Reducing Defence Expenditure during the Greek Crisis: A Balance between Austerity and Security

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Abstract. The prolonged recession entangling the Greek economy has finally convinced the authorities that the emphasis of the fiscal policy must shift away from revenues and on to the expenditures side. As it is usually the case, defence is a popular target when it comes to expenditure reduction for a wide variety of reasons, discussing which lies beyond the scope of the present paper. This paper focuses on an updated assessment of the net economic benefit derived when expenditure cuts aim at the long – run defence procurement programmes in an economic crisis environment. It will be shown, in fact, that defence spending on procurement can not contribute to the long – run growth rate of the Greek economy as its impact on the country's GDP has been found to be steadily adverse. This finding can be explained by the fact that the overwhelming percentage of the Hellenic Armed Forces defence equipment is imported thus leaving just leftovers to the domestic defence industrial base as regards contributing to the country's defence needs.
Keywords: Defence Expenditure, Economic Growth, Debt.

PACS: 88.05 Lg

INTRODUCTION

In the context of the on-going crisis the Greek authorities have been finally convinced that the stabilization policy followed would have been more fruitful if emphasis were placed on the expenditure instead of the revenue side which has been the case until now. Thus the new package of fiscal measures adopted by the policy makers early this year focuses exclusively on spending cuts concerning all public goods and primarily defence. Regarding the latter, this paper aims at contributing an update to the relevant literature by showing that the impact of procurement defence expenditure on the growth rate of the Greek economy tends to be negative in the long run. This is a conclusion which deserves serious consideration by the authorities and triggers a number of questions which this paper aims at answering, in terms of a long – run reconsideration of the country's defence- procurement policy in an environment of profound recession.

The paper first takes a look at the literature on this issue followed by an outline of the Greek defence industry profile as this has been shaping up until only very recently. The empirical section that follows involves the data description and the estimation results while the next section deals with the application of these results in terms of policy considerations. Finally, the closing section of the paper consists of the conclusions offered on the subject.

LITERATURE REVIEW

Starting with the seminal research by Benoit (1978) who tackled the issue of the defence-growth nexus and until only recently when Hartley (2010) approached the subject by asking whether "defence is a worthwhile investment" there is a vast amount of contributions in the literature covering a wide selection of its aspects. Indeed one can consider the case in which defence expenditure contributes to growth under a variety of perspectives like e. g. the extent to which it refers to developed (e. g. Kollias and Paleologou, 2010), or developing (e. g. Galvin, 2003) countries, or both (e. g. Wilkins, 2004), the possibility of involving private or public firms or even forms of partnership between the two (e. g. Parker and Hartley 2003), or, finally, the option of resorting to procurement from domestic sources rather than imports (e. g. Dunne et al, 2007).

Following Benoit's conclusion that defence expenditure can promote growth in more ways than one, it seems that the subject concerning the extent to which defence spending triggers macroeconomic imbalances has assumed increasing interest since Looney and Frederiksen (1986) studied the relationship between economic growth and defence expenditure in a number of developing countries depending on their resources availability. However, contributions like Brzoska (1983), Deger and Smith (1983), Faini et al. (1984) and Lim (1983) who challenge Benoit's findings always in the framework of developing economies. After the end of the Cold War, the ensuing defence spending reduction accompanied by rising costs has attracted increasing attention on the subject. Thus, in a rather technical approach Seiglie (1998) considered the effect of defence spending on growth via its effect of fiscal variables like deficits and debts, focusing, however, on developed rather developing economies. Emphasis on technical matters is also given in a very interesting paper by Dunne et, al. (2005), who conclude that the impact of defence spending on growth is related to the threat facing each country and consequently its economy. Thus, military expenditure has a positive effect on output when the threat is high and a negative effect when threat is low. Concerning more recent contributions it appears that interest in the Looney and Frederiksen research has revived in the form of case studies by papers like Karagol (2006) and Yemane (2009) who focus on examining the relationship between external debt, defence spending and growth in the case of Turkey and Ethiopia respectively. Regarding the former, there can always be a pending question concerning the minus sign of the defence expenditure coefficient when affecting the country's GNP, given that, unlike the Greek case, the Turkish defence industry is thriving supporting a considerable fraction of the country's armed forces procurement requirements and consequently contributing to growth with no clear evidence of defence-debt relationships (Sezgin, 2004).

It seems, in fact, that Sezgin has invested a great deal of input in looking into the specific matter, as he has been concentrating on the impact of defence expenditure on the Turkish economic growth in several of his publications. It appears, concerning the Turkish case, that defence spending no matter whether it may be used as an aggregate item or just as the military equipment bill, exercises a positive influence on the country's economic growth (Sezgin, 2001). The corresponding evidence for Greece, by contrast, is more or less contradicting, with Kollias (1995) and Balfousias & Stavrinos (1996) tracing a positive influence of defence spending on growth, unlike Antonakis (1996 and 1997).

There are also two recent and at the same time very interesting contributions by Abu-Qarn (2010) and McDonald and Eger (2010) which deal with the defence – growth relationship in the context of a case study. The findings of both these papers add to the conclusion that defence spending reinforces economic activity despite the adverse political, social and strategic environment outlining the two studies. In fact Abu-Qarn (2010) finds that in the context of the Israeli – Arab conflict there is no adverse repercussion on the rate of growth of the sides involved as a result of defence spending while McDonald and Eger (2010) use a nonlinear

production function to show that the defence sector of the post – Soviet states has favoured their economic growth.

Finally, in terms of an overall assessment, Yang et al. (2011) approach the relationship between defence spending and growth with reference to both income level and threat intensity for a large number of countries.

Focusing on the scope of the present paper which aims at assessing the extent to which defence expenditure can be held responsible for impeding the growth of the Greek economy while adding to the country's external debt, it is interesting to note that Kollias et al. (2004) conclude that defence spending brings about an adverse effect on external debt, a finding which appears reasonable bearing in mind that the bulk of the armed forces procurement requirements comes from external sources. It can not be taken as a simple coincidence that Sezgin (2003) seems to support this conclusion by finding that unlike the Turkish case, equipment defence spending entails adverse repercussions on the economic growth of Greece.

In terms of a more technical approach, Refenes et. al (1995) use neural network methodology to study the determinants of Greek defence spending, a tool of analysis that allows for smaller forecasting errors compared to those attained by using traditional regression methods. Avramides (1997), by contrast, employs the Stone-Geary welfare function to assess the extent to which Greek defence expenditure in level terms depends on the corresponding Turkish variable. The findings are then compared with those derived when using the Deaton-Muellbauer functional form to determine Greek defence expenditure expressed in GDP - share terms. Finally, concentrating on the causality issue, there seems to be no clear-cut answer on the interaction of military spending with the economy, given that, for example, Dunne et al. (2001) find that defence spending Granger - causes economic growth in Greece unlike Kollias and Makrydakis (2000) who trace no Granger causality between growth and defence expenditure. Following Brauer (2003), part of the disagreement in such cases may be attributed to the data selection and specification e. g. to choices between levels and GDP shares. Decisive steps towards resolving the causality issue seem to be taken by Dunne and Smith (2010) who address a number of econometric and methodological issues that affect the causality tests. Thus they argue that one must distinguish between Granger causality and economic causality and try to determine the relationship between the two using an identified structural model. The authors also point to specification as well as intertemporal stability problems reflected in the various causality- tests derived which are taken to account for the variety of results encountered in the literature.

THE GREEK DEFENCE INDUSTRY

Before turning to the technical section of the paper it is necessary to outline the particularities of the Hellenic defence industry and the procurement policies followed since their role is decisive in determining defence expenditure in the country and consequently the specification of the function itself. To begin with the GDP shares denoting defence expenditure in Greece include a wide selection of expenditure categories, the leading ones being the payroll of the Hellenic Armed Forces personnel, including a large number of civilians as well as the cost of the participation of Greece in assignments of international interest like peace – keeping forces. As a result the figure devoted to equipment procurement is on the average only about one fourth of the total defence expenditure figure[6].

[6] National Accounts Statistics of Greece and SIPRI (2009 and 2010). It seems however, that the situation is even tighter according to the Defence Minister's statement in the Parliament, at the end of 2009, who declared a reduction of the equipment procurement payments to reach 0.8% of the GDP for 2010, 0.3% of the GDP for 2011 and a bare 0.098% of the GDP for 2012!

Turning to the Hellenic defence industry, this has been created mainly as a result of exogenous pressure applied after the 1974 Greek – Turkish clash rather than following a long term planning procedure. As a result the main focus of the authorities was to relieve the Hellenic Armed Forces from constraints like dependence on foreign suppliers, substantial delivery delays, spare part shortage and considerable foreign exchange outflows. The government encouraged both public and private funds to promote defence industry and as a result a number of essential production units have begun to form the defence infrastructure of the country. Since then, however, the performance of these firms has left a lot to be desired as regards efficiency and support of the armed forces requirements This is mainly due to serious weaknesses like mismanagement, strong political involvement, absence of coordination with the Hellenic Armed Forces Programme Requirements, the so – called EMPAE (Procurement Programmes) and the country's academic institutions to profit from research and development (R & D) programmes as well as technology transfer. It is easy to see that such weaknesses introduce market distortions and lead to the disorientation of these industries from leading targets like profit – maximisation. Despite recent efforts to privatisation aiming at improving the efficiency of a certain number of firms, the fact remains that the Hellenic defence industrial base as it stands can only meet a small percentage, possibly around 10% of the country's procurement needs in value terms as these are expressed in the medium and long term EMPAE while the rest is imported (ELIAMEP, 2007)[7]. This means that the defence of the country continues to rely heavily on foreign suppliers whose local agents are most happy to collect generous commission fees by promoting business mainly via the so called "military offsets", the value of which in some cases may even exceed 100% of that representing the initial agreement. It appears, however, that the use of such offsets is far from being fruitful for the Greek side, given that the legal framework underlying their application is full of "gray areas" leaving ample room for personal interpretation (ELIAMEP, 2007).

Such tactics, however, tend to threaten the country's balance-of-payments sustainability[8], a largely technical issue that has been considered most useful in order to evaluate the extent to which placing emphasis on domestic production rather than imports of defence equipment is expected to contribute to the benefit of the Greek economy in more ways than one: Indeed, the more the government opts for promoting procurement from domestic sources at the expense of imports, the more it relieves the balance of payments from its sustainability constraint, given that in such a case the payments involved are not recorded in the external trade flows of the country according to the resident – non resident criterion (IMF 1993). Last but not least, such a policy is expected to contribute to the integration of the Greek industrial complex to the European industry with all the benefits that the resulting technology transfer may entail in such cases[9].

[7] According to Frost and Sullivan Defence and Security Reports for Greece (Frost and Sullivan, 2009) the percentage of contribution of local contractors to the armament programs appears to be higher than what it actually is because it reflects the value of contracts undertaken by Greek firms and not their exact production i. e. their value added in each of those contracts. Once this dimension is taken into account the real contribution of the Greek defence industry is not estimated to exceed 10% of real productive contribution.

[8] The predominantly fiscal nature of the current Greek crisis pointing to its excessive twin deficits has inevitably raised the question of its balance-of-payments sustainability as treated among others by Zombanakis et al. (2009) and Brissimis et al. (2010).

[9] Sandler T. and K. Hartley (eds) (2007) Handbook of Defence Economics, Vol. 2, North Holland

THE EMPIRICAL INVESTIGATION FRAMEWORK

The variables used are expressed in terms of GDP shares while the estimation period ranges from 1971 to 2011. The source of all variables is the Hellenic National Accounts statistics with the exception of the external debt which uses Bank-of-Greece figures and the SIPRI Yearbook (SIPRI 2009 & 2010) for the defence expenditure breakdown.

The Long - Run Structure

Our analysis is set to distinguish the long run, equilibrium, relationships from the short-run interactions among the variables examined. This is a necessary step when examining non-stationary variables as pointed out in various papers explaining the setting of the cointegration analysis framework (see e. g. Engle and Granger 1987, Johansen 1988). To this end, we follow the formulation of the underlying relationships used by Looney and Frederiksen (1986) and applied in its logarithmic version by Karagol (2006), thus forming (1) to capture the long-run structure of the examined relationship as follows:

$$GDP = f\ (\ DEBT,\ INV\ ) \qquad (1)$$

GDP is the level of the Greek GDP, DEBT is the stock of the total external debt of the country and INV is total investment spending, all expressed in logarithmic form. Both explanatory variables are expected to be related to the GDP, because both investment activity and foreign borrowing aim at raising output; as a result, we expect that there may be a long – run direct relationship of the GDP growth of Greece with the country's external debt and the total investment expenditure. Note that, following Benoit's reasoning (Benoit, 1978), defence spending is used only in the short-run structure of the empirical investigation, bearing in mind that due to the inefficiency of the domestic defence industrial base its contribution to the EMPAE requirements is negligible.

Initially, we test the series for stationarity and Table 1 suggests that they all have a unit root. We, therefore, use the first differences of these series (the prefix D denoting first differences of the corresponding variables) to form the short-run relationship (Table 5).

TABLE (1). Unit Root Test Results*

Variable	ADF	DF-GLS	PP	PP-GLS
GDP	-0.74	1.04	-0.74	1.49
DEBT	0.18	0.40	0.04	0.52
INV	-1.50	-1.30	-1.19	-1.15
EDEF	-1.596	-1.538	-1.642	-1.368
DGDP	-5.44**	-0.98	-5.43**	-0.09
DDEBT	-4.40**	-4.45**	-4.43**	-2.90**
DINV	-5.74**	-4.35**	-6.14**	-2.76**
DEDEF	-6.485**	-6.473**	-6.486**	-3.083**
Critical values				
5%	-2.94	-1.95	-2.94	-1.98
10%	-2.61	-1.61	-2.61	-1.62

*Rejection of the unit root null is indicated by ** at a 5% and by * at a 10% confidence interval, respectively

The results of the unit root tests, reported in Table 1, indicate that our data, in terms of levels are non-stationary. We proceed, therefore, to the examination of the existence of cointegration effects among the series of debt, GDP and investment using the well-known Johansen (Johansen, 1988 and Johansen and Juselius, 1990) cointegration analysis, suitable for multivariate systems. The results presented in Table 2 report both the trace and the maximum eigenvalue statistics and indicate that there exists a single stationary linear combination among the three variables at a 1% confidence interval.

TABLE (2). Johansen Cointegration Analysis

Test of the H_0:	Trace stat.	Max. Eigenvalue-test
no coint. Vec. = 0	53.35**	37.04**
no coint. vec. = 1	16.31*	16.19*
no coint. Vec. = 2	0.11	0.11

* rejection of the null at a 5% level of significance, ** rejection of the null at a 1% level of significance

Furthermore, we need to test for the composition of the cointegration vector (Johansen and Juselius, 1992) with the respective results reported in Table 3, below indicating that only the GDP series is exogenous in the long-run structure; thus reflecting causality patterns among the GDP and the other two variables. This result indicates that the GDP variable should be used for normalization of the cointegration vector. Aiming at an accurate estimation of the long-run coefficients, we rely on OLS regressions, as suggested by Engle and Granger (1987). Recall, that we have already found that there exists a stationary linear combination among the three variables we examine; as a result, the OLS estimates will serve for the proper identification of the long-run relationship between GDP (as the normalization variable), debt and investment. These results are reported in Table 4, below.

TABLE (3). Structure of the Cointegration Space

Test of exclusion (β=0):	LR-statistic	P-value
DEBT	8.31	0.06
INV	0.35	0.55
GDP	18.98	0.00

TABLE (4). Estimation Results of the Long–Run Function

DEPENDENT VARIABLE: GDP	COEFFICIENT	t- STATISTIC
CONSTANT	8.6471	16.2656
DEBT	0.2927	13.7829
INV	0.4706	3.3301

which means that the long-run relationship can be shown as a cointegrating vector of the following form:

$$RES_t = GDP_t - \underset{(13.7829)}{0.2927}*DEBT_t - \underset{(3.3301)}{0.4706}*INV_t - \underset{(16.2656)}{8.6471} \qquad (2)$$

According to the results of the unit root tests of Table 1, relationship (2) constitutes a stationary linear combination of the series of GDP, investment and debt and represents, therefore, a long-run equilibrium relationship. In plain terms there exist significant co-movements among the three series in the long run, indicating that the Greek GDP is significantly interlinked with debt and investment. This result, however, requires further investigation of the short-run dynamics of the three series and especially their adjustment towards this long-run equilibrium. Specifically, the residuals of relationship (2) represent an error correction term (which we note by the acronym RES) which may exercise significant adjustment effects on the short-run dynamics of the three series.

The Short - Run Structure

This section describes the dynamics of the relationships analyzed above. In particular, we examine the interlinkages of the variables that we have used to formulate the cointegration relationship, introducing, an additional variable that captures the effects of the Greek defence expenditure on equipment (EDEF) as provided by SIPRI sources. Finally, given the length of the time series used, the specification is completed by the introduction of variables capturing the political cycle, the drachma devaluations, as well as incidents like the invasion to Cyprus, the Imia crisis and the war in Iraq. Thus, this short-run specification aims at describing the impact of the Greek defence procurement spending on the economic activity of the country, its fiscal position and the total investment flows taking into account several specific features of the Greek defense procurement policy, as these were described in section 3.

To do so we use a vector error correction model (VECM), which consists of a VAR in which the GDP, the debt, the total investment flows and the defence expenditure appear in their first differences together with an error correction term that captures adjustment dynamics towards the long-run cointegrating relationship specified by equation (2).

This formulation relieves the analysis of any co-variance effects that may influence the dynamics of the variables involved, thus enabling us to focus on the direction of the causality of the underlying relationships. In fact, the VAR framework aims at treating co-linearity issues by capturing simultaneous effects among the underlying variables in the variance-covariance matrix. For the purposes of the present analysis, we have chosen to insert four lags in the VAR system, in order to approximate the duration of the EMPAE programs. Table 5 reports the results of the VAR.

The results of Table 5 provide a complete picture of the interlinkages between the dependent variables of our system, as well as the effects of the dummy variables on them. It is interesting to point out that disturbances like the uncertainty prevailing during pre-election periods, the various crisis incidents and the drachma devaluations had a negative effect on growth. The defence expenditure effects exercised on the GDP variable are shown to be marginally significant and negative with a lag of four years while the rest of the dependent variables are shown not to be significantly affected. Based on these results we also estimated the impulse response functions, the results of which are illustrated in Figure 1.

POLICY CONSIDERATIONS

Figure 1 summarises the adverse repercussions of the defence procurement policy exercised in Greece with the help of the impulse response analysis. In fact, it is only natural that the long run effect of military procurement on the country's GDP turns out to be negative and certainly negligible given that the overwhelming majority of the defence equipment is imported. The same reasoning applies in the case of investment activity, in which the accumulated response of defence procurement expenditure barely reaches non-negative rates. And recalling

that the military debt has rarely exceeded 1% of the GDP, as we have already pointed out earlier on in this paper, it is easy to justify the negative impact of the equipment defence spending on the country's external debt.

TABLE (5). The Results of the VECM

	DEDEF	DGDP	DDEBT	DINV
DEDEF(-1)	0.058903 (0.23243)	0.000897 (0.11361)	-0.069128 (-1.58407)	0.048374 (1.48560)
DEDEF(-2)	-0.146467 (-0.54932)	-0.006713 (-0.80789)	-0.074189 (-1.61582)	0.019658 (0.57380)
DEDEF(-3)	-0.033162 (-0.14221)	-0.010589 (-1.45700)	-0.068197 (-1.69832)	-0.003004 (-0.10024)
DEDEF(-4)	-0.108525 (-0.45002)	-0.014703 (-1.95640)	-0.033254 (-0.80079)	-0.041932 (-1.35329)
DGDP(-1)	0.729955 (0.11626)	0.457660 (2.33888)	-3.836873 (-3.54875)	2.144330 (2.65803)
DGDP(-2)	3.001201 (0.40991)	-0.143042 (-0.62689)	-2.580027 (-2.04636)	0.487321 (0.51802)
DGDP(-3)	-1.452000 (-0.26461)	0.224448 (1.31247)	-0.106228 (-0.11242)	0.731953 (1.03815)
DGDP(-4)	4.741419 (1.02830)	-0.064533 (-0.44909)	-1.995154 (-2.51279)	-0.559222 (-0.94392)
DDEBT(-1)	0.052974 (0.05317)	-0.014699 (-0.47336)	0.158672 (0.92479)	-0.245038 (-1.91402)
DDEBT(-2)	-0.733205 (-0.63258)	-0.064114 (-1.77492)	0.580541 (2.90865)	0.062873 (0.42217)
DDEBT(-3)	0.149401 (0.12650)	0.014278 (0.38792)	0.071178 (0.34997)	0.042123 (0.27757)
DDEBT(-4)	-0.690880 (-0.69290)	-0.039226 (-1.26236)	0.125722 (0.73224)	0.056974 (0.44472)
DINV(-1)	-2.318013 (-1.17551)	-0.025693 (-0.41808)	1.040649 (3.06466)	-0.509546 (-2.01109)
DINV(-2)	1.531975 (0.83365)	-0.049802 (-0.86958)	1.100163 (3.47662)	-0.193557 (-0.81975)
DINV(-3)	-0.206389 (-0.11886)	-0.094051 (-1.73801)	0.293089 (0.98021)	-0.362535 (-1.62495)
DINV(-4)	-2.674215 (-1.51297)	-0.053401 (-0.96943)	0.708964 (2.32932)	-0.029615 (-0.13040)
Constant	-0.169002 (-0.44801)	0.023804 (2.02482)	0.213665 (3.28925)	-0.077101 (-1.59073)
DELEC	0.076900 (0.14179)	-0.034502 (-2.04123)	0.071796 (0.76875)	-0.004014 (-0.05759)
DDEV	0.237159 (0.74902)	-0.021567 (-2.18560)	0.051848 (0.95094)	0.078703 (1.93457)
DCRISIS	0.479446 (0.93153)	-0.050453 (-3.14542)	-0.263154 (-2.96918)	-0.101424 (-1.53369)
RES(-1)	-0.913299 (-0.44998)	-0.174020 (-2.75113)	1.322725 (3.78456)	-0.169559 (-0.65018)

Note: Parentheses report values of t-statistics.

A number of additional points seem to be worth considering: First, the negative accumulated impulse response of investment on procurement spending in the long run reflects

the fact that there have been practically no FDI flows directed to the domestic defence industrial base during the period under consideration. By contrast, the long run GDP rise may give some room for a slight increase of the funds devoted to defence procurement. Second, the pronounced long run negative accumulated response of the GDP to investment flows verifies the fact that for, at least the last decade, the growth of the Greek economy relied exclusively on consumption.

It appears, therefore, that spending on defence procurement does very little to contribute to growth, a target of particular importance especially during austerity times. One can not help pointing out, however, that the ineffectiveness of any form of policy relying on defence procurement spending to influence fundamental variables of the economy must be a source of concern to the policy makers, in the context of the on going crisis, on one hand and the arms race against Turkey, on another (Andreou and Zombanakis, 2006), a country in which the defence industrial base picture is considerably different. In fact, a literature review on the subject shows that the majority of contributions agree that the effect of defence spending either in aggregate terms or just its procurement component on the Turkish GDP is positive (Sezgin, 2001, Yildirim and Sezgin, 2002). To the extent that defence procurement does not refer to importables, in which case it may be expected to bring about an adverse impact on the country's GDP via the income identity, any long run positive link between defence procurement and growth is more likely to rely on the country's domestic defence industrial base. And in such a case Greece faces a very serious disadvantage because, as Brauer (2003) puts it, "Greece's arms industry still is primarily state – owned, highly inefficient and underutilises its capacity; only very recently are a number of these firms being privatised. In contrast, the Turkish arms industry began privatisation and foreign joint – venture participation in 1983 (rather than mere licence production)" "both countries' arms industries are diversified into air, land and sea transportation systems, ordnance and information technology and associated electronics, but Turkey's arms industry appears substantially more diverse than that of Greece;"

CONCLUSIONS

The defence procurement policy of Greece faces a number of binding constraints, the main one being the dramatic reduction of the defence budget during an economic crisis period. To make the constraint even tighter, the overwhelming fraction in value terms of the equipment required is purchased from external sources, something which heavily burdens the import bill of a current account, the deficit sustainability of which has been repeatedly questioned, as pointed out earlier on in this paper. As a result, focusing on any form of defence expenditure cuts concerning equipment procurement seems to be ineffective in terms of adding to the country's GDP in the peace – dividend sense, a finding that agrees with earlier work on the topic (e. g. Kollias et al. 2004). A possible remedy to the problem would be a gradual shift towards domestic sources procurement, a long – run import – substitution strategy by means of technology transfer, at least for a certain number of items required by the EMPAE programmes. Such a strategy can aim at compromising between an austerity programme that calls for budget cuts and the pressing defence needs of an arms race against Turkey (Andreou and Zombanakis 2011), the defence industry of which contributes to the Turkish growth through its substantial support to the local defence procurement programmes. As Sezgin (1997) puts it, "the defence industry ..... will be an important part of the Turkish industrial sector and productivity and export potential will increase in the future. ..... empirical evidence showed that Turkish defence spending ..... helps economic growth. There is a positive and significant relation between military size and economic growth".

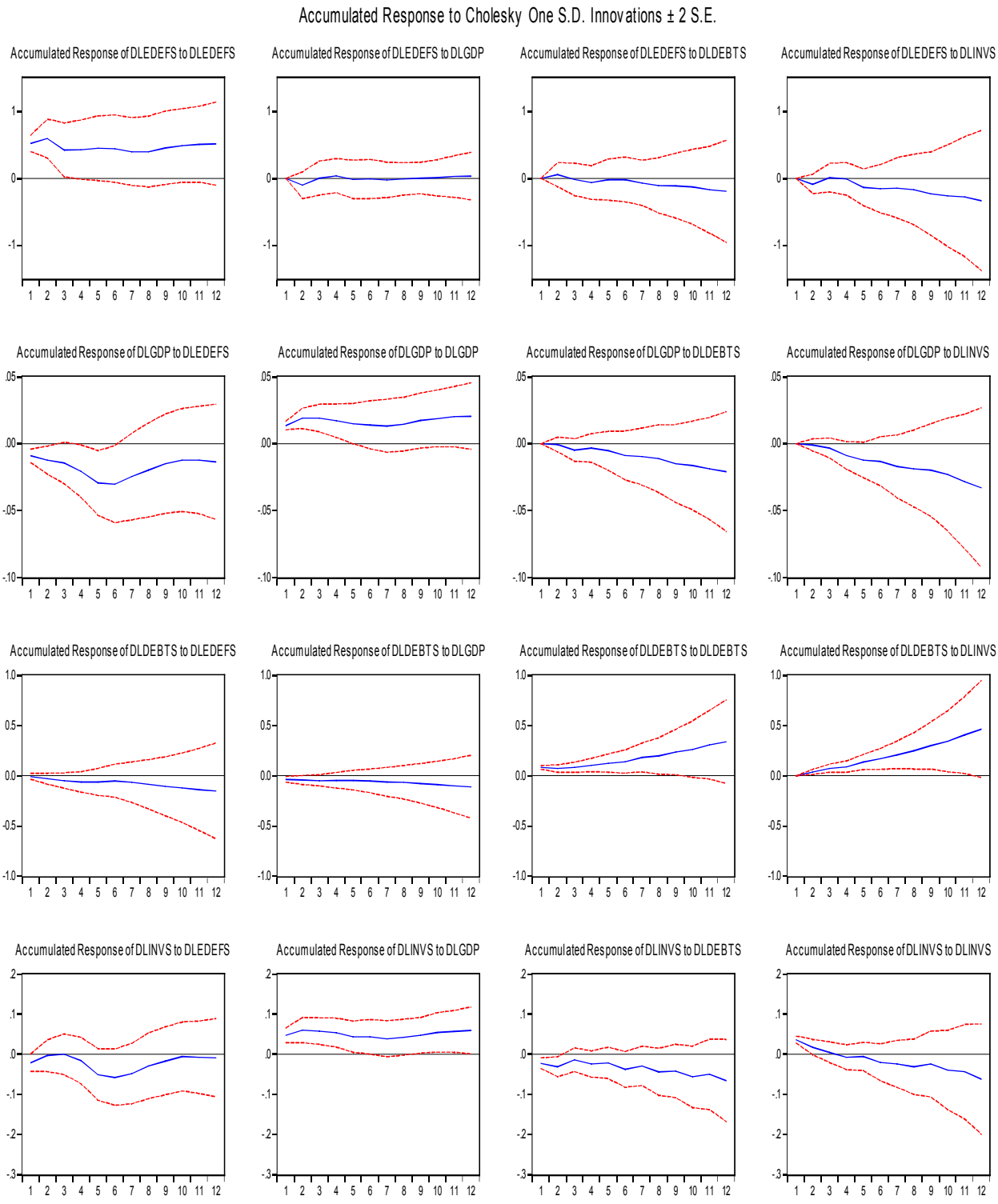

Figure 1. Impulse responses from the VECM

It appears, therefore, that the Turkish recipe may be considered as applicable to contribute to both growth and security in Greece at a time of austerity. After all, quoting Dunne et al. (2005), "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 'that of protecting the society from the violence and invasion of other independent societies … that of protecting, as far as possible, every member of society from the injustice or oppression of every member of it'".

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