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## **INFLUENCE OF PUBLIC SECTOR SIZE ON ECONOMIC GROWTH: THE CASE OF TURKEY (1980-2014)**

### **Abstract:**

The share of the state's economic system varies from country to country. It can be said that when regulatory role of the state is taken into account, it has great importance in terms of the whole country. The relationship between development level of the country and the share of the public sector seems to be inverse. Everything is expected from the state for the reason that there is not enough power of the private sector in less developed country. Therefore, the share of public sector is greater than the share of the private sector in less developed countries. In developed countries, the share of the private sector is greater than the public sector. State which represent common legitimate sanction power of society, is important in history of economic thought. The regulatory and controlling role and share of the state in the economy and share are one of the most important issues that have discussed for many years. State-economic relations and the weight of the state in the economy is always the most important issues of economic agenda. The share of the state in the economy affects economic growth in an economic system.

In this study, the relationship between the size of the public sector and economic growth is being assessed in terms of Turkey's economy. In this context between the years of 1980-2014 time series data will be utilized which pertain to Turkey's economy. After the time series used in according to their stasis unit root tests, the analysis examined cointegration between the series whether Mani (cointegration) will be investigated. The relationship will be determined between the size of the public sector and economic growth depending on the results of the appropriate empirical econometric models.

### **Keywords:**

Public Sector, Economic Growth, Cointegration

**JEL Classification:** H10, O40

## INTRODUCTION

What should be the share of the public sector in the economy; there are two views on the subject. The first one is the classical view which is the notion that the state's share in the economy is limited with the basic services of state. In the 19th century, classical economists argued that there should be as little as possible the share of the state in the economic system and they were in favor of keeping state's role limited with services considered as basic ones which are national defense, security and government (Tanzi and Schuknecht, 1996: 2). The second one is the view of Keynesian theorists which advocates the necessity of state intervention in the economy: they claim that public expenditure may be used as an effective tool through increasing and decreasing them especially in an economy where there is the lack of demand (Sancar, 2012: 3). Socialist thinkers opposed to the classical economists in the second half of the 19th century. Factors related to re-distribution (transfer of wealth from the rich to the low-income earners) have increased the statutory functions of the state. Despite these practices, the share of public expenditure in GDP has been tried to be limited.

## THEORETICAL FRAMEWORK

The relationship between public expenditure and economic growth with the development of growth theories has been the subject of many theoretical and empirical studies. There are numerous empirical studies that tested the effects of public size on the growth. However, findings reached by conducted studies show differences. While some studies have reached the conclusion that public expenditure create a positive impact on the growth, there is another view that increases in the public size retard the growth in some of the studies and some other studies have reached there was no significant relationship between growth and public expenditure (Uzay, 2002: 160).

Classical and neo-classical economists argued, by taking into account the funding type of public expenditure, that an increase in the density of public activities in the economy adversely affects economic growth by creating the Crowding Out effect on private investments. On the other hand, Keynesian economists have upheld that public expenditure would have a complementary (Crowding In) effect on private investment because it is directed to the production of public goods such as infrastructure services, social security services, security, defense services, education and health services, which are not undertaken by private entrepreneurs (Sancar, 2012: 4).

Nowadays the long-term determinants of economic growth are among the most researched topics. Within this framework, the relationship between the size of the public sector and economic growth find large study area in many studies which conducted by utilizing horizontal section and panel data analysis. In the relatively small number of conducted studies using time-series data, the relationship between only short-term size of the public sector and economic growth is analyzed using a bivariate model. There is a logical expectation that there is a positive correlation between two variables because public expenditure, which is the most important indicator of size of the public sector, is a component of the gross domestic product. However, it is seen two different approaches on this topic both in terms of theoretical background and empirical findings (Artan and Berber, 2004: 14).

According to the first approach which is advocated by Holmes and Hutton (1990), Devarajan et al. (1996), Ghali (1999), Cao and Li (2001), there is a positive impact of

the size of public sector on economic growth because public sector has a very important function on the removal of imperfect competition in the market. Also in some cases, public sector may be more effective than private sector and it contributes the dissemination of new knowledge in the market (Cao and Li, 2001: 5). The determination of state functions correctly is the important issue in this approach. The execution of experienced, export-oriented free market economy and the development process with the interventionist policies of state in the newly industrialized countries leads to high growth rates (Pio, 1993, p.117).

The size of the public sector is negatively affect economic growth according to the second approach as set forth by Landau (1983), Gray and Tullock (1989) and Barron (1989, 1990 and 1991), Barth, Keleher and Rusek (1990), GHJ (1998) Damalagas (2000) and Grimes (2003). According to this approach, the main reasons for an inverse relationship between the size of the public sector and economic growth : (Artan ve Berber, 2004: 15).

1) Too much of the public's consumption and investment spending share of the economy Accordingly, while accepted as a positive influence on economic growth of a number of actions taken by the public (The main duty of the state) with an increase in the size of the public sector of the economy will reverse this relationship is expressed (Gwartney et al. 1998: 168).

2) Transfer expenditures and other welfare-enhancing policies have negative effects on economic growth is concerned (Teresawa and Gates, 1998: 208).

3) The public sector is good treatment and hinders the provision of optimality in resource allocation. Because decisions in the public sector, are taken by political decision-making and This situation leads to the use of scarce resources in unproductive areas

4) Because it is less sensitive to increases in funding costs (interest rates) and the high creditworthiness of public sector easier to find funds from the market and thus almost to the exclusion of private sector economic growth is adversely affected (Ghali, 1999: 975).

5) Seen from a broader perspective of economic growth is a process of discovery and The discovery of the new technologies or the development of existing technologies, The availability of new products and result of the development of more efficient production methods are emerging . More compared to a static structure for the functioning of the free market mechanism of functioning of the public sector, the innovation occurring in the public market (this would undermine the economic growth of the resource) access and It will cause the affected adversely economic growth (Gwartney et al. 1998: 169).

## LITERATURE

Landau stated in his work which is one of the first conducted studies on the relationship between the size of the public sector and economic growth and involving nearly 100 countries and the period of 1960-1970 that there is a negative relationship between them (1983).

Barro showed in his study which theoretically examined the relationship between savings and growth rate with the size of public expenditure under the assumption of

constant productivity for broadly defined (including human capital) capital that an increase emerged in public expenditure reduces the savings and growth rate (1990).

Cao and Li (2001) conducted a similar study, by following the Ghalia, for the four Asian Tiger countries. According to the findings of the study: 1) in the period under consideration, the size of the public sector positively affects economic growth in the other three countries except Korea, 2) bidirectional causality, from the size of public sector towards economic growth and from the economic growth towards the size of public sector, has been identified in Hong Kong and Singapore. The unidirectional causality is seen from the size of public sector towards the economic growth for Taiwan's economy and from the economic growth towards the size of public sector for Korea's economy.

Grimes (2003) tackled again using the IMF's data set which is studied for 23 OECD countries by GHL. Grimes achieved similar results with GHL (1998) and he asserted that when the share of public expenditure in GDP reduces from 40% to 30%, economic growth will increase by 1.2%.

Yuk (2005) analyzed the relationship between public spending and economic growth in the long term by using the VAR analysis and time series analysis in the 1830-1993 period in the UK. In the study, it is emphasized that public expenditure in the mentioned period is the cause of economic growth under the scope of the Granger causality relationship.

Sinha (2007) analyzed the relationship between economic growth and public expenditure with data for the period from 1950 to 2003 of Thailand by the methods of Granger causality analysis and also to-Regression Distributed Lag (ARDL). Whilst there cannot be found a causality relationship in the sense of Granger from the economic growth towards public expenditure; in analysis conducted by ARDL method, very weak relationships can be given between the economic growth and public expenditure in the long term.

Aytaç and Guran (2010) investigated the relationship between public expenditure and economic growth using the causality and vector autoregression (VAR) analysis by considering causality structural breaks according to economic classification in Turkey for the years of 1987-2005. According to the Granger causality test which is conducted in parallel with VAR analysis, it has been seen one-way causality from economic growth towards the current expenditure and total expenditure. No relationship was found between transfers and investment expenditures with economic growth. As a result, it was concluded that there is no causality from economic growth towards public expenditure in this period for Turkey's economy.

Altunc (2011) analyzed the relationship between public spending and its components and economic growth with annual data for the period of 1960-2009 in the context of Turkey's economy. Barro's (1990) data was used moving from his or her (1990) endogenous growth model and ARDL limit test approach and Vector Autoregressive (VAR), Granger causality / Block externalities Wald Test were used as econometric methods. Empirical findings offer supporting evidence to the Wagner Act between economic growth and public expenditure. However, when the components of public expenditure which is disaggregated based on economic category were included to analysis, the findings are given that the direction of causality has changed.

In their study, Yüksek and Songur (2011) used Engle- Granger co-integration test and Granger causality test within the frame of time series methods for the 1980-2010 period in Turkey. Accordingly, it has been reached the following results: there is a) a long-term relationship between all other variables excluding debt interest payments and economic growth b) a one-way causal relationship from current expenditure with total public expenditure towards economic growth.

Küçükkale ve Yamak (2012) analyzed Co-integration and causality between economic growth and public expenditure with annual data for the period 1968-2004 in Turkey. According to their test results, a common trend cannot be caught between economic growth and public expenditure in the long term. There was no evidence to support the Wagner Act in the long term in the study but it is emphasized that there is a powerful and two-way causal relationship between economic growth and public expenditure in the short term.

## ECONOMETRIC MODEL

### Data and Methodology

GDP growth rate (Y), the share of current public expenditure in GDP (ca), the share of public investment in GDP (ky), the share of total public expenditure in GDP (to) variables are used in the study. In this study which is used the quarterly data set of 1999I - 2015II in Turkey's economy, all variables are converted to real ones with 1998 prices and series were purged from seasonal effects by using the Census method. All variables of the study are taken from the TurkStat (TÜİK) data system and the relationships between the following were determined sequentially: the relationship between first the growth rate and current public expenditure and then the growth rate and public investment expenditure and the growth rate and total public expenditure. The following tests were used in the study with this purpose:

- ADF (Augmented Dickey-Fuller)- PP (Philips-Perron) Unit Root Test
- Johansen Co-integration Test
- Granger Causality Test

### Empirical Results

**Table 1: ADF and PP Unit Root Tests**

Variables	ADF			
	I(0)		I(1)	
	Constant	Constant and Trend	Constant	Constant and Trend
Y	-2.578954 (4)	-2.518278 (4)	-6.686707 (3)*	-6.645956 (3)*
CA	-1.678212 (2)	-1.584587 (2)	-8.818693 (1)*	-8.827378 (1)*
KY	-2.350845 (0)	-2.331361 (0)	-9.694890 (0)*	-9.656641 (0)*
TO	-1.661637 (3)	-1.602717 (3)	-4.598183 (2)*	-4.680578 (2)*

PP				
Variables	I(0)		I(1)	
	Constant	Constant and Trend	Constant	Constant and Trend
Y	-3.196976 (0)	-3.102732 (0)	-6.506484 (3)*	-6.465558 (3)*
CA	-3.373021 (4)	-3.276579 (4)	-10.76555 (10)*	-10.72178 (0)*
KY	-2.287115 (3)	-2.265708 (3)	-9.889935 (2)*	-9.734769 (1)*
TO	-2.237197 (4)	-2.168549 (4)	-10.29360 (3)*	-10.37523 (3)*

\* denotes significance at the level 1%

It is first necessary to know the stability of the series used in order to determine the relationship between economic growth and public expenditure. Level value I(0) of the series or becoming stationary state after obtaining the first-degree difference I(1) are tested with unit root tests. The ADF and PP tests were applied to variables used for this purpose. In the ADF and PP unit root tests, the alternative hypothesis which is stationary is tested against the null hypothesis that the series contains a unit root. If the absolute value of the calculated values in the ADF and PP tests based on the 1% level of significance is smaller than the critical value, the null hypothesis cannot be rejected and it is concluded that there is the unit root. According to test results, they were found stationary after obtaining the difference of the variables in both methods.

**Table 2: The Result of Johansen Co-integration Test**

GDP Growth Rate –Current Government Expenditure					
Hypothesis	Eigenvalue	Trace static	Trace 0.05 Critical Value	Max-Eigen Statistic	Max-Eigen 0.05 Critical Value
H0:r=0	0.253985	24.84746	20.26184	18.45958	15.8921
H0: r≤1	0.096424	6.387878	9.164546	6.387878	9.164546
GDP Growth Rate -Government Investment Expenditure					
Hypothesis	Eigenvalue	Trace static	Trace 0.05 Critical Value	Max-Eigen Statistic	Max-Eigen 0.05 Critical Value
H0:r=0	0.308268	26.73051	20.26184	22.48197	15.8921
H0: r≤1	0.067278	4.248539	9.164546	4.248539	9.164546
GDP Growth Rate -Total Government Expenditure					
Hypothesis	Eigenvalue	Trace static	Trace 0.05 Critical Value	Max-Eigen Statistic	Max-Eigen 0.05 Critical Value
H0:r=0	0.441035	38.95421	20.26184	36.06343	15.8921

H0: $r \leq 1$	0.045555	2.890784	9.164546	2.890784	9.164546
r indicates co-integration vector number					

Johansen co-integration test was used to investigate the co-integration relationship among the series becoming stationary after obtaining the first difference: primarily the current public expenditure with economic growth, afterwards public investment expenditures with economic growth and finally total public expenditure with economic growth have been investigated whether there is a co-integration between the series or not. The values of Trace and Eigenvalue at 5% level of significance confirm that variables are co-integrated in all three models. Among series, after the determination of the co-integration, the results of Granger causality analysis based on the error correction model are presented in Table 3-4-5 in order to detect the direction of relation within the frame of 3 different models.

**Table 3: Granger Causality Test Based on Error Correction Model (GDP Growth Rate –Current Government Expenditure)**

Dependent Variable	Short Term Causality		Long Term Causality
	Independent Variable		
	D(Y)	D(CA)	Error Correction Term ECT(-1)
D(Y)		4.731551 [ 0.0296]**	-0.299207 (-2.98055)*
D(CA)	4.74361 [0.1408]		-0.02446 (-1.95513)***
t values are given in parentheses ( ), probability values are given in brackets [ ]. * , ** , *** , Respectively equals to the level of causality 1%, 5%, 10%			

In the short term, there is causality from the current public expenditure towards economic growth in the 5% significance level. However, the presence of significant error correction coefficients of both variables shows the bi-directional causality between current public expenditure and economic growth in the long term.

**Table 4: Granger Causality Test Based on Error Correction Model (GDP Growth Rate -Government Investment Expenditure)**

Dependent Variable	Short Term Causality		Long Term Causality
	Independent Variable		
	D(Y)	D(KY)	Error Correction Term ECT(-1)
D(Y)		3.961040 [ 0.1380]	-0.021196 (-4.47180)*
D(KY)	2.300505 [ 0.3166]		-0.02446 (-2.24432)**
t values are given in parentheses ( ), Probability values are given in brackets [ ]. *, **, ***, Respectively equals to the level of causality 1%, 5%, 10%			

Causal relationship between public investment expenditures and economic growth has not been determined in the short term. On the other hand, the presence of significant error correction coefficients of both variables shows the bi-directional causality between economic growth and public investment expenditure in the long term.

**Table 5: Granger Causality Test Based to Error correction Model (GDP Growth Rate -Total Government Expenditure)**

Dependent Variable	Short Term Causality		Long Term Causality
	Independent Variable		
	D(Y)	D(TO)	Error Correction Term ECT(-1)
D(Y)		2.722082 [ 0.2564]	-0.910185 (-4.13595)*
D(TO)	2.130209 [ 0.3447]		-0.105679 (-2.83883)*
t values are given in parentheses ( ), probability values are given in brackets [ ]. *, **, ***, Respectively equals to the level of causality 1%, 5%, 10%			

Causal relationship between public investment expenditures and economic growth has not been determined in the short term. On the other hand, the presence of significant



error correction coefficients of both variables shows the bi-directional causality between economic growth and total public expenditure in the long term.

## CONCLUSION

Turkey involved in the globalization process of capital movements in 1990s has entered the domain of crisis occurred in the international market more quickly. Both the crisis occurred countries in the world and coalition governments which left their marks again to the 1990s and finally the 1994 crisis slowed economic growth.

Starting from the 1990s until 2000, Turkey's economy has experienced a deep decline in public balances. In addition, the most significant increase has been in debt interest payments in the distribution of the total consolidated budget expenditures. Increases in domestic debt stock, the return of the domestic debt and growth under the stability again have become the main problems of Turkey during these years. Whilst increase in interest rates and in company with having a huge place of the domestic debt service in public expenditure, on the one hand, cause economic instability, on the other hand, it limited the growth potential of the national economy and even collapse by blocking the conversion of the domestic savings to fixed capital.

In the short term, there is a causal relationship from current public expenditure towards the economic growth in the level of significance. However, the presence of significant error correction coefficients of both variables shows the bi-directional causality between economic growth and current public expenditure in the long term.

Causal relationship between public investment expenditures and economic growth has not been determined in the short term. However, the presence of significant error correction coefficients of both variables shows the bi-directional causality between economic growth and public investment expenditure in the long term.

Causal relationship between public investment expenditures and economic growth has not been determined in the short term but on the other hand, the presence of significant error correction coefficients of both variables shows the bi-directional causality between economic growth and total public expenditure in the long term.

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