Savunma Bilimleri Dergisi
The Journal of Defense Sciences
Kasım/Nov 2018, Cilt/Volume 17, Sayı/Issue 2.
ISSN (Basılı) : 1303-6831 ISSN (Online): 2148-1776

Macroeconomic Effects of Defense Expenditures in Turkey

Mustafa ŞİT*

Abstract

In this study, the effects of defense expenditure on the macroeconomic majorities of Turkey such as economic growth, inflation, current account balance, import and employment have been investigated. The relation in question has been analysed over the period between 1980-2016 by structural breaks unit root test, causality tests of Toda-Yamamoto and Granger. As a result of this study, it has been detected that defense expenditures are effective on inflation, current account balance and import. Unlike previous studies which same tests were applied, causality from current account balance and GDP to defense expenditures was determined in this article. Evidence has shown that, for Turkish economy, defense expenditures are effective on macroeconomics variables.

Keywords: *Defense Expenditures, Macroeconomic magnitudes, Turkish Economy, Structural Break Test, Causality Analysis.*

Türkiye'de Savunma Harcamalarının Makro Ekonomik Etkileri

Öz

Bu çalışmada Türkiye ekonomisi için savunma harcamalarının ekonomik büyüme, enflasyon, cari işlemler dengesi, ithalat ve istihdam gibi makro büyüklükler üzerindeki etkisi araştırılmıştır. Söz konusu ilişki 1980-2016 dönemi üzerinden yapısal kırılmalı birim kök testi, Granger ve Toda-Yamamoto nedensellik testleriyle analiz edilmiştir. Çalışma sonucunda savunma harcamalarının enflasyon, cari işlemler dengesi ve ithalat üzerinde etkili olduğu tespit edilmiştir. Aynı testlerin uygulandığı önceki çalışmalardan farklı olarak, bu makalede cari işlemler

* Dr. Öğr. Üyesi, Harran Üniversitesi, msit@harran.edu.tr

Geliş Tarihi/Received:14.05.2018
Kabul Tarihi/Accepted:18.06.2018

dengesinden GSYİH'e ve savunma harcamalarına nedensellik belirlenmiştir. Kanıtlar Türkiye ekonomisinde savunma harcamalarının makro ekonomik değişkenler üzerinde etkisi olduğunu göstermektedir.
Anahtar Kelimeler: *Savunma Harcamaları, Makroekonomik büyüklükler, Yapısal Kırılma Testi, Nedensellik Analizi.*

Introduction

Turkey is a country located on Middle Eastern territory where the earliest civilizations in human history existed. This is an region which has always been subject to the domination of all nearby countries as well as the super powers of the world. Even some theologians who approach the subject from a different perspective and sources declare that the big war which is expected to break out towards the end of World is claimed to take place in this region. Thereby, this fight for domination upon the area brings along with itself many wars and terrorism.

In Turkey both interior and exterior security issues are crucial regarding the country's geopolitical position. By this means, because of the terror, which has been a problem for Turkey for 30 years as well as the recent Arab spring and Syrian civil war that causes an unbalanced political situation in Middle East has contributed to the rise in defense expenditures of Turkey. Although these defense expenditures create an effect of security it also has many economic effects. Accordingly, it is essential to conduct research on the economic effects of defense expenditures which are the major state expenditures.

This study shall attempt to investigate the hypothesis which "defense spending affects some macroeconomic variables in Turkish economy". As macroeconomic variables, inflation, growth rate, current account to GDP ratio, inflation and employment will be used. The reasons for the expectations of "why defense expenditure has an effect on the mentioned macroeconomic factors" can be explained as follows.

The relation between defense expenditures and economic growth is explained in theoretical part. It is expected that defense expenditures related with inflation. Because defense expenditure is a public expenditure and increases the demand. Defense expenditures lead to imports due to military equipment and

intermediate goods which imported from abroad. An increase in imports may cause deterioration in the current account balance. So, it is expected that these two variables are also related with defense expenditures. Finally, if defense expenditure is caused by domestic production, it can lead to increased employment.

In the first section of the study, the theoretical framework of the subject is shaped and the literature review of empirical studies which have been previously conducted on the subject in Turkey and in other countries is presented. In the econometric analysis section, on the other hand, variables which have been subjected to the analysis are explained and the mentioned relation has been analysed by structural breaks unit root test, causality tests of Toda-Yamamoto and Granger.

Theoretical Framework

David RICARDO and Adam SMITH, the classical economists, have claimed that defense expenditures had no effect on growth and that they had a restricted position in the industry. These economists have expressed that these expenditures only cause consumption making them unnecessary because these defense expenditures are spent for the sake of a country's security instead of the economic development and growth activities. However, in addition to these views, Adam SMITH has also declared that defense expenditures are for the security of a country as well as the protection of citizens so they are more important than wealth.

Neoclassical economists, on the contrary, considered defense expenditures to be a function of social wealth in terms of maximizing the country's advantage. According to this opinion, defense expenditure is a rational item which stables alternative cost by means of its security benefit.

In this theoretical framework, national output Y can be expressed as a function of labour, capital and technology which is usually proxied by defence spending.

$$Y = f(L, C, T) \tag{1}$$

Where L stands for labour, C for capital and T for technology (Paparas, 2016:5).

In the very period that it has emerged, the demand insufficiency has been seen as the main reason of economic crises by the Keynesian economists. They have mentioned that defense expenditures is a subcategory of public expenditures. For this very reason, each defense expenditure will contribute to the total demand rates by means of the multiplier effect which it will create in economy. By this way, the capacity use will increase and as a result, economic growth will be supported by profit and investment.

The Keynesian framework is frequently used in the literature in order to investigate the relationship between military spending and economic growth. The model is:

$$Y = Q - W = C + I + D + T \quad (2)$$

Where Y is the actual output, Q is the summary of demands for goods and services, W is the difference between actual and potential output (Q), C is the consumption expenditure, I is the investment expenditure, D is the defence spending and T is the trade balance (Paparas, 2016:4).

Additionally, according to the Keynesian economists, defense expenditures result in positive externalities which contribute to factor efficiency. Stability, training of military personnel, their discipline, modernization, research and development as well as infrastructure activities form the bases of these externalities. Especially, new technologies which emerge as a result of the research and development activities that have spread to the society in a very short time will contribute to economic growth. (Looney, 1997:46)

Similar to the Keynesian view, Eshay has expressed that throughout the peaceful periods of industrial countries, demands generally decline and as a result, the production rates go down; however he has also stated that defense expenditures encourage the economic activities causing a revival in production, in this trend. (Eshay, 1983:87)

Corporate economists that support Keynesian approach have approached the issue from a different pathway. According to them, extreme defense expenditures will cause ineffectiveness in industrial and service sectors. Furthermore, some

persons, corporations and companies might benefit from defense expenditures resulting in the emergence of a strong interest group.

Economic effects of defense expenditures can be broadly grouped into demand effects, supply effects and security effects. Demand effects operate through the level and composition of expenditure. The most obvious is the Keynesian multiplier effect: an exogenous rise in military spending increases demand and, if there is spare capacity, increases utilization and reduces unemployment of resources. Underconsumption theories reverse this causation and explain military expenditure by the government's need to manage demand. Military expenditures have opportunity costs and may crowd-out other forms of expenditure, such as investment. The extent and form of crowding-out following an increase in military spending will depend on prior utilization and how the increase is financed. The way the increase is financed will have further effects (e.g. a larger deficit may raise real interest rates, which feeds back on the economy).

Supply effects operate through the availability of factors of production (labour, physical and human capital and natural resources) and technology, which together determine potential output. Some of the demand effects (e.g. crowding-out of investment) may also have supply effects by changing the capital stock. Clearly resources used by the military are not available for civilian use, but there may be externalities. Training in the armed forces may make workers more or less productive when they return to civilian employment. Military R&D may have commercial spin-offs. From the military sector to the civil sector there are positive externalities in the form of technology, human capital and employment spread.

Finally, security of persons and property from domestic or foreign threats is essential to the operation of markets and the incentives to invest and innovate. To the extent that military expenditure increases security it may increase output. Adam Smith noted that the first two duties of the state were to provide internal and external security (Dunne, 2005: 450,451).

Because of lack of theoretical models, relations between defense expenditures and other macroeconomic variables have been investigated through empirical models. Thanks to econometric methods which evolved over time these relations have been analyzed with causality methods without the need for a theoretical structure (İpek, 2014:114).

Related Literature

When the studies which examine the relations between defense expenditures and other macroeconomic variables are viewed, it is apparently seen that they are divided into two categories. First section studies are the ones that deal with the relations between basic defense expenditures and inflation, employment and current accounts balance and some economic magnitudes and the other section studies, on the other hand, are the ones in which the relations between defense expenditures and economic growth are examined.

Among the first section studies conducted abroad, Aiyedogbon (2014) examined the relations of inflation and defense expenditures according to the data between the years 1980- 2012 in Nigerian economy. In the study, cointegration, ARCH and Granger causality tests have been applied. As a result of the study, it has been observed that there is a long term relation between variables and a positive effect of defense expenditures on inflation.

In another study that has been conducted on Nigerian economy, Oyinyola (1993) has investigated the relation between the balance of payments, defense expenditures, growth, inflation and unemployment. In the study which has been performed using OLS method, it has been detected that there is a positive relation between defense expenditures, growth and inflation.

In another study conducted on Nigerian economy, Anfofum (2013) who examined the relations between the defense expenditures, oil income, non-oil income, growth and exchange rate has applied Johansen cointegration, Granger causality tests and made VAR analysis. According to the result of the study, there is a long term relation between variables. In addition, it has been detected by Granger causality analysis that there is a unilateral causality from oil and non-oil incomes to defense expenditures and by VAR analysis a long term relation effect of variables on defense expenditures. In another study conducted by Anfofum et. al in 2014 the relation of defense expenditure and external debt over the period of 1986-2011 was examined by Granger causality and cause and effect analysis. As a result, a unilateral causality from defense expenditures to external debt variable has been detected.

In his study which searched the effects of defense expenditures on wage deficit, Vadlamannati (2008) has used the data of the period of 1975-2015 for five South-Asian countries. In the study where the TSLS method has been applied it has been observed that defense expenditures have a positive effect on wage deficit.

Azam (2016), on the other hand, examined the relation between military expenditures and unemployment for the South Asian Regional Cooperation Organization (SAARCH) in the period of 1990-2013. In the study, panel data analysis has been used. As a result of the study, it has been observed that defense expenditures of these countries support employment.

In the studies that have been conducted on Turkish economy, Özsoy and İpek (2010) used a four-variable vector autoregressive model (VAR). By means of this model, relations between share of defense expenditure in GNP (Gross National Product), GNP growth rate, current accounts rate to GNP and rate of inflation have been investigated for Turkey, Egypt, Israel and Jordan separately for the period of 1980-2006. Likewise, the relations between these variables for all countries have been tried to be determined by impulse-response graphs, variance decomposition and Granger causality. Among the results of the analyses, the most remarkable one is that a rise in GNP will have a positive effect on defense expenditures for Turkey, Egypt and Israel but it will have a negative effect on Jordan.

In an another study that has been conducted on Turkish and Israeli economies by İpek (2014), some selected macroeconomic magnitudes like the relations between the rate of growth of defense expenditures, inflation rates, current account balance to GNP have been searched by ARDL border test over the period of 1980-2012. Although a long term relation has not been observed between the related variables for Turkey, it has been seen that there is a unilateral causality relation from defense expenditures to inflation in the short term.

Soyyiğit Kaya (2013), however, applied a causality analysis on the financial effects of defense expenditures in Turkey. In the study where Granger and Todo-Yamamoto causality test has been done over the period of 1970-2010, it has been concluded that there is a mutual causality relation between defense expenditures and employment and a unilateral causality relation from defense expenditures towards GDP. By using ARDL test and cointegration in the studies over the period of 1950-1997, Yıldırım et al. (2013) has reached the conclusion

that, both in short and long term, there is a negative effect of defense expenditures on employment.

In their study conducted in 2004, Karagöl and Palaz (2004) also analysed the relations between defense expenditures, educational expenditures, labour force, growth and capital stock over the period 1995-2005. In the study where cointegration and Granger causality methods have been used, it has been found that there is a long term balance between defense expenditures and GNP and there is a unilateral negative relation from defense expenditures to GNP.

In the second section, the studies that examine the defense expenditures and economic growth have multiplied after the study of Benoit (1978) which was conducted on 44 countries. In this study, Benoit came up with the result that there was a positive relation between defense expenditures and economic growth. The hypothesis of Benoit was followed by studies which supported or rejected the hypothesis. The results of these supportive and refutational studies reach to different results because of the differences between the used methods, examined periods and the samples.

For instance, in one of the studies that opposes the hypothesis Kollias, (1997), could not find any causality relation between growth and defense expenditures using Granger causality analysis on Turkish economy over the period of 1954-1993. On the contrary, in the studies conducted by Wijeweera and Webb (2009), Karagöl et al. (2004), Dunne (2001) it has been expressed that defense expenditures have a positive effect on economic growth.

As a result of the literature search, it is seen that defense expenditures generally have effects on macroeconomic variables (inflation, economic growth, current accounts balance).

Econometric Analysis

Data and Methodology

In this study, summary of data for the period 1980-2016 is as follows;

de: Share of defense expenditure in GNP,

gr: Growth rate,

inf: Inflation rate,

cab: Ratio of current account balance to GNP,

imp: Share of import in GNP,

emp: Employment data.

Stockholm International Peace Research Institute (SIPRI) data are used in the literature because of the problems related to the ratio of defense expenditure to GNP. Data on other variables were taken from the database of the Central Bank of the Republic of Turkey (CBRT). The analysis was performed by taking the natural logarithm of the employment data. All financial data were in constant US dollars.

ADF unit root test, let x_t be a time series. Deriving from an AR(k) representation the ADF test involves the following regression:

$$\Delta x_t = \mu + \gamma t + \alpha x_{t-1} + \sum_{j=1}^{k-1} \beta_j \Delta x_{t-j} + \mu_t \quad (1)$$

Where Δ is the difference operator and μt is a white-noise innovation. The test examines the negativity of the parameter α based on its regression *t* ratio. Dickey and Fuller (1979) derived the asymptotic distribution of the statistic. Hall (1994) showed that the asymptotic distribution is unaffected by data-based model selection using standard information criteria. To the extent that the distribution can be sensitive to the lag order in finite samples, there remains the problem of applying appropriate lag-adjusted critical values (Cheung 1995:1).

Philips Perron (PP) test was carried out with the equation 2 given below:

$$X_t = \mu + \alpha X_{t-1} + \gamma(t + T/2) + \mu_t \quad (2)$$

Where the coefficients are μ, α, γ and T is the total number of observations.

Zivot and Andrews (1992) endogenous structural break test is a sequential test which utilizes the full sample and uses a different dummy variable for each possible break date. The break date is selected where the t-statistic from the ADF test of unit root is at a minimum (most negative). Consequently, a break date will be chosen where the evidence is least favorable for the unit root null. The critical values in Zivot and Andrews (1992) are different from the critical values in Perron (1989). The difference is due to the fact that the selecting of the time of the break is

treated as the outcome of an estimation procedure, rather than predetermined exogenously (Glynn 2007:6).

In order to determine whether changes in one variable are a cause of changes in another, we employed the Granger (1969) causality test. Granger (1969) causality method of investigating whether A causes B is to see how much of current B can be explained by the previous values of B and then to see whether by including lagged values of A we can improve the explanation of B. B is said to be Granger-caused by variable A if A helps in the prediction of B, or if the coefficients on the lagged A's are statistically significant. The main idea of causality is quite simple, if A causes B, then changes in A should precede changes in B. This characteristic makes causality test an important one in the test of endogeniety (Aiyedogbon 2014:11).

Toda-Yamamoto (1995) applies VAR model due to the number of delay and take into account the degree of integration of the series with χ^2 distribution of the Wald test. Toda-Yamamoto causality analysis of the values β of the variables so that the level of the series by creating a standard VAR model eliminates the problems of determining the rank of cointegration (Bayat 2012:123). Accordingly, the generated for relationship between defense expenditure and other variables VAR(p) can be written as follows;

$$DE_t = \sum_{i=1}^{p+d_{max}} \alpha_{1i} DE_{ti} + \sum_{i=1}^{p+d_{max}} \beta_{1i} GR_{ti} + \sum_{i=1}^{p+d_{max}} \beta_{1i} INF_{ti} + \sum_{i=1}^{p+d_{max}} \beta_{1i} CAB_{ti} + \sum_{i=1}^{p+d_{max}} \beta_{1i} IMP_{ti} + \sum_{i=1}^{p+d_{max}} \beta_{1i} EMP_{ti} + \mu_{1t}$$

Empirical Proofs

Where dmax is the maximum degree of integration of the variables in the model, p is the optimal lag length obtained from the VAR model and ε_t is the term refers to the error correction based on the assumption of white noise. The null hypothesis is tested as $\beta_{1i} = 0$ for i≤k in equation. If the alternative hypothesis is accepted, it means that there is a causality between DE and other variables running from DE to the others.

In the study, primarily, Augmented Dickey Fuller (ADF) and Philips Perron (PP) unit root tests have been applied in order to check the stability of variables.

The results of ADF and PP unit root tests are presented in Table 1. According to these results, all series have let-up by having the first variable I taken (1). Besides this, Gr and cab variables are stable ı (0) in the level rates.

ADF and PP unit root tests don't consider structural causality. Therefore, in this part of the study, the results of unique causality unit root tests Zivot Andrews (ZA) are given by considering the structural causality in the next phase.

Table 1. ADF and PP Unit Root Test Results

		Level		**First difference**	
Variables	**Method**	**Non-Trend**	**Trend**	**Non-Trend**	**Trend**
De	ADF	-0,897	-2,020	-6,428*	-6,402*
De	PP	-0,721	-2,044	-6,435*	-6,406*
Gr	ADF	-6,898*	-6,811*	-10,218*	-10,057*
Gr	PP	-8,391*	-8,883*	-25,746*	-25,021*
İnf	ADF	-0,509	-2,217	-7,151*	-7,188*
İnf	PP	-0,258	-2,360	-7,120*	-7,150*
cab	ADF	-6,037*	-6,090*	-6,973*	-6,859*
cab	PP	-6,045*	-6,158*	-33,448*	-33,480*
imp	ADF	-2,015	-1,595	-6,077*	-5,624*
imp	PP	-2,013	-1,577	-6,173*	-7,011*
emp	ADF	-0,368	-1,430	-4,945*	-4,869*
emp	PP	-0,494	-1,745	-4,952*	-4,876*

*****Denote rejection of the null hypothesis of unit root at 1% significant levels, respectively (Pesaran and Pesaran 2009).

The ZA unit root test results related to variables are given in Table 2. Of the models predicted from the ZA test application, the first model (A) is about the average causality, while Model C demonstrates that a structural change modifies both the average and the slope. According to these tests, if t-statistic rates of the

variable is smaller than critical rate it is accepted to be H_0 Hypothesis which shows that it is not stable. According to Table 2 results, all variables are stabilized in level rates.

Table 2. ZA Unit Root Test Results

	Model A		**Model B**	
Variables	**Min T-stat**	**Break Time**	**Min T-stat**	**BreakTime**
de	-4,1747	2010 (3) [2.60]	-4,2852	2004 (3) [2,71]
gr	-3,1503	2005 (6) [-1,27]	-4,0459	2006 (0) [4,60]
inf	-5,2477	1997 (5) [3,14]	-5,1896	1997 (5) [0,58]
cab	-4,3849	2009 (3) [-4,21]	-6,0591	2008 (8) [-5,84]
imp	-3,4199	1999 (0) [0,72]	-4,3109	1991 (3) [-2,55]
emp	-4,9252	1998 (3) [3,81]	-4,5001	1998 (3) [0,27]

The rates given in brackets show the number of selected latency by Akaike Info Criteria, box brackets show the t-statistic rates which belong to the variable. For the models, the critical rates taken from Zivot Andrews (1992:256-257) are 1% and 5% at Model A respectively meaning levels -5.34 and -4.80 and for Model C are 1% and 5% respectively meaning levels -5.57 and -5.08.

According to these results, defense expenditures rate to GNP has shown a causality at Model A in 2010 and at Model C in 2004. The break was also found in 2005 and 2006 for Gr variable. Breaks were detected in 2008 and 2009 in current account balance variable. For import variable rate to GNP the breaks occur in 1991 and 1999. And lastly breaks were detected in 1998 in employment variable.

Table 3. Granger Causality Test Results

Null Hypothesis (H_0)	Obs	F-Statistic	Prob.
GR does not Granger Cause DE	32	2.67027	**0.0578**
DE does not Granger Cause GR		1.08059	0.3891
INF does not Granger Cause DE	32	1.07497	0.3917
DE does not Granger Cause INF		4.02161	**0.0129**
CAB does not Granger Cause DE	32	1.91085	0.1427
DE does not Granger Cause CAB		3.51290	**0.0223**
IMP does not Granger Cause DE	32	0.66939	0.6198
DE does not Granger Cause IMP		2.49059	**0.0714**
LNEMP does not Granger Cause DE	32	0.97215	0.4418
DE does not Granger Cause LNEMP		0.98974	0.4329

For causality analysis, Granger and Toda- Yamamoto tests have been applied. According to the aim of the research, only the causality results between defense expenditures and the other variables have been given. According to the Granger causality test results that are given in Table 3, a unilateral causality has been detected from defense expenditures to the inflation, current accounts balance and import variables. In addition to this, there is a unilateral causality from economic growth variable to defense expenditure variable.

Table 4. Toda-Yamamoto Causality Test Results

Hypothesis	Optimal VAR Lag Length ($k+d_{max}$)	Wald (X^2)	p Value	Result
lnde ≠> lngr	4	6,6776	0,153	No causality
lngr≠> lnde	4	8,5729	**0,072**	**Causality**
lnde ≠> lnenf	4	10,3766	**0,034**	**Causality**
Lnenf ≠> lnde	4	6,6271	0,156	No causality
lnde ≠> lncab	4	12,4770	**0,014**	**Causality**
Lncab ≠> lnde	4	9,3895	**0,052**	**Causality**
lnde ≠> lnimp	4	7,9790	**0,092**	**Causality**
Lnimp ≠> lnde	4	2,7012	0,608	No causality
lnde ≠> lnemp	4	1,2635	0,867	No causality
lnemp≠> lnde	4	2,0760	0,721	No causality

Lag lenghts have been selected according to SIC criteria. ≠> notation on the table expresses the hypothesis that there is no Granger causality relation between two variables in the shown direction.

The result of Toda–Yamamoto causality test in Table 4 resembles the Granger causality test result but in this test result, a bidirectional relation between defense expenditures and current account balance has been detected.

Conclusion

In this study, the effects of defense expenditures on some macroeconomic magnitudes are examined. Primarily, in the study ADF and PP unit root tests and Zivot Andrews (ZA) unit root test that takes structural causality into consideration have been applied. According to ZA test results, the years of causalities have been detected. Defense expenditures rate to GNP has shown a break in 2010 and 2004. In Turkish economy which has experienced growth acceleration after 2003, the rates of defense expenditures in GNP have declined due to the increase of the GNP figures. These breaks point out that compared to the previous years, defense expenditures rates to GNP declined in 2004. This decline continued until 2010,

after 2008 global crisis by means of the decline in GNP in Turkish economy, the rates of defense expenditures to GNP has increased. This situation is the very reason of the causality that happened in 2010.

For Gr variable the break was also found in 2005 and 2006. As mentioned above, in Turkish economy which has increased since 2001 economic crisis, high rates of economic growth were recorded in the years of 2005 and 2006. The causality that occurred in inflation variable in 1997, points to the increase of the inflation by the taken precautions after the decrease in 1994 economic crisis. The reason of breaks which detected in 2008 and 2009 for CAB variable was the low level of current account deficit caused by 2008 global crisis in those years which normally were high in level.

For import variable rate to GNP the breaks occur in 1991 and 1999. These causalities point to the declining process of export rates in GNP in the year 1999 which had increased in 1991. The reason of the causality in employment in the year 1998 can be the high level of employment rates in the year compared to the 1990s with low level rates of employment.

Unlike previous studies which same tests were applied, causality from GDP to defense expenditures was determined in this article. Accordingly, income growth that has been supplied by economic growth increases the defense expenditures. Non-existence of a causality from defense expenditures towards growth supports the theory of classical economists who claim the non-existence of the effect of military expenditures on the growth.

Defense expenditures are again effective on inflation because each unit of expenditure in an economy causes a rise in demand and can result in inflation. The causality from defense expenditures to current accounts balance and import variables shows that defense expenditures in Turkish economy causes import and results in a disturbance of current account balance. Also the current account balance is a result of defense expenditures. This relationship can be explained by the desire to reduce imports from defense expenditure in order to economically prevent the deterioration in the current account balance. However, according to the empirical proofs, any defense expenditure that has been performed in Turkish economy doesn't result in any increase in employment. As a result, when examined according to the economic theory the causalities that have been detected between

variables are significant. Also the results resemble to some other studies in the literature (Kollias 1997; Aiyedogbon 2014; Olaniyi 1993; Özsoy and İpek 2010; İpek 2014; Dristakis 2004).

According to the findings of study, the following policies are proposed. Staff expenditures can be reduced and professional military system can applied so that not defense expenditure cause inflation. Because defense expenditure includes personnel (military, police) spending which increases demand. Domestic production should be promoted and R & D spending can be increased so that not defense expenditures cause imports. Thus, deterioration of current account balance can be avoided.

Genişletilmiş Özet

Giriş

Türkiye öncesinde birçok medeniyetin var olduğu hatta ilk insanlığın yaşadığı Ortadoğu coğrafyasının içerisinde bir ülkedir. Bu coğrafya yüzyıllardır dünyanın süper gücü ülkeleri de dahil bölgedeki tüm ülkelerin üstün olmaya çalıştığı bir bölgedir. Hatta olaya daha farklı açı ve kaynaklardan bakan din bilimcileri dünyanın sonuna doğru ortaya çıkması beklenen büyük dünya savaşının bu coğrafyada meydana geleceğini ileri sürmektedir. Dolayısıyla bu güç kurma çatışması bölgede birçok savaş ve terör durumunu da beraberinde getirmektedir.

Türkiye'de sahip olduğu jeopolitik konumu sebebiyle hem iç hem de dış güvenlik unsurları önem arz etmektedir. Buradan hareketle gerek 30 yılı aşkın devam eden terör sorunu gerekse son dönemlerde Arap baharı ve Suriye'de yaşanan iç savaş sebebiyle daha fazla hissedilen Ortadoğu'daki politik ve sosyal istikrarsızlıklar Türkiye ekonomisinde savunma harcamalarının artmasına sebep olmaktadır. Savunma harcamaları genel anlamda bir güvenlik etkisi oluştursa da bunun yanında birçok ekonomik etkisi mevcuttur. Bu açıdan, en önemli kamu harcamalarından biri olan savunma harcamalarının oluşturduğu ekonomik etkilerin incelenmesi önemlidir.

Bu çalışma, "Türk ekonomisinde savunma harcamalarının bazı makroekonomik değişkenleri etkilediği" hipotezini araştırmaktadır. Makroekonomik değişkenler; enflasyon, büyüme oranı, cari işlemlerin GSYH'ye

oranı ve istihdam olarak belirlenmiştir. "Savunma harcamalarının neden söz konusu makroekonomik faktörler üzerinde bir etkisinin olduğu" beklentilerinin nedenleri şu şekilde açıklanabilir.

Savunma harcamaları ile ekonomik büyüme arasındaki ilişki teorik kısımda açıklanmıştır. Savunma harcamalarının enflasyonla ilişkisinin olması beklenmektedir. Çünkü bir kamu harcaması olan savunma harcamaları talebi artırır. Savunma harcamaları, yurt dışından ithal edilen askeri teçhizat ve ara mallar nedeniyle ithalata neden olmaktadır. İthalattaki artış, cari işlemler dengesinde bozulmaya neden olabilir. Dolayısıyla savunma harcamalarının bu iki değişkenle de ilişkisinin olması beklenmektedir. Son olarak, eğer savunma harcamaları yerel üretime sebep olursa istihdam artışına yol açabilir.

Çalışmanın ilk bölümünde konunun teorik çerçevesi çizilmiş ve konuyla ilgili daha önce yurt içi ve yurt dışında yapılmış ampirik çalışmalardan oluşan literatür özeti sunulmuştur. Ekonometrik analiz kısmında ise analize konu olan değişkenler açıklanmış ve söz konusu ilişki yapısal kırılmalı birim kök testi, Granger ve Toda-Yamamoto nedensellik testleriyle irdelenmiştir.

Veri Seti

Savunma harcamalarının temel makroekonomik değişkenlerle ilişkisinin analiz edildiği bu çalışmada 1980-2015 dönemine ait verilerin özeti aşağıdaki gibidir;

sh: Savunma harcamalarının GSMH içindeki payı,

bo: GSMH büyüme oranı,

enf: Enflasyon oranı,

cid: Cari işlemler dengesinin GSMH'ye oranı,

ith: İthalatın GSMH içindeki payı ve

ist: İstihdam rakamları

Savunma harcamalarının GSMH'ye oranı serisine ait yaşanabilecek problemlerden dolayı Stockholm Uluslararası Barış Araştırmaları Enstitüsü (Stockholm International Peace Research Institute-SIPRI) verileri kullanılmaktadır. Diğer değişkenlere ait veriler Türkiye Cumhuriyeti Merkez Bankası veri

tabanından (EVDS) elde edilmiştir. İstihdam rakamlarının doğal logaritması alınarak analize konulmuştur. Tüm veriler ABD doları cinsindendir.

Sonuç

Bu çalışmada, savunma harcamalarının bazı makro ekonomik büyüklükler üzerindeki etkisi araştırılmıştır. Çalışmada öncelikle ADF ve PP birim kök testleri ve yapısal kırılmayı dikkate alan Zivot Andrews (ZA) tek kırılmalı birim kök testi uygulanmıştır. ZA testi sonuçlarına göre, Savunma harcamalarının GSMH'ye oranı 2010 ve 2004 yıllarında kırılma göstermiştir. 2003 yılından sonra büyüme ivmesi yakalayan Türkiye ekonomisinde GSMH rakamlarının artışıyla savunma harcamalarının GSMH içindeki oranı düşük gerçekleşmiştir. Bu kırılmalarda önceki yıllara göre 2004 yılında savunma harcamalarının GSMH içindeki oranının azalışına işaret etmektedir. Bu azalış 2010 yılına kadar devam etmiş 2008 küresel krizinden sonra Türkiye ekonomisinde GSMH'nin azalmasıyla savunma harcamalarının GSMH içindeki oranını da artmıştır. 2010 yılındaki kırılmanın sebebi bu durumdur.

Gr değişkeninde de 2005 ve 2006 yıllarında kırılmalara rastlanmıştır. Yukarıda bahsedildiği gibi 2001 ekonomik krizinden sonra yükselişe geçen Türkiye ekonomisinde 2005 ve 2006 yıllarında yüksek oranlı büyüme rakamlarına ulaşılmıştır. 1997 yılında enflasyon değişkeninde ortaya çıkan kırılma 1994 ekonomik krizinden sonra alınan tedbirler sonucunda düşen enflasyonun 1997 yılında tekrar yükselişe geçmesine işaret etmektedir. Cari işlemler dengesi değişkeninde de 2008 ve 2009 yıllarında kırılma tespit edilmiştir. Bu kırılmaların sebebi Türkiye ekonomisinde sürekli yüksek gerçekleşen cari işlemler açığının 2008 küresel krizinin etkisiyle bu yıllarda düşük gerçekleşmesidir. İthalatın GSMH'ye oranı değişkeninde 1991 ve 1999 yıllarında kırılma tespit edilmiştir. Bu kırılmalar 1991 yılıyla yükselişe geçen ithalatın GSMH içindeki oranının 1999 yılıyla azalışa geçmesinin göstergesidir. İstihdamda da 1998 yılında kırılma olmasının sebebi 1990'lı yıllarda düşük gerçekleşen istihdam rakamlarının diğer yıllara göre bu yılda yüksek gerçekleşmesi olabilir.

Aynı testlerin uygulandığı çalışmalardan farklı olarak, bu makalede cari işlemler dengesinden GSYİH'e ve savunma harcamalarına nedensellik

belirlenmiştir. Buna göre; ekonomik büyümeyle sağlanan gelir artışı savunma harcamalarını arttırmaktadır. Savunma harcamalarından büyümeye doğru nedensellik olmaması klasik iktisatçıların savunma (askerî) harcamalarının büyümeye etkisi olmadığı teorisini destekler niteliktedir.

Yine savunma harcamaları enflasyon üzerinde etkilidir, çünkü ekonomide yapılan her bir birim harcama talep artışına yol açarak enflasyona sebep olabilir. Savunma harcamalarından cari işlemler dengesi ve ithalat değişkenlerine doğru nedensellik olması Türkiye ekonomisinde savunma harcamalarının ithalata yol açtığını ve bunun sonucunda cari işlemler dengesinde bozulmaya sebep olduğunu göstermektedir. Ayrıca, cari işlemler dengesi savunma harcamalarının nedenidir. Bu ilişki iktisadi olarak cari işlemler dengesindeki bozulmayı önlemek için savunma harcamalarından doğan ithalatın azaltılmak istenmesiyle açıklanabilir. Ancak sonuçlara göre, Türkiye ekonomisinde yapılan savunma harcamaları herhangi bir istihdam artışı sağlamamaktadır. Sonuç olarak, iktisat teorisine göre bakıldığında değişkenler arasında tespit edilen nedensellikler anlamlıdır. Ayrıca sonuçlar, literatürdeki bazı çalışmalarla (Kollias 1997; Aiyedogbon 2014; Olaniyi 1993; Özsoy ve İpek 2010; İpek 2014; Dristakis 2004) benzerlik göstermektedir.

Araştırma bulgularına göre, önerilen politikalar şu şekildedir: Savunma harcamalarının enflasyona yol açmaması için personel giderleri azaltılabilir ve profesyonel askerlik sistemine geçilebilir. Çünkü savunma harcamaları talebi arttıran personel (asker, polis) giderlerini de içermektedir. Yine savunma harcamalarının ithalata sebep olmaması için, yerel üretim arttırılabilir ve AR-GE harcamaları arttırılabilir. Böylece cari işlemler dengesindeki bozulmalar önlenebilir.

References

Books

Eshay, E. (1983). *Fiscal and Monetary Policies and Problems in Developing Countries*. Cambridge: Cambridge University Press.

Pesaran, H. M., and B. Pesaran. 2009. *Microfit 5.0*. Oxford: Oxford University Press.

Articles

Aiyedogbon, J. O., & Ohwofasa, B. O. (2014). Impact of Military Expenditure on Inflation in Nigeria 1980-2012, *Review of Arts and Humanities, Vol. 3, No. 2, pp. 01-17.*

Anfofum, A. A. (2013). Macroeconomic Determinants of Defence Expenditure in Nigeria (1970-2011). *International Journal of Business and Social Science*,*4*(9).

Anfofum, A., Andow, H., & Mohammed, A. (2014). Military spending and external debt burden in Nigeria. *International Journal of Education and Research*, *2*(7), 611-626.

Azam M., Khan F., Zaman K., Rasli A. (2016), Military Expenditures and Unemployment Nexus for Selected South Asian Countries, *Social Indicators Research, Vol: 127, Issue 3, pp 1103-1117.*

Bayat T., Kayhan S., Şentürk M., (2012), Budget Deficits and Interest Rates: An Empirical Analysis for Turkey, *Eurasian Journal of Business and Economics, 5 (9), 119-128*.

Benoit, E. (1978), Growth and Defense in Developing Countries, *Economic Development and Cultural Change, 26: 271-280.*

Cheung, Y. W., & Lai, K. S. (1995). Lag order and critical values of the augmented Dickey–Fuller test. *Journal of Business & Economic Statistics*,*13*(3), 277-280.

Dickey, D. A., & Fuller, W. A. (1979), Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association, 74(366a), 427-431.*

Dritsakis, N. (2004). Defense spending and economic growth: an empirical investigation for Greece and Turkey. *Journal of Policy Modeling*, *26*(2), 249-264.

Dunne, Paul, Eftychia Nikolaidou and Dimitrios Vougas, (2001), Defence Spending and Economic Growth: A Causal Analysis for Greece and Turkey, *Defence and Peace Economics, Vol: 12, No:1, pp.5-26.*

Dunne, J. P., Smith, R. P., & Willenbockel, D. (2005). Models of military expenditure and growth: A critical review. *Defence and peace economics, 16(6), 449-461*.

Glynn, J., Perera, N., & Verma, R. (2007). Unit root tests and structural breaks: a survey with applications, *Revista De Metodos Cuantitativos Para La Economia (3) pp:63-79.*

Hall, A. (1994). Testing for a unit root in time series with pretest data-based model selection. *Journal of Business & Economic Statistics, 12(4), 461-470*.

İpek, E. (2014). Savunma Harcamalarının Seçilmiş Makroekonomik Değişkenler Üzerine Etkisi: ARDL Sınır Testi Yaklaşımı, *Anadolu Üniversitesi Sosyal Bilimler Dergisi, 14(3).*

Karagöl, E. Palaz S, (2004) Does Defence Expenditure Deter Economic Growth in Turkey? A Cointegration Analysis, *Defence and Peace Economics, Vol:15, No:3, , pp. 289-298*.

Kollias, C. (1997), Defence Spending and Growth in Turkey 1954-1993: A Causal Analysis, *Defence and Peace Economics, Vol: 8, No:2, pp.189-204.*

Looney, R. E. (1997). Excessive defense expenditures and economic stabilization: The case of Pakistan, *Journal of Policy Modeling, 19 (4), 381- 406.*

Oyinlola, O. (1993). Nigeria's National Defence Spending and Economic Development: An Impact Analysis. *Scandinavian Journal of Development Alternatives*, *12*(2-3), 241-254.

Özsoy, O., & İpek, E. (2010). The Relationship Between Defense Spending and Macroeconomic Variables. *International Journal of Economics and Finance Studies*, *2*(1), 103-111.

Paparas, D., Richter, C., & Paparas, A. (2016). Military Spending and economic growth in Greece and the Arms Race between Greece and Turkey. *Journal of Economics Library, 3(1), 38-56.*

Perron, P. (1989). The great crash, the oil price shock, and the unit root hypothesis. *Econometrica: Journal of the Econometric Society, 1361-1401.*

Soyyiğit Kaya S. (2013), Türkiye'de Savunma Harcamalarının İktisadi Etkileri Üzerine Nedensellik Analizi (1970-2010). *Trakya Üniversitesi Sosyal Bilimler Dergisi 15*(2).

Toda, H., Y., Yamamoto, T., (1995), "Statistical Inference in Vector Autoregressions with Possibly Integrated Processes", *Journal of Econometrics, 66, pp. 225-250.*

Vadlamannati, K. C. (2008). Exploring the relationship between military spending & income inequality in South Asia. In *William Davidson Institute Working Paper No. 918.*

Wijeweera, A. and Webb, M.J. (2009); "Military Spending and Economic Growth in Sri Lanka: A Time Series Analysis". *Defence and Peace Economics, 20(6): 499-508.*

Yıldırım J. Sezgin S,(2003), Military Expenditure and Employment in Turkey", *Defence and Peace Economics, Vol: 14, No:2, pp.129-139.*

Zivot Eric, D. Andrews, (1992), ''Further Evidence On The Great Crash, The Oil Price Shock, and The Unit Root Hypothesis, *Journal of Business & Economic Statistics, vol. 10, no. 3, pp.251-270.*

Internet Sources

SIPRI, (2016) SIPRI Military Expenditure Database.
https://www.sipri.org/sites/default/files/SIPRI-NATO-milex-data-1949-2015.xlsx 09.09.2017.

TCMB, (2016), Elektronik Veri Dağıtım Sistemi, http://evds.tcmb.gov.tr/ 09.09.2017.