Are Imports a Reason of Growth?: Evidence from Turkey

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Abstract: In smaller and open economies, import and foreign trade play major roles in economic development and growth. Thus, the importance of import and export in economic growth is a field of research, which is highly current in economic literature. The purpose of this study is beyond determining, whether the export oriented growth hypothesis is valid for the period between 1998-2008 and it also aims to determine the role import has over export and growth theoretically and econometrically. Engle-Granger causality test was conducted on the data of these periods inspected. Based on the findings obtained; no causality relation is available between export and growth, while bidirectional causal relation was determined between import and export. Furthermore, unidirectional causal relation was determined from import to export.

Key words: Export, import, economic growth, causality, JEL classification; F41, F43, F49, foreign trade

INTRODUCTION

In developing countries, one of the basic targets of economy policies is minimizing the difference of development between them and the developed countries. For this purpose, they are obliged to put emphasize on industry. The developing foreign trade increasing with the industrialization and the internal and external economies created, rapid technological developments and their training effects are the driving force in development. The developments in foreign economies are closely followed up by nearly all countries and it attracts attention from the public as well. All positive or negative progresses in foreign economic affairs also affect many economic components of economy such as rate of inflation, employment, growth rate and exchange rates indirectly. The components which activate growth in an economy are substitution of imports, export and increases in domestic demand. The first two are the effects from foreign trade. Third is regarding the domestic expenditures. Development based on the import oriented industrialization is dependent on the total domestic demand being driven from imported goods to domestic goods. The driving force in export oriented industrialization arises from foreign demand. The targets adopted are production for the global markets and increasing the export as well as using the similar scale economies.

The relation between the increase in export and growth and development is subject to debates in literatures for many years and there is an immense amount of literature in this respect. Darrat (1987), Edwards (1993), Atukeren (1994), Paul and Chowdury (1995), Abhayaratne (1996) and Park and Prime (1997) can be given as examples, which lead the literature. On the other hand, research of Chris and Utkulu (1997), Giles and Williams (2000) and Awokuse (2005) are also in literature.

The purpose of this study is debating the basic foreign trade policy implemented during the period including the November-2000 and February 2001 crisis after the crisis in the year 1994 as of 1998. Q1 and 2008:Q periods and conducting the mathematical analysis of import and export of goods and services in this period and its effects on the increase in products in statistical aspect. This research is different from the current literature in terms of analysing the export oriented growth analysis as well as analysing the relation between import and growth theoretically and empirically. Furthermore, it submits evidences as to the import oriented growth in Turkey.

Conceptual framework: According to the conventional theory of foreign trade, if each country specializes in the goods and services at which it has comparable superiority, the production in the world will increase through foreign trade and the countries engaged in free foreign trade will benefit from this. According to the theory of comparable superiority, the developing and under developed countries, based on their current appointment of factors and technological structure need to specialize in the production of foodstuff, mining and agricultural raw materials and by exporting said goods, they need to import many industrial products from

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developed countries. However, this type of a model will cause the continuance of imbalances in the long term other than being insufficient in explaining the foreign trade today.

Based on the nature of the relations with the foreign trade, the industrial strategies are divided into two groups being import-oriented and export-oriented industrialization. Import oriented industrialization is supplying for the domestic demand, which was initially met with import, being covered with domestic production by taking protective and incentive precautions and it is a developmental strategy. Consequently, it requires intense intervention from government; including foreign trade restrictions such as customs tariffs, quotas and invisible restrictions as well as interests, prices for basic goods and inputs. In the import oriented industrialization model, market mechanisms lose its functionality by a great deal in the allocation of sources. A balanced industry should be considered instead of selective industry. Instead of the sectors, which may compete with the world in future, based on the predicted increases in domestic demand, balanced distribution of investment funds among all industries is envisaged. The export oriented industrialization strategy is based on the comparative superiorities. Being selective is the main principle in industrialization. In this strategy, the industries having higher potential of competition and development are supported. Since the production is mainly performed for the foreign markets, the shortfall in domestic markets expire, thus the production facilities are founded with optimum technical capacity and the opportunity to benefit from economies of similar scale can be obtained.

In the literature of international trade, the export oriented growth hypothesis defines the relation between export and gross product. In the mentioned hypothesis, the positive relation between the claimed increase in export and the national product implies that the export oriented policies will contribute to the economic growth (Alici and Ucal, 2003).

Based on the export oriented industrialization competition, changes are required in manufacturer behaviours and production structure. Foreign competition destroys the monopoly markets and consequently, the competition requires finding new methods to diminish their costs. This accelerates technological development. The growth in the volume of export increases the hard currency income. The import outgoings of the country increases, meanwhile since an export oriented liberal foreign trade policy is implemented. Thus, the ratio of foreign trade increases in Gross National Product but also balance of payments will suffer from deficits. The increase in export is the increasing demand in a country's production. Thus, the increase of production in a country will cause the consumption, employment, production in

said country to increase (Olorunsolaand Olorunfemi, 2006). According to the export oriented growth hypothesis, the increase in export is the demand from the foreigners in the country's production so the production and employment will increase. As the result of implementing a policy to increase the ratio of export in foreign trade; the increase in the export income will also increase the exchange income required importing of capital and intermediate goods. This matter is essential for countries with economies dependent on other countries in terms of technology and intermediate goods that is because all countries in global economy today have to establish relations with the rest of the world so as to increase their production capacities. In export oriented growth model, since the target is foreign markets, the competition in export markets will cause the technology to advance (Abdulnasser and Irandoust, 2000). In brief, in export oriented growth model, it is stated that the relation between export and production is a positive relation from export towards production.

With the program of structural changes and transformation in 1980, the import oriented industrialization strategy was abandoned, while export oriented industrialization strategy was adopted. With this strategy, great increases incurred in import and export. Towards the end of 1980s, with the increase in export, due to the fact that the import increased even more, current accounts deficit increased. In order to substitute the current accounst deficit, the restrictions for the capital movements were eliminated in the year 1989. If the capital movements are free in economies integrated to foreign economies and when the interests are fixed and there is fixed exchange rate implementation, it is possible that capital will exit/avoid from said country.

After the insufficient and unsustainable growth, which continued for many years, the use of exchange rate being used as currency peg in order to maintain the stability of prices and rates was adopted in December 1999 upon 18th support from IMF. However, the crisis which started in February 2001, ended with the currency floating and free movement policy of the capital and flexible exchange rate. So, the low rate and financing model for external deficit, while pressurizing the increase in export, increased the import.

MATERIALS AND METHODS

The causality relation between two or more variables can be determined through the use of Engle-Granger causality test, Vector Autoregressive Model (VAM) and Vector Error Correction Model (VECM). The causality relation between two variables, if all variables are fixed

I (0) the Engle-Granger Causality test may be conducted (Enders, 2004). The fixed exchange rate policy has been implemented in Turkey's economy until February 2001 crisis and following this crisis; the variable exchange rate policy was adapted.

As the result of this new exchange rate policy implemented; the foreign trade variables, Export of goods and services (EX), Import of goods and services (IM) variables and the Gross Domestic Product (GDP) affected by those variables caused the diffraction.

As the diffraction is considered, the mentioned variables become fixed. Generally GDP, EX and IM variables being I (0), the causal relation between the mentioned variables can be expresses with the following Eq. 1-3:

$$GDP_t = \beta_{10} + i\sum_{i=1}^{N_{11}}\beta_{11}GDP_{t-i} + \sum_{j=1}^{N_{12}}\beta_{12}EX_{12} + u_{1t} \quad (1a)$$

$$GDP_t = \beta_{10} + i\sum_{i=1}^{N_{11}}\beta_{11}GDP_{t-i} + \sum_{j=1}^{N_{12}}\beta_{12}IM_{12} + u_{1t} \quad (1b)$$

$$EX_t = \beta_{20} + i\sum_{i=1}^{N_{21}}\beta_{21}GDP_{t-i} + \sum_{j=1}^{N_{22}}\beta_{22}EX_{22} + u_{2t} \quad (2a)$$

$$IM_t = \beta_{20} + i\sum_{i=1}^{N_{21}}\beta_{21}GDP_{t-i} + \sum_{j=1}^{N_{22}}\beta_{22}IM_{22} + u_{2t} \quad (2b)$$

$$IM_t = \beta_{30} + i\sum_{i=1}^{N_{31}}\beta_{31}IM_{t-i} + \sum_{j=1}^{N_{32}}\beta_{32}EX_{32} + u_{3t} \quad (3a)$$

$$EX_t = \beta_{30} + i\sum_{i=1}^{N_{31}}\beta_{31}IM_{t-i} + \sum_{j=1}^{N_{32}}\beta_{32}EX_{32} + u_{3t} \quad (3b)$$

At this point, the constant parameters, β_{10}, β_{20} and β_{30} in Eq. 1a and b-3a and b and error terms u_{1t} u_{2t} and u_{3t} are white noise processes with zero average and fixed variance. N_{11} N_{12}, N_{21}, N_{22}, N_{31} and N_{32} show the optimal delay durations. For the equality in Eq. 1a and b, the hypothesis below can be formed:

$$H_0 : \beta_{12j} = 0 \quad j = 1,......N_{12}$$
$$H_1 : \beta_{12j} \neq 0 \quad \text{for at least one j}$$

If H_0 hypothesis is denied, according to equality (1a), EX variable is Granger cause of GDP variable. In the same way, if H_0 hypothesis is denied for equality (1b), IM variable is Granger cause for GDP variable. On the other side, for equality in Eq. 2a and b, the hypothesis can be formed:

$$H_0 : \beta_{21i} = 0 \quad i = 1,......N_{21}$$
$$H_1 : \beta_{21i} \neq 0 \quad \text{for at least one i}$$

If the basic hypothesisis H_0 is denied, based on the equality (2a), GDP variable is the Granger cause of EX variable. In the same way, if basic hypothesis H_0 is denied, based on the equality (2b), the variable GDP is the Granger cause of IM variable. For equality in 1a and b and 2a and b), if the basic hypothesis H_0: $\beta_{12j} = 0$ and H_0: $\beta_{21i} = 0$ are denied, respectively. Bidirectional causal relation is available between EX, IM and GDP variables. Equality in 3a and b expresses the Granger causal relation between the variables EX and IM. The hypothesis can be conducted for the equality in 3a:

$$H_0 : \beta_{32j} = 0 \quad j=1,....N_{32}$$
$$H_1 : \beta_{32j} \neq 0 \quad \text{for at least one j}$$

If H_0 basic hypothesis is denied, based on the equality in 3a, the variable EX is the Granger cause of IM variable. In a similar way, the hypothesis mentioned will be conducted for the equality in 3b:

$$H_0 : \beta_{31i} = 0 \quad i = 1,......N_{32}$$
$$H_1 : \beta_{31i} \neq 0 \quad \text{for the last one i}$$

If H_0 basic hypothesis is denied, based on equality in 3b, the variable IM is the Granger cause of EX variable. If H_0: $\beta_{32j} = 0$ and H_0: $\beta_{31i} = 0$ hypothesis are denied, bidirectional causal relation between EX and IM variables will be available.

RESULTS AND DISCUSSION

In order to determine the causality analysis between two or more variables, it must be determined whether the variables include any unit roots. In the analysis conducted without any structural diffraction, it was seen that the series include unit roots. The summarized statistics as to the analysis conducted are submitted in Table 1. As of the period inspected, it can be understood

Table 1: Results of adf (augmented dickey-fuller) test

Variables	ADF test statistics	Critical values (5 %)	(C; T; L)
1998:Q1-2008:Q4			
EX	-4.054469	-3.529758	C; T; 4
IM	-2.495293	-3.518090	C; T; 0
GDP	-1.889814	-3.529758	C; T; 4

		Critical value $(\tilde{\tau}_B)$			
Variables	Test statistics (t_B)	1%	5%	10%	(C; T; L)
1998:Q1-2008:Q4					
$Y_t = \mu + \beta t + \gamma_3 DVT^* + \tilde{Y}_t^B$					
$Y\widetilde{EX}_t^B$	-3.637050	-4.51	-3.87	-3.58	C; T; 4
$Y\widetilde{IM}_t^C$	-3.595564	-4.51	-3.87	-3.58	-; -; 0
$YGD\tilde{Y}_t^B$	-4.248014	-4.51	-3.87	-3.58	C; T; 4

*C: Constant ; **T: Trend; ***L: Delay; $\lambda = 0.3$

Table 2: Engle-granger causal test

Direction of causality	F-statistics	p-value	Result
1998:Q1-2008:Q4			
EX → GDP	1.26681	0.29366	Denied
GDP → EX	0.49505	0.61352	Denied
IM → GDP	45.0258	0.00870	Accepted
GDP → IM	5.40707	0.00871	Accepted
EX → IM	1.39127	0.26147	Denied
IM → EX	11.4188	0.00014	Accepted

a priori following the graphical analysis that diffractions can be observed within the series following the year 2001 (the year of the economic crisis), when the changes in exchange rates occurred. Diffraction with variable slope can be observed in all three series mentioned. So, total deviation model was used so as to determine this diffraction. As the result of the tests, which consider structural diffractions, it can be understood that the series became constant at the importance rates of 5 and 10%. In this case, the test to be conducted for causality is Engle Granger causality test. The summarized statistics regarding the mentioned test results were shown in Table 2. Based on the results of the analysis; there is no relation of causality between exporting and growth, however there is a bidirectional causality relation determined between exporting and growth. Moreover, bidirectional causality relation is available between importing and exporting.

CONCLUSION

Within the smaller scaled developing and outward oriented economies, the share which the exported country has included by the added value for the products manufactured for foreign markets is rather low. Intermediate materials and use of technology are obligatory regarding these goods. In the goods manufactured for export markets, intermediate materials and technologies are essentially supplied by the foreign markets. However, in such economies, the ratio of the total added value of the goods imported the share, which the importer country has is rather low.

In this framework, the periods 1998:Q1-2008:Q4 was inspected based on data of trimester. No findings could be reached as to support the hypothesis of export oriented industrialization hypothesis. On the other side, while the bidirectional causal relation is available between importing and growth, the causal relation between importing and exporting is unidirectional. Especially, after February 2001, the financing model based on higher interest rate with lower rate of currency was adopted. While such a financing model increased importing, it has pressurized exporting.

Conclusively, regarding the period inspected, the export oriented growth model is not valid for Turkey. Thus, the findings obtained from this research conducted shows that economic growth in Turkey is more dependent on importing rather than exporting. In a similar way, it is concluded that exporting grows based on importing, which is understood from the econometric analysis conducted. In Turkey, we may consider the growth as import oriented growth.

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