“The effect of public expenditure on economic growth: Turkey example”

AUTHORS	Metehan Yilgör Cemil Ertugrul Merve Eker Celepcioğlu

ARTICLE INFO	Metehan Yilgör, Cemil Ertugrul and Merve Eker Celepcioğlu (2012). The effect of public expenditure on economic growth: Turkey example. *Investment Management and Financial Innovations*, *9*(2-1)
RELEASED ON	Tuesday, 31 July 2012
JOURNAL	"Investment Management and Financial Innovations"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **0**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

Metehan Yilgör (Turkey), Cemil Ertuğrul (Turkey), Merve Eker Celepcioğlu (Turkey)

The effect of public expenditure on economic growth: Turkey example

Abstract

The aim of this article is to analyze the relationship between public expenditure and economic growth in Turkey. To that end, public expenditure and economic growth data for Turkey were examined by ADF and PP tests using data for the period of 1980-2010. The results of variance decomposition analysis and impulse-response functions were interpreted by establishing a VAR model. In Granger causality test, one-way causality was found from current, transfer, and total expenditures to economic growth in Turkey.

Keywords: public expenditures, economic growth, variance decomposition analysis, impulse-response functions.
JEL Classification: Q47, C22.

Introduction

From a historical perspective, the relationship between public expenditure and economic growth has generated extensive discussion within the economics literature. Discussions mostly involve the role of government in economic development and how these roles can be realized in the most efficient way (Uzay, 2002, p.151). The problem regarding the role of the public sector within the economy gained a new dimension following the Great Depression in 1929. While supply-side economic policies had been dominant prior to 1929, demand-oriented policies subsequently predominated. In addition, as the increase of the importance of demand-oriented Keynesian policies also increased the importance of government within the economy, public expenditure increased for many years as a result of many causes. At the same time, factors such as higher standards of living, scientific and technical developments, and increase in population influenced increasing public expenditures (Gül and Yavuz, 2010, p. 166).

The representatives of neoclassical theories of public expenditure and the role of government in the economy claim that the best government is one that is least involved in the economy. These neoclassical economic theories are based on the assumption that the economy can establish the appropriate balance on its own. The supporters of Classical thought who adopt a liberal interpretation of the role of the state emphasized the necessity to minimize public expenditure, which is regarded as diminishing national income. They claimed that, as increased state activities inhibit the efficient function of a market economy, the actual role of the government is to ensure domestic and foreign security (Nadaroğlu, 2000, p. 137; and Pehlivan, 2007, pp. 75, 76). However, in the Great Depression, which began in early 1929 and quickly resulted in instability in employment, the balance proposed by neoclassical economic theory began to diminish and market factors were unable to reestablish economic equilibrium. Therefore, neoclassical economic theories were insufficient to explain the events of the economic depression. As a result of these negative events, Classic thought lost confidence and Keynesian theories became adopted.

The new perception, which emerged as a result of the collapse of neoclassical perception, which had its effect on public expenditures until the beginning of 1930, was totally different from the Classical perception. Keynes, in his famous work titled "The General Theory of Employment, Interest and Money" explained his thoughts on the Great Depression and produced new solutions. He suggested that economic balance can be realized with underemployment and that, in addition, balance of full employment, as claimed by neoclassical economics, had never existed within any economy (Pehlivan, 2007, p. 77). By claiming that unemployment resulted from the insufficient consumer demand, Keynes stated that consumption should be stimulated to also increase total demand and that the current usable income should be increased to reduce unemployment. In order to increase current usable income, public expenditures should be increased and taxes should be reduced (Akgül Yılmaz, 2007, p. 67). Briefly, Keynes suggested an open budgetary policy and expansionary fiscal policy. He discussed that, when an increase was observed in public expenditures, it might have a positive effect on economic growth, and proposed new economic roles for the state. However, in the 1970s, following the oil shock, Keynes' policies began to be questioned and a need for new implementations arose.

Theories suggested after the 1970s, when Keynesian policies began to lose importance, and which reinterpreted neoclassical perception, claimed that pub-

lic expenditure, should be minimized together with budget, and economic growth increased the public budget rather than public expenditure stimulating growth. After the 1980s, with the acceleration of privatization, such approaches were used to defend proposals that public expenditures should be as well as the reliance on supply-side economic policies. Structural amendments were made via these policies (Takım, 2010, p. 110). Supply-side economic theories suggest that public deficits can be reduced, interest rates can be reduced, and economic growth can be encouraged as a result of reducing tax rates and public expenditures (Skousen, 2000, p. 65).

The state is seen as having different roles in economic life in developed growth theories and various economics movements. However, societies experience unavoidable social developments, which require the increase of state activities. Individuals whose income level has increased would want to benefit from relevant services in order to increase their social welfare, leading to an expansion in the state's capacity in economic life in order to fulfill the requirements to be a social state. The economics literature does not include a common idea about the role of the state in the economy; and the necessity to redefine the concepts of "economic functions of state" and "social state" and the necessity of restructuring the state are accepted by nearly every section, especially international organizations (Ergün, 2000, p. 6).

1. Literature review

The relationship between public expenditure and economic growth has always been one of the most discussed topics in economics literature. One of the factors that led to intense demands for public expenditures and economic growth is the increase of public expenditures following the introduction of market mechanism after the collapse of socialism at the end of the 1990s. On the other hand, another reason is that the relationship between public expenditure and economic growth is two-sided and both sides are grounded in theoretical bases (Sarı, 2003, p. 26). In stating his thoughts on the increase of public expenditure, Wagner expressed that an increase in economic activity would lead to an increase in public expenditure. On the other hand, unlike Wagner, Keynes claimed that public expenditures did not increase as a result of increases in economic activities, but that economic activities increased as a result of public expenditures (Arısoy, 2005, p. 64).

Studies within the literature mostly aim to test the validity of the hypotheses of Wagner and Keynes and the present study aims to examine the available sources regarding Wagner and Keynesian hypotheses.

Landau (1983) produced one of the most important studies examining the relationship between public expenditure and growth. Landau determined a negative relationship between public consumption expenditures share in GDP and GDP growth rate per real capita based on data for 1961-1976 from 96 countries.

Barro (1989a) also examined the relationship between public expenditure and economic growth. He examined some empirical regulations covering working, growing, efficiency and investment, and concluded that there was an inverse relationship between public consumption expenditures share in GDP and growth, and a slight relationship between growth and public investments, meaning that growth could be regarded as insignificant. In another analysis, using data for the period of 1960-1985 from 72 countries, Barro (1989b) reported a negative relationship between growth and investment proportions of public consumption expenditures per capita and determined a positive relationship between public investment expenditures and growth.

In a study covering 1938-1995, Terzi (1998) analyzed the relationship between public expenditures and GDP in Turkey's economy through simple regression and cointegration tests based on adaptive expectations model; the findings confirmed the validity of Wagner's Law for Turkey. Ulutürk (2001) examined the effect of public expenditures on economic growth in Turkey, using data from 1963-1994 using a two-sector production function method. The results concluded that public expenditures in Turkey had a growth-oriented effect and that the bigger the public sector was, the more economic growth increased, due to the fact that factor efficiency was higher in the public than the private sector.

Uzay (2002) analyzed public expenditures and economic growth in Turkey within the framework of a two-sector production function, and determined that public size slightly affected growth negatively; however, the increase in public expenditures positively affected growth.

Kar and Taban (2003) analyzed the effects of public expenditures on economic growth in Turkey using data from 1971-2000. They analyzed public expenditures such as education, health, social security, and infrastructure expenses with a cointegration approach. The education and social expenses had positive effects, whereas health expenses had negative and infrastructure expenses had insigni-

ficant effect on economic growth. In their study using the approach of Ghali (1999), Cao and Li (2001), Artan and Berber (2004) tested the relationship between the size of the public sector and economic growth for the period of 1987-2003, using a multiple co-integration technique, and concluded that, in the long run, the size of the public sector positively affected economic growth; however there was no causal relationship between the size of the public sector and economic growth.

Çavuşoğlu (2005) tested the empirical validity of Wagner Law for Turkey, based on consolidated budget expenditures covering 1923-2003 periods, and could not reach a conclusion supporting Wagner's Law. Several other studies, published in the same year by Arısoy (2005), Gacener (2005), and Işık and Alagöz (2005), examined the validity of Wagner's Law. Yılmaz and Kaya (2005) used data for the period of 1975-2003 to examine the effect of public expenditure types on economic growth in Turkey. They concluded, by examining current, investment, and transfer expenditure items described according to economic difference, that the relationship between current expenditures and economic growth was insignificant, the relationship between investment expenditures and economic growth was significantly positive, and the relationship between investment expenditures and economic growth was significantly negative.

Kar and Ağır (2006) used data for the period of 1926-1994 to examine the relationship between human capital, which was frequently stressed by intrinsic growth models, and economic growth, using causality tests. They showed the presence of a long-term relationship between variables with a co-integration approach by using health and education expenses as a proportion of incomes; their findings indicated that causal relationship between variables was sensitive to the selection of human capital indicator.

Altay and Altın (2008) analyzed the effects of public expenditures in Turkey on economic growth and investments during 1980-2005. They used models based on two-sector production functions, regarded public expenditures as current, transfer and investment expenditures according to economic classification measures. They concluded that any increase in public expenditures negatively affected economic growth, and that factor efficiency within the private sector was higher than the public sector during the period examined. In addition, they found that increased public expenditures positively affected total investments in the short term due to a positive externality; and in the long term, as a result of increases in public size, this created an exclusion effect on total investments. Bağdigen and Beşer (2009) analyzed the relationship between economic growth and public expenditures in Turkey with regards to Wagner's Law, using annual data for 1950-2005. They claimed that, unlike other studies, they analyzed the causal relationship between economic growth and public expenditures in Turkey using causality methods developed by Hsiao (1979), and Toda and Yamamoto (1995); as well as the Granger causality test. Except for one model, the results showed no causal relationship supporting Wagner's Law.

In a study covering 1987-2005, Aytaç and Güran (2010) examined the relationship between public expenditures and economic growth with regards to economic classification in Turkey, using causal relationship and vector autoregression (VAR) analysis and regarding structural break. They concluded that any increase in growth in Turkey would lead to an increase in public expenditures. Takım (2010) empirically tested the relationship between public expenditures and economic growth in Turkey by using trimester data for the period from 1998:1 to 2009:3. The findings indicated no causal relationship between Gross Domestic Product and public expenditures.

Nişancı, Uçar and Karabıyık (2011) examined the relationship between public expenditures and economic growth between 1950 and 2010. They tested the effect of public expenditures on growth based on Wagner and Keynes' hypotheses within the framework of an error correction and causality relationship; they concluded there was no causal relationship between national income and public expenditures in the short term and there was a one-way causal relationship from national income to public expenditures in the long term. Their results indicated the validity of the Wagner hypothesis and invalidity of the Keynes hypothesis over the long term for Turkey. In this regard, they claimed that public expenditures could not be used separately as an efficient policy tool in economic growth phenomena.

2. Data, methodology and empirical results

This study examines the relationship between public expenditure and economic growth in Turkey. Gross Domestic Product at constant prices was used to represent economic growth and current, investment, and transfer expenditures shares in GDP, which were all economically classified, were used to represent public expenditures. In addition, the study also analyzed total expenditure as a share of GDP, which is the sum of all three expenditure types examined. Annual data for the years 1980-2010 was obtained from the State Planning Organization.

The variables used in the study are: GSYHS − Gross Domestic Product at constant prices, CGSYH − Current expenditures share in Gross Domestic Product, YGSYH − Investment expenditures share in Gross Domestic Product, TGSYH − Transfer expenditures share in Gross Domestic Product, DHGSYH − The share of expenditure defining current, investment, and transfer expenditures in Gross Domestic Product.

Augmented Dickey-Fuller and Phillips-Perron tests were used as unit root tests. In order to reveal the relationship between public expenditures and economic growth, a VAR model was applied, variance decomposition analysis was made and impulse-response functions were examined. The Granger causality test was used to examine causal dimension.

2.1. Unit root tests. Unit root tests were used to determine whether the time series were non-stationary. The ADF and PP tests were applied by taking grade, primary and secondary differences of all series. As seen in Table 1, relevant variables are not stable in level state. When primary differences of series were examined, all variables were observed to be stable, in other words to not include a unit root, except for constant and trend DHGSYH variable. Only for the ADF test, when the secondary difference of constant and trend DHGSYH variable was examined, was observed to be stable at 5% significance level.

Table 1. ADF and PP test results

	ADF (Augmented Dickey Fuller)			PP (Phillips Peron)	
Variable	Level	First difference	Second difference	Level	First difference
CGSYH (fixed)	-1,036930	-3,391306**		-1,21422	-4,40071*
CGSYH (fixed + trend)	-3,049468	-4,071426**		-2,862632	-4,24612**
GSYHS (fixed)	0,664726	-5,492568*		1,307334	-5,495235*
GSYHS (fixed + trend)	-2,016165	-5,573567*		-2,016165	-5,825152*
DHGSYH (fixed)	-0,746104	-2,975881***		-0,901103	-4,579719**
DHGSYH (fixed + trend)	-2,310806	-2,909100	-4,200375**	-2,187682	-4,476287**
TGSYH (fixed)	-0,896862	-3,123244**		-1,083649	-4,465571**
TGSYH (fixed + trend)	-2,028315	-3,077294	-3,233770	-1,840945	-4,378138**
YGSYH (fixed)	-2,537507	-4,921026**		-1,901324	-4,933774***
YGSYH (fixed + trend)	-1,726437	-5,547130***		-1,001927	-6,663918***

Notes: *, **, *** indicate significance at 1%, 5% and 10% levels, respectively.

2.2. VAR model. Macroeconomic research involves definition and analysis of relationships between variables, making future predictions and using these predictions in political analysis. These relationships had been examined using systems of simultaneous equations before the 1970s. However, subsequent chaos in the USA economy accelerated the search for a new model. The VAR model is an alternative technique arisen from this kind of necessity (Bozkurt, 2007, p. 76).

The VAR model is an autoregressive model that was developed by Sims (1980), in which all variables were accepted as endogenous without distribution. In this model, initially, a common lag length is determined for all variables. Primarily, dependent variables are determined and lag values of other variables are subject to regression by determining independent variable (Terzi and Kurt, 2007, p. 5).

All variables in the system are required to be stable to make predictions in a VAR model. Correlations obtained from VAR models can reveal the relationships between the set of variables examined (Bozkurt, 2007, pp. 83, 91).

A two-variable VAR model can be defined as follows:

$$Y_t = a_1 + \sum_{i=1}^{p} b_{1i} y_{t-i} + \sum_{i-1}^{p} b_{2i} X_{t-i} + v_{1t}, \quad (1)$$

$$X_t = c_1 + \sum_{i=1}^{p} d_{1i} y_{t-i} + \sum_{i-1}^{p} d_{2i} X_{t-i} + v_{2t}, \quad (2)$$

where, P is lag length; V is random error term whose average is zero, covariance with its own lag values is zero, and variances are constant and which has normal distribution.

In the VAR model, the assumption that errors are independent from their lag value does not put any limits on model, since the autocorrelation problem can be solved by increasing the lag lengths of variables (Özgen and Güloğlu, 2004, p. 96).

The important thing in a VAR model is primarily related to choosing variables, determining their features, and ranking them. Variables should be ranked from exogenous to endogenous. The ranking is important, as if the ranking is determined incorrectly in matrix form, the results might be erroneous. After the variables are ranked accurately, a stationary condi-

tion should result, and stochastic or deterministic trends should be removed. Lag lengths should then be determined and, after operating the system, political analysis or predictions should be made (Tarı, 2010, p. 456).

The three techniques required for using the VAR model in structural analysis are the Granger causality test, impulse-response analysis, and the variance decomposition method. In the VAR model, the mutual relationships between variables are revealed by the Granger causality test. While variance decomposition analysis reveals the interaction between variables, impulse-response analysis is used to reveal symmetrical relationships to determine dynamic relationships between the examined variables (Cansu, 2006, p. 101). Most studies using VAR generally employ impulse-response analysis and variance decomposition methods rather than interpreting the calculated coefficients of the model (Gacener, 2005, p. 110).

After model is predicted, test should be made on error term and the predicted VAR model should be tested to see whether its structure is stable. Within this context, results related to determining the problem of autocorrelation and heteroscedasticity are shown on Table 2 and Table 3.

Table 2. Autocorrelation LM test results

Lags	LM-Stat	Prob.
1	36.81652	0.0601
2	31.84117	0.1627
3	28.90040	0.2681
4	36.20680	0.0685
5	25.07634	0.4581
6	30.81103	0.1954
7	17.30922	0.8703
8	20.22272	0.7350
9	19.88552	0.7528
10	43.19540	0.0133
11	25.55981	0.4314
12	19.97822	0.7480

The results of the LM test indicate there is no autocorrelation between error terms in the predicted VAR at the 12 lag levels and 5% significance level examined. The results of the White Heteroscedasticity Test applied to determine whether error term variance is constant for the entire sample are shown in Table 3.

Table 3. White Heteroscedasticity Test results

Chi-sq	Df	Prob.
313.3791	300	0.2859

Table 3 shows that error term variance does not change for all observations; in other words, the problem of heteroscedasticity is not observed. Impulse-response function charts and variance decomposition analysis results obtained from VAR model predictions are shown in Figure 1.

In Figure 1, as seen in the charts showing the response of DCGSYH to DGSYHS and the response of DGSYHS to DCGSYH, the response of current expenditure share in GDP to one unit shock in growth increases until the 2nd period. After the 2nd period, it decreases but remains positive. After the 3rd period, it increases slightly and remains positive until the 10th period. When a one-unit shock occurs in CGSYH variable share, an increase occurs in GSYHS variable until the 3rd period in response, which remains positive in later periods.

In charts showing the response of DGSYHS to DYGSYH and the response of DYGSYH to DGSYHS, it can be seen that when one unit shock occurs in GSYHS variable, the response of YGSYH variable is to decrease until the 2nd period. After the 3rd period, it shows an increase and after the 4th period it remains positive. When one unit shock occurs in YGSYH variable share, an increase occurs in GSYHS variable until the beginning of the 4th period, which shows decreases in later periods but stays positive.

In charts showing the response of DGSYHS to DTGSYH and the response of DTGSYH to DGSYHS, it can be seen that the effect of 1 unit shock in GSYHS variable on TGSYH variable is an increase until the 4th period, remaining positive until the end of the 10th period. The effect of 1 unit shock in TGSYH variable share on GSYHS variable is an increase until the 2nd period, a decrease after the 2nd period to the 3rd period, remaining positive after the 3rd period.

In charts showing the response of DGSYHS to DHGSYH and the response of DHGSYH to DGSYHS, it can be seen that DHGSYH, which defines current, investment and transfer expenditures as a share in GDP, shows an increase after 1 unit shock in GSYHS variable until the 4th period, then gradually decreases after the 4th period to the 10th period but stays positive. When 1 unit shock is applied to DHGSYH, the GSYHS variable shows an increase until the 2nd period, then decreases until the 10th period but remains positive.

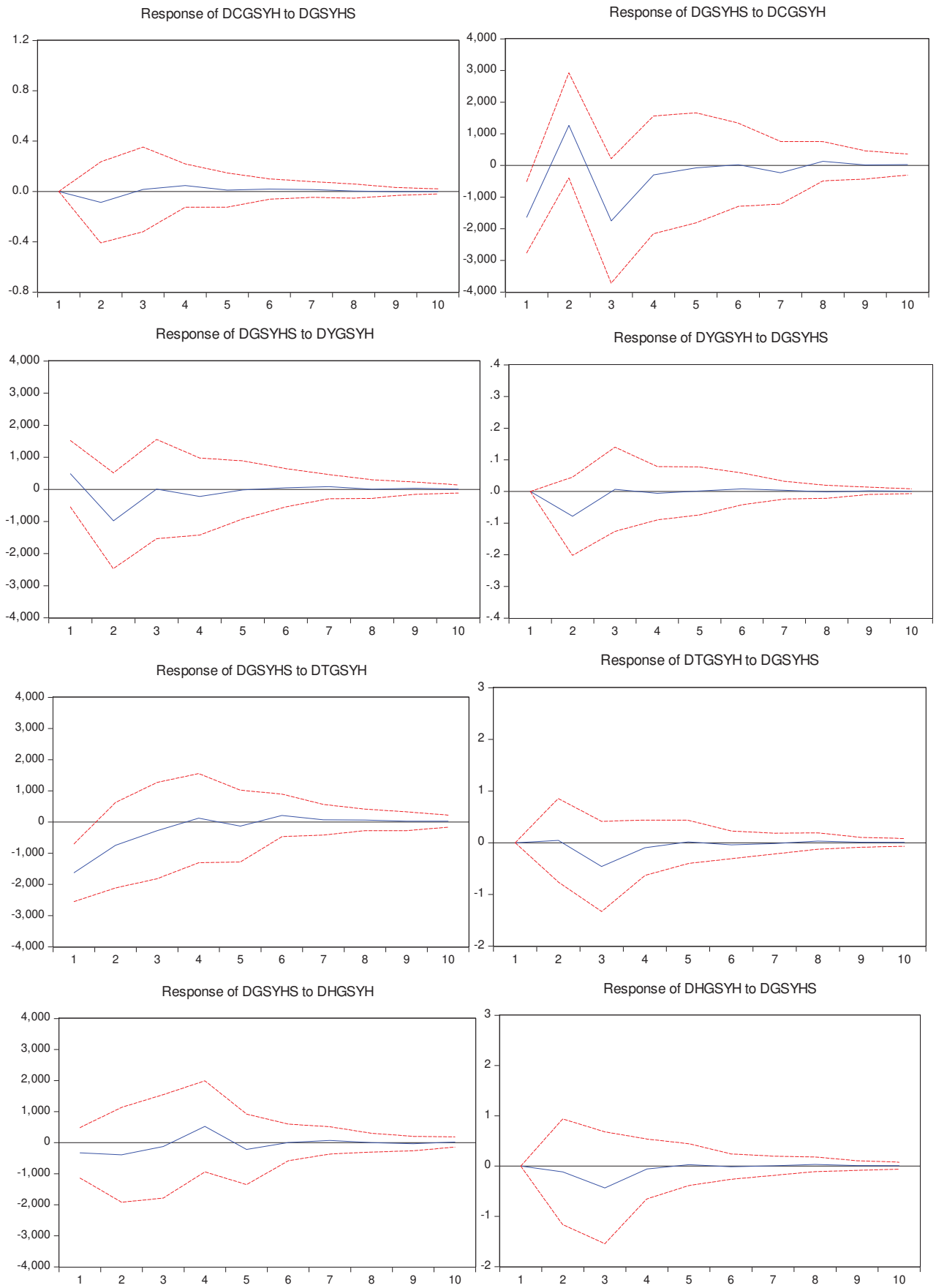

Fig. 1. Impulse-response functions

Table 4. Variance decomposition of CGSYH

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
1	0.818571	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.846923	94.42364	0.340265	2.558119	1.626863	1.051113
3	0.850822	93.60528	0.529728	3.117137	1.669296	1.078560
4	0.861799	91.33997	0.951470	4.716111	1.643269	1.349182
5	0.864503	90.78385	1.222427	4.994517	1.643143	1.356067
6	0.867265	90.67521	1.239234	5.055830	1.635877	1.393846
7	0.867755	90.62655	1.254562	5.054566	1.641088	1.423235
8	0.867937	90.62759	1.254159	5.052447	1.641844	1.423956
9	0.868023	90.61843	1.254373	5.060765	1.642707	1.423719
10	0.868067	90.61346	1.255768	5.064370	1.642820	1.423579

When we examine the variance decomposition table (Table 4) about CGSYH variable representing current expenditure share in GDP, it can be seen that 5% of prediction error of CGSYH variable was determined by TGSYH variable at the end of the 10th period.

Table 5. Variance decomposition of YGSYH

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
1	0.310331	7.227652	92.77235	0.000000	0.000000	0.000000
2	0.333781	6.343982	83.61982	3.456076	1.084390	5.495733
3	0.346904	11.48456	77.41729	4.116653	1.855227	5.126279
4	0.359055	15.33613	73.80413	3.910420	2.137668	4.811651
5	0.360428	15.52884	73.24285	4.258769	2.192635	4.776909
6	0.360771	15.57142	73.12536	4.250726	2.233126	4.819363
7	0.361191	15.63425	72.95703	4.337267	2.251091	4.820362
8	0.361217	15.63499	72.95486	4.337845	2.251402	4.820904
9	0.361342	15.68874	72.90429	4.336167	2.250297	4.820499
10	0.361352	15.69043	72.90095	4.337335	2.250719	4.820567

The variance decomposition table (Table 5) about YGSYH variable representing investment expenditure share in GDP shows that, while the self-explanatory power of the YGSYH variable is 92.77% in the initial period, this rate decreases at the end of the 10th period to 72.90%. While the power of CGSYH, TGSYH and DHGSYH variables to explain CGSYH variable increases over time, the power of GSYHS variable to explain CGSYH variable is 5.49% at the beginning and decreases to 4.82% at the end of the 10th period.

Table 6. Variance decomposition of TGSYH

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
1	2.057090	18.11793	12.53359	69.34848	0.000000	0.000000
2	2.175503	19.55253	17.72253	62.57806	0.101821	0.045060
3	2.412297	27.79758	14.50499	53.92174	0.129224	3.646465
4	2.433670	28.00280	15.00890	53.11063	0.137204	3.740471
5	2.462027	29.49206	14.68394	51.92352	0.241280	3.659201
6	2.468124	29.46913	14.61235	51.83855	0.411799	3.668169
7	2.469211	29.50785	14.60977	51.79658	0.417042	3.668766
8	2.470811	29.50665	14.59633	51.79883	0.416521	3.681672
9	2.471294	29.50811	14.60410	51.78932	0.416900	3.681576
10	2.471644	29.52003	14.60069	51.78096	0.417072	3.681244

The variance decomposition table (the following Table 6) about TGSYH variable representing transfer expenditure share in GDP shows that the self-explanatory power of TGSYH decreases from 69.34% to 51.78% between periods 1 and 10. The power of all variables in the table to explain the TGSYH variable shows an increase from the 10th period.

Table 7. Variance decomposition of DHGSYH

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
1	2.675785	44.58902	14.68229	40.68172	0.046958	0.000000
2	2.793231	42.19175	19.43281	37.43355	0.770178	0.171710

Table 7 (cont.). Variance decomposition of DHGSYH

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
3	2.949518	44.72685	17.44257	34.78169	0.738004	2.310884
4	2.956544	44.80064	17.49176	34.63319	0.736166	2.338248
5	2.979223	45.50467	17.29737	34.11552	0.770643	2.311800
6	2.983608	45.38423	17.24796	34.20274	0.858549	2.306522
7	2.984279	45.37650	17.25659	34.19870	0.862587	2.305625
8	2.985933	45.37243	17.24294	34.20670	0.861658	2.316270
9	2.986143	45.36735	17.24829	34.20558	0.861560	2.317221
10	2.986436	45.37534	17.24510	34.20074	0.861444	2.317375

In the variance decomposition table (Table 7) for DHGSYH, representing total expenditures as share of GDP, the self-explanatory power of DHGSYH shows a slight increase between periods and, at the end of 10th period, it becomes 0.86%. Except for TGSYH, the power of all variables to explain DHGSYH increase and the power of TGSYH variable to explain DHGSYH variable decreases from 40.68% to 34.20%.

Table 8. Variance decomposition of GSYHS

Period	S.E.	CGSYH	YGSYH	TGSYH	DHGSYH	GSYHS
1	3200.998	26.18415	2.332378	25.78234	1.051187	44.64994
2	3692.717	31.40459	8.739129	23.43504	1.918340	34.50290
3	4099.929	43.73035	7.089968	19.45866	1.642811	28.07821
4	4176.929	42.64116	7.114814	18.83834	3.161491	28.24419
5	4185.883	42.49118	7.085731	18.85411	3.414593	28.15439
6	4193.770	42.33444	7.074514	19.04343	3.401944	28.14567
7	4202.386	42.46384	7.086295	18.99624	3.417852	28.03577
8	4205.024	42.50863	7.077906	18.99855	3.413579	28.00134
9	4205.621	42.49792	7.083612	18.99708	3.418476	28.00292
10	4205.886	42.49644	7.083551	18.99927	3.420468	28.00027

In Table 8, the self-explanatory power of GSYHS variable, representing GDP at constant prices is 44.64% initially and decreases to 28% at the end of the 10th period. The power of CGSYH, YGSYH, and DHGSYH variables to explain GSYHS variables increases between periods. However, the power of TGSYH variable to explain GSYHS variable is initially 25.78% and decreases to 18.99% at the end of the 10th period.

2.3. Granger causality test. Granger causality describes a situation when variable *X* informs variable *Y* about both *X* and *Y* variables; if variable *Y* is predicted only by the usage of past values of *X*, then variable *Y* is the Granger cause of *X* (Takım, 2010, p. 12).

Causality test of two stable series X_t and Y_t is made by the following equations (Granger, 1969, p. 431):

$$X_t = \sum_{j=1}^{m} a_j X_{t-j} + \sum_{j=1}^{m} b_j Y_{t-j} + \varepsilon_t, \quad (3)$$

$$Y_t = \sum_{j=1}^{m} c_j X_{t-j} + \sum_{j=1}^{m} d_j Y_{t-j} + \eta_t, \quad (4)$$

where, m is the lag length; η_t and ε_t are the error terms. Error terms are assumed to be independent of each other.

Table 9. Results of Granger causality test

Direction of causality	F value	Probability value (p)	Decision
GSYHS is not Granger cause of CGSYH.	0.23467	0.9150	There is no causal relationship.
CGSYH is not Granger cause of GSYHS.	3.54703	0.0280	There is causal relationship.
GSYHS is not Granger cause of TGSYH.	1.59333	0.2216	There is no causal relationship.
TGSYH is not Granger cause of GSYHS.	2.95187	0.0507	There is causal relationship.
GSYHS is not Granger cause of YGSYH.	2.07810	0.1286	There is no causal relationship.
YGSYH is not Granger cause of GSYHS.	0.36333	0.8313	There is no causal relationship.
GSYHS is not Granger cause of DHGSYH.	3.36334	0.3186	There is no causal relationship.
DHGSYH is not Granger cause of GSYHS.	7.10310	0.0305	There is causal relationship.

According to the results shown in Table 5 at the 10% significance level, while there is no causal relationship between economic growth and current, investment and transfer expenditures during the period examined, we can say that there is a causal relationship from current expenditures, investment expenditures, and total expenditures to economic growth. No causal relationship is observed between investment expenditures and economic growth.

Conclusion

Public expenditures and the role of the state in economic life are examined by various economics perceptions and different views have been suggested. While defenders of the classical movement claim that both the involvement of the state within economic life and public expenditures should be minimized as much as possible, defenders of the Keynesian movement suggest the necessity of the state's involvement in economic life.

This study examines the effect of public expenditures on economic growth in Turkey for the period of 1980-2010. This study used GDP at constant prices and current investment, and transfer expenditures share in GDP, which were all economically classified. The analysis also included total expenditures, defined as the sum of current investment, and transfer expenditures. Initially, ADF and PP tests were used to determine whether the data series were stationary, and then variance decomposition analysis and impulse-response functions were realized using a VAR model. The Granger causality test was applied to determine the causality between public expenditures and economic growth. The results indicate a one-way causal relationship from current, transfer, and total expenditures to economic growth. No causal relationship was observed between investment expenditures and economic growth.

In light of the empirical findings, it can be concluded that current expenditures, transfer expenditures, and total expenditures are related to growth in Turkey's economy. These results suggest that, in order to ensure growth in Turkey's economy, controlled increases should be realized in forms of public expenditure.

References

1. Akgül Yılmaz, G. (2007). Kamu Maliyesi Ders Notları, Genişletilmiş 2. Bası, İstanbul.
2. Altay, O., Altın, O. (2008). Türkiye'de Kamu Harcamalarının Ekonomik Büyüme ve Yatırımlar Üzerine Etkilerinin Analizi (1980-2005), *Ege Akademik Bakış*, 8 (1), pp. 267-285.
3. Arısoy, İ. (2005). Türkiye'de Kamu Harcamaları ve Ekonomik Büyüme İlişkisi (1950-2003). Türkiye Ekonomi Kurumu Tartışma Metni 2005/15, Web: http://www.tek.org.tr adresinden 24 Şubat 2011'de alınmıştır.
4. Artan, S., Berber, M. (2004). Kamu Kesimi Büyüklüğü ve Ekonomik Büyüme İlişkisi: Çoklu Ko-Entegrasyon Analizi, *C.Ü. İktisadi ve İdari Bilimler Dergisi*, 5(2), pp. 13-29.
5. Aytaç, D., Güran, M.C. (2010). Kamu Harcamalarının Bileşimi Ekonomik Büyümeyi Etkiler Mi? Türkiye Ekonomisi İçin Bir Analiz. *Sosyoekonomi*, 2 (1), pp. 29-152. Web: http://www.sosyoekonomi.hacettepe.edu.tr/100207.pdf adresinden 5 Haziran 2011'de alınmıştır.
6. Bağdigen, M., Beşer, B. (2009). Ekonomik Büyüme İle Kamu Harcamaları Arasındaki Nedensellik İlişkisinin Wagner Tezi Kapsamında Bir Analizi: Türkiye Örneği, *ZKÜ Sosyal Bilimler Dergisi*, 5 (9), pp. 1-17.
7. Barro, R.J. (1989a). Economic Growth in a Cross Section of Countries, NBER Working Paper, No. 3120.
8. Barro, R.J. (1989b). A Cross Country Study of Growth, Saving And Government, NBER Working Paper, No. 2855.
9. Bozkurt, H. (2007). *Zaman Serileri Analizi*, Bursa: Ekin Kitabevi.
10. Cansu (Tunalı), İ. (2006). Türkiye Ekonomisinde İç Borçlanmanın Faiz Oranı ve Döviz Kuru İle İlişkisi. Yayımlanmamış Yüksek Lisans Tezi, Ankara Üniversitesi Sosyal Bilimler Enstitüsü İktisat Anabilim Dalı, Ankara.
11. Çavuşoğlu, A.T. (2005). Testing The Validity of Wagner's Law in Turkey: The Bounds Testing Approach, *Ankara Üniversitesi Siyasal Bilgiler Fakültesi Dergisi*, 60 (1), pp. 73-87.
12. Ergün, İ. (2000). Devlet ve Ekonomi. H.Ü. İktisadi ve İdari Bilimler Fakültesi Dergisi, Cilt 18, Sayı 1, pp. 1-27.
13. Gacener, A. (2005). Türkiye Açısından Wagner Kanunu'nun Geçerliliğinin Analizi. Dokuz Eylül Üniversitesi İ.İ.B.F, *Dergisi*, 20 (1), pp. 103-122.
14. Granger, C.W.J. (1969). Investigating Causal Relations by Econometric Models and Cross-Spectral Methods, *Econometrica*, 37 (3), pp. 424-438.
15. Gül, E., ve Yavuz, H. (2010). AB'nin Yeni Üyeleri İle Türkiye'de Kamu Harcamaları ve Ekonomik Büyüme İlişkisi: 1996-2008 Dönemi, Maliye Dergisi, Sayı: 158, Ocak-Haziran 2010.
16. Işık, N., Alagöz, M. (2005). Kamu Harcamaları ve Büyüme Arasındaki İlişki, Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi 24 (1), pp. 63-75.
17. Kar, M., Ağır, H. (2006). Türkiye'de Beşeri Sermaye ve Ekonomik Büyüme İlişkisi: Eşbütünleşme Yaklaşımı İle Nedensellik Testi 1926-1994, *Selçuk Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi*, 6 (11), pp. 51-68.
18. Kar, M., Taban, S. (2003). Kamu Harcama Çeşitlerinin Ekonomik Büyüme Üzerine Etkileri, *Ankara Üniversitesi Siyasal Bilimler Fakültesi Dergisi*, 58 (3), pp. 145-169.
19. Landau, D. (1983). Government Expenditure and Economic Growth: A Cross Country Study, Southern Economic Journal, 49 (3), pp. 783-792. PROQUEST Veritabanından 25 Haziran 2011'de alınmıştır.
20. Nadaroğlu, H. (2000). Kamu Maliyesi Teorisi. Gözden Geçirilmiş ve Düzeltilmiş 11. Baskı, Beta Basım Yayım Dağıtım A.Ş., İstanbul.
21. Nişancı, M., Uçar, M., Karabıyık, İ. (2011). İktisadi Büyüme ve Kamu Harcamaları Arasındaki Nedensellik İlişkisi. Hukuk, Ekonomi ve Siyasal Bilimler Aylık İnternet Dergisi 111, pp. 1-17. Web: http://e-akademi.org adresinden 26 Haziran 2011'de alınmıştır.

22. Özgen, F.B., Güloğlu, B. (2004). Türkiye'de İç Borçların İktisadi Etkilerinin VAR Tekniğiyle Analizi, *ODTÜ Gelişme Dergisi*, 31 (1), pp. 93-114.
23. Pehlivan, O. (2007). Kamu Maliyesi, Derya Kitabevi, Trabzon.
24. Sarı, R. (2003). Kamu Harcamalarının Dünyada ve Türkiye'deki Gelişimi ve Türkiye'de Ulusal Gelir İle İlişkisi, *İktisat İşletme ve Finans*, 18 (209), pp. 25-38.
25. Skousen, M. Çev: Özgen, F.B. (2000). Arz Yönlü İktisatta En Fazla Hakedilen Başarı. Liberal Düşünce, Yıl 5, Sayı 19, Yaz 2000, pp. 64-66.
26. Takım, A. (2010). Türkiye'de GSYİH İle İhracat Arasındaki İlişki: Granger Nedensellik Testi, *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 14 (2), pp. 1-16.
27. Takım, A. (2010). Türkiye'de Kamu Harcamalarının Ekonomik Büyüme Üzerine Etkilerinin Ekonometrik Analizi. New World Science Academy Uluslar arası, *Hakemli E-Dergi*, 5 (2), Article Number: 3C0037.
28. Tarı, R. (2010). Ekonometri. Genişletilmiş 6. Baskı. Kocaeli: Umuttepe Yayınları.
29. Terzi, H. (1998). Kamu Harcamaları ve Ekonomik Kalkınma İlişkisi Üzerine Ekonometrik Bir İnceleme, *İktisat İşletme ve Finans*, 13 (142), pp. 67-80.
30. Terzi, H., Kurt, S. (2007). Dolarizasyon, Enflasyon ve Reel Döviz Kuru İlişkisinin VAR Analizi İle Tespiti. 8. Türkiye Ekonometri ve İstatistik Kongresi. İnönü Üniversitesi, Malatya. Web: http://web.inonu.edu.tr/~eisemp8/bildiri-pdf/terzi-kurt.pdf adresinden 4 Temmuz 2011'de alınmıştır.
31. Ulutürk, S. (2001). Kamu Harcamalarının Ekonomik Büyüme Üzerine Etkisi, Akdeniz İ.İ.B.F., *Dergisi*, 1 (1), pp. 131-139.
32. Uzay, N. (2002). Kamu Büyüklüğü ve Ekonomik Büyüme Üzerindeki Etkileri: Türkiye Örneği (1970-1999), Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi 19, pp. 151-172.
33. Yılmaz, Ö., Kaya, V. (2005). Kamu Harcama Çeşitleri ve Ekonomik Büyüme İlişkisi: Türkiye İçin Panel Veri Analizi, *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 12 (2), pp. 413-426.