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Military Expenditures and Economic Development Concepts and Models: a Literature Review Utilizing Competitive Intelligence

Alex P. Andriamahazoarivo
Ministry of Defense, 101 Antananarivo-Madagascar

François A. Ravalison
University of Antananarivo, Ecole Supérieure Polytechnique, 101 Antananarivo-Madagascar

ABSTRACT
The main objective of the study is to have a map of analysis about military expenditures (training included) and economic development. Competitive Intelligence is the core of the research process. First, we have framed the data research, and then we have researched and collected data. At the end of process, we have synthesized the analysis. The main finding reveals that there is an impact of military expenditures on economic development.

Keywords: *Competitive Intelligence, Economic Development, Military Expenditures*

1. INTRODUCTION

During the Cold War, lots of arms had been exported from developed countries to developing ones. It had created a new deal process. On the first hand, the developed countries adopted a new axle of creating richness. And on the second hand, the developing countries found a new way to target and gain power governance. So the military expenditure (milex) and economic development mapped the world economy before the globalization. That situation guides to determine to the following research question “does milex have a positive or negative effect on economic development?”.

2. LITERATURE REVIEW

The following literature review sees several theoretical and empirical studies that discuss the relationship between military expenditure and economic growth specifically and between the defense sector and the economy generally.

The results find three propositions:

a) The relationship between military expenditure and economic growth is significant and negative;
b) The relationship between military expenditure and economic growth is not significant;
c) The relationship between military expenditure and economic growth is significant and positive.

The first proposition argues that military expenditure has negative effects on economic growth. This relationship is related to the “Production-Possibility-Frontier” model applied to the trade-off between the defense sector and the civilian sector, often termed as “guns versus butter”. In this model, the state must choose

between two sectors to spend its limited resources (represented by the GDP): the guns (defense sector) or the butter (civilian production). There are various explanations to this proposition, which have been clustered as follow: productivity, investment, fiscal, saving.

The second proposition argues that military expenditure bears no significant relationship with economic growth. This proposition is based on various empirical researches that find the regression analysis on both variables doesn't produce a statistically significant coefficient of correlation.

The third proposition argues that military expenditure is directly proportional with economic growth. There are various explanations to this proposition, which have been clustered as follow: security, aggregate demand, employment, technology, human capital and economic stimulus.

3. METHODOLOGY

To undertake that study, research process based on competitive intelligence is utilized. There are a lot of definitions of Competitive Intelligence (CI). This is the one preferred by many researchers: Competitive Intelligence (CI) involves the use of public sources to develop data on competition, competitors, and the market environment. It then transforms, by analysis, that data into [intelligence]. Public, in CI, means all information you can legally and ethically identify, locate, and then access (McGonagle and Vella2002).

CI is also called by a lot of other names: competitor intelligence, business intelligence, strategic intelligence, marketing intelligence, competitive technical intelligence, technology intelligence, and technical intelligence. The most common difference among them is that the targets of the intelligence gathering differ. However, what those who are developing it all do is essentially the same:

1. They identify the information that a decision-maker needs on the competition, or the competitive environment;
2. They collect raw data, using legal and ethical means, from public sources;
3. They analyze that data, using any one of a wide variety of tools, converting it into intelligence, on which someone can take action (''actionable''); and
4. They communicate the finished intelligence to the decision-maker(s) for their use.

The research process based on CI is:

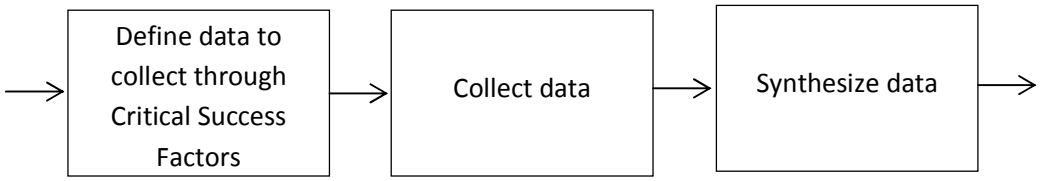

Figure 1: Research process

4. FINDINGS

Table 1: Synthesis of analysis by Competitive Intelligence

Benoit (1978)	He conducted the first ever study regarding the relationship between defense and

	growth for 44 developing countries for the time period 1950-1965. The findings of Benoit's study show that there is significant cross country position correlation between defense expenditure and economic growth i.e. defense helps development. Benoit was of the view that high defense expenditure leads to high economic growth through the channel of aggregate demand i.e. if initial demand is inadequate as compare to potential supply then increase in defense spending may increase aggregate demand and thus has positive impact on growth. The Benoit's result of positive correlation between defense spending and economic growth initiated a series of books, articles and papers to reanalysis this relationship.
Smith and Smith (1980)	Smith and Smith, hypothesized that military expenditures might help growth through resource mobilization and modernization of equipment. However, they found out that the small import was far outweighed by the indirect effect of lower savings rate in the economy.
Taylor and al (1980)	They found out that increases in military budgets had a negative impact on economic growth for all developing countries.
Russett (1982)	It is conventional wisdom that there is trade-off between military spending and non-military spending. However it does not tell us about the pattern of trade-off between these variables. Russett (1982) estimated a model for America to show the tradeoff pattern of military spending on one hand and education and health on the other for the time period 1941 to 1979. Applying OLS estimation technique, the findings of the study show that there is no systematic trade-off pattern between military spending and expenditure on education and health nor military spending significantly depress education and health.
Degar and Smith (1983)	They investigate the relationship between military expenditure and economic growth in 50 less developed countries by estimating a macroeconomic model of cross sectional observation for the time period from 1965 to 1975. The findings of their study show that military spending has a small positive effect on growth through modernization channel and larger negative effect through saving channel. They show that the negative saving effect outweigh the positive modernized effect the net effect of military spending on economic growth is negative.
Deger and Smith (1983)	Deger and Smith (1983) argue that an increase of military expenditure can prevent economic growth. Military expenditure can create bottlenecks in a constrained economy. On the top of that, it also slows down development through the fostering of a militaristicideology. Furthermore, excessive defense expenditure can cause balance of payments problems if hard-earned foreign exchanges are used to purchase arms and defense hard ware.

Fredriksen and Looney (1983)	Frederiksen and Looney re-examined Benoit's study, by grouping the 44countries into rich and poor countries. They found (using a cluster analysis): (i) For the richer countries "defense expenditure may play an important and positive role in increasing growth" (ii) For the poorer countries , the reverse was true
Lim (1983)	Lim (using Cross-sectional data) in 1983, found that: (i) defense spending in general hurt economic growth (ii) economic growth in Africa adversely affected by defense spending. (iii) on the other hand, there is no relationship between these two variables in"Asia, and Middle East and Southern Europe".
Looney (1983)	Looney's work is of particular significance for distinguishing between conflict states and non-conflict states in Africa. However, rather than using indicators of political violence or armed conflict, his criteria related primarily to government legitimacy and effectiveness. Non-conflict states consistently displayed lower military burden and better socioeconomic performance than conflict states. Interestingly, only in the former category was military spending positively and significantly related to quality of life measures, showing that the socioeconomic effects of milex vary with regime characteristics. But even in conflicted states, the relative defense burden produced a mix of positive and negative outcomes for socioeconomic development indicators
Nabe (1983)	Nabe conducted a cross-sectional analysis of the impact of defense spending on industrialization in 26 African states during 1967-1976. Although he found a positive relationship between GDP manufacturing and social and economic factors of development, there was no direct relationship between defense spending and industrialization. Furthermore, military expenditure exhibited a negative relationship to GDP manufacturing through both social and economic development factors. Ten of 11 analyses showed no significant covariation between milex and development, whereas all analyses showed positive relationships between economic and social development factors and economic development. In short: military expenditure had neither notable positive nor negative effects on economic development
Mohamed and Thisen (1985)	In their literature survey on the impact of African military spending on economic growth and development, Mohammed and Thisen reviewed studies that found both positive and negative direct effects, but the overall impact was negative when indirect effects on human resources, investment, and foreign trade balance were included; no studies reported uniform or overall positive effect on economic growth. Their own modest statistical test involving 23 African countries for which consistent data were available for 1970–1991 also produced mixed results, with 44 per cent of the sample

	experiencing negative impacts and 30 per cent insignificant effects. In addition, countries with high and rising milex incurred substantial economic costs, those with moderate military burdens had insignificant effects, and countries with low military burdens enjoyed overall positive effects.
Degar (1986)	He critically evaluated the Benoit's findings and investigated the inter-relationships among defense; saving and economic growth for a sample of 50 less developed countries for the time period from 1965 to 1973. Using the three stage OLS estimation technique the results of the study show that defense expenditure significantly depresses the saving which leads to retard growth and development and therefore, the correlation between defense expenditure and economic development is negative which is the opposite of Benoit's result.
Looney and Fredericksen (1986)	Looney and Fredericksen sought to determine if the availability of external and internal resources affected the relationship between military spending and economic growth in 61 developing countries during the 1970s and early 1980s. Although they discerned no statistically significant relationship between milex and growth for the entire sample, the relationship was positive in countries with relatively unconstrained resources and negative in resource-constrained countries. Looney then investigated whether milex had contributed to public debt accumulation in 77 Third World states up to 1982. Again he found no global pattern, but resource-constrained and non-arms producing countries did accumulate higher external indebtedness. His later study of Africa, which controlled for the effects of conflict, revealed that non-conflict states enjoyed greater access to international credit (ie, higher debt) than conflict states, while the latter relied more on domestic resources and incurred greater socioeconomic costs as military spending rose.
Chan (1988)	He investigated the relationship between defense burden and economic growth for a single country (Taiwan) for the time period 1961-1985. He discussed three models; modernization model, the capital formation model and the export-led growth model through which defense burden may affect economic growth. Using GLS method, the results of the study show that modernization effect did not play a significant role in raising the economic growth which is contradicted to Benoit's result. The results of capital formation model and export-let model show that capital formation is curtailed by defense spending and also defense spending has adverse impact on export competitiveness.
Looney (1988)	The distinction between conflict and non-conflict states also mattered in Looney's analysis of external debt, with non-conflict states relying more heavily on external public debt to cover military needs while conflict states more typically absorbed military

	costs internally at the expense of domestic social programmes. Finally, while non-conflict states consistently imported arms in direct proportion to their ability to pay for them, their conflicted counterparts tended to buy weapons without regard to current economic conditions, thereby imposing additional burdens on their people especially during times of austerity. In concluding, he argued that this "demonstrates the futility of attempting to generalize about the costs of military expenditures in the Third World" and in the case of Africa, "the level, composition, and ultimate socio-economic impact of military expenditures are greatly influenced by internal conditions the effectiveness of a government in either meeting or containing the demands of citizens, and the degree to which it can count on them to comply voluntarily with its policies". In an extension of this work, Looney later analyzed the effect of military spending on the socioeconomic performance of 33 African states during 1970–1982. Again the distinction between conflict and non-conflict states proved significant: the former experienced almost uniformly negative linkages between military expenditures and socioeconomic indicators, while in the latter group of countries the pattern was reversed
Mintz and Huang (1990)	Mintz and Huang (1990) using a three equation model for the US finds defense expenditure negatively impacts on investment and therefore growth.
Chowdhury (1991)	All the above studies are conducted on the implicit assumption that defense expenditure is incurred prior to economic growth. However, these studies are silent regarding the causality that may exist between defense expenditure and economic growth. Chowdhury (1991) investigated the casual relationship between expenditure and economic development. In order to show the direction and presence of causality the Granger causality tests are used on annual time series data for 55 less developed countries. The results of the study show that the correlation between defense and economic growth is positive for some countries and is negative for other countries. So this correlation cannot be generalized across countries due to the difference in socio-economic structure and the type of government in each of these countries.
Stewart (1991)	Stewart's article, which is interesting in two respects. First, his results challenge analysts who contend that the effects of milex on economic growth are not consistent across countries and regions but rather depend on an array of intervening variables, particularly economic and fiscal. Second, he contests others' findings that higher levels of military spending are associated with lower growth rates across nations. Using samples of 19 Latin American and 13 African states (varying dates, 1950–1970), Stewart found that both large defence and non-defence burdens increased economic growth over the longer term. More remarkably, the positive effect of the defence burden

	was more pronounced than the non-defence burden, so that increasing relative outlays for non-defence programmes will lower GDP growth over time! Since these effects were constant across regions, Stewart contended that universal generalisations can be made about the impact of milex. However, quite aside from the more complex methodological technicalities of his study, his sample of 13 African states (including four in North Africa) hardly appears representative of the continent.
Gyimah-Brempong (1992)	Ghanaian scholar Gyimah-Brempong, using a sample of 39 African states 1973–1983, examined the effects of an increased defence burden on GDP growth rate, the mechanisms by which milex affected economic growth, and whether it influenced economic growth directly and independently. His results indicated that defence spending affected economic growth through its effects on investment rate and skilled labor supply to the civilian sector, military spending did not have any significant direct effect on economic growth, and overall, the effects of the defence burden on economic growth are "significantly negative". In a later study Gyimah-Brempong, this time with a sample of 40 African states 1967–1987, found a peculiar pattern in which governments in every geographical region, and regardless of their oil-exporting or -importing status, tended to reduce defence spending when overall budget resources are increasing but to increase military spending in times of austerity. When constrained, such spending raised the defence burden when governments and their citizens were least able to afford it
Lindex (1992)	Different studies have conducted with different channels to analysis the impact of defense burden on economic development for different countries. Lindex (1992) derived a two sector growth model to analysis the effect of military burden and government expenditure on the growth of GNP in selected Middle East countries for the period 1974 to 1985. By using GLS, the findings of the paper show that the impact of military burden on the growth of GNP is negative whereas the government size is positive related to the growth of GNP.
McMillan (1992)	In addition to the cross-national studies cited above, several empirical case studies have been conducted. Not surprisingly, South Africa has attracted the lion's share of the attention. McMillan's statistical analysis of the relationship between economic growth and defence spending in South Africa during 1950–1985 produced a mix of positive and negative effects
Mbaku (1993)	Taking a different approach, Mbaku investigated relationships among democracy, military spending, and economic growth in Africa during the 1980s. He found that democracy fostered growth, but defence spending retarded it. In other words, the military has larger claims on resources in dictatorships (both military and civilian),

	which frustrates economic development
Oyinlola (1993)	In another African empirical case study, Oyinlola's econometric analysis of Nigerian defence spending also yielded mixed outcomes. More precisely, he concluded that "the Nigerian defence sector contributes positively to real growth in gross domestic product; it has a progressive distributional effect and a dampening effect on inflation. However its impact in these respects is very low and insignificant. On the contrary, the impact on importation where defence has a negative effect on the economy is significant." It is therefore fair to conclude that the net economic impact of military spending in Nigeria has been negative.
Dunne and Mohammed (1995)	Dunne and Mohammed studied the determinants and effects of defence expenditure on a sample of 13 (supposedly) relatively homogenous sub-Saharan countries during 1967-1985. Analysing this group of countries as a whole, using different statistical techniques, they found no indication that military spending had positive economic effects, but both aggregate and individual country results showed substantial negative impacts, especially on growth, trade balance and investment
Looney (1995)	Looney's studies have found "a consistent pattern whereby certain groups of third world countries – usually the more successful economically, the most stable politically, or those engaged in military production – derive positive impacts from military spending. Those countries less successful economically, more politically unstable, or lacking a domestic arms industry fail to derive any positive economic impacts from defense expenditures." Nevertheless, even the former category of states can and do suffer some negative effects, and both regime types (civilian versus military) and indigenous arms production capacity also produce a mix of positive and negative economic effects.
Birdi and Dunne (1996)	Birdi and Dunne, after reviewing the various models and results embodied in the literature on milex and growth in South Africa, used cointegrating vector autoregressive (VAR) techniques to obtain, yet again, mixed results, consistent with several other reports showing that milex, on balance, had somewhat negative or insignificant effects on growth.
Blomber and Brock (1996)	They studied the effect of defense spending and political instability on growth for a sample of 70 countries for the period from 1967 to 1982. Using OLS and GLS, the findings of the paper show that increase in political instability do decrease growth while increase in defense expenditure does decrease political instability. However the results explain that increase in defense expenditure has a direct negative effect on growth but not significantly.

Dunne (1996)	According to Dunne, who summarized the results of 54 studies in the period 1973–1996, “military expenditure has at best no effect on growth. It is likely to have a negative impact – certainly there is no evidence of a positive effect.
Roux (1996)	A few years later Roux used a four-equation model to analyse the effects of milex on South African economic growth 1960–1990. He also found mixed results, but overall the military burden negatively affected economic growth
Khilji and Mehmood (1997)	They analyzed the impact of military expenditure on economic growth and other major economic variables in Pakistan for the period from 1972 to 1995. By using annual data set of time series, they applied Granger causality test on the four equations model. The findings of the study show that there is bi-directional feedback between defense burden and GDP growth. Their results explain that defense burden is negatively related to GDP growth, growth of non-defense output, investment ratio and tax revenue. However, the findings of four equation model did not reflect the degree of interdependence that may exist between these variables. So results derived from such models may be misleading. Therefore, they specified three equations model which explains GDP growth, average propensity to save and defense ratio. In single equation estimation of saving ratio and defense burden, the results show that the saving ratio is positively affected by defense burden and negatively by the inflation rate and they also show that Pakistan defense burden is negatively affected by Indian defense burden and positively by government budget.
Dunne and Vougas (1999)	Even more emphatic are the results obtained by Dunne and Vougas, who used causality techniques that recognize the long-term relationship (co-integration) between military spending and economic growth. Their work revealed that defence spending had a “significant negative impact” on economic growth in South Africa during 1964–1996.
Heo (1999)	Heo’s work has reinforced the importance – indeed the necessity – of controlling for key variables in the study of defence-growth relationships. As others before, in his tabularized summary of 49 empirical studies published during 1973–1998 he found no empirical or theoretical consistency, but rather a variety of fi ndings including positive, negative, and no significant relationships. He then investigated selected economic growth-related effects of military spending in a mix of 80 developed and developing countries (including 22 African) for the period 1961–1990, using a three-sector production function model (military, nonmilitary and external). His findings echo most of Looney’s: The effects of defence spending on economic growth varied across countries. The level of defence burden had a significant effect on growth: in countries where the relationship is negative, increases negatively affect

	more countries; where positive, increases positively affect fewer countries. Lower per capita income countries experienced higher negative effects than those over $1,000 per capita, but above that fi gure there was not much difference. Regime type had no pronounced effect on military externality effects, but did have a significant effect on non-military externality effects and on productivity in the nonmilitary government sector. Arms production capability was not related to the effects of milex on growth.
Smith (2000)	More recently, Smith assessed that the "large literature does not seem to indicate any robust empirical regularity, whether positive or negative," nor has the "vast empirical literature" on the determinants of economic growth "found military expenditure to be an important determinant of growth …" In short, "the literature on military expenditure and growth is inconclusive." He went on to argue that we should not even expect to discern empirical regularities: if defence spending and economic growth were closely related, reciprocal causality produces both negative and positive interactions between them. Moreover, when security-related variables are factored in, the relationship between milex and growth will be either positive or negative depending on whether growth or threat conditions are constant or changing. Smith concluded that "military expenditure probably does have a small negative economic effect on output in the long run – but measuring that effect requires care, sophistication and being lucky enough to get the right historical pattern of events to reveal it."
Olaniyi (2002)	Another review of the African literature by Olaniyi generated the sweeping judgment that "the conflicting theoretical conclusions and empirical results suggest that the demand and supply of military spending depend on and generate a complex web of sometimes opposing relations among various economic and non-economic variables within an economy. The direction and magnitude of these relationships depend on divers' endogenous and exogenous factors that generate primary and secondary effects contingent on the historical realities of each country." He went on to apply a supply-side model to 25 African countries 1993–1994, distinguishing between substitution and externality effects of defence spending, and between agricultural economies and industrializing/mineral-exporting economies. The results showed that defence outlays had negative but statistically insignificant effects on economic growth regardless of a country's economic basis.
HaliciogluFerda (2004)	In 2004, HaliciogluFerda in his research work titled 'defense spending and economic growth in Turkey an empirical application of new macroeconomic theory,found that there exist a positive long-run relationship between aggregate defense spending and aggregate output in Turkey. Using CUSUM and CUSUMQ tests he confirmed the stability of the aggregate output function.

Hirnissa and Baharon (2009)	In 2009, M.T. Hirnissa and A.H. Baharom did work on this issue in Asean-5countries. According to their findings: (i) there are only three (Indonesia, Thailand and Singapore) out of five countries analyzed exhibit long-run relationship between military expenditure and economic growth. (ii) while for the case of Singapore , the Causality is bi-directional, for Indonesia and Thailand it is Uni-directional from military expenditure to economic growth, and (iii) for remaining countries (Malaysia and Philippines), no meaningful relationship could be detected. The results are robust, providing similar results employing both Auto regressive Distributed Lag (ARDL) and Dynamic Ordinary Least-Square. (iv) In an another study done by Albert Wijeweera and Matthew J. Webb for the economy of Srilanka (2009) found that , compared with non- military spending,military spending increases GDP by 1.6%. In contrast, military spending only increases GDP by 0.05% which suggests that the economic benefits for Sri Lanka from a sustained peace may be considerable.

5. DISCUSSION

The following table summarizes that there is a relation between military expenditure and economic growth

Table 1: Summarize of analysis

Significant, Negative Relationship	Insignificant Relationship	Significant, Positive Relationship
Defense sector can decrease domestic productivity	Regression analysis on both variables doesn't produce a statistically significant coefficient of correlation	Military expenditure is important to guarantee national security, which is vital to support economic activities
Defense sector may hinder investment	The nature and the amount of defense expenditures vary over time	Military expenditure can influence growth through aggregate demand related to the capital utilization
Defense sector can worsen fiscal conditions	Defense spending is not large enough to have a statistically meaningful effect on economic growth	In recession, rise of military expenditure may encourage the economy
The scale of domestic saving will decrease in line with the increase of tax to fund military expenditure		Military expenditure can lead to employment
		Military expenditure to develop military technology will create spin off to civilian technology
		A portion of defense spending is related to the development of human capital

6. CONCLUSION

36 documents have been consulted. They all presented studies about military expenditures and economic development. The time period is between 1980 and 2000. A group of authors concluded that military expenditures impact positively the economic development. Another group found that there was a negative impact. And some studies concluded that there was no relation between the two variables.

The objective of our study is obtained. A map of all studies is presented. Based on that map, other studies can be conducted especially those concerning Madagascar. For that specific case, date related to Madagascar should be collected and perform to conclude the relation between military expenditures (training included) and economic development. That may be another topic of research.

7. REFERENCES

Abu-Bader, S. and Abu-Qarn, A. S. (2003), Government Expenditure, Military Spending and Economic Growth: Causality Evidence from Egypt, Israel and Syria, *Journal of Policy Modelling,* 25, 567-583.

Aizenman, J. and Glick, R. (2006), Military Expenditure, Threats and Growth, *Journal of International Trade and Economic Development*, 15(2), 129-155.

Alami R (2002), Military debt: Perspectives from the experience of Arab countries, *Defence and Peace Economics* 13(1),pp 13–30.

Alexander, W. R. J. (1990), The Impact of Defence Spending on Economic Growth: A Multi-sectoral Approach to Defence Spending and Economic Growth with Evidence from Developed Economies. *Defence Economics,* 2(1), 39–55.

Antonakis, N. (1997), Military Expenditures and Economic Growth in Greece, 1960-1990. *Journal of Peace Research,* 34 (1), 89-100.

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. and Mueller, M. J. (1990), Defence Spending and Economic Growth.*Defence Economics,* 2 (1), 89-100.

Benoit, E. (1973), Defense and Economic Growth in Developing Countries (Boston: Lexington Books).

Benoit, E. (1978), Growth and Defense in Developing Countries.*Economic Development and Cultural*

Birdi A. & Dunne J.P (1998), South Africa: An econometric analysis of military spending and economic growth, in Brauer& Dunne, pp 221–233.

Biswas, B. and 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.

Brauer, J. (2002), Survey and Review of the Defense Economics Literature on Greece and Turkey: What have we Learned? *Defence and Peace Economics,* 13, 85-107.

Brown, R. L., Durbin, J. and Evans, J. M. (1975), Techniques for Testing the Constancy of Regression Relations Over Time (with Discussion). *Journal of the Royal Statistical Society*, B, 37, 149-192.

Brzoska M (1983), Research communication: The military related external debt of Third World countries, *Journal of Peace Research* 20(3), pp 271–277.

Chan S (1986), Military expenditures and economic performance, in US ACDA, *World Military Expenditures and Arms Transfers* USADCA/US Government Printing Office, Washington, DC, p 30.

Chan, S. (1992), Military Burden, Economic Growth and Income Inequality: The Taiwan Exception, In Steve Chan and Alex (Eds). *Defence, Welfare and Growth,* New York, Routledge.*Change,* 26 (2), 271-287.

Chowdhury, A. R. (1981), A Causal Analysis of Defense Spending and Economic Growth, *The Journal of Conflict Resolution*, 35(1), 80-97.

Dakurah, A. H., Davies, S. P. and Sampath, R. K. (2000), Defense Spending and Economic Growth in Developing Countries: A Causality Analysis, *Journal of Policy Modeling*, 23, 651-658.

Deger, S. (1986), Economic Development and Defense Expenditures.*Economic Development and Cultural Change,* 35 (1), 179-196.

Deger, S. and Smith, R. P. (1983), Military Expenditures and Growth in Less Developed Countries. *Journal of Conflict Resolution,* 27 (2), pp. 335-353.

Dickey, D. A. and Fuller, W. A. (1979), Distributions of the Estimators for Autoregressive Timeseries with a Unit Root. *Journal of the American Statistical Association,* 74 (3), 427-431.

Dickey, D. A. and Fuller, W. A. (1981), Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica,* 49 (4), 1057-1072.

Dowdle A. (1992), A cross-national model of military spending in African nations, *Journal of Political and Military Sociology* 20(1), pp 153–169.

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

Dunne J.P (1996), Economic effects of military expenditure in developing countries: A survey, in N P Gleditsch, O Bjerkholt, Å Cappelen, R P Smith & P Dunne (eds), *The peace dividend*, Elsevier, Amsterdam, pp 439–464.

Dunne J.P, Perlo-Freeman S &Soydan A (2004), Military expenditure and debt in South America, *Defence and Peace Economics* 15(2), pp 1–20.

Dunne J.P.&Vougas D. (1999), Military spending and economic growth in South Africa: A causal analysis, *Journal of Conflict Resolution* 43(4), pp 521–537.

Dunne JP (1996), Economic effects of military expenditure in developing countries: A survey, in N P Gleditsch, O Bjerkholt, Å Cappelen, R P Smith & P Dunne (eds), *The peace dividend*, Elsevier, Amsterdam, pp 439–464.

Enders, J. (2004), Applied Econometric Time Series, 2nd edition (New York: John Wiley and Sons).

Engle, R. F. and Granger, C. W. J. (1987), Co-integration and Error Correction: Representation, Estimation and Testing. *Econometrica,* 55 (2), 251-276.

Faini, R., Annez, P. and Taylor, L. (1984), Defence Spending, Economic Growth, and Growth Evidence Among Countries Over Time. *Economic Development and Cultural Change,* 32 (3), 487-498.

Feder, G. (1982), On Exports and Economic Growth.*Journal of Development Economics,* 12 (1/2), 59-73.

Frederiksen, P. C. and LaCivita, C. J. (1987), Defense Spending and Economic Growth: Time Series Evidence on Causality for the Philippines, 1956-82, *Journal of Philippine Development*, 14(2), 354-360.

Frederiksen, P. C. and McNab, R. (2001), The Relationship Between Defence Spending and Economic Growth: A Granger Causality Analysis for Malaysia, 1961 to 1999, *STRATEGI: Journal of Strategic Studies on International Relations*, 9, 63-71.

Frederiksen, P.C. (1991), Economic Growth and Defense Spending: Evidence on Causality for Selected Asian Countries, *Journal of Philippine Development*, 18(1), 131-147.

Gleditsch N.P, De Soysa I, Lindgren G, Smith S, &MouhlebN(eds) (1990), *Making peace pay*, pp 25–45, 57, 65–67, 89–108, 114, 117–118, 125–126.

Gonzalo, J. (1994), Five Alternative Methods of Estimating Long-run Equilibrium Relationships. *Journal of Econometrics,* 60 (1/2), 203–233.

Gunluk-Senesen, G. (2002), Budgetary Trade-offs of Security Expenditures in Turkey. Defence and Peace Economics, 13 (4), 385-403.

Gyimah-Brempong K (1989), Defense spending and economic growth in subsaharan Africa: An econometric investigation, *Journal of Peace Research* 26(1), p 88.

Gyimah-Brempong K. (1992), Do African governments favor defense in budgeting? *Journal of Peace Research* 29(2), pp 191–206.

Hassan, M. K., Waheeduzzaman, M. and Rahman, A. (2003), Defense Expenditure and Economic Growth in the SAARC Countries, *The Journal of Political, Social* and *Economic Studies*, 28(3), 275-293.

HeoU(1999) *The political economy of defense spending around the world*, Edwin Mellen, Lewiston, New York

Huang, C. and Mintz, A., (1991), Defence Expenditures and Economic Growth: The Externality Effect. *Defence Economics,* 3 (2), 35-40.

Johansen, S. (1988), Statistical and Hypothesis Testing of Co-integration Vectors.*Journal of Economic Dynamics and Control,* 12 (2), 231-254.

Johansen, S. (1991), Estimation and Hypothesis Testing of Cointegrating Vectors in Gaussian Vector Autoregressive Models.*Econometrica,* 59 (6), 1551–1580. Defense Spending and Economic Growth in Turkey 199.

Johansen, S. and Juselius, K. (1992, Testing Structural Hypotheses in a Multivariate Cointegration Analysis at the Purchasing Power Parity and the Uncovered Interest Parity for the UK.*Journal of Econometrics,* 53 (2), 211–244.

Kalyoncu, H. and Yucel, F. (2006).An analyticalapproach on defense expenditure and economic growth: the case of Turkey and Greece, *Journal of Economic Studies*, 33(5), 336-343.

Kollias, C., Manolas, G. and Paleologou, S. Z. (2004b), Defence Expenditure and Economic Growth in the European Union: A Causality Analysis, *Journal of Policy Modeling*, 26, 553-569

Kollias, C., Naxakis, C. and Zarangas, L. (2004a), Defence Spending and Growth in Cyprus: A Causal Analysis, *Defence and Peace Economics*, 15(3), 299-307.

Lebovic JH (1999), Using military spending data: The complexity of simple inference, *Journal of Peace Research* 36(6), pp 681–697.

Looney R.E &Fredericksen (1986) PC, Defense expenditures, external public debt and growth in developing countries, *Journal of Peace Research* 23(4), pp 329–338.

Looney R.E (1987), Impact of military expenditures on Third World debt, *Canadian Journal of Development Studies* (8)1, pp 7–26

Looney R.E (1988), Military expenditures and socio-economic development in Africa: A summary of recent empirical research, *Journal of Modern African Studies* 26(2), pp 319–325.

Looney R.E (1988), *Third-World military expenditure and arms production*, St Martin's, New York, pp 21–49

Looney R.E (1990), The role of military expenditures in the African economic crisis, *Jerusalem Journal of International Relations* 12(1), pp 76-101 (also reprinted as Chapter VII in Looney, *The economics of Third World defense expenditures*, pp 111–133.

Looney R.E (1995), *The economics of Third World defense expenditures*, JAI Press, Greenwich, Conn and London, , p 218.

Mbaku J.M (1993), Political democracy, military expenditures and economic growth in Africa, *Scandinavian Journal of Development Alternatives* 12(1), pp 49–64.

McGonagle JJ, Vella CM (2002) Bottom line competitive intelligence. Quorum Books, Westport

McKinlay R.D (1989), *Third World military expenditure: Determinants and implications*, Pinter, London & New York, 1989.

McMillan M. (1992), Economic growth and military spending in South Africa, *International Interactions* 18(1), pp 35–50.

Milman C (1989), Military expenditures and foreign debt: A case study of the Southern Cone countries, 1971–1983, *Journal of Third World Studies* 6, Spring, pp 147–155.

Ministry of Finance of Turkey of General Directorate of Budget and Fiscal Control (1992), Defense and National Security (1924-1993) (Ankara: Ankara University Press).

Mohammed N.A.L (1993), Defense spending and economic growth in subsaharan Africa: Comment on Gyimah-Brempong, *Journal of Peace Research* 30(1), pp 95–99, which includes a reply by Gyimah-Brempong and a rejoinder by Mohammed.

Mohammed N.A.L (1993), Determinants of military expenditures in sub-Saharan Africa, *Ethiopian Journal of Economics* 2(2), pp 87–126.

Nabe O. (1983), Military expenditure and industrialization in Africa, *Journal of Economic Issues* 17(2), pp 575–587.

Olaniyi O.(2002), Military spending and economic development in sub-Saharan Africa: A supply-side analysis, in J Brauer& J P Dunne (eds), *Arming the South*, Palgrave, Basingstoke and New York, pp 275–289.

Oyinlola O. (1993), Nigeria's national defence spending and economic development: An impact analysis, *Scandinavian Journal of Development Alternatives* 12(2–3), p 250.

Ozsoy, O. (2000), TheDefence Growth Relation: Evidence from Turkey. In: The Economics of Regional Security: NATO, the Mediterranean, Southern Africa, edited by JurgenBrauer and Keith Hartley (Amsterdam: Harwood Academic Publishers), pp. 139-159.

Pesaran, M. H. and Pesaran, B. (1997), Microfit 4.0 Interactive Econometric Analysis (Oxford: Oxford University Press).

Phillips, P. C. B. and Perron, P. (1988), Testing for a Unit Root in Time Series Regression. Biometrika, 75 (2), 335-346.

Ram R. (1995), Defense expenditure and economic growth, in K Hartley & T Sandler (eds), *Handbook of defense economics*, Elsevier Science, Amsterdam & New York, p 266.

Ram, R. (1986), Government Size and Economic Growth: A New Framework and Some Evidence From Cross-section and Time-series Data. *American Economic Review,* 76 (1), 191-203.

Rasler, K. and Thompson, W. R. (1998), Defense Burdens, Capital Formation, and Economic Growth.*Journal of Conflict Resolution,* 32(1).

Roux A. (1996), Defence expenditure and economic growth in South Africa, *Journal of Studies in Economics and Econometrics* 20(1), pp 19–34.

Sandler, T. and Hartley, K. (1995), Defence Economics (Oxford: Oxford University Press).

Sezgin, S. (1997), Country Survey X: Defence Spending in Turkey. *Defence and Peace Economics,* 8, 381-409.

Sezgin, S. (1999), Defence Expenditure and Economic Growth in Turkey and Greece: A Disaggregated Analysis. PaperPresentedat the 'Arms Trade, Security, and Conflict' Conference, Middlesex University Business School, London, June 11-12.

Sezgin, S. (2000), A Causal Analysis of Turkish Defence Growth Relationships: 1924-1996. *Ankara University Journal of Political Sciences*, 55, 113-124.

Sezgin, S. (2001), An Empirical Analysis of Turkey's Defence-growth Relationships with a Multiequation Model (1956-1994).*Defence and Peace Economics,* 12 (1), 69-81.

Smith R.P (2000), Defence expenditure and economic growth, in N P Gleditsch, G Lindgren, N Mouhleb& S Smit (eds), *Making peace pay*, Regina Books, Claremont, California, p 15.

Smith, R. (1980), Military Expenditure and Investment in OECD Countries, 1954-1973. *Journal of Comparative Economics*, 4 (1), 19–32.

Stewart D (1991), Economic growth and the defense burden in Africa and Latin America: Simulations from a dynamic model, *Economic Development and Cultural Change* 40(1), pp 189–207.

Taylor, J. B. (2000), Teaching Modern Macroeconomics at the Principles Level. *American Economic Review*, 90 (2), 90-94.

US Arms Control and Disarmament Agency (ACDA) (1991), *World Military Expenditures and Arms Transfers 1990*, US ACDA/US Government Printing Office, Washington, DC, November, p 2.

US Department of State (2002), *World Military Expenditures and Arms Transfers 1999–2000*, Washington, DC, pp 2–3.

Ward, M. D., Davis, D., Penubarti, M., Rajmaira, S. and Cochrane, M. (1991), Military Spending in India–Country Survey I. *Defence Economics,* 3 (1), 41-63.

Yildirim, J. and Sezgin, S. (2002), A System Estimation of the Defense-Growth Relation in Turkey. In: Arming the South: The Economics of Military Expenditure, Arms Production and arms Trade in Developing Countries, edited by JurgenBrauer, J. Paul Dunne (London: Palgrave Publishing), pp. 319-325.