The Defence Spending - Growth Nexus In Turkey

Okyay Ucan, Associate Prof.
Mutlu Basaran Ozturk, Prof.
Abdulmenaf Akyildiz, Post Graduate Student
Nigde University, Turkey

Abstract

Due to globalization the power balances change in the form of a new world. In order to continue their freedom against inner and outer threats, countries have spent some of their national income to the military defence although their nation's loss of wealth. Recently, it has been wondered how the portion military defence spending has affected the financial growth. In this research, it will be studied on whether defence spending has a triggering effect on economical development. After dealing with the relationship of defence spending with economic growth on the frame of theory, it is concluded that there has been a two dimensional causality relation between defence spending and growth by analyzing 2006 – 2015 years data in long and short terms.

Keywords: Defence spending, economic growth, Granger causality, unit root, cointegration

Introduction

It is a reality that one of the reason of states is to protect the safety of their countries people and their properties. There are some duties of the state such as inner and outer safety, fairness and the fulfillment of social needs. Therefore, there have been some spending areas of the state like education, health, infrastructural investment and defence.

In the 21st century a great part of state budget has been put aside for defence spending. So higher defence spending in the countries lead to less resources to the other areas except defence spending (Akal et al., 2011).

Whether there is a relationship between defence spending and economic growth has accelerated by Benoit's works in 1973 and it has been the leading one for the other studies. Following this research, the causality relation of these has been searched and many empirical analyses using the data of emerging and developed countries has been done (Turk, 2007).

In this study the relationship between defence spending and growth will be analyzed by using the quarterly data from 2006 to 2015. Here, there are three parts. In the first part, following the literature review, theoretical frame is given. Secondly, the relationship between the defence spending and growth will be taken into the consideration in an econometric approach in the light of data. In the last part all the research will be argued and the necessary suggestions will be proposed.

Theoretical Approach

It is mentioned that there are two different approaches dealing with the effect of defence spending on the growth. One of them is Keynesyen and the other one is neo-classical approach. According to Keynesyen approach defence spending' positive effect on growth relates to positive externalities. The increase in defence spending will rise the capacity and output by the help of multiplier mechanism. In accordance with neo-classical approach, the effect of defence spending on growth is explained by crowding out effect. Increasing the defence spending results in economic shrinkage of the sources using on the process of production. So private investments will be excluded (Aksogan and Elveren, 2012).

Defence spending may affect growth positively both from supply and demand side. From the demand side, possible increase in defence spending will increase the growth. Because the rise in defence spending will decrease unemployment. So, this affects the growth positively by increasing the total demand (Gokbunar and Yanikkaya, 2004).

At the same time, the increasing defence spending will play an important role by providing inner and outer safety. Thus, investors will find the most suitable area. Therefore, the country will be thought as a safe port by the investors. So national and international investment and capitals will be attracted. Following this, the investment and of course capital inflow will increase. The capital inflow to the country will affect the growth positively by conveying the capital directly to the investment. However, if the country is open to external shocks or there exists lack of safety inside and outside, this situation will be risky to the capital owners and investors. As a result, there will be less investment, rise in unemployment, less total demand and drop in production. Finally, this affect the economical growth negatively (Ozbaran, 2004).

From the supply side, it is claimed that there is a positive relationship between the defence spending and economic growth because spending happened on defence industry generally creates various public infrastructural investments. These are mainly airways, communication webs, dams, ways and other transportation webs. Today widely used communication tools like smartphones and aviation tools are the output of science sector and so the

defence industry. Social and economical events will be provided easily by this technology, and they also will accelerate the production of goods and services and so will create a positive effect on growth (Sumer, 2005). At the same time, infrastructural investment will result in developments on education, health and human capital. Therefore, the productivity of final output will increase and so it affects economic growth positively. (Kirbitcioglu, 1998) Together with the increase in defence spending, the countries' R&D activities will rise (Gulmez and Yardimcioglu, 2012). So innovative ideas have appeared in the economy and these innovative ones change into profitable high value added products. By producing these products Reel GDP (Gross Domestic Product) i.e growth increases. The increase in import spending of defence industry bring the importing also the production technique. This gained technology is applied to defence industry and private sectors in production are affected positively and this gives rise in economic growth. (Tuyluoglu and Sarac, 2012)

Classical economists have thought that defence spending are nonproductive and unnecessary. Finally, they claim that it will not affect economic growth positively. They claim that due to increasing defence spending, sources in the area of private consuming, public infrastructure, education and health are wasted. Therefore, growth will be affected negatively (Sumer, 2005).

The literature review about defence spending is given in Table 1. According to some researches there is a causality relation from defence spending towards growth. According to other researches there is a causality relation from economic growth towards defence spending. However in some other researches there hasn't been any causality relation. So nobody has had an agreement between defence spending and economic growth.

Table 1. Literature Review

Author	Methodology and Period	Result
Gokbunar, Yanikkaya (2004)	Panel Data (1980-1997)	It was determined that defence spending have increased investments so affecting growth positively in developing countries. On the other hand, no relationship was found in the developed ones.
Chi-Hung L. and Chiehwen (2008)	Granger Causality (1947-2002)	It was concluded that defence spending is not an evident factor on growth.
Gorkem, Işik (2008)	VAR, Granger Causality (1968-2006)	In Turkey, it is concluded that there is not a relation of causality between defence spending and growth.
Yilanci, Özcan (2010)	Zivot-Andrews Unit Root Test, Gregory-Hansen	There isn't cointegration relation between the

	Cointegration, Toda-Yamamoto Causality (1950-2006)	defence spending and the growth but it is found that there is uni-directional relation of causality from GDP towards defence spending.
Demir (2011)	Spatial Econometrics (2004-2007)	In Turkey it is found that there is statistically significant but negative relationship between military and civil defence spending and growth.
Yurttançikmaz et al. (2012)	ARDL (1965-2008)	In long term it is determined that military spending affects growth positively. In short term it is determined that military spending has statistically significant and positive effect on growth.
Alptekin (2012)	Unit Root Test, Panel Cointegration (1991-2008)	There is a negative effect of defence spending on growth.
Basar, Kunu (2012)	Panel Data (1997-2004)	More defence spending causes less growth. This relation is statistically significant.

The Progress of Defence Spending In Turkey

A country's power is measured by the country's technology but not its wealth. In Turkey, it is found that defence spending-GDP ratio is increasing. Resolution process effect is the main reason of this situation. Personal and ammunition expenditure decreased, however one of the other component, defence industry spending increased. Clearly, Turkey realizes its projects on the field of defence like self weapons, unmanned / manned aerial vehicles, helicopters, ships and tanks after the resolution process which was started in 2004 (Erel, 2010). Together with the rise in defence expenditure, the production in defence industry also increases. The output of the defence industry reduces Turkey's external dependency. So external deficit also decreases. As a result, the balance of payment surplus arises, therefore it affects the economic growth positively (http://evds.tcmb.gov.tr/, 02.01.2016).

Econometric Approach

Model and Data Set

This study investigates the relationship between the defence spending and economic growth. The variables take place in the model are defence spending (DS) and growth (GDP). In the analysis, quarterly data between 2006Q1 – 2015Q3 is used. The data is taken from the Central Bank of the

Republic of Turkey (CBRT) electronic data delivery system. Johansen's cointegration approach is applied in order to determine whether there is a long term relationship between the variables. If there is a cointegration relation, vector error correction model is used to get the short term model.

Table 2. Unit Root Results

	Level (intercept and trend)		First Difference (intercept and trend)	
Variables	ADF Values	Probability	ADF Values	Probability
GDP	-3,317466	0,0805	-2,103126	0,0358
DS	-2,769465	0,2173	-37,42679	0,0000

The used variables GDP and DS are stationary in their first difference, i.e. I (1) as it seen in Table 2.

In Table 3, lag length is found via vector auto regressive (VAR) model. It was seen, according to the Akaike Information and Schwarz Criteria, lag lenght is found as four.

Table 3. Lag Structure

Lags	LogL	LR	FPE	AIC	SC	HQ
0	-1125.262	NA	3.24e+25	64.41495	64.50382	64.44563
1	-1074.282	93.21942	2.21e+24	61.73041	61.99704	61.82245
2	-1069.727	7.808156	2.15e+24	61.69871	62.14310	61.85211
3	-1031.804	60.67765	3.11e+23	59.76022	60.38236	59.97499
4	-1018.572	19.65865*	1.86e+23*	59.23269*****	60.03259*	59.50882*

The lag length found from VAR analysis is used in Johansen Cointegration test given in Table 4.

Table 4. Johansen Cointegration Results

Trace Test	%5 Critical Value	Probability	No. of CE(s)
11.39453	12.32090	0.0711	None
4.475226	4.129906	0.0408	At most 1*
Max-Eigen Statistic	%5 Critical Value	Probability	No. of CE(s)
6.919307	11.22480	0.2566	None
4.475226	4.129906	0.0408	At most 1*

In Table 4, it is obvious that there is at least one cointegration. GDP and DS are not stationary in level so they are going to be stationary by taking first differences. Existing errors can be avoided by Error Correction Model.

Table 5. Error Correction Model (ECM)

Hata düzeltme	D (GSYİH)	D (SH)
cointEq1	-0.156474	0.278958
Standart hata	(0.05063)	(0.04706)
T Hesaplanan Değeri	[-3.09071]	[5.92716]

As seen in Table 5 Error Correction Model results take place there. With the help of data, it is calculated to get the time period that the short term deviations can be avoided to get the long term equilibrium by 1/ECM formula. To find the period and use formula, cointEq1 has to be between 0 – 1 and t value must be it must statistically significant (Tarı,2012). CointEq1 is found as -0.156 and t value is significant (-3.090). It is concluded that short term fluctuations can regain their long term equilibrium approximately in 2(1/0.0156 quarterly period) years. In other words, %16 of short term deviations are avoided in every quarter of the year.

Table 6. Short Term Analysis

Cointegrating Eq:	Coefficient
GDP(-1)	1.000000
DS(-1)	**-10.91107**
	(0.22461)
	[-48.5776]

Short term analysis is seen in Table 6.Due to this, 1 unit TL increasing in the short term defence spending, will increase GDP 10.911TL.

Table 7. Granger Causality Test

Ho	Probability	Decision
DS≠> GDP	0.0006	Reject Ho
GDP ≠> DS	0.0434	Reject Ho

In Table 7 Granger Causality test which applied to Error Correction Model takes place. As seen, it is concluded that there is a bilateral causality relation between defence spending and GDP which is the main topic of this research.

Conclusion

In Turkey, it is believed that after 2006 in defence spending there is a decrease. However, it is not like that. How does this happen like that? The main reason is the defence spending components relocate among each other. After the process of resolution in 2006, expenditure of defence industry and TUBITAK's (The Scientific and Technological Research Council of Turkey) research and development spending are obviously increasing defence spending totally. At the same time in military spending, ammunitions and staff costs decline causes decrease in defence spending. Entirely, with the increase in high value added products Turkey in the field of defence

decreases its external dependency. So balance of payment deficit decreases and this gives rise in growth.

As a result of analysis, it is expressed that Turkey should follow some policies. The illegal terrorist movements which are active in Turkey's economy should be removed. By getting rid of all kinds of phenomenon causing instability, innovative ideas should turn into marketable products by supporting R&D. High budget defence industry spending should be increased. Therefore, hopefully economic growth will be realized by avoiding the dependency to the import.

References:

Akal, Mustafa, Adnan Dogruyol and Kursat Bilisli. Sanghay İsbirliği Orgutu Ve Turkiye-Iran Savunma Harcamalari Nedenselligi Testi. Kirgizistan Celalabat: Uluslararasi Hakemli Sosyal Bilimler Enstitusu E-Dergisi, 2011.

Aksogan, Gul and Adem Yavuz Elveren. Turkiye'de Savunma, Saglık Ve Egitim Harcamalari Ve Gelir Esitsizligi (1970-2008): Ekonometrik Bir Inceleme. Turkiye: Sosyoekonomi 17.17, 2012.

Alptekin, Volkan. Benoit Hipotezi: Secilmis Oecd Ulkeleri Olceginde Panel Veriler Yardimiyla Analizi. Turkiye Celal Bayar Universitesi Sosyal Bilimler Dergisi10/2, 2012.

Basar, Selim and Serkan Serdar Kunu. Savunma Harcamalarinin Iktisadi Buyumeye Etkisi. Turkiye: Sosyal Bilimler Enstitusu Dergisi, 2012.

Can, Erel. Turk Silikon Vadisi Hayata Geciriliyor. Turkiye: http://www.canerel.com.tr/v2/images/publication/Makale1987WEByayin.pdf

Demir, Ayse. Turkiye'de Il Bazında Sivil ve Askeri Savunma Harcamalarinin Ekonomik Buyume Uzerindeki Etkisi: Mekansal Ekonometri Yaklasimi. Turkiye: Afyon Kocatepe Universitesi Sosyal Bilimler Enstitusu Dergisi 2011.

Gokbunar, Ramazan and Halit Yanıkkaya. Savunma Harcamalarini Belirleyen Faktorler Ve Ekonomik Buyumeye Etkileri. Turkiye: Ankara Universitesi SBF Dergisi 59(01), 2004.

Gorkem, Hilal and Serkan Isik. Turkiye'de Savunma Harcamalari Ve Ekonomik Buyüue Arasindaki Iliski. Turkiye: Marmara Universitesi I.I.B.F Dergisi, 2008.

Gulmez, Ahmet, and Fatih Yardimcioglu. OECD Ulkelerinde Ar-Ge Harcamalari ve Ekonomik Büyüme Iliskisi: Panel Esbutunlesme ve Panel Nedensellik Analizi (1990-2010). Turkiye: Maliye Dergisi 163, 2012.

Kirbitcioglu, Aykut. Iktisadi Buyumenin Belirleyicileri ve Yeni Buyume Modellerinde Beseri Sermayenin Yeri. Turkiye: Ankara Universitesi SBF Dergisi 53.(01), 1998.

Ozbaran, M. Hakan. Turkiye'de Kamu Harcamalarinin Son Bes Yilinin Harcama Turlerine Gore Incelenmesi. Turkiye: Sayistay Dergisi 53, 2004.

Selen, Ufuk and Kadir Eryigit. Yapisal kirilmalarin varliginda, Wagner kanunu Turkiye icin gecerli mi. Turkiye: Maliye Dergisi 156, 2009.
Sumer, Kutluk Kagan. Savunma Harcamalarinin Ekonomik Buyume Uzerine Etkisinin İncelenmesi. Turkiye: Guvenlik Stratejileri Dergisi 01, 2005.
Tari, Recep, Ekonometri, Umuttepe Yayinlari, Kocaeli, 2012.
Turk, H. Karahan. Turk Savunma Sanayinin Ekonomik Etkileri ve Savunma Harcamalari-Büyüme Iliskisinin Ekonometrik Modellenmesi. Yuksek Lisans Tezi, 2007.
Tuyluoglu, Sevket And Senay Sarac. Gelismis ve Gelismekte Olan Ulkelerde Inovasyonun Belirleyicileri: Ampirik Bir Analiz. Turkiye: Eskisehir Osmangazi Universitesi İktisadi Ve İdari Bilimler Dergisi 7.(1), 2012.
Yilanci, Veli, and Burcu Özcan. Yapisal Kirilmalar Altinda Turkiye icin Savunma Harcamalari ile GSMH Arasindaki İliskinin Analizi. Turkiye: CU İktisadi ve İdari Bilimler Dergisi 11.(1), 2010.
Yurttancikmaz, Ziya Caglar, Amin Aali, And Omer Selcuk Emsen. Askeri Harcamalar ve Ambargonun Ekonomik Buyumeye Etkileri: Iran Uzerine Bir Uygulama. Ataturk University Journal Of Economics and Administrative Sciences 26.(2), 2012.
http://evds.tcmb.gov.tr/, 02/01/2016