the results of the relevant studies in Turkey show differences according to the methods used, Ay et al. (2004), Erdoğan (2006) emphasizes the bidirectional relationship between export and economic growth. According to Gerni et al. (2008), the effect of export on economic growth is brought out through export. Similarly, Soyyiğit et al. (2010), analyzed the period of 1990-2008 with Toda-Yamamoto causality test and claimed that manufacturing industrial export and economic growth occur through intermediate good and investment good import. Tuncer (2002) analyzing the relationship between import, export and growth showed that there exist a unidirectional relation from growth to export, and bidirectional one between import and economic growth. Aktaş (2009), analyzed the relationship between import, export and economic growth with Johansen cointegration test and found out a unidirectional causality relationship, in the long term, from export to import, import to export, growth to export and growth to import. In their study that analyzed the relationship between import, export and growth between 1989-2007, İspir, Ersoy, Yılmazer (2009) came to the conclusion that export has a determining effect on growth and import affects growth through export. In the study lasting about twenty five years, Saraç (2013), (1989:2-2011:4) examined the effects of import and export on economic growth with a non-linear econometric method and found out that export and import affect economic growth in a positive way.

4. Related Data, Methodology and Empirical Findings

Seeking to examine the correlation between three variables as import (IMP), Gross Domestic Product (GDP), and export (EXP) for the years between 1960 and 2011 in Turkey,
the study refers to the data obtained from the World Bank database. All of the variables utilized in the analysis are real data (1998=100 base). During the analysis, Napierian logarithm values of the variables have been used. Initially, the study aimed to specify the order of stationary for the variables LNEXP, LNGDP, and LNIMP by means of Augmented Dickey-Fuller (ADF) unit root test. The results derived by the ADF unit root test applied to the level values of the variables are illustrated in Table-2.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Lag Length</th>
<th>τ-statistics value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNIMP</td>
<td>1</td>
<td>-3.44928*</td>
</tr>
<tr>
<td>LNGDP</td>
<td>3</td>
<td>-3.15514*</td>
</tr>
<tr>
<td>LNEXP</td>
<td>1</td>
<td>-2.59705*</td>
</tr>
</tbody>
</table>

Note: * denotes that the basic hypothesis cannot be rejected on the significance level of 5%. The lag length values have been determined taking account of the Akaike Information Criterion.

Following the conclusion that the variables of export, import, and GDP are non-stationary in level with respect to the ADF unit root test results that are presented in Table-1; ADF unit root test has been applied to the first-difference values of the variables and the test results are illustrated in Table 3.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Lag Length</th>
<th>τ statistics value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔLNIMP</td>
<td>0</td>
<td>-6.22151*</td>
</tr>
<tr>
<td>ΔLNGDP</td>
<td>1</td>
<td>-2.03932*</td>
</tr>
<tr>
<td>ΔLNEXP</td>
<td>0</td>
<td>-6.81226*</td>
</tr>
</tbody>
</table>

Note: * denotes that the basic hypothesis is rejected on the significance level of 5%. The lag length values have been determined taking account of the Akaike Information Criterion.

The ADF unit root test results applied to the first-difference values of the variables of import, export, and GDP have revealed that both variables are stationary in first-differences and \( I(1) \) variables. Hence, the variables of import, export, and GDP utilized in the analysis are \( I(1) \) variables.

After determining the orders of stationarity of the variables; the potential causality relation among the variables of import, export, and GDP has been examined by means of the causality analysis developed by Toda and Yamamoto (1995). This type of causality analysis has been used as unit root tests and co-integration tests are not necessary in this approach. In Toda and Yamamoto’s (1995) causality analysis, extended Vector Autoregressive Models (VAR) are employed, composed of absolute variables and through such models, it becomes possible to examine dynamic relations between variables. Furthermore, presence of a potential co-integration relation between variables does not have an effect on analysis results in this method. The models utilized in the causality analysis of Toda and Yamamoto (1995) and composed of absolute variables have been adopted for our study as follows:
Presented on models 1, 2, and 3, the value $k$, denotes the optimal lag length in VAR model and $d_{\text{max}}$ denotes the highest of the integration order values of the variables within the system. The most crucial point is to define rational $k$ and $d_{\text{max}}$ values. Described as the optimal lag length, $k$ can be defined by means of Akaike and Schwarz information criteria while $d_{\text{max}}$, the highest integration order value, can be defined by means of unit root tests. Following the definition of $k$ and $d_{\text{max}}$, the extended $VAR(k + d_{\text{max}})$ models 1, 2, and 3 are estimated through Seemingly Unrelated Regression (SUR) method. After the estimation of the models 1, 2, and 3 by means of SUR method; in order to detect causality relation with the trend from the export variable to GDP variable, $H_0: \delta_{1i} = 0$ hypothesis is tested by use of the modified WALD test statistics. Again; in order to detect causality relation with the trend from the import variable to GDP variable, $H_0: \phi_{1i} = 0$ hypothesis is tested by use of the modified WALD test statistics. Presence of causality relation with the trend from GDP variable and import variable to export variable can be detected by test of $H_0: \beta_{2i} = 0$ and $H_0: \phi_{2i} = 0$ hypotheses respectively. Lastly, presence of causality relation with the trend from GDP variable and export variable to import variable can be detected by test of $H_0: \beta_{3i} = 0$ and $H_0: \delta_{3i} = 0$ hypotheses respectively. Provided that the MWALD test statistic value computed is greater than the $\chi^2$ table value with degree of freedom $k + d_{\text{max}}$, the null hypotheses shown above are rejected.

The lag length value $k$ has been defined as “1” for the models 1, 2, and 3 by means of Akaike information criterion. $d_{\text{max}}$ value has been defined as “1” based on the ADF unit root test results, which are featured in Table-2 and Table-3. Hence, the causality analysis results were found, which are presented in Table-4, by estimation of extended VAR (2) model.
According to the causality test results presented in Table-4, there is a unidirectional causality relation with the trend from the import variable to the export variable as well as the trend from the GDP variable to the import variable. Yet, there is a bidirectional causality relation between the variables of GDP and export. According to these results; while the export variable impacts the GDP variable, the GDP variable impacts the export variable. On the other hand; while the GDP variable impacts the import variable, the import variable impacts the export variable.

5. Conclusion

With the stability program of 24 February 1980 in Turkey, liberation process started in the external trade. In this period, outward-oriented growth that depends on export was adopted. In the period before 1980, inward-oriented programs protected with high customs walls were replaced with export dependent growth models. After Turkey adopted export dependent outward-oriented models in its economic growth, the rate of export’s fulfilment of import increased day-by-day starting from the year of 1980. Between 1980-1989, increases were observed in growth rates in general terms. 1990’s are the years when the goods and capital movements were liberated. Export increased gradually until 1997’s. Export rate decreased with 1997 South East Asia Crisis and 1998 Russia crisis. During this period, import rate also decreased. In 2000’s external demand was restricted and surplus was aimed in the external trade. As of the beginning of 2000’s, export showed increase until 2005. On the other hand, import increased in 2000 and started to decrease with the 2001 financial crisis. During the global crisis period of 2009, some decrease was observed in import, export and economic
growth. Within the framework of this study, the relationship between import, export and
growth in Turkey between the years of 1974 and 2011 was analysed empirically.

The results of this study have marked a bidirectional relation between export and GDP
besides unidirectional relations with the trend from GDP to import and from import to export
in Turkey. Nevertheless, no significant relation with the trend from import to GDP and from
export to import has been noted. The model underlined that GDP is the determinant for both
import and export. Accordingly, as the Turkish economy booms, it paves the way for increase
of import as well. On the other hand; import that increases in parallel with economic growth
supplies inputs to the export-oriented industries in dependence on exported inputs. This
instance corresponds to the presence of the causality relation with the trend from economic
growth to import and from import to export, which has been identified in consequence of this
empirical study.

These results underline the importance of export oriented growth policies in Turkey. The
stability of economic growth should be supported with outward-oriented growth models. As is
known, export is an important determining factor of growth. However, it is not possible to
claim that Turkey benefits from its export potential. On the other hand, export in Turkey is
highly dependent on the import of capital goods and intermediate goods. Thus, another
determining factor of increase in Turkey’s export is import. This structure depending on
import in underlying the exports growth effect brings together the problem of current deficit
in Turkish economy. In this regard, it is crucial to increase Research and Development
investments in Turkish economy to raise the production of intermediate and capital goods
which led to a large part of the current account deficit.

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