The Impact of Defence Expenditures on Government Debt, Budget Deficit, and Current Account Deficit: Evidence from Developed and Developing Countries

Ayşegül Durucan[1]

Eda Yeşil[2]

Savunma Harcamalarının Kamu Borcu, Bütçe Açığı ve Cari Açık Üzerindeki Etkisi: Gelişmiş ve Gelişmekte Olan Ülkelerden Bulgular	The Impact of Defence Expenditures on Government Debt, Budget Deficit, and Current Account Deficit: Evidence from Developed and Developing Countries
Öz	**Abstract**
Kamu harcamaları içinde önemli bir paya sahip olan savunma harcamalarının çeşitli makroekonomik değişkenler üzerindeki etkisine ilişkin çok sayıda çalışma olmasına rağmen, kamu borcu, bütçe açığı ve cari işlemler açığı üzerindeki etkilerine ilişkin çok az çalışma bulunmaktadır. Bu çalışmada, 2000-2019 dönemi için 16 gelişmiş ve 9 gelişmekte olan ülkeden yıllık veriler kullanılarak sistem GMM analiziyle, savunma harcamalarının kamu borcu, bütçe açığı ve cari işlemler açığı üzerindeki etkisi ampirik olarak analiz edilmiştir. Çalışmanın bulguları, savunma harcamalarının kamu borcunu, bütçe açığını ve cari işlemler açığını belirlemede önemli bir faktör olduğunu göstermektedir.	Although there are many studies on the effect of defence expenditures, which have a significant share in government expenditures, on various macroeconomic variables, there are very few studies on their effects on government debt, budget deficit and current account deficit. In this paper, the effect of defence expenditures on government debt, budget deficit, and current account deficit is empirically analyzed by system GMM analysis employing annual data from 16 developed and 9 developing countries for the period 2000-2019. The findings of the paper show that defence expenditures are important factor to determine government debt, budget deficit and current account deficit.
Anahtar Kelimeler: Savunma Harcamaları, Kamu Borcu, Bütçe Açığı, Cari Açık, Sistem GMM Analizi	**Keywords:** Defence Expenditures, Government Debt, Budget Deficit, Current Account Deficit, System GMM Analysis
JEL Kodları: H50, H62, H63	**JEL Codes:** H50, H62, H63

Araştırma ve Yayın Etiği Beyanı	Bu çalışma bilimsel araştırma ve yayın etiği kurallarına uygun olarak hazırlanmıştır.
Yazarların Makaleye Olan Katkıları	Çalışmanın tamamı iki yazar ile birlikte/bölümleri yazarlara paylaştırılarak oluşturulmuştur.
Çıkar Beyanı	Yazarlar açısından ya da üçüncü taraflar açısından çalışmadan kaynaklı çıkar çatışması bulunmamaktadır.

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[1] Assist. Prof., Kırıkkale University, Faculty of Economics and Administrative Sciences, Department of Public Finance, ayseguldurucan@kku.edu.tr
[2] Assoc. Prof., Kırıkkale University, Faculty of Economics and Administrative Sciences, Department of Public Finance, edayesil@kku.edu.tr

1. Introduction

Although defence expenditures have been studied from different angles, there is not yet comprehensive literature on the impact of defence expenditures on government debt, budget deficit, and current account deficit. Especially, there are very few studies that examine the effect of defence expenditures on the budget deficit. To fulfill this gap in the empirical literature this paper considers the impact of defence expenditures on government debt, budget deficit, and current account deficit by focusing on 16 developed and 9 developing countries.

Defence expenditures, which are one of the expenditure items of the budget, cause financing needs. In this case, if the internal financing resources of the countries are not sufficient (and if nothing can be done about it—such as a change in the composition of budget expenditure items or increased taxation), the countries have to run a budget deficit. Considering that developing countries are insufficient in finding internal financing resources, it can be said that these countries mostly run budget deficits. On the other hand, importing defence equipment may increase foreign currency needs, leading to an increase in the current account deficit. Finally, countries may also be producing their own defence equipment. However, if they need imported intermediate goods from abroad in this production process, they will have to meet these needs either through foreign currency. Thus, an increase in imports may cause deterioration in the current account balance (Günlük-Şenesen 2004; Narayan and Narayan 2008; Shahbaz et al. 2016). In addition to these, defence expenditures may create a huge burden on the budget by increasing budget deficits, especially in third-world countries (Samadi and Behboodi 2013).

Thanks to econometric methods that have developed gradually over time, the above-mentioned relationships have become able to be analyzed using various econometric methods without the need for theoretical background. In this context, since there are no theoretical models for the effects of defence expenditures on government debt, budget deficit, and current account deficit, the mentioned effects are investigated using empirical models (Ipek 2014).

Looking at differing Keynesian positions on the deficits of the 1960s, 1980s and 1990s period. The important distinction is between cyclical and structural deficits. In the cyclical deficit, the economic activities are at a low level. To solve this problem, automatic stabilizers are desirable. In structural deficits, policymaker's role is very important. The level of government expenditures, tax rates and benefit levels for transfer programs are related to structural deficits (Froyen 1995, 454). New classicals believe that large deficits give harm to the Federal Reserve to set up a credible disinflation policy. They also believe that deficits have caused increasingly negative effects on the economic process. And monetarists' views on deficits that tight fiscal and monetary policies are risen real interest rates and it has negative effects on investment (Froyen 1995, 460). But on the other hand, during extraordinary periods Congress needs to give budget deficits such as wars. So, governments are increasing defence expenditures. Due to these debts are getting higher. This was a reasonable policy response. And in addition to this situation, budget deficits reduce national savings, it leads to a trade deficit that is financed abroad. This link between budget deficit and trade deficit has two main effects of government debt. Firstly, high levels of government debts may increase the risk of capital flight. Secondly, high levels of government debt financed by foreign borrowers may reduce a nation's political prestige in the world (Mankiw 2003, 424).

Accordingly, this paper concentrating on how defence expenditures can affect the government debt, budget deficit, and current account deficit of 16 developed and 9 developing countries. Due to this the theory behind the effects of defence expenditures on government debt, budget deficit, and current account deficit is the main determinant. The rest of the paper proceeds as follows. Section 2 provides an empirical literature review. Section 3 makes a dynamic panel data analysis of defence expenditures on government debt, budget deficit, and current account deficit. And the final section, Section 4 concludes.

2. Literature Review

While the literature on the effect of defence expenditures on current account deficit and debt have been growing rapidly in recent years, the literature on the impact of defence expenditures on the budget deficits are very limited. To the best knowledge of the authors, in the literature, there are only three papers examining the impact of defence expenditures on budget deficits. These are: Özsoy (2008), Samadi and Behboodi (2013), Ertekin (2020).

Özsoy (2008) investigated the nexus defence expenditures, budget deficits, and income distribution by applying vector autoregression (VAR) and Impulse Response Functions (IRF) models for Turkey during the period 1965-2003. The outcomes of the study revealed that the positive link between defence expenditures and budget deficits. Samadi and Behboodi (2013) explored the defence expenditures, budget deficits, and transfer expenditures nexus by employing vector error correction model (VECM) for Iran over the period 1972-2006. The results of the study showed that defence expenditures had a positive effect on budget deficits. Ertekin (2020) examined the effect of defence expenditures on budget deficits by using panel data analysis method for 22 OECD countries over the period 2000-2017. His findings revealed that the defence expenditures had a positive effect on budget deficits.

On the other hand, some studies, such as Frederiksen and Looney (1994), Kollias et al. (2004), and Caruso and Di Domizio (2016) revealed that the impact of defence expenditures on government debt. A summary of aforementioned studies is presented below.

Frederiksen and Looney (1994) examined the linkage between defence expenditures, budget deficits, and government debt by using two extended models—Hicks/Kubisch for short-run impact model and Hess/Mullman for long-run adjustment model—for Pakistan over the period 1973-1986. The results of the study showed that the interrelationships of budget deficit, government debt, and defence expenditures are often complex, so their effects are difficult to forecast. Kollias et al. (2004) investigated the impact of defence expenditure on government debt for Greece for the period 1960-2001. Using the regression analysis, the authors concluded that defence expenditures enhancing government debt. Caruso and Di Domizio (2016) scrutinized the linkage between defence expenditures and government debt by using an Arellano-Bond panel estimation and a linear fixed effect model, and a fully modified least squares (FMOLS) estimation for 13 European countries during the period 1988-2013. The outcomes of the study revealed that two main findings. The first is that the debt burden of European countries is positively related to the US military burden, and the second is that it is negatively related to the average military burden of other European countries. Also, studies examining the effect of defence expenditures on debts reveal that different results. For instance, the studies of Brzoska (1983), Dunne et al. (2004a), Narayan and Narayan (2008), Karagöl (2006), Smyth and Narayan (2009), Wolde and Ruffael (2009), Ahmed (2012), Muhanji and Ojah (2014), Esener and İpek (2015), Azam and Feng (2015), Shahbaz et al. (2016), Karagöz (2018), Karakurt et al. (2020) found a positive impact of defence

expenditures on debts, while Günlük-Şenesen and Sezgin (2002), Sezgin (2004) found no significant relationship between defence expenditures and debts. On the other hand, some studies, such as Dunne et al. (2004b), Khan et al. (2021) revealed that the impact of defence expenditures on debts varies according to the selected countries. A summary of aforementioned studies is given below.

A seminal study by Brzoska (1983) explored the linkage between defence expenditures and debt by using regression analysis for third world countries over the period 1970-1979. The empirical findings indicated that the positive effects of defence expenditures on debts for developing countries. Employing data from 1960 to 2000, Dunne et al. (2004a) scrutinized the economic effects of defence expenditures on external debt for 11 small industrializing countries by employing fixed effects (FE), random effects (RE), and Arellano-Bond GMM techniques. The results of the study showed that the impact of defence expenditures on the share of external debt in GDP is positive. Narayan and Narayan (2008) investigated the linkage between defence expenditures and debt for Fiji by using cointegration, vector autoregression (VAR) models during the period 1970 and 2005. They found positive linkage between defence expenditures and external debt. Karagöl (2006) explored the linkage between defence expenditures and external debt for Turkey during the period between 1960 and 2002 by employing cointegration technique, impulse response functions (IRF) and variance decomposition analysis. The findings of the study showed that external debt positively affected defence expenditures. Smyth and Narayan (2009) carried out the effect of defence expenditures on external debt by performed fully modified least squares (FMOLS) and dynamic least squares (DOLS) in Bahrain, Iran, and Jordan Oman, Syria and Yemen (six Middle Eastern Countries) for 1988-2002, and they reached that the positive link between defence expenditures and external debt. Wolde and Ruffael (2009) applied the bounds test and Granger-causality tests investigated the same relationship for Ethiopia for the period 1970-2005 by using. The authors found that the positive link between defence expenditures and external debt. Ahmed (2012) investigated the effect of defence expenditures on external debt by using panel data analysis for 25 Sub-Saharan countries for the period 1988-2007. His findings show that the positive relation between two. Another study by Muhanji and Ojah (2014) scrutinized the effect of defence expenditures on external debt by using dynamic stochastic general equilibrium model for 10 African countries during the period 1970-2010 and obtained that positive relationship between defence expenditures and external debt. Esener and Ipek (2015) employed the pooled OLS and dynamic panel analysis for 36 developing countries over the period 1996-2013. Their findings indicate that defence expenditures positively effect external debt. Azam and Feng (2015) examined the linkage between defence expenditures and external debt by using panel data analysis for 10 Asian countries during the period 1990-2011 and detected positive link between defence expenditures and external debt. Shahbaz et al. (2016) explored the linkage between defence expenditures and external debt for Pakistan during the period 1973-2009. Employing cointegrated regression and error correction model, the outcomes of the study revealed that positive link between defence expenditures and external debt. Karagöz (2018) empirically analyzed the effect of defence expenditures on external debt by applying DOLS, FMOLS, and FE models for Turkey, Kazakhstan, Kyrgyzstan, and Azerbaijan during the period 1994-2015. He concluded that the increase in defence expenditures had a positive effect on the external debt. Besides, Karakurt et al. (2020) scrutinized the linkage between defence expenditures, arms import, and external debts by employing autoregressive distributed lag (ARDL) bound

tests for Turkey during the period 1975-2017. The outcomes of the study showed that there is a positive link between defence expenditures and external debt.

On the other hand, Günlük-Şenesen and Sezgin (2002) used the regression analysis for Turkey during the period 1980-2000, and they found no significant relationship between defence expenditures and external debt. Similarly, Sezgin (2004) examined the relationship between defence expenditures and debt by applying Engle-Granger cointegration technique for Turkey for the period 1979-2000. The author concluded that no clear evidence between the relationship defence expenditures and external debt.

Besides, Dunne et al. (2004b) employed the ARDL for Argentina, Brazil, and Chile during the period 1970-2000. They concluded no significant relationship result for Argentina and Brazil, but positive relationship for Chile. A very recent study Khan et al. (2021) scrutinized the impacts of defence expenditures on external debt by using panel analysis techniques for 35 arms importing countries for the period 1995-2016. They provided evidence that defence expenditures generally increase the external debt, except Europe and Central Asia.

In addition, some studies, such as Sezgin (2004), Alozious (2015), Canbay and Mercan (2017), Çayın and Yapraklı (2018), Şit (2018), Gül and Torusdağ (2020) revealed that the impact of defence expenditures on current account deficit. A brief summary of aforementioned studies is given below.

Sezgin (2004) scrutinized the linkage among defence expenditures, current account deficit, and arms import by using cointegration test for Turkey from 1979 to 2000. The outcomes of the study indicated that while there is a negative linkage between defence expenditures and current account deficit in the long-run, there is a positive linkage between current account deficit and arms import in the short-run. Alozious (2015) explored the relationship between defence expenditures and current account deficit by applying panel data analysis for 30 OECD countries for the period 1995-2011, and he found that defence expenditures increase the current account deficit. Canbay and Mercan (2017) investigated the linkage between defence expenditure, current account deficit, and growth by employing vector error correction model (VECM) for Turkey over the period 1986-2016. The findings of the study showed that defence expenditures based on imports increase the current account deficit. Çayın and Yapraklı (2018) examined the relationship between defence expenditures, current account deficit, and growth by using Toda-Yamamoto (1995) Granger-causality test and Hacker-Hatemi J (2005 and 2006) bootstrap causality analysis for Turkey during the period 1970-2016. Their findings revealed that one-way causality from the defence expenditures to current account deficit. Şit (2018) explored the impact of defence expenditures on macroeconomic effects, including the current account deficit by applying Granger (1969) causality test and Toda-Yamamoto (1995) Granger-causality tests for Turkey in the period 1980-2016. He concluded that there is a two-way causality relationship between the current account deficit and defence expenditures. Gül and Torusdağ (2020) studied the linkage between defence expenditures, current account deficit and growth by employing Engle-Granger (1987), Johansen (1995), Benarjee (1998), and Boswjick (1994) cointegration analysis, Hacker-Hatemi (2006) causality test, and Hacker-Hatemi (2006) time-varying causality tests for Turkey for the period 1990-2017. Based on the outcomes of the study, it can be said that there is a one-way causality from current account deficit to military expenditures in other periods except 1993-2007, from military expenditures to current account deficit in sub-periods other than 1995-2009.

3. Data and Methodology

In our study we aim to analyse the effects of defence expenditures on government debt, budget deficit and current account balance in 16 developed (Belgium, Canada, Denmark, Estonia, France, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Slovenia, Spain, U.K., U.S.) and 9 developing (Croatia, Hungary, Latwia, Lithuania, Poland, Turkey, Albania, Bulgaria, and Romania) countries with the period of 2000-2019 by using system GMM analysis. While choosing the sample and time period for developed and developing countries, we tried to choose the countries where we could access up-to-date data as much as possible and accordingly the appropriate time period. The variable definitions are given in Table 1.

Table 1: Variable Definitions

Variables	Definitions
Defence	Defence expenditures/GDP
Debt	Government debt/GDP
Buddef	Budget deficit/GDP
Cab	Current account balance/GDP
GDP	GDP growth rate
Inf	Consumer price index (End of period)
Unemp	Primary balance/GDP
Primbal	Primary balance/GDP
Dummy	2008 crises period

Government debt, budget deficit, current account balance, GDP growth rate, consumer price index, unemployment rate, primary balance variables data taken from IMF World Economic Outlook. Defence expenditures data which include all current and capital expenditures on the armed forces, including peacekeeping forces, defence ministries and other government agencies engaged in defence projects, paramilitary forces, if these are judged to be trained and equipped for military operations and military space activities (World Development Indicator 2022). Dummy variable shows 2008 crises period.

Figure 1: Defence Expenditure Development in 9 Developing Countries (Share of GDP, 2000-2019)
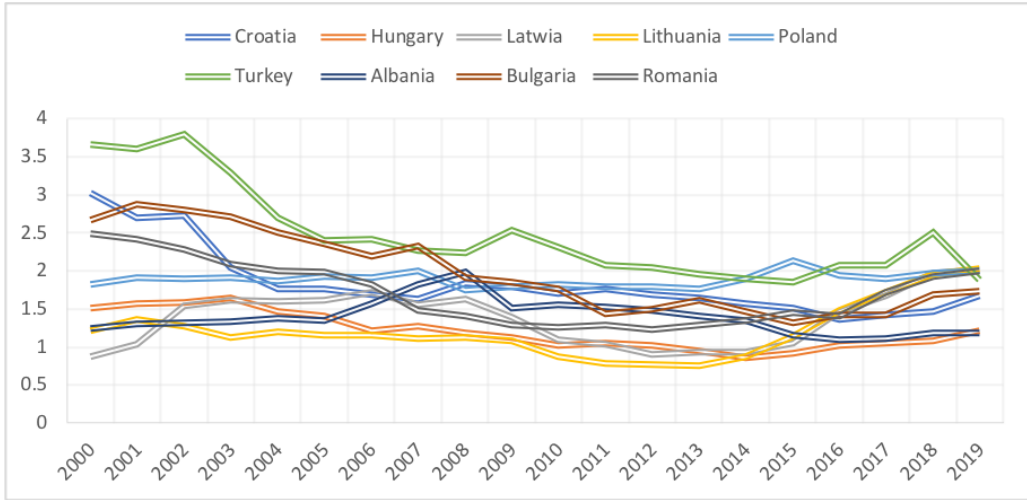
Source: World Development Indicator, 2022.

While Figure 1 shows the evolution of defence expenditures in 9 developing countries, Figure 2 displays the defence expenditures development in 16 developed countries from 2000 to 2019.

Figure 2: Defence Expenditure Development in 16 Developed Countries (Share of GDP, 2000-2019)
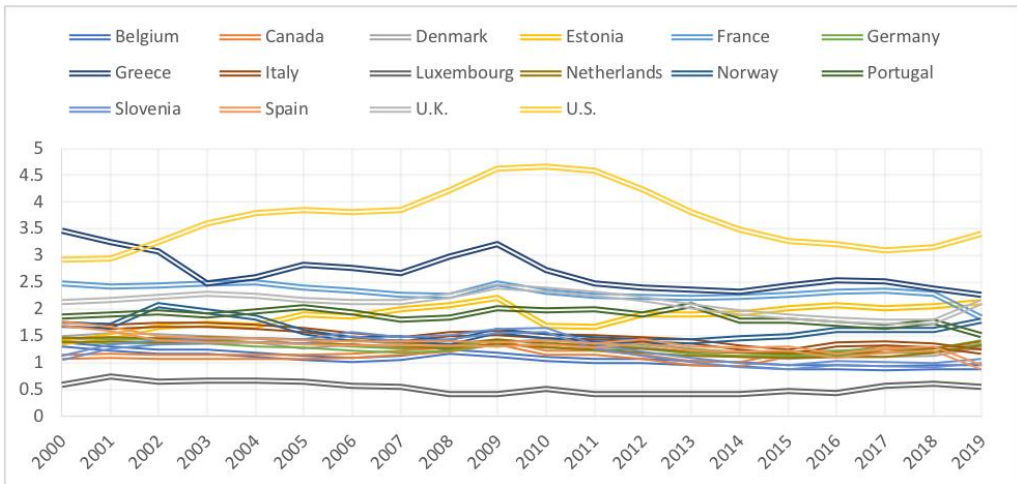
Source: World Development Indicator, 2022.

Panel data analyses allows the inclusion of data for both cross sections(N) and time periods(N). This data set offers a variety of estimation methods. The main idea in panel data models are the individual relationships will all have the same parameters. All the individuals are pooled together into one data set and a common set of parameters are affected across them. In this assumption panel data estimation has some advantages. First advantage is sample size can be increased and much better estimates can be obtained. Secondly, omitted variables which may cause biased estimates in a single individual regression, might not occur in a panel context. On the other hand, if the pooling assumption is not correct there may be problems (Asteriou and Hall 2011, 442-443). A simple panel data model is given below;

$$Y_{it} = a_{it} + \theta X_{it} + \varepsilon_{it} \tag{1}$$

In general, static dynamic model can be estimated using constant, fixed effect and random effect models. And the Hausman test is formulated to assist in making a choice between the fixed effect and random effect estimators. The appropriate choice between the fixed effects and random effect methods involves investigating whether the regressors are correlated with the individual effect. In Hausman model H_0 hypothesis is random effects are consistent and efficient. If the value of statistics is larger than the differences between the estimates are significant, we reject the null hypotheses that the random effect model is consistent (Asteriou and Hall 2011, 444-447).

Table 2: Static Panel Data Analysis Results (9 Developing Countries)

	Model 1 (Dep.var.debt)	Model 2 (Dep.var.buddef)	Model 3 (Dep.var.cab)
	RE	RE	RE
Defence	1.6801	-0.8710	0.3996
	(0.25)	(-1.02)	(0.48)
Dummy	-8.4383***	0.2987	-7.8086***
	(-2.72)	(1.13)	(-3.49)
GDP	-1.7214***	0.0879***	-0.9267***
	(-4.72)	(2.65)	(-5.35)
Inf	-0.1163	-0.1294***	-0.1662*
	(-0.53)	(-4.48)	(-1.92)
Unemp	0.6658	-0.0967***	-0.0270
	(1.00)	(-3.34)	(0.30)
Primbal	0.3367***	0.7955***	0.4102
	(0.56)	(7.27)	(1.37)
Cons	43.7147**	0.3274	0.5001
	(2.28)	(0.25)	(0.24)
N	9	9	9
Sample	180	180	180
Prob	0.000	0.000	0.0000
Breush Pagan LM test	699.94	327.02	18.58
Pesaran Cross Sectional Dependence Test	2.169	19.75	7.007

Source: Authors' computations
Note: ***, **, * show 1%, 5%, 10% statistically significant or not and figures in the parentheses are z statistics.

Table 2 shows the results of the static panel data analysis of the effects of defense expenditures on government debts, budget deficits and current account balance in developing countries for 3 models. In these 3 models, control variables such as primary balance, inflation, GDP growth rate and unemployment are also included. As seen in Table 2, random effects were selected according to Breush Pagan LM tests. And also, the random effects model was estimated with a robust estimator called the Arellano, Froot and Rogers

GLS estimator. According to our analysis, defence expenditures have not any effects on public debts, budget deficits and current account balances for developing countries for static panel data analysis. Also, there is no cross sectional depence of all models.

Table 3: Static Panel Data Analysis Results (16 Developed Countries)

	Model 1 (Dep.var.debt)	Model 2 (Dep.var.buddef)	Model 3 (Dep.var.cab)
	RE	RE	RE
Defence	-8.7330	-0.8870**	-1.2505
	(-1.20)	(-2.01)	(-1.21)
Dummy	-8.6870***	0.3966*	-1.9941*
	(-4.42)	(1.78)	(-1.87)
Gdp	-0.9293*	0.0400**	-0.2392
	(-2.10)	(1.34)	(-1.28)
Inf	-3.0761***	-0.0690**	-0.7367***
	(-2.95)	(-1.35)	(-3.75)
Unemp	2.8424***	-0.0529***	0.1714
	(5.71)	(-0.95)	(1.28)
Primbal	0.3367	0.9582***	0.3775**
	(0.56)	(21.14)	(2.30)
Cons	69.2358***	0.2214***	3.4745
	(4.84)	(0.27)	(1.35)
N	16	16	16
Sample	320	320	320
Prob	0.0000	0.0000	0.0000
Breush Pagan LM test	1383.02	1407.55	377.05
Pesaran Cross Sectional Dependence test	3.737	3.903	0.153

Source: Authors' computations
Note: ***, **, * show 1%, 5%, 10% statistically significant or not and figures in the parentheses are z statistics.

Table 3 shows the static panel data results for 3 models in developed countries. As seen in Table 3, all 3 models random effects were selected according to Breush Pagan LM tests. Model 1 indicates that defense expenditures has not significant effects on government debt. And also, there is no cross sectional dependence. Model 2 implies the significant negative effects of defence expenditures on budget deficits. And also, there is no cross sectional

dependence. In model 3, which is the effect of defence expenditures on current account balance. There is not any effect of defence expenditures on current account balance. But In 2008 crises period, defence expenditures play an important role on government debts, budget deficit and current account balances according to analyses in developed countries. Similar to the first and second models, there is no cross-sectional dependence. All 3 models are estimated with the Arellano, Froot and Rogers GLS estimator.

Government debt, budget deficit and current account balance are affected by the previous performance of them. So that it has dynamic structure. Due to this, in this study dynamic panel analyses are used because static analysis is biased and inconsistent estimators. And in addition to this, the presence of the lagged dependent variable and endogeneity of independent variables dynamic panel data analyses gives more convenient results.

The Arellano–Bond (1991) model, uses the lagged level variables as instruments. The instrumentation is actually undertaken on a 'period-by-period' basis and in so doing the sample length is not reduced. The instruments used are known as GMM-style instruments. The approach can best be described in the first instance using an example based around a very simple panel data structure. Additional instruments can be obtained in a dynamic panel data model if one utilizes the orthogonality conditions that exist between lagged values of Y_{it} and the disturbances v_{it} (Baltagi 2005, 136).

The Arellano-Bond GMM estimator is defined as;

$$Y_{it} = aY_{it-1} + \beta X_{it} + \theta_i + u_{it} \qquad (2)$$

For the above model, the vector contains the set of short-run effects and should be interpreted as such.

Testing for Autocorrelation in the Arellano-Bond model, the presence of serial correlation in this type of model is more efficient than standard linear regression model. The presence of higher-order serial correlation then has wider implications in the Arellano-Bond GMM dynamic panel model given it dictates what can be used as part of a valid instrument set.

In the presence of heteroscedasticity and serial correlation a two-step system GMM estimator should be used exploiting a weighting matrix using residuals from the first step.

Compared to Arellano and Bond (1991) difference GMM models, System GMM is used rather than difference GMM. In the system GMM models differences are instrumented by levels. The system GMM model can allow for heteroscedasticity of unknown style (Greene, 2002: 523-525). An in addition to this, adds to this one extra degree of instrumentation where the original degrees are instrumented with differences (Arellano and Bover 1995) and allows for more instruments and improve efficiency (Roodman, 2009: 86). In our analyses we used system GMM estimators because of the mentioned advantages.

Table 4: System GMM Analysis Results (Developing Countries)

	Dep.var.debt	Dep.var. buddef	Dep.var.cab
	Model 1	Model 2	Model 3
Debt(-1)	1.0143*** (112.27)	-	-
Buddef(-1)	-	0.5097*** (7.544)	-
Cab(-1)	-	-	0.7853*** (12.07)
Defence	-0.8477 (-1.41)	-0.5551*** (-3.06)	1.2925*** (4.43)
Dummy	0.6401 (1.05)	-0.4959*** (-2.80)	-0.2411 (-0.23)
Gdp	-0.6403*** (-15.28)	0.0883*** (2.83)	-0.6371*** (-7.53)
Inf	0.2810*** (4.84)	-0.1008*** (-6.53)	-0.0768** (-2.12)
Unemp	0.1011** (1.99)	-0.0094*** (0.34)	-0.0259 (-0.87)
Primbal	-.8590*** (-7.25)	0.5717*** (7.43)	0.0750 (0.55)
N	9	9	9
2.Order Autocorrelation	0.54	-0.12	0.03
Sargan Test	170.78	230.29	160.77
Hansen Test	1.50	2.98	2.44
Sample	171	171	171

Source: Authors' computations
Note: ***, **, * show 1%, 5%, 10% statistically significant or not and figures in the parentheses are z statistics.

In Table 4, system GMM analysis results are seen. Both 2 models which are signs the effects of defence expenditures on budget deficits and current account balances has a significant effect in developing countries. But in model 1, there is not a significancy of debt and defence expenditures in developed countries. As a result of this analysis, we can say that developing countries spend their income to close their budget deficits or another current expenditures. And in the model one-step results are shown. There is no autocorrelation and all the instruments are valid according to Hansen and sargan test results.

Table 5: System GMM Analysis Results (Developed Countries)

	Dep.var.debt	Dep.var. buddef	Dep.var.cab
	Model 1	**Model 2**	**Model 3**
Debt(-1)	0.9656*** (70.22)	-	-
Buddef(-1)	-	0.3923*** (6.76)	-
Cab(-1)	-	-	0.9745*** (26.94)
Defence	1.0667** (2.16)	-0.3140* (-1.80)	0.0722 (0.43)
Dummy	1.0224*** (1.01)	-0.8595*** (-2.64)	-0.3774 (-0.80)
Gdp	-1.0799*** (-6.09)	0.0609* (1.95)	-0.3470*** (-4.96)
Inf	0.5721*** (3.22)	-0.0762 (-1.09)	0.0399 (0.57)
Unemp	0.2988*** (3.82)	-0.0412 (-1.56)	0.0479** (2.03)
Primbal	-0.3925** (-2.51)	0.7441*** (10.11)	0.0090 (0.16)
N	16	16	16
2.Order Autocorrelation	0.91	0.52	-1.30
Sargan Test	237.26	663.20	276.29
Hansen Test	9.99	7.52	9.09
Sample	304	304	304

Source: Authors' computations
Note: ***, **, * show 1%, 5%, 10% statistically significant or not and figures in the parentheses are z statistics.

Table 5 shows the system GMM analysis results in developed countries. Model 1 shows the effects of defence expenditures on government debt. The relations between them are statistically significant. When defence expenditures increase, government debts are risen. Model 2 shows the effects of defence expenditures on budget deficits. The results between them are statistically significant. There is a negative relation between them. Model 3 shows one-step results of GMM anaysis that the effects of defence expenditures on current account balances. They have not significant effects. And all of the models are convenient. There is no

autocorrelation, Hansen and sargan test shows all the instruments are valid. To sum up these results, the effect of defence expenditures in developed countries on government debts and budget deficits are statistically significant but on current account deficits are not significant. And also, in 2008 crises term defence expenditures has an effect on government debts and budget deficits.

As a result, it is possible to say that defense expenditures have a statistically significant effect on government debts and budget deficits in developed countries, while defense expenditures have a significant effect on budget deficits and current account deficits in developing countries. While it is seen that defense expenditures are not effective on current account balances in developed countries, it can be stated that defense expenditures do not have an effect on government debts in developing countries.

4. Conclusion

In this study, the effect of defence expenditures on government debt, budget deficit, and current account deficit by employing annual data from 16 developed and 9 developing countries over the period 2000 and 2019 has been examined. System GMM analysis which is used as econometric estimation method. As a result of the analysis, it is possible to say that defense expenditures have a statistically significant effect on government debts and budget deficits in developed countries, while defense expenditures have a significant effect on budget deficits and current account deficits in developing countries. While it is seen that defense expenditures are not effective on current account balances in developed countries, it can be stated that defense expenditures do not have an effect on government debts in developing countries.

According to the results of the analysis, as defense expenditures increase in developed countries, government debts also increase; however, it is possible to say that the budget deficits have decreased. Based on this finding, it can be concluded that the financing of defense expenditures in developed countries is provided by government borrowing. On the other hand, as defense expenditures increase in developing countries, current account deficits also increase; however, it is observed that the budget deficits have decreased. This result suggests that defense expenditures in developing countries are financed by external resources. The result that the increase in defense expenditures causes a decrease in budget deficits in both country groups shows that defense expenditures are used in productive areas to reduce budget deficits.

Another important point is governments are rised their current account deficits depends on increase of defence expenditures in developing countries. However, the increase in the current account deficit should not always be interpreted negatively, since the current account deficit is not a stock variable but a flow variable. The fact that the increase in defense expenditures caused a decrease in the budget deficits in both country groups supports this view. As a policy recommendation, if developing countries do not want their current account deficits to increase when they increase their defense expenditures, they should transform their defense expenditure compositions into a structure based on exports and domestic production rather than imports.

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