Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.6, No.7, 2015

The Impact of Military Spending on Economic Growth: Evidence from the US Economy

MASOUD ALI KHALID* MUNADHIL ABDUL JABAR ABDUL RAZAQ
College of Financial & Administration- Department of Accounting & IT, Cihan University/ Sulaimani, Kurdistan Region Government/Iraq
* E-mail of the corresponding author: masoudqajry@yahoo.com

Abstract
The impact of military spending on gross domestic product (GDP) growth is not clear and deserves detailed empirical analysis in order to discern which one (if any) of the effects prevails: do defense expenditures have an externality effect on an economy, specifically with regard to technological progress, infrastructure, and human capital formation or do they crowd out resources for investment and consumption, thereby hindering economic growth? The present study aims at investigating the relationship between military expenditures and economic growth in United States Of America (USA) using the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration tests for the period from 1970 to 2011. The results suggest that, there is the negative relationship between military expenditure and economic growth.
Keywords: New Macroeconomic Model; Military expenditures; Economic growth, ARDL; USA.

1. INTRODUCTION

The relationship between military spending and economic growth has attracted the interest of many economists and researchers since Benoit's study (1973). Since then, scholars have carried on several studies which, among others, are to investigate the presence and direction of the relationship between these two variables, either at the individual country level or through the examination of large samples of countries.

Numerous studies have examined the potential channels through which military spending affect the economy. Researchers are focused either on the supply-side neoclassical models or the demand-side Keynesian model Dunne *et al*., (2001). According to the Keynesian theory, military expenditure probably enhances the aggregate demand through the increased utilization of capital stock and higher investment and therefore stimulates economic growth.

On the other hand, to the neoclassical model, military spending, encourage economic growth through innovation and spin-off effects. However, it may be plausible that economic growth is prior to military spending, in the sense that higher growth rate countries support their external and internal security by increasing defense spending or diverting resources to other more productive usage (Kollias *et al.,* 2004).

Furthermore, in the last two decades, defense spending has decreased dramatically. This is because the attribution of the end of the cold war, which reduced military expenditure and security Obligations all over the world. However, by the end of the cold war and the last two decades, defense spending has decreased dramatically, which also reduced military expenditure and security obligation all over the world.) The terrorist attacks against the US in September 2001 have once more intensified the argument whether higher military spending is necessary to provide a greater degree of security, thus encouraging and stimulating economic growth.

As Deger and Sen (1995) mentioned that, from a purely economic viewpoint, the military spending is seen as the essential unproductive expenditure (except as insurance against war) and its influence on output growth would be negative. Until the important work of Benoit (1973), practically, all economic theorists had assumed the macroeconomic effect of military spending to be non-positive, although no empirical evidence was presented in this respect. However, even if defense spending does have an adverse impact on present economic growth, there is no necessary suggestion that such expenditures are damaged or too high because of the confidence effect mentioned above. The impact of military spending on gross domestic product (GDP) growth is thus not clear and deserves detailed empirical analysis in order to discern which one (if any) of the effects prevails: do defense expenditures have an externality effect on an economy, specifically with regard to technological progress, infrastructure and human capital formation or do they crowd out resources for investment and consumption, thereby hindering economic growth?

Moreover, according to the SIPRI (2013), USA is the highest military spender in the world, and it provides the largest economic resources to this sector. The political argument debated that military spending might stimulate economic growth and, vice versa, whilst military cuts may have negative economic implications have been a popular discussion in the USA and it can be clarified by the strong impact of the complex defense industry in political decisions. One of the supporters' claims for an extensive military policy is that decreasing military expenditures drive up unemployment (see Smith, 1977). For instance, Adams and Gold (1987) found that, reductions in military spending would create substantial unemployment because defense expenditure is labor-intensive. The proponents of high military spending stressed the fact that defense spending serves as a

Research Journal of Finance and Accounting www.iiste.org
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.6, No.7, 2015

catalyst for economic growth according to the Keynesian theory.

Several investigations on the impact of military expenditure on economic growth in the US are frequently founded on supply-side specifications such as the work of; Atesoglu and Muller (1990), Huang and Mintz (1990, 1991), Muller and Atesoglu (1993), Ward and Davis (1992), and later, Atesoglu (2002). Atesoglu (2002) employed cointegration approaches to evaluate the military-growth nexus in the US, and he concluded the existence of a positive relationship between military expenditure and gross domestic product growth.

The aim of this paper is to investigate the relationship between military spending and economic growth by applying the Autoregressive distributed lag (ARDL) Model in the case of the USA for 1970–2011.

This paper is organized as follows. The next section presents the review of the literature. Subsequently, the following section provides an overview of the new macroeconomic model and the methodology is presented in the fourth section. The fifth section presents the data and the empirical findings of the relationship between military expenditure and economic growth and the conclusion is drawn in the sixth section.

2. LITERATURE REVIEW

Since the work of Benoit (1973), there has been growing interest in the literature on the relationship between military expenditure and economic growth. Nowadays, the argument is far from being complete. In fact, the varied results can be attributed to the multiplicity of theoretical models or econometric techniques employed. For instance, results from studies by Smith (1980), Fredericksen and Kennedy (1983); Looney (1983); Faini et al. (1984); Ram (1986), Deger (1986); Atesoglu and Mueller (1990); and Biswas, (1993); Chletsos and Kollias (1995); Sezgin (1997), Brumm (1997); Aizenman and Glick (2003); Yildirim *et al.* (2005) are found to be congruent with Benoit's findings which support the Keynesian view on the impact of military spending.

On the other hand, these findings have been challenged by several empirical studies. For example, Frederiksen and Looney (1986), Lim (1983); Deger and Smith (1983); Starr *et al.* (1984); Faini *et al.* (1984); Cappalen *et al.* (1984); Dunne and Mohammed (1995), Dunne *et al.* (2005); Abu-Bader and Abu-Qarm (2003); Galvin (2003); Atesoglu (2002); Halicioglu (2004); Yildirim *et al.* (2005); Bas (2005), and Sawhney *et al.* (2008) found negative correlations between defense spending and economic growth, which is opposite to the Benoit's study.

Moreover, the literature also contain some investigations which have failed to yield any significant relationship between these two variables for instance, Biswas and Ram, (1986); Choudhury, (1991); Mintz and Stevenson, (1995); DaKurah *et al.*, (2001) and some researchers which have explored a bidirectional relationship between military expenditure and economic growth such as Joerding, (1986); Cuaresma and Reitschuler, (2004); Kollias *et al.*, (2007).

This evidence points to the continuing argument about the impact of military expenditure on economic growth. It endures to be one of the most congested areas in economics. As Kollias *et al.* (2004) discussed on the basis of the available various literature, it seems that the relationship cannot be generalized across countries and over time. The present study aims at making a contribution to this debate by providing empirical evidence from the US.

3. MODEL AND METHOD

We can start our model building with the augmented Keynesian cross model, where the macroeconomic output is measured from the expenditure side. The familiar equilibrium condition is;
Aggregate Output = Aggregate Expenditure
Similar modeling has been done by Romer (2000) and Taylor (2000) as well as Atesoglu (2002). From their models, we obtain the equation (1), which shows that GDP comprises consumption (C_t) of the household sector, Investment (I_t) of the firms, government expenditures which can be split into non-military (GE_t) and military (ME_t) sector and the international sector (X_t).

$$GDP_t = C_t + I_t + GE_t + ME_t + X_t \quad (1)$$

Then, the right-hand side variables in the equation (1) are determined by:

$$C_t = a + b(GDP_t - T_t) \quad (2)$$
$$T_t = c + dGDP_t \quad (3)$$
$$I_t = e - fR_t \quad (4)$$
$$X_t = g - hGDP_t - iR_t \quad (5)$$

Where T_t stands for real taxes, and a, b, c, d, e and f are positive parameters.
In this model, the method of Atesoglu (2002) in discussing R_t is like an exogenous variable, solving equations (1) to (5) to the reduced form of GDP_t, we obtain the following equation;

$$GDP_t = a_1 + a_2GE_t + a_3ME_t + a_4R_t + u_t \quad (6)$$

Where GDP=α+b (GDP-C-dGDP) +e-Fr+g-hGDP-iR+GE+ME

GDP= α+GDP (h+b-bd)-bc+e-fR+g-iR+GE+ME
GDP-GDP (h+b-bd) = α-bC+e-fR+g-iR+GE+ME
GDP (1-b+bd+h) = α-bC+e-fR+g-iR+GE+ME

$$GDP=\frac{1}{(1\text{-}b+bd+h)}\{\alpha\text{-}bC+e\text{-}fR+g\text{-}iR+GE+ME\}$$

$a_1 = \frac{\{a-bc+e+g\}}{\{1-b(1-d)+h\}}$, $a_2 = a_3 = \frac{1}{\{1-b(1-d)+h\}}$, $a_4 = \frac{-(f+i)}{\{1-b(1-d)+h\}}$ and $a_2, a_3 > 0$, $a_4 < 0$

Equation (6) is a reduced form of the new macroeconomic model in which the government and military expenditure with real interest rates are extracted from the determinants of GDP. In natural logarithm form the estimating equation will be given by (7);

$$lnGDP_t = a + \beta lnME_t + \delta lnGE_t - \lambda lnR_t + \mu_t \qquad (7)$$

Where GDP is real domestic product, ME is real government military expenditure, GE is real non-military government expenditure, and R is the real interest rate. and μ is the stochastic error-term. The parameters: β , δ *and* λ are empirically determined co-integration coefficients and α is the intercept term.

4. DATA AND UNIT ROOT TEST

Table I variables descriptions: Annual data: (1970-2011)

Variable	Description	Source
RME	Military expenditure	SIPRI (2010)
RGDP	Real Gross domestic product per Capita	WDI (2010)
RGE	Public government expenditure	WDI (2010)
R	Real interest rate	WDI (2010)

The four variables used in this study; namely real military expenditure, real general government expenditure, real interest rate and real GDP, using time-series data for over the period 1970–2011. The data are collected from various sources. For example, the data of gross domestic product (GDP), real general government expenditure and real interest rate are collected from World Development Indicator (WID), while the data for military expenditures are obtained from Stockholm International Peace Research Institute (SIPRI).

We begin the empirical analysis with an investigation of the unit root test for the variables and we assumed that, the data used in this estimation are stationary. If the results of stationary are violated, this might lead to spurious results. In examining the time-series data properties, there are several models to test the stationary, but the most important one is the Augmented Dickey–Fuller (ADF) (Dickey and Fuller, 1979, 1981) and the Phillips–Peron (PP) (Phillips and Peron, 1988) unit root tests.

5. AUTOREGRESSIVE DISTRIBUTED LAG(ARDL) MODEL AND COINTEGRATION ANALYSIS

To analyze time series data in different order I(1) and I(0) together, Pesaran et al. (2001) suggested, the Autoregressive distributed lag approach (ARDL) to test for cointegration as an alternative to cointegration model for Engle-Granger (1989). The study uses the ARDL model to investigate the long run and the short run relationship between variables. The ARDL bond testing approach for cointegration can be written:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta GDP_{t-i} + \sum_{i=0}^{p} \alpha_2 \Delta GE_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta ME_{t-i} + \sum_{i=0}^{p} \alpha_4 \Delta R_{t-i}$$
$$+\delta_1 GDP_{t-1} + \delta_2 GE_{t-1} + \delta_3 ME_{t-1} + \delta_4 R_{t-1} + \mu_t \qquad (8)$$

Here Δ is the first difference operator; ΔGDP_t stands for the natural log of real GDP, ΔGE stands for the natural log of real government expenditure,ΔME stands for the natural log of real military expenditure, R stands for the natural log of real interest rate and μ_t stands for the error correction term.

The *F* test is used to determine whether the long-run relationship exists between the variables through testing the significance of the lagged levels of the variables. When the long-run relationship exists, the *F* test will show which variable should be normalized.

The null hypothesis of no cointegration amongst the variables in the equation (8) is

$\delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$

Against the alternative hypothesis

$\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 = 0$

The *F* test has a standard distribution which depends on; (1) whether the variables are included in the ARDL model are I(0) or I(1); (2) the number of independent variables; (3) whether the ARDL model contains an

intercept and a trend; and (4) the sample size of the variables. According to Narayan (2005), the rejection of the null depends on the F-test and the critical bound tabulated value for small sample size.
The long run relationship among the variables exists if the calculated value of F - statistic is greater than the upper critical bound (UCB), and if the calculated value of F- statistic is smaller than the lower critical bound (LCB), the long run relationship does not exist. If the calculated value of the F-statistic comes in between the range of LCB and UCB, then the long run relationship is inconclusive, Mintz (1990) Hassan & Kalim, (2012). The optimal lag can be selected using the model selection criteria like Akaike Information Criterion (AIC). Narayan (2005) stated the maximum lags for small sample size is two lags.

6. RESULTS AND DISCUSSIONS

Table II Augmented Dickey-Fuller and Phillip-Perron unit root test results USA

	ADF		Philip-Perron	
	Level			
	Intercept	**Intercept and trend**	**Intercept**	**Intercept and trend**
GDP_t	-1.715171	-2.459618	-1.861813	-1.590107
GE_t	-1.009772	-2.702574	0.002714	-1.998605
ME_t	-4.968409*	-6.015342*	-4.932968*	-10.71829*
R_t	-2.715638***	-2.240513	-0.340197	-1.821726
First Difference				
GDP_t	-4.621860*	-4.794549*	-4.394975*	-4.667337*
GE_t	-2.776816***	-2.586227	-2.763263***	-2.558414
ME_t	-8.239342*	-8.108106*	-18.99220*	-18.53070*
R_t	-6.148899*	-6.429485*	-4.455223*	-4.408573*

* *Denotes significant at 1%,* ** *Denotes significant at 5%,* *** *Denotes significant at 10%.*

Table II shows the result of the stationary test for ADF-test and PP test respectively for the US case. Both tests revealed that GDP has a unit root at level, but it becomes stationary at first difference, which implies that GDP is I (1). Nevertheless, all other variables are found to be significant at first difference and thus it indicates the variables are I (1). As the results point out, the variables are either I(0) or I(1), therefore implying that we can confidently apply the ARDL approach to this model as using ARDL requires the data to be stationary at the level I(0) and first difference I(1) (Narayan, 2005).

Table III represents the co-integration test analysis, and the existence of a long run relationship has been established among the model's variables. Results illustrate that the computed F-statistics are 4.020. The relevant critical value bounds at ten percent level (with unrestricted intercept and no trend) are 3.008 and for the lower and upper bounds respectively. Subsequently, the computed F-statistics is higher than the critical value of the upper bound, the null hypothesis of no long run co-integration relationship among the variables can be simply rejected.

TABLE III ARDL BOUNDS TEST FOR CO-INTEGRATION

Lag structure:					2,0,0,2	
F-statistics	**1% Critical value**		**5% Critical value**		**10% Critical value**	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
4.5766***	5.018	6.610	3.548	4.803	2.933	4.020
K=3, N=40						
The critical value according to Narayan (2005) (Case III: Unrestricted intercept and on trend)						

*, (**), (***) Significant at 1 %, 5% and 10% respectively.

Table IV demonstrates the selected long ARDL model, based on Akaike Information Criterion (AIC). The results show a positive and significant relationship between general government expenditure (GE_t), and gross domestic product (GDP) in the long run. The results are revealed that improvement in the general government expenditure associated with improvement in gross domestic product. To be precise, the improvement of government expenditure by 1% leads to increase in GDP per capita by 0.578%. This finding is consistent with finding suggested by Mintz and Huang (1990) and Ward and Davis (1995). In other words, government military expenditure (ME_t) and real interest rate (R_t) have a negative impact on (GDP), while these relationships are statistically significant at 1%. The negative and significant relationship between economic growth and military expenditure may seem counterintuitive at first. Perhaps, the negative effects of military spending can be so pervasive as to carry over to arms exports. Another possible explanation for this negative relationship is a two-way causality where slower economic growth has a negative effect on military budgets, forcing more export sales in place of canceled domestic military contracts. In this case, there might be an identification problem for both military spending and net arms exports.

Table V shows the short run relationship between military spending and economic growth. The results indicate that all of the variables in this model are statistically significant at one percent. Specifically, gross domestic product (DLGDP) is negative and significant at 1%, while public government expenditure (DLGE) is positively related to economic growth and significant at one per cent. Surprisingly, military spending and real interest rate are negatively related to economic growth. We found that military burden in the U.S.A does in fact have a negative impact on economic growth as a share of GDP; therefore increasing military-servicing problems, which indeed could have led to reduced economic growth in the US. Our empirical tests show that military spending does have adverse consequences on development by reducing productive capital investment. Furthermore, Yakovlev, Pavel (2007) found that higher military spending and arms exports separately lead to lower economic growth, but higher military spending is less detrimental to growth when a country is an arms exporter.

TABLE IV ESTIMATION RESULTS LONG RUN RELATIONSHIP

Lag Structure		2,0,0,2
Dependent variable: Gross Domestic Product (LGDP)		
Regressors	*Coefficient*	*T-Ratio [Prob]*
Constant	-10.5020*	-30.6928[.000]
LGE_t	.87762*	36.7145 [.000]
LME_t	-.27967*	-9.0303 [.000]
LR_t	-.023193*	-3.5299 [.001]
Diagnostic Test		
Test statistics:	LM version	F version
Jarque-Bera(normality)	CHSQ(2)= 6.3016 [.043]	Not applicable
LM test (1) correlation	CHSQ(1)= .81791 [.366]	F(1, 31)= .64711 [.427]
ARCH test	CHSQ(1)= .0060382[.938]	F(1, 38)= .0057371[.940]
Ramsey RESET test	CHSQ(1)= .10404 [.747]	F(1, 31)= .080842 [.778]
CUSUM test	Stable	Stable
CUSUMQ test	Stable	Stable

(*), (**), (***) denotes Significant at 1%, 5% and 10% respectively.

TABLE V ESTIMATION RESULTS SHORT RUN RELATIONSHIP.

Lag Structure		2,0,0,2
Dependent variable: Gross Domestic Product (DLGDP)		
Regressors	*Coefficient*	*T-Ratio [Prob]*
Constant	-6.9219*	-3.6962[.001]
$DLGDP_{t-1}$	-.59619 **	-3.7509[.001]
$DLGE_{t-1}$	.57844**	3.8492 [.001]
$DLME_{t-1}$	-.18433**	-3.8757[.000]
DLR_{t-1}	.026939**	3.4848 [.001]
$DLR1_{t-2}$	-.011932 ***	-1.8625[.071]
ECT_{t-1}	-.65910 *	-3.8804[.000]

**, (**), (***) denotes Significant at 1%, 5% and 10% respectively.*

Finally, when analyzing the stability of the long-run coefficients together with the short-run dynamics, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ) are applied Following Pesaran and Pesaran cited in Bahmani-Oskooee (2001), the stability of the regression coefficients is evaluated by stability tests and they can show whether or not the model equation is stable over time. This stability test is appropriate in time series data, especially when we are uncertain about when structural change might have taken place. CUSUM and CUSUMQ statistics are plotted against the critical bound of 5% significance. According to Bahmani-Oskooee and Wing NG (2002), if the plot of these statistics remains within the critical bound of the 5% significance level, the null hypothesis (i.e. That all coefficients in the error correction model are stable) cannot be rejected. The plot of the cumulative sum of the recursive residual is presented in graph 1-2. As shown, the plot of both the CUSUM and the CUSUMQ residual are within the boundaries. That is to say that the stability of the parameters has remained within its critical bounds of parameter stability. It is clear from both the graphs presented in Figure (1-2) that both the CUSUM and the CUSUMQ tests confirm the stability of the long-run coefficients.

FIGURE I CUMULATIVE SUM OF RECURSIVE RESIDUALS.

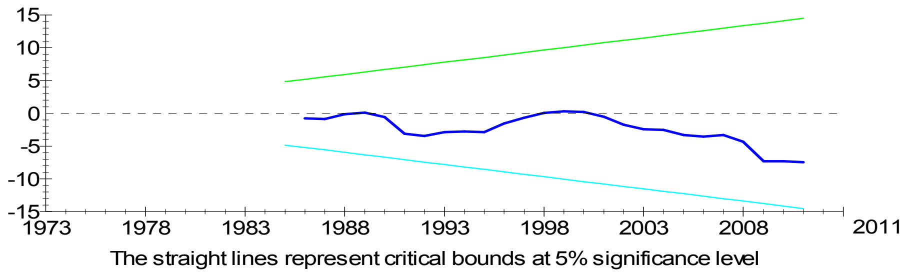
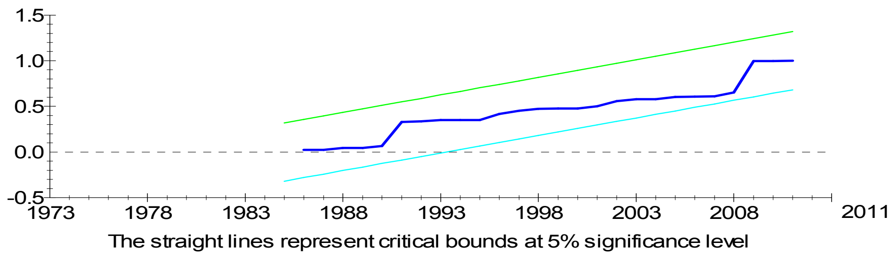


FIGURE II CUMULATIVE SUM OF SQUARES OF RECURSIVE RESIDUALS



7. CONCLUSIONS AND POLICY IMPLICATION

The aim of this paper is to see if there is a relationship between military spending and economic growth in the US economy, wherein the government plays a significant role in the economies and large proportions of expenditure go to the military sector. Since government expenditure is believed to underlie the macroeconomic instability and low economic growth in the US during the last decade, this study has investigated the effect of military spending on economic growth to show whether military expenditure leads to higher economic growth or hinder the growth rate since the US economic growth has declined because of its recent financial crises.

This result reveals that when considering overall government expenditures, there is a positive and significant relationship between government civilian spending and economic growth.

Further investigation revealed that military spending might be the cause of these findings. In precise, military burdens negatively affected economic growth in the short run and long run. This result corroborates earlier findings that military expenditure in the US is not determined by economic factors, but rather by the political situation in the country. The implications of this analysis are straightforward and could reduce the country's military burdens. However, the effect of channeling the freed resources to civilian uses of economic growth is as clear as the direct effect.

The finding in this study is consistent with some recent empirical studies, for example, by David K.Davis (1995) and Pavel Yakovlev (2007), where they found that, reducing military spending will stimulate US economic growth. Further, they concluded that, the relationship between both variables is negative, but it's statistically significant.

In this case, shifting resources from military to civilian spending seems to increase long-run economic growth; and resources must be reallocated from unproductive military sector to the civilian activities in order to foster US economic growth. Thus, reallocating resources from military to civilian spending may not result in increased growth unless the military allocation favors productive activities.

The finding of this study suggests that the US economy military expenditure can play a non-productive role in the economy. This does mean that society will neither benefit from the reallocation of military spending as government spending does not have many goals in the society and economy, nor does it mean that military spending is the best way to achieve economic growth. It suggests that the US economy is currently being hindered by its current military burden, though the recent increase in military spending and downturn cyclical fluctuations have led to the military burden to be closed to its optimal level. Thus, further increases are likely to be at the cost of economic growth in the long run.

REFERENCES

Abu-Bader, S., & Abu-Qarn, A. S. (2003). Government expenditures, military spending and economic growth:

causality evidence from Egypt, Israel, and Syria. *Journal of Policy Modeling,* 25(6), 567-583.

Adams, G., & Gold, D. (1987). *Defense Spending and the Economy: Does the Defense Dollar Make a Difference?* : Defense Budget Project at the Center on Budget and Policy Priorities.

Aizenman, J., & Glick, R. (2003). Military expenditure, threats, and growth: National Bureau of Economic Research: New York.

Atesoglu, H. S. (2002). Defense Spending Promotes Aggregate Output in the United States--Evidence from Cointegration Analysis. *Defence and Peace Economics,* 13(1), 55-60.

Atesoglu, H. S., & Mueller, M. J. (1990). Defence spending and economic growth∗. *Defence and Peace Economics,* 2(1), 19-27.

Bahmani-Oskooee, M. (2001), "Real and Nominal Effective Exchange Rates of Middle Eastern Countries and Their Trade Performance", Applied Economics, Vol. pp. 103-111.

Bahmani-Oskooee, M and Wing NG, R.C. (2002). " Long-run Demand for money in Hong Kong: An application of the ARDL model." International journal of Business and Economics, 2002,Vol.1, No.2, 147-155

Bas, M. A. (2005). Military spending, investment and economic growth: Relaxing the linearity assumption: Working Paper, University of Rochester 1–36.

Benoit, E. (1973). *Defense and economic growth in developing countries*: Lexington Books: Lexington, MA.

Biswas, B., & Ram, R. (1986). Military expenditures and economic growth in less developed countries: an augmented model and further evidence. *Economic Development and Cultural Change,* 34(2), 361-372

Brumm, H. J. (1997). Military spending, government disarray, and economic growth: a cross-country empirical analysis. *Journal of Macroeconomics,* 19(4), 827-838.

Cappelen, Å., Gleditsch, N. P., & Bjerkholt, O. (1984). Military spending and economic growth in the OECD countries. *Journal of Peace Research,* 21(4), 361-373

Chletsos, M., & Kollias, C. (1995). Defence spending and growth in Greece 1974–90: some preliminary econometric results. *Applied Economics,* 27(9), 883-890.

Chowdhury, A. R. (1991). A causal analysis of defense spending and economic growth. *Journal of Conflict Resolution,* 35(1), 80-97.

Cuaresma, J. C., & Reitschuler, G. (2004). A non‐linear defence‐growth nexus? Evidence from the US economy. *Defence and Peace Economics,* 15(1), 71-82.

Dakurah, A. H., Davies, S. P., & Sampath, R. K. (2001). Defense spending and economic growth in developing countries: A causality analysis. *Journal of Policy Modeling,* 23(6), 651-658.

Deger, S., & Sen, S. (1995). Military expenditure and developing countries. *Handbook of defense economics*, in: Keith Hartley & Todd Sandler (ed.), Handbook of Defense Economics, edition 1, volume 1, chapter 11, pages 275-307 Elsevier.

Deger, S., & Smith, R. (1983). Military expenditure and growth in less developed countries. *Journal of Conflict Resolution,* 27(2), 335-353.

DiPietro, W. R., Anoruo, E., & Sawhney, B. (2008). The Effect of the Size of the Military on Stock Market Performance in the United States and the UK. *Kyklos,* 61(1), 33-44.

Dunne, J. P., & Mohammed, N. A. (1995). Military spending in sub-saharan Africa: Some evidence for 1967-85. *Journal of Peace Research,* 32(3), 331-343.

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.

Dunne, P., Nikolaidou, E., & Vougas, D. (2001). Defence spending and economic growth: A causal analysis for Greece and Turkey*. *Defence and Peace Economics*, 12(1), 5-26.

Engle, R. F., Granger, C. W., & Hallman, J. J. (1989). Merging short-and long-run forecasts: An application of seasonal cointegration to monthly electricity sales forecasting. *Journal of econometrics,* 40(1), 45-62.

Faini, R., Annez, P., & Taylor, L. (1984). Defense spending, economic structure, and growth: Evidence among countries and over time. *Economic Development and Cultural Change,* 32(3), 487-498

Frederiksen, P. C., & Looney, R. E. (1983). Defense expenditures and economic growth in developing countries. *Armed Forces & Society,* 9(4), 633-645.

Galvin, H. (2003). The impact of defence spending on the economic growth of developing countries: a cross-section study. *Defence and Peace Economics,* 14(1), 51-59.

Halicioğlu, F. (2004). Defense spending and economic growth in Turkey: an empirical application of new macroeconomic theory. *Review of Middle East Economics and Finance,* 2(3), 193-201

Halicioğlu, F. (2004). Defense spending and economic growth in Turkey: an empirical application of new macroeconomic theory. *Review of Middle East Economics and Finance,* 2(3), 193-201.

Hylleberg, S., Engle, R. F., Granger, C. W., & Yoo, B. S. (1990). Seasonal integration and cointegration. *Journal of econometrics,* 44(1), 215-238.

Joerding, W. (1986). Economic growth and defense spending: Granger causality. *Journal of Development Economics,* 21(1), 35-40.

Kollias, C., Manolas, G., & Paleologou, S.-M. (2004). Defence expenditure and economic growth in the European Union: a causality analysis. *Journal of Policy Modeling,* 26(5), 553-569.

Kollias, C., Mylonidis, N., & Paleologou, S. M. (2007). A panel data analysis of the nexus between defence spending and growth in the European Union. *Defence and Peace Economics,* 18(1), 75-85.

Lim, D. (1983). Another look at growth and defense in less developed countries. *Economic Development and Cultural Change,* 31(2), 377-384.

Looney, R. E., & Frederiksen, P. C. (1986). Defense expenditures, external public debt and growth in developing countries. *Journal of Peace Research,* 23(4), 329-337.

Mintz, A., & Huang, C. (1990). Defense Expenditures, Economic Growth, and The" Peace Dividend". *The American Political Science Review*, 84(4) 1283-1293.

Mintz, A., & Huang, C. (1991). Guns versus butter: The indirect link. *American Journal of Political Science*, 35(3), 738-757.

Mintz, A., & Stevenson, R. T. (1995). Defense expenditures, economic growth, and the “peace dividend” A Longitudinal Analysis of 103 Countries. *Journal of Conflict Resolution,* 39(2), 283-305.

Narayan, P. K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied Economics,* 37(17), 1979-1990.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics,* 16(3), 289-326.

Ram, R. (1995). Defense expenditure and economic growth. *Handbook of defense economics, 1*, Handbook of Defense Economics edited by K. Hartley and T. Sandler. Amsterdam, The Netherlands: Elsevier Science Publication, pp. 251-273.

Romer, D. (2000). Keynesian macroeconomics without the LM curve: National Bureau of Economic Research Working Paper No. w7461.

Sezgin, S. (1997). Country survey X: defence spending in Turkey. *Defence and Peace Economics,* 8(4), 381-409.

Smith, R. P. (1977). Military expenditure and capitalism. *Cambridge Journal of Economics,* 1(1), 61-76.

Smith, R. P. (1980). Military expenditure and investment in OECD countries, 1954–1973. *Journal of Comparative Economics,* 4(1), 19-32.

Starr, H., Hoole, F. W., Hart, J. A., & Freeman, J. R. (1984). The relationship between defense spending and inflation. *Journal of Conflict Resolution,* 28(1), 103-122.

SIPRI (2013) SIPRI Yearbook. World Armaments and Disarmaments. Oxford: Oxford University Press.

Taylor, J. B. (2000). Teaching modern macroeconomics at the principles level. *The American Economic Review,* 90(2), 90-94.

Ward, M. D., & Davis, D. R. (1992). Sizing up the peace dividend: Economic growth and military spending in the United States, 1948-1996. *The American Political Science Review*, 86, 748-755.

Yakovlev, P. (2007). Arms trade, military spending, and economic growth. *Defence and Peace Economics,* 18(4), 317-338.

Yildirim†, J., Sezgin, S., & Öcal, N. (2005). Military expenditure and economic growth in Middle Eastern countries: a dynamic panel data analysis. *Defence and Peace Economics,* 16(4), 283-295.