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Is export-based growth hypothesis valid for Turkey?

Fatih OKUR and Özgür Bayram SOYLU
Hacettepe University Beytepe Campus Department of Economics

Abstract

The main target of this paper is to analyze whether export-based growth hypothesis is valid for Turkey or not. The empirical tests applied with the help of 1980-2015 period in Turkey. In the analysis, ADF unit root, Johansen Co-integration and Granger Causality tests were applied. According to the unit root test results, all series were found to be stationary in the first differences. The Johansen co-integration test results show that there is a long-run relation between economic growth, exports and government expenditure. As a result of the analyzes made with the help of data covering the period of 1980-2015, no Granger causality result was found between the variables. According to these results, the export-based growth hypothesis of Turkey does not seem valid.

Keywords: Economic growth, exports, government expenditure, VAR, Granger causality

1. Introduction

The classical economists, who were before the Great Depression, argued that market forces dominated in the economy in order to increase public welfare. However, during Great Depression and following this event it was faced economic and social difficulties. To overcome these difficulties and to increase welfare, the Keynesian ideas argued that it was necessary to intervention economic structure by government. The weight of state has increased with Keynesian policies become important so government expenditure has increased by years. *(Gül, Yavuz, 2011: 73)*

Increasing in the government expenditure has been shown as a one of the major causes of macroeconomic issue by some economists. By the reason of increase in the government spending, the share of state in the economy has increased. Countries attempting to remedy this problem have implemented liberalization and privatization programs to reduce the public sector's share of the economy after 1980. However, the share of the public sector in the economy has continued to increase in many countries (Gül, Yavuz, 2011: 74). This case may negatively affect economic growth. Such a result is mostly due to the ineffectiveness of the public, and related to this, regulatory activities bring very high costs to the budget (Isik, Alagöz, 2005: 63). It is worth mentioning that the populist approaches of power are the factors that impact the efficiency of the system (Uzay, 2002).

Another issue underlying these studies is the relation between exports and economic growth. It's been pointed out by many thinkers after A. Smith that economic growth is positively affected by foreign trade and that exports are one of the main sources of growth, and liberalization of foreign trade is advocated (Sandalcılar, 2012: 162).

Most developing countries have abandoned their growth policies based on import substitution in the last 30 years and have shifted to export-led growth policies (Aktaş, 2009: 36). Following the decisions of January 24, 1980, like these countries in Turkey, the import-residence-based growth policy has been abandoned and passed on to an export-based industrialization policy (Yardımcıoğlu ve Gülmez, 2013: 145).

The policy makers of the 1960s showed a splendid interest in the potential link between exports and economic growth. For this relation, the country has raised the question whether it will increase the exports or the exports will increase as the growth of the country increases (Konya, 2006: 978).

In the literature there are contrasting answers given to this question. While some empirical studies have pointed to a correct causality for economic growth, others have come to the conclusion that exports have increased as a result of growing up (Awokuse, 2006: 389).

The direction of the causality relationship between economic growth and exports may vary. The direction of this causality can occur in three ways. One is a uni-directional causality relation from export to growth, the other one is a uni-directional causality relation from economic growth to export, and the lastly is a bi-directional causality relation between economic growth and export.

2. Literature

In the economic depression during the 1930s, Keynes argued that, unlike classical models, the state must intervene in the economy through taxes and expenditures to increase total demand in order to get rid of the economic stagnation. The increase in the total demand by the State leads to increases in the spiral of consumption-investment-national income. According to Keynes, total demand is determined by investments, and total demand is also increasing by multiplying total production. Thus, according to the government expenditures at the beginning, there is a big increase in the national income. This is called the "multiplier" mechanism. In other words, the increase in government expenditures is the multiplication of the government expenditures by the coefficient which shows how many times the national income will increase these expenditures. In other words, as the spending that the state has made increases, the national income that is balancing the goods market is increasing accordingly. (Bulut, 2001).

The multiplier effect of government spending shows how much of a unit increase in the amount of spending will be on the effect of economic growth. In the short run, the multiplier of government expenditure has a direct impact on economic growth. However, the effects of some of the expenditure items made by the government are not immediately apparent, but they are appearing in a long period of time. Expenditures such as education, health and infrastructure are directly related to the national income and the long-term indirect effect affects the economy in the

positive direction. As a result of the investments that the state has made to the health institutions and the social security institutions in this area, The effects of these expenditures can be given as an example of this in that the people who get healthier in shorter time by getting better services should return to their jobs in a shorter time and be more efficient. Nevertheless, the government's spending on the education sector will provide people with better quality education. Spending on areas such as the application laboratories provided, development in education, schooling, and sufficient number of teachers will increase educational quality. The effects of these expenditures will not appear immediately, the quality of trained personnel will be trained in the long term, and these will contribute to the economy with the results of working efficiently and increasing the income (Arısoy, 2005: 2).

Adolph Wagner has stated that, there will be an upsurge in the economic activities of the panel along with economic development and therefore in government expenditures. This increase is due to the necessity of the state to carry out its administrative and security duties more effectively with industrialization and the placement of the legal system is more important than the old one (Arısoy, 2005: 2). In addition, rapid urbanization and increased population density make government expenditure at a higher level for both public services and socio-economic arrangements a necessity (Şener, 1996: 29, Aksoy, 1991: 115, Nadaroğlu, 1992: 145). In addition, technological development with industrialization has made it necessary for the state to make large-scale investments such as communication, transportation (Mann, 1980: 189). For these reasons, it is argued that government expenditures will increase with industrialization.

The theoretical implications of the relationship between the size of government expenditure and the saving and growth rate suggest that a rise in government spending will reduce the saving and growth rate (Barro, 1990; Terasawa and Gates, 1998).

In the first empirical studies on the size of the public sector and economic growth relationship, there is a negative relationship between public sector size and economic growth (Landou, 1983, Grier and Tullock, 1987). In some studies using the Granger causality test, bi-directional causality from public sector size to economic growth and from economic growth to public sector size was determined.

Ahmet and Miller (2000) classify government expenditures by debt or tax and financing methods and examine their effects on investment in developed and developing countries. Government expenditures financed by debt were positive for developing countries and negative for developed countries. Tax-financed government expenditures exclude investment in two of the developed and developing countries.

Gül (2011) examined the causality between economic growth and government expenditures, current expenditures, investment expenditures, transfer expenditures for Turkish economy. He found a long-lasting relationship between the series and used the granger causality test to explore the direction of this relationship. The result of the causality test was found to be a one-way causality relation from government expenditures and investment and transfer expenditures to economic growth. This indicates that the Keynesian hypothesis is valid for Turkey.

Miller and Russell (1997) have grouped government spending according to their funding patterns in their work for developed and developing countries. The increase in defense, health,

social security and welfare spending has been found to negatively affect domestic growth per GDP in developing countries. In developed countries, they found that the increase in educational spending positively affects growth. Ghali (1998) examined the economic growth, government expenditures, investment expenditures, imports and exports variables by using the method of multiple co-integration with the size of public sector and economic growth. In Japan Canada France Switzerland and Norway have found that the direction of causality is public sector size to economic growth. In the other five countries, public sector size, investment expenditures and economic growth through exports are indirectly affected.

In his study of Awokuse (2006), he applied the VAR model. He examined the relation between export and economic growth for Bulgaria, the Czech Republic and Poland using the 1993-2004 quarterly data. In these countries, the direction of causality is unidirectional-from export to economic growth-.

Konya (2006) studied the relationship between real GDP and real exports for the 24 OECD countries using the Granger causality analysis. The data are annual and covering the years 1960-1997. The empirical results show that there is a uni-directional causality for Belgium, Denmark, Iceland, Ireland, Italy, New Zealand, Spain and Sweden –from export to economic growth-. For Austria, France, Greece, Japan, Mexico, Norway and Portugal, he has reached a uni-directional causality from economic growth to export. For Australia, Korea, Luxembourg and Switzerland also found bi-directional causality between exports and growth. For the United States and the United Kingdom, no causality has been reached.

Ramos (2001) used the 1865-1998 period data for his study of the relationship between imports, exports and growth for Portugal. VAR model used in study. There is a bi-directional causality between exports and growth, and there is no causality between exports and imports.

In their study of Pistoresi and Rinaldi (2012), they examined the relation between exports, imports and growth for Italy during 1863 to 2004. VAR model was used in the study and data are annual. Between 1863 and 1913, causality was found uni-directional-from export to growth-.Between 1914 and 1939, there was no long run relation between variables. Between 1951 and 2004, there was a bi-directional causality between exports and imports.

3. Data Set and Methodology

The annual data for the 1980-2015 period, which was used in econometric analyzes to measure Turkey's government expenditures, exports and national income relations, was obtained from the official website of the World Bank. In this study, the causality relations between public expenditures, exports and economic growth are investigated as a whole. In this context, before doing Granger causality tests, it is necessary to know about the integration grades of the time series used in the analysis and whether they have common trends (Gül ve Ekinci, 2006).

In analyzes with time series, it is first necessary to subject the series used in the model to the stationary test. The mean variance of a time series does not change over time, and the covariance between the two periods is stable if it depends only on the distance between the two periods (Gujarati, 1999:718-720). All data used in the study are converted to natural logarithm.

For regression, the following equation can be written by moving from previous studies to examine the relation between variables affecting national income and national income.

$$\Delta lnGDP=\beta_0 + \beta_1 lnEXP + \beta_2 lnGE + \mu \qquad (1)$$

In the above equation β0, β1 and β2 show the estimated regression coefficients. ΔLn GDP is growth, lnEXP logarithm is the real export amount, and LnGE is logarithmized real government expenditure.

The following tests will be applied during the study:

- Time series unit root test,
- Long-term co-integration test between variables,
- Granger causality test,
- Impact-response analyzes to determine whether short- and long-term effects are positive or negative

4. Empirical Findings

4.1. Augmented Dickey and Fuller Unit Root Test (ADF)

In the ADF unit root test, equation (6) is estimated and it is tested whether the α (α = ρ-1) parameter is statistically different from zero. The assumption that the α parameter is non-zero indicates that the series is stationary at the level (Dickey ve Fuller, 1981).

$$\Delta Yt = \beta 0 + \beta 1\, t + \alpha Yt\text{-}1 + \sum_{i=1}^{k} Yi\, \Delta Yt\text{-}1 + \varepsilon t \qquad (2)$$

Table 1. ADF Unit Root Test

Variable	Constant	Constant/Trend
LGDP	0,2077 (1)	-3,6930(0)
ΔLGDP	-6,0097(0)[a]	-5,9028(0)[a]
LEXP	-2,5601(6)	-2,3245(8)
ΔLEXP	-5.4292(0)[a]	-5.5740(1)[a]
LGE	-0,0694 (0)	-3,1836(1)
ΔLGE	-4,4501(0)[a]	-4,3304(0)[a]

(a): the variable is stationary at the level of 1%.

Table-1 shows the results of the Dickey-Fuller Test (ADF) test applied to the model series. GDP, EXP and GE series are higher than MacKinnon critical values at constant and constant/trend. Therefore, the hypothesis that unit valleys in level values of relevant variables have not been rejected. To solve this problem, the first differences [I (1)] of the series in the model are taken. It is observed that ΔLGDP, ΔLEXP and ΔLGE variables are stationary with the first differences [I (1)] in both constant and trend, or in other words they do not contain unit roots. All of these variables were stationary at 1% significance level.

4.2. Johansen co-integration test

Co-integration can be defined as a common act between variables in the long run. Technically, according to Engle-Granger (1987), where each of the variables is integrated at I (1), the linear combination of the series may be stationary, even though the series are not stationary by level. The series are not stable, but the Linear Composition Stability will also invalidate the standard Granger causality in this case, so Error Correction Models need to be created. For this reason it is necessary to test the co-integrated properties of the original series before Granger causality tests are applied (Çetintaş, 2004: 26).

After the VAR model gave the stationary condition, the results in Table-2 were obtained using the Johansen co-integration method. The results of the co-integration test show that there is a long-run relationship between GDP, EXP and GE. The maximum eigenvalue test points to the presence of three (3) co-integrated vector.

Table 2: Johansen co-integration test

Null	**Eigenvalue**	**Trace Stat.**	**%5 Critical Value**	**Prob.**
r=0	0,5674	55.8232	35.1927	0,0001*
r≤1	0,4228	28.1663	20.2618	0,0033*
r≥2	0,2620	10.0286	9.1645	0,0342**
Max-Eigen				
Null	**Eigenvalue**	**Max. Eigen Stat**	**%5 Critical Value**	**Prob.**
r=0	0,5674	27.6568	22.2996	0,0081*
r≤1	0,4228	18.1377	15.8921	0,0219**
r≥2	0,2620	10.0286	9.1645	0,0342**

*** And ** indicate that the null hypothesis at the significance level of 0.01 and 0.05 respectively is not rejected.**

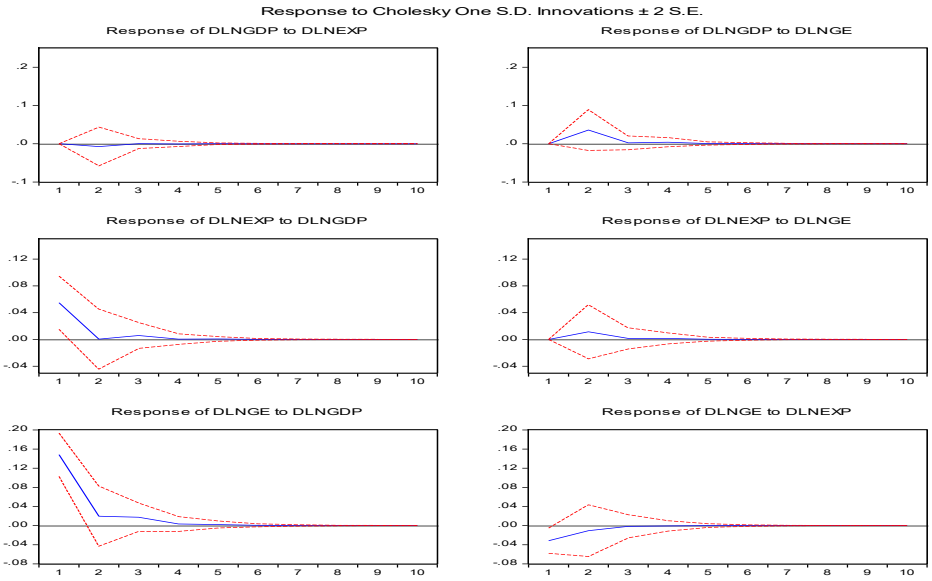
4.3. Granger Causality Test

According to the test results, no Granger causality result was found between the variables. The results are shown in table-3.

Table 3: Granger Causality Test

Dependent Variable	ΔLGDP Prob.	ΔLEXP Prob.	ΔLGE Prob.
ΔLGDP		0.7729	0.1744
ΔLEXP	0.5008		0,5731
ΔLGE	0.3023	0.7833	

After the Granger Causality test, an Impact-Response test was conducted to find out whether the causations found were positive or negative. Economic growth negatively impacts exports and negatively affects government expenditure. Exports are positively affecting the economic growth in a decreasing pattern and is negatively affecting government expenditure. Government expenditures affect the economic growth in a decreasing positive direction while exports have a positive effect in a fixed ratio.



5. Conclusion

In this paper, the relation between economic growth, exports and public expenditures in Turkey was analyzed with the help of annual data between 1980-2015. In the study, it was first investigated whether the series contain unit root or not. According to the ADF unit root test results, the first difference of all series is reached as the result of being stationary [I (1)].

Johansen co-integration test was performed to investigate the long-run relationship as a result of ensuring stationary in the first differences of the variables. According to results of co-integration analysis, a long-term relationship between variables was reached. As a result of the analyzes made with the help of data covering the period of 1980-2015, no Granger causality result was found between the variables. According to these results, the export-based growth hypothesis of Turkey does not seem valid.

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