

The Relationship Between Government Expenditures and Economic Growth in Turkey

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Abstract

The impact of government expenditures on economic growth has been discussed widely on economic literature. There have been two different approaches dealing with the relationship between government expenditure and economic growth: Wagner hypothesis and Keynes hypothesis. While Wagner hypothesis argues that economic growth affects government expenditures positively, Keynesian approach indicates that increasing government expenditures increase economic growth. In this study the relationship between government expenditures and economic growth in Turkey has been investigated for 1975-2016 period to understand either Wagner hypothesis or Keynes hypothesis is valid for Turkish economy. The causality relationship between variables has been examined by Vector Autoregressive (VAR) Granger Causality test and long-term relationship has been examined by Johansen Cointegration test.

Keywords: *Government Expenditures, Economic Growth, Causality, Cointegration.*

Introduction

Government expenditure refers to all expenses incurred by the state in order to meet the needs of the society. In addition to the expenditures made with the state budget, government expenditure in the broader sense is the sum of the expenditures made by other public institutions and organizations and the tax revenues that are waived due to exemptions, discounts and exemptions in taxes (Pehlivan, 2014: 68; Kolçak, vd., 2015: 2). According to their impact on GDP, government expenditures can be classified as current expenditures, investment expenditures and transfer expenditures. Current expenditures can be defined as the expenditures that affect the production and price level of GDP. Investment expenditures are expenditures that increase the production capacity and contribute to the national product by making net additions to the capital stock of the country. Transfer expenditures are unpaid expenditures done by the state, which do not create direct demand against public production in the current period, can create demand for private sector production in some cases (Işık and Alagöz, 2005: 65).

In the literature, there are two basic approaches to the relationship between government expenditures and economic growth. In the first approach, government expenditures are taken as an endogenous variable and accepted to be determined by economic growth. Government expenditures are highly sensitive to the change in economic growth and respond positively to any increase in growth. As the national income of a country increases, government expenditures increase and the public sector expands accordingly. The most important factor that enlarges the public sector is the increase in the amount of government expenditure needed in the country in terms of quality and quantity in parallel with economic growth. As a matter of fact, with the growth, the need for administrative and protective services of the state will increase and there will be a need for more social and cultural goods and services. Thus, an increase in the administrative activities of the state is required to ensure smooth functioning of the markets and to eliminate the disruptions that

may arise. This approach was introduced by the German economist Adolph Wagner in the late 19th century as Wagner's Law (Oktayer and Susam, 2008, 148).

According to Wagner, there are three reasons for the increase in public activity. Firstly, with economic development, the state must expand its administrative and defense functions, due to the increasing complexity of legal relations and communication. To ensure the legal order and social stability especially in city centers in which population increases, more of government expenditures are required in order to realize social and economic services. The second reason for the increase in government expenditures is the increase in the demand for many services provided by the public such as culture and education, which have high income elasticity as income increases. Finally, the technological needs of industrialized societies require more capital than the private sector provides (Chang, 2002: 1158; Ağayev, 2017:9).

Second approach considers the relationship between government expenditures and economic growth in the opposite direction. In this approach, the origin point is government expenditures. The increase in government expenditures is considered as one of the most important stimulants that affect economic growth positively. Through the multiplier effect, economic growth accelerates as government expenditures increase. This second view is shaped by the Keynesian approach (Oktayer and Susam, 2008, 148).

When the issue is analyzed within the framework of growth theories, it is observed that government expenditures are not included in the analysis until the endogenous growth theory. Before endogenous growth theory, government expenditures were not addressed in the studies conducted. Government expenditures are included in the analysis by scholars such as Barro (1990), Futagami et al. (1993). Their studies suggest that government spendings in productive areas such as capital, education and R&D can have a positive impact on economic growth in the long run (Bakkal, 2016, 127).

It is possible to say that the public sector can have an effect on growth by expenditures in a number of ways. Public sector can contribute positively to growth by making public investments that can minimize potential distortions in the supply and demand of capital and labor, by providing social and economic infrastructure that will facilitate the activities of the private sector and by making necessary investments for the operation of private sector despite to market deficiencies or externalities (Braşoveanu, 2012; Bakkal, 2016, 127). On the other hand, government expenditures may lead to negative effects such as decrease in private sector investments, deterioration of income distribution, the emergence of diminishing returns and low productivity (Uzay, 202: 165).

While examining the impact of the public sector on economic growth, it is important to make a distinction between productive and unproductive government expenditures. Moreover, the effects of government expenditures on growth may vary according to the development level of the countries. In an underdeveloped country, the increase in public size will increase the level of stable balance production. In the case of developed economies, the increase in government expenditures will decrease the level of stable balance production. The effect of government expenditures on growth may also vary according to the type of expenditure. Public consumption expenditures, besides defense and education expenditures, significantly reduce economic growth. Defense and transfer expenditures do not seem to have a significant impact on growth. Although education is seen to be related to growth, it is not related to public education expenditures level. The effect of government expenditures on growth varies depending on the financing method of these expenditures. Financing government expenditures by taxes, public borrowing or borrowing from the central bank will have a negative impact on economic growth (Deverajan et al., 1996: 314; Yavas, 1998: 305; Landau, 1986: 68, 359; Uzay, 202: 162).

It is observed that government expenditures have started to increase rapidly in the historical course especially since the second half of the 19th century. It is observed that this increase has gained momentum after the first quarter of the 20th century. It is possible to measure the size of government expenditures by calculating the share of total government expenditures in GNP. Government expenditure, which was around 10% of national income in the early years of the 20th century, started to increase from the 1930s onwards,

and in some countries it exceeded 50% of national income, especially after the second world war. The increase in government expenditures is undoubtedly due to the increase in the duties undertaken by the state and consequently public activities. While the primary duty of the state is to ensure the internal and external security of the society, it is also among the duties of the state to ensure growth and stability in the economy and to improve income distribution. Public expenditure with government intervention in the economy also began to increase especially during the extraordinary periods (Pehlivan, 2004: 70; Kanca, 2011: 80).

On the other hand, in Turkey, open market economy was adopted in the 1980s. In this process, the size of the public sector and government expenditures have been tried to be reduced. However, the transition process never been easy for Turkey which is located in developing country status. The crisis experienced in 2001, 2008 and 2009 created negative effects on both private and public sector (Kolçak et al., 2015:3).

In the 1980s, many economic reforms were accomplished in Turkey: privatization and structural reforms such as liberalization of foreign exchange regime, liberalization of international trade regime, removal of barriers on capital movements, limitation over intervention of government. However, economic interventions in public economy continued due to the budgetary deficits of the Social Security Institution and the triggering role of local governments for the monetary problems such as public debts, public deficits and inflation in the country. Because of economic crises during the 80s, public expenses were fluctuated and the intervention of government in the market increased. Under the influence of some political, economic and social problems, government expenditure which indicates the relative size of the public sector in the overall economy rose in Turkey despite the liberal economic policies which were expected restrain government expenditures (Kanca, 2011: 81).

In this study, selected empirical studies conducted with the objective of explaining the relationship between government expenditures and economic growth has been shared firstly. The validity of Wagner and Keynes hypotheses have been tested via VAR Granger Causality test and Johansen Cointegration test. The relationships between government expenditures and economic growth in Turkey have been examined for 1975-2016 period. Before empirical analysis the methodology has been explained. The aim of this study is to evaluate the policies supporting government expenditures depending on the existence of the relationship between government expenditures and economic growth and and contribute to the literature.

Literature

There has been no common concensus in studies related to the government expenditures and economic growth. Different studies carried out examining the relationship between government expenditures and economic growth in different countires for different terms. Selected studies conducted by various methods and their results are shared in Table 1.

Table 1. Selected Emprical Studies

Authors	Period	Method	Results
Tülümce and Zeren (2017)	1975-2014	Hacker-Hatemi J and Asymmetric Causality Test	In the study carried out for Turkey, mutual causality relationship have been identified between economic growth and government expenditures in terms of positive shocks.
Bakkal (2016)	1980-2013	Least Squares Method	Positive impact on economic growth of current expenditure in Turkey have been identified. The effect of investment expenditures on growth was not statistically significant.
Timur and Albayrak (2016)	1998:1-2015:4	VAR Analysis Granger Causality Test	No causality relationship has been found between economic growth and government expenditures in Turkey.

Kolçak vd. (2015)	1984-2014	VAR Analysis Granger Causality Test, Variance Decomposition	Causality relationship is identified between current expenditure and GDP. In addition, by variance decomposition it has been concluded that investment expenditures affect GDP, but transfer expenditures do not affect GDP.
Şanslısoy ve Sunal (2016)	1980-2010	Toda-Yamamoto, Dynamic Least Squares Method	No causality relationship has been determined between economic growth and government expenditures in Turkey.
Ulucak ve Ulucak (2014)	1950-2011	Hacker-Hatemi J Bootstrap Causality Analysis	No causality relationship has been reached between economic growth and government expenditures in Turkey.
Christie (2014)	1971-2005	Panel Data Analysis	It was determined that government expenditures affect economic growth positively in Europe and Central Asia Countries.
Gül ve Yavuz (2011)	1963-2008	Johansen Cointegration Test and Granger Causality Test	Long term relationship was identified between government expenditures and economic growth and causality relationship from government expenditures to economic growth was found in Turkey.
Kanca (2011)	1980-2008	Engle-Granger Cointegration Test, Granger Causality Test	Government expenditures were effected by economic growth in short term. A causality relationship from government expenditures to economic growth was also found.
Altunç (2011)	1960-2009	ADRL Bound Testing Approach	Findings achieved supporting the validity of Wagner Law in Turkey. When the components of government expenditures are included in the analysis, it was stated that the direction of causality changes.
Başar vd. (2009)	1975-2005	ADRL Bound Testing Approach	Government expenditures were negatively affected by economic growth.
Bağdigen ve Beşer (2009)	1950-2005	Granger, Toda-Yamamoto, Hsiao Causality Tests	No causality relationship was found between government expenditures and economic growth in Turkey.
Oktayer ve Susam (2008)	1970-2005	Least Squares Method	While the effect of government expenditures on growth was not significant, it was determined that investment expenditures affect economic growth positively in Turkey.
Romero-Avila ve Strauch (2008)	1960-2000	FMOLS	Government expenditures affect economic growth negatively in EU-15.
İşık ve Alagöz (2005)	1985-2003	Johansen Cointegration Analysis, Granger Causality Test	Cointegration relationship was found between government expenditures and economic growth and causality relationship was determined from economic growth to government expenditures.
Uzay (2002)	1971-1999	Regression Analysis	It was found that the increase in government expenditures affect economic growth positively in Turkey.
Chang (2002)	1951-1996	Johansen Cointegration Analysis	Long term relationship between government expenditures and economic growth was found in South Korea, Taiwan, Japan, USA and the UK, no relationship was found in Thai economy.

Shantayanan, vd. (1996)	1970-1990	Panel Veri Analizi	In the study carried out for 43 developing countries, it was found that the increase in current expenditures had a positive effect on economic growth.
Lin (1994)	1960-1985	Panel Data Analysis	The effect of government current expenditures on economic growth was found high at developed countries, low at developing countries.
Oxley (1994)	1870-1913	Cointegration and Causality Analysis	Causality relationship was found from economic growth to government expenditures.
Barro (1991)	1960-1985	Cross Section Analysis	Negative relationship was found between government expenditures and economic growth in 98 countries.
Alexander (1990)	1959-1984	Panel Data Analysis	The effect of current expenditures on economic growth was found negative in 13 OECD countries.

Data and Methodology

In this study, the relationship between government expenditures and economic growth have been investigated for 1975-2016 period in Turkey. All variables have been expressed in logarithmic form and data have been provided from Republic of Turkey Ministry of Treasury and Finance and Organization for Economic Co-operation and Development (OECD). Analyses have been carried out by Eviews 10.0 and government expenditures and gross domestic product are represented by PEX and GDP respectively.

By Augmented Dickey-Fuller (ADF) unit root test developed by Dickey and Fuller (1979) and Phillips-Perron (PP) unit root test developed by Phillips and Perron (1988), the stability of series are investigated. Dickey-Fuller designed three models and included the lagged values of independent variable in the model. Phillips-Perron made a nonparametric addition to the model incase problems such as randomness and covariance of error terms. In both unit root test the rejection of null hypothesis shows that series do not contain unit root and are stationary.

Granger causality test is used to determine the causality relationship and the direction of the causality between government expenditures and economic growth variables. Granger causality test is conducted with the help of equations (1) and (2). m expresses the lag length, u_{1t} and u_{2t} are independent error terms. At α significance level and $(m; n-2m)$ degree of freedom, if the calculated f statistic is bigger than the table value null hypothesis is rejected and the coefficients in the model said to be significant. For instance when a causality is found from X_t to Y_t variable, the coefficients in equation (1) becomes significant (Granger, 1969: 427).

$$Y_t = \alpha_0 + \sum_{i=1}^p \phi_i Y_{t-i} + \sum_{i=1}^q \delta_i X_{t-i} + \varepsilon_t \quad (1)$$

$$X_t = \beta_0 + \sum_{i=1}^p \pi_i X_{t-i} + \sum_{i=1}^q \lambda_i Y_{t-i} + \mu_t \quad (2)$$

Johansen cointegration test developed by Johansen (1991) was used to investigate the cointegration relationship between variables. Johansen Cointegration test is conducted by the help of equation (3). The matrix π rank shows the long term relationships between variables and is equal to the number of independent cointegration vectors. According to Johansen cointegration test if the rank of π is equal to zero,

there is no cointegration, if it is equal to one there is one cointegration relationship, and if it is equal to two two cointegration relationships exists.

$$\Delta y_t = \sum_{i=1}^{k-1} \pi_i \Delta y_{t-i} + \pi y_{t-k} + \varepsilon_t \quad (3)$$

Empirical Results

The stationary of series are tested by ADF and PP unit root tests. It has seen that GDP and PEX series are not stationary at the level. In both ADF and PP test the calculated t-statistics are less than Mac Kinnon critical value at %5 significant level. At first differences of series it has been observed that calculated t-statistics are greater than Mac Kinnon critical value at %5 significant. According to ADF and PP test results series are equally integrated at first differences (Table 2).

Table 2: ADF and PP Unit Root Test Results (Constant and Linear)

Variable	ADF		PP	
	Level Test Statistics	First Difference Test Statistics	Level Test Statistics	First Difference Test Statistics
GDP	-2.378592 (0.3846)	-5.674820 (0.0002)	-2.341486 (0.4031)	-8.611596 (0.0000)
PEX	-2.474277 (0.3384)	-7.750644 (0.0000)	-2.474277 (0.3384)	-8.099731 (0.0000)
Mac Kinnon Critical Value (%5)	-3.526609	-3.529758	-3.526609	-3.529758

*Values in parenthesis show probability values.

Appropriate lag length for VAR Model is determined as 1 according to final predicting error (FPE), Akaike Information Criteria(AIC), Schwarz Information Criteria (SC) and Hannan-Quinn Information Criteria (HQ) (Table 3).

Table 3. Determination of Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	98.79848	NA	1.83e-05	-5.232.350	-5.145.273	-5.201.651
1	135.7571	67.92395*	3.09e-06*	-7.013897*	-6.752667*	-6.921801*
2	137.3918	2.827639	3.51e-06	-6.886.044	-6.450.661	-6.732.552
3	141.9167	7.337687	3.44e-06	-6.914.418	-6.304.881	-6.699.528
4	143.6306	2.593929	3.93e-06	-6.790.842	-6.007.152	-6.514.555

LM probability values in the model have been observed as greater than 0.05 and it has been decided that there is no autocorrelation between error terms. Heteroskedasticity test result has shown the existance of constant variance (Table 4).

Table 4: Autocorrelation LM Test and Heteroskedasticity Test Results

Autocorrelation Test		
Lag	LM-Statistic	Probability Value
1	5.266884	0.2610
2	4.105353	0.3919
3	3.979014	0.4089
4	6.465243	0.1670

Heteroskedasticity Test		
Chi-Square	df	Probability Value
15.37463	12	0.2216

Causality relationship is examined by conducting Granger Causality test and mutual causality relationship is achieved between government expenditures and economic growth in short term (Table 5).

Table 5. VAR Granger Causality Test Result

Dependent Variable: DGDP		
Independent Variable	Chi-sq	Probability
DPEXP	10.76972	0.0010
Dependent Variable: DPEXP		
Independent Variable	Chi-sq	Probability
DGDP	6.200832	0.0128

Since the series are equally integrated, long-term relationship has been investigated by Johansen cointegration test developed by Johansen (1991). The H0 hypothesis states that there is no r or less cointegrated relationship between the variables, while the general alternative hypothesis indicates that there are r cointegration relationships between variables. In Johansen Cointegration test if the trace statistic and Max-Eigen statistic are bigger than critical value the null hypothesis is rejected. The test results show that there is no cointegration relationship between government expenditures and economic growth. As can be followed from Table 6 no cointegrating vectors are found at %5 significance level.

Table 6: Johansen Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No.of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability
None	0.366779	16.26683	20.26184	0.1623
At most 1	0.021270	0.730988	9.164546	0.9802
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No.of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value	Probability
None	0.366779	15.53584	15.89210	0.0568
At most 1	0.021270	0.730988	9.164546	0.9802

Conclusion

The relationship between government expenditure and economic growth has been defined with two approaches in economic literature. Many studies conducted with different methods in national and international level and different results achieved according to the examined period, country or country groups. Some results support Wagner hypothesis while some study results support Keynes hypothesis. Also some study results support the two approaches and some studies rejected the validity of both hypotheses. In this study the relationship between government expenditures and economic growth has been investigated in Turkish economy. Causality relationship has been investigated by VAR Granger Causality test and cointegration relationship is examined by Johansen Cointegration test. Firstly ADF and PP unit root tests have been conducted and it has seen that both variables are stationary at first differences. The VAR Granger causality test result showed that there has been a mutual causality relationship between government expenditures and economic growth in short term. This result reveals that both Wagner

hypothesis and Keynesian hypothesis are valid in Turkey in short term. Government expenditures and economic growth stimulates each other. Government expenditures can be used as a policy tool in order to accelerate economic growth and by increasing welfare, government expenditures will also increase.

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