

# Military Spending and Economic growth in Sub Saharan Africa

J Paul Dunne,  
UWE Bristol and SALDRU

## Introduction

- Military spending influence beyond the resources it takes up
- While most countries need some level of security to deal with internal and external threats, there are opportunity costs as the money could be used being used for other purposes that might improve the pace of development.
- With the end of the cold war there were considerable reductions in military expenditure, but in more recent years the declining trend has bottomed out
- While there have been conflicts the major pressure to increase military spending have not been the result of obvious strategic needs, but of internal pressures by vested interests.
- Economic effects still used as reason why cant cut military spending and procurement

## Theoretical considerations

- Applied work this is usually restricted to economic growth rather than development because of the problems of defining and measuring development. Necessary but not sufficient
- A theoretical model is important for any empirical study but much of economic theory does not have an explicit role for military spending as a distinctive economic activity.
- The dominant neoclassical approach
- The Keynesian and Institutional approach
- The Marxist approach

## Empirical analysis

- In empirical work the fact that there is no agreed theory of growth among economists means that there is no standard framework that military spending can be fitted into.
- Clearly, in developing countries military spending, economic capacity (education, governance, institutions, natural resources) all interact to influence growth.
- theoretical work has allowed the identification of a number of channels, the relative importance and sign of these effects and the overall impact on growth can only be ascertained by empirical analysis.

## Previous surveys

- Chan (1986), who found a lack of consistency in the results,
- Ram (1995) who reviewed 29 studies, concluding little evidence of a positive effect of defence outlays on growth, but that it was also difficult to say the evidence supported a negative effect.
- Dunne (1996) covering 54 studies concluded that military spending had at best no effect on growth and was likely to have a negative effect, certainly that there was no evidence of positive effects and
- Smith (2000) suggesting the large literature did not indicate any robust empirical regularity, positive or negative, though he thinks there is a small negative effect in the long run, but one that requires considerably more sophistication to find
- Smaldone (2006) heterogeneous, that variations can be explained by intervening variables. Negative effects tend to be wider and deeper in Africa and most severe in countries experiencing legitimacy/security crisis and economic/budgetary constraints.

## Previous studies

Type	Total No.	%Positive	%Negative	%Unclear
Cross country	63	19	38	43
Case studies	40	20	35	45
Total	103	20	37	43

- Dunne and Uye (2009) survey of 103 studies on the effects of military spending on economic growth, where case studies refers to single or small groups of countries and the unclear category, implies mixed or insignificant results
- Would personally discount some of the positive findings
- Overall, while there is no consensus on the economic effects of military spending the most common finding is that military burden has either no significant effect, or a negative effect on economic growth for developing countries.

## Modelling

- Commonly used Feder Ram model criticised in Dunne et al (2005)
- Develop a model based on augmented Solow growth model with Harrod-neutral technical progress.
- Key assumption is that the military spending share  $m = M/Y$  affects factor productivity via *level* effect on efficiency parameter which controls labour-augmenting technical change.

## Estimating

$$\ln y_{i,t} = \gamma \ln y_{i,t-1} + \sum_{j=1}^5 \beta_j \ln x_{j,i,t} + \eta_t + \mu_i + \nu$$

where:

$y = yp$  = GDP per capita

$x_1 = iy$  = gross investment/GDP,

$x_2 = my$  = military expenditure/GDP,

$x_4 = ngd = n+g+d$  = labour force growth rate + 0.05,

- Excluding  $x_5$  = human capital investment/GDP because of data limitation
- Estimating a reparameterised general first order dynamic model gave the results in Table 1,

## Estimating

- Using panel data with dynamic models
- The data available in this study is not long enough to use large-N large-T methods, so we use a Fixed-Effects Model, but introduce dynamics.
- While there is downwards lagged dependent variable bias the bias is likely to be small and when computing the long run coefficients the biases are likely to offset each other.

## Results

**Table 1.** Regression Results for Fixed Effects Model

Variable	All countries n=126	Developing n=96	SSA n=35
Constant	0.370 (5.1)	0.434 (5.1)	0.492 (3.7)
$\Delta iy$	0.092 (11.2)	0.087 (9.1)	-0.034 (2.8)
$\Delta my$	-0.032 (5.8)	-0.030 (4.7)	-0.026 (3.1)
ngd	-0.416 (4.2)	-0.046 (4.0)	-0.066 (4.4)
lyp1	-0.526 (6.3)	-0.690 (6.2)	-0.100 (5.0)
liy1	-0.333 (6.2)	0.034 (5.5)	0.014 (1.6)
lmy1	-0.015 (3.5)	-0.015 (3.1)	-0.016 (3.7)
N	1784	1308	468
Rsq within	0.112	0.114	0.126
Rsq between	0.004	0.035	0.031

Notes: absolute t ratios in parentheses

## Results

- Estimating the model for all available countries provides a relatively well defined empirical model with signs as expected and a clear negative effect of the change in military burden and the lagged level.
- Considering only non-developed countries reduces the sample but gives surprisingly little change in the coefficient estimates.
- Focusing upon the SSA countries alone does see some changes, with the lagged investment share becoming insignificant, but the model retains similar characteristics in terms of coefficient signs and magnitudes.

## Results

- Long run coefficients
- All countries:  $lyp = 6.98 + 0.63 liy - 0.29 lmy$
- Non-developed:  $lyp = 6.29 + 0.49 liy - 0.23 lmy$
- SSA:  $lyp = 4.92 + 0.14 liy - 0.16 lmy$

## Results considering conflict

Table 2. Regression Results for Fixed Effects Model: SSA

Variable	Total n=35	No Conflict n=27	Conflict n=8
Constant	0.492 (3.7)	0.504 (3.2)	0.788 (2.7)
Δly	-0.034 (2.8)	0.040 (3.0)	0.029 (0.9)
Δlmy	-0.026 (3.1)	-0.022 (2.4)	-0.019 (0.9)
lngd	-0.066 (4.4)	-0.059 (2.1)	-0.071 (3.5)
lyp1	-0.100 (5.0)	-0.102 (4.6)	-0.142 (3.1)
liy1	0.014 (1.6)	0.002 (0.2)	0.064 (2.6)
lmy1	-0.016 (3.7)	-0.004 (0.6)	-0.029 (2.3)
N	468	351	117
Rsq within	0.126	0.11	0.23
Rsq between	0.031	0.20	0.181

- This consistency is striking and shows a significant negative impact of military spending, both in the short run model and the long run.
- The coefficient on the log of military burden is smaller for SSA, suggesting a smaller negative impact.
- 
- One concern with SSA sample is that the results may be affected by the high proportion of countries that have experienced major conflict.
- Using the Smaldone (2003) categorisation gave the results in Table 2.
- 

SSA:  $lyp = 4.92 + 0.14 liy - 0.16 lmy$   
 SSA no conflict:  $lyp = 4.94 + 0.02 liy - 0.04 lmy$   
 SSA conflict:  $lyp = 5.55 + 0.45 liy - 0.20 lmy$

- These results are surprising :
- the no conflict sample shows marked differences, but only in the levels coefficients, with the log of investment share in GDP (liy) and the log of military burden (lmy) insignificant,
- while for the sample of countries in conflict it is the changes in these variables that are insignificant.
- This suggests that there is only a short run adjustment process for the no conflict subsample and only a long run relationship for the conflict one. This is an intriguing result.

## Conclusions

- Military spending is an expenditure by governments that has influence beyond the resources it takes up, especially when it leads to or facilitates conflicts.
- No theoretical consensus on effects so empirical question
- The empirical analyses suggest little or no evidence for a positive effect on economic growth and that it is more likely to have a negative effect, or at best no significant impact at all.
- This paper has provided an analysis of military spending and economic growth 1988-2006 with a focus on SAA, and is one of the few that deal with the post Cold War period.

## Conclusions

- Using a dynamic first order model and fixed effects panel data estimation method, gave very interesting results.
  - Firstly for SAA and across other samples of countries there is an unequivocal negative impact of military burden on growth in –surprisingly consistent.
  - When the SSA sample was split into those involved in major conflict and those not, the results were intriguing.
    - suggest a significant short run effect of military spending on growth for countries in conflict, but this is not evident in the long run,
    - while the opposite seems to hold for the countries involved in conflict.

## Conclusions

- This might suggest that countries in conflict develop a war economy, that follows a different logic to the 'peace' economy, being dependent for it's continuation on the social and market relations created by conflict,
- But this does not mean it is a sensible way to organise the economy and there is a real long run economic cost to ending up in conflict.
- This is an interesting finding, but further investigation is required to confirm it.
- NB there is not necessarily an automatic improvement in development as a result of millex reductions, it something that requires good governance, management and support
- [www.carecon.org.uk](http://www.carecon.org.uk)
- [www.epsjournal.org.uk](http://www.epsjournal.org.uk)