

# The Economic Effects of Military Expenditure in Developing Countries

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## **Abstract:**

This chapter provides a survey of the issues and empirical studies involved in the debate over the economic effects of military spending in developing countries. Firstly, it briefly summarises the main theoretical approaches and methodologies used. It then considers the channels through which military spending can effect growth, the question of whether or not it is positive is seen to be an empirical one. The survey of the empirical analyses, mainly within the Keynesian framework suggest that military expenditure has at best no effect on growth but is likely to have a negative impact, certainly there is no evidence of a positive effect. This suggests that disarmament does indeed provide an opportunity for improved economic performance. There are still problems, however, in moving to lower levels of military spending and policies of conversion are required at a national and international level, including assistance from the developed world.

## 1. Introduction

With the end of the Cold War the changed strategic environment has presented an opportunity to reduce global military spending. In the developed world the end of the superpower arms race has, indeed, led to marked cuts in military spending, while in the third world the removal of superpower involvement in regional conflicts has reduced tensions, military and military-related aid, and the scale of conflicts. Although this has led to some reductions in military spending in the developing countries the situation is complex. There are still some countries increasing their expenditures, mainly in response to local insecurities and local arms races, but also encouraged by the push for arms exports by the developed countries. It is also important to recognise that the cuts in military spending that have taken place do not necessarily imply a reduction in militarisation. Weapons have become cheaper in the increasingly competitive world market and the world remains a very dangerous place with many regional and civil conflicts. Nevertheless, there is the potential for marked reductions in military spending by some of the poorest countries in the world and there is evidence that a number of countries are taking the opportunity presented to them.

Given that reductions in military expenditure release resources that can be used for other purposes, the possibility exists of tackling some of the major threats to human survival. Attention can be directed towards the problems of poverty and economic security, environmental degradation and environmental security. UNDP estimate that in developing countries the chances of dying from social neglect (malnutrition, preventable disease) are 33 times greater than from a war started by external aggression. Some of the world's poorest countries use their scarce foreign exchange resource to purchase weapons and spend more on their military than on the people's education and health. Indeed in 1992, world military spending equalled the income of almost half the world's population (UNDP, 1994). The cost of military security in terms of resources foregone from economic and social development is huge and this sacrifice has not necessarily been justified in terms of national security. The question is whether the resources made available will be used for these purposes.

Certainly, the belief that reducing military spending will lead to a "peace dividend", as the economic benefit of reallocating military expenditures to other uses has been termed is not accepted by all. Some people have argued that cuts in military expenditure are more likely to result in a "peace penalty", because of the costs of adjustment. The experience of the developed economies is rather salutary, as they have generally failed to benefit economically from cuts in their military expenditures. While this is mainly the result of failing to reallocate the savings made to other forms of expenditure as part of a policy of conversion, rather than the lack of a peace dividend per se, it does suggest that care must be taken to develop policies to aid structural adjustment (Dunne and Willett, 1992, Hartley, 1993).

In the case of the developing world the circumstances differ but the issues are similar. In order to develop policies of disarmament, it is important to consider the role military spending plays in the economy and the likely economic effects of changes in such spending. It is only after such information is available that policies to help developing countries adjust can be developed, both at a national and an international level. This paper contributes to this understanding by providing a survey of the studies of economic effects of military expenditure and the economics

of disarmament and conversion for developing countries. Section 2 presents some information on the trends in military spending in developing countries and the potential for a "peace dividend". A discussion of the method and theoretical approaches used in analysing the economics of military spending in developing countries is presented in Section 3. Section 4 then provides a review of the empirical literature on the determinants of military spending in developing countries, followed by a review of the applied literature on the economic effects of military spending on developing countries in Section 5. A survey of the issues involved in the process of disarmament in developing countries is then undertaken in Section 6, allowing a discussion of the requirements of policies for disarmament and conversion. Finally, section 7 draws some conclusions.

## **2. World Military Expenditure Trends**

In considering the trends in military expenditure it is important to treat the published data with care, especially when looking at developing countries. There are numerous problems with the data: definitions, coverage, accuracy etc which make it particularly difficult to use figures for comparison across country, or to aggregate to larger groups. There is also growing evidence that important amounts of security expenditure do not enter the accounts or budgets of developing countries. This can be simply because of the different conventions or attempts to "massage" the figures using mechanisms such as double -bookkeeping, extra budgetary accounts, highly aggregated budget categories, military assistance, and foreign exchange manipulation (Ball, 1984). Scheetz (1991) illustrates the degree to which the official figures may differ from those of interest to the researcher. In a detailed analysis of defence expenditure in Latin America, he constructed series for military spending directly from the government accounting agencies in charge of public sector budget outlays, so capturing some of what had been excluded from the defence budget figures. He also made attempts to find secret (off budget) accounts used to acquire arms, for example in Chile. The result is figures which are considerably larger than those published by international organisations, but which Scheetz still considered to be conservative estimates. Such problems are also reflected in the fact that different data sources, SIPRI, ACDA, IISS, IMF and World Bank, can give markedly different numbers. The most extreme case was Argentina in 1982 where the IISS military expenditure figure and that published by the IMF differed by 1034%.

Such differences are particularly important for cross section analyses of countries, but not so much for time series data. If looking over time, the concern is with the changes rather than the absolute or relative values of variables and as long as the definitions do not change significantly and systematically one can be relatively confident of the analysis. Also, in most cases researchers are left with only the published sources to use and these are at least the products of attempts to achieve consistency. Even if data are comparable, the use of the exchange rate to put them into a common currency is not without its problems, as it will not reflect the different relative prices of the categories of military expenditure and the different compositions across countries. Heston and Atena (1983) provide data for a cross section of countries which have been adjusted to take account of these problems, but in most cases researchers focus upon standardised data such as the share of military expenditure in GDP or GNP. Developing countries may also differ in the way in which they treat or define military related aid, the fungibility of aid, and the way in which arms sales are financed (Brzoska, 1994, Deger and Sen, 1991).

Bearing these data problems in mind the most striking features of the world military expenditure trends is the domination of the superpower arms race, with NATO and WTO accounting for 78% of world expenditure in 1981 and superpower involvement in local conflicts leading to higher expenditure in other countries. Between 1960 and 1987 military expenditures by developing countries grew three times as fast as those of the industrial countries, with very little concern shown internationally. Superpower military and military related aid and their direct involvement in conflicts, the search for export markets by the major arms producers and a number of regional conflicts and instabilities fuelled this growth. Porter (1989) suggested that there were four "stylised facts" of the contemporary development process up to 1980:

1. Military Expenditure had risen as a fraction of GDP.
2. Capital cost component was rising relative to operational component.
3. The proportion of the developing countries' population in the armed forces was rising.
4. Military wages were rising relative to civilian.

Unfortunately for him, when these stylised facts were published things were already changing. As Figure 1 shows the military burden for the developing countries peaked in the mid seventies, then declined and rose again peaking in 1982-3. It then declined to 1989, before rising briefly 1989-90 and then continuing the downward trend. Figure 2 shows world military expenditure to have peaked in constant prices in 1987 and then to have declined continuously. The pattern for the developing country differs with the peak occurring in 1982 and with the brief increase in the early 1990s. The overall picture for developing countries does hide some regional differences. Figure 3 shows that real military expenditure has continued on an increasing trend in South Asia, while declining in Africa and South America. The high growth rates of the South Asian economies has meant, however, that their military burden has not increased as shown in Figure 4. In the Middle East real military expenditure peaked in 1982-3, fell to 1989 and then rose again briefly as shown in figure 5. The rise in military expenditure, both in constant prices and as a share of GNP, in the developing world in the early 1990s was in fact is almost entirely the result of this increases in the Middle East. Table A1 provides the source data for the Figures.

In the recent UNDP Report an estimate was made of the savings from the cuts in military expenditure that have been made and are likely to be made. This allows the computation of a cumulative peace dividend as presented in Table 1. They estimate that the cumulative "peace dividend" to 1987-94 has been 933 billion dollars of which only 126 billion has been in the developing countries (although weighting by their share of world military spending makes similar to the developed economies). Clearly the earlier cuts are also the easiest but there is still considerable potential for further cuts. Assuming an annual reduction of 3%, they estimate a further saving of 459 billion by 2000 with 73 billion in the developing countries.

While there may be considerable potential for cuts in military expenditure in developing countries, the questions we now have to ask are what are the likely effects of such cuts and if they are positive, what are the preconditions required to make the most of the opportunity presented, both for the individual countries and for the international community? In general the answers to such questions will be contingent on the theoretical understanding of the process of economic growth and it is to these issue we now turn.

### 3. Methodology and Theoretical Approaches

A major problem that arises in surveying the results of studies of the economic effects of military spending in developing countries is the variety of such studies. They vary in the questions asked, the methods used, the sample of countries, the time period and in their theoretical underpinnings. As a result, in developing the empirical work there are so many auxiliary assumptions that have to be made that tests of particular hypotheses can become tests of the assumptions made and so comparisons of the studies can be at best difficult and at worst meaningless. Given such problems it is useful to consider some of the methodological and theoretical issues involved as prior to a review of the studies.

While the main concern of the research we are interested in has been to investigate the relation between military spending and development, in applied work this is usually restricted to economic growth rather than development because of the problems of defining and measuring development. The former is, of course, only a necessary condition for the latter and the starting point for any such analysis should really be some theoretical understanding of the links between the two (Brauer (1993) , Graham et al (1986)). Similarly, it is important to recognise that military spending is only one aspect of militarism in a society and is only a measure of inputs rather than output (Smith, 1983).

To interpret the results of any empirical study it is necessary to have a theory, even though this may not of itself be verifiable. For research on the economic effects of military spending this is complicated by the fact that much of economic theory does not have an explicit role for military spending as a distinctive economic activity. However, this has not prevented the development of theoretical analyses, with three basic theoretical positions being adopted in the literature on both developed and developing countries:

Neoclassical: This approach sees the state as a rational actor which balances the opportunity costs and security benefits of military spending in order to maximise a well defined national interest reflected in a societal social welfare function. Military expenditure can be treated as the pure public good and the economic effects on military expenditure will be determined by its opportunity cost, the trade off between it and other spending. Game theoretic models representing in a limited way interstate behaviour have also become fashionable. This general approach does have the advantage of allowing the development of consistent formal models for the empirical analysis. However, it can be criticised for being ahistoric, always able to justify observed actions, concentrating on the supply side, ignoring the internal role of the military and military interests, implying a national consensus and requiring extreme knowledge and unrealistic computational abilities of the rational actors. All of which are particularly relevant in the context of developing economies developing countries. The most influential neoclassical model is Biswas and Ram (1986), developed from Feder (1982).

There have been some developments within this approach, with the new classicals using military expenditure as an important shock to the system, which can have dynamic real effects on output. In addition, there have been attempts to introduce military spending into endogenous growth models (Berthelemy et al, 1994).

Keynesian: This approach sees a proactive state which uses military spending as one aspect of

state spending to increase output through multiplier effects in the presence of ineffective aggregate demand. In this way increased military spending can lead to increased capacity utilisation, increased profits and hence increased investment and growth (eg Stewart (1991) and Faini et al. (1984)). It has been criticised for its failure to consider supply side issues, leading many researchers to include explicit production functions in their Keynesian models (eg Deger and Smith, 1983).

**Institutionalist:** Usually this radical liberal approach (Smith, 1977) is combined with a Keynesian perspective but focuses on the way in which high military spending can lead to industrial inefficiencies and to the development of a powerful interest group composed of individuals, firms and organisations who benefit from defence spending, usually referred to as the military industrial complex (MIC). The MIC increases military expenditure through internal pressure within the state even when there is no threat to justify such expenditures (See Fine, 1993 for a critical review).

**Marxist:** This approach sees the role of military spending in capitalist development as important though contradictory. There are a number of strands to the approach which differ in their treatment of crisis, the extent to which they see military expenditure as necessary to capitalist development, and the role of the MIC in class struggle. One offshoot of this approach has provided the only theory in which military spending is both important in itself and an integral component of the theoretical analysis, the underconsumptionist approach. Developed from Baran and Sweezy (1966) this sees military expenditure as important in overcoming realisation crises, allowing the absorption of surplus without increasing wages and so maintaining profits. No other form of government spending can fulfil this role. While this approach has been extremely influential in the general economic development literature, empirical work within this approach has tended to be limited to developed economies, eg Smith (1977) and Szymanski (1973).

Once we move beyond a broad stroke theoretical understanding towards an empirical analysis it becomes necessary to be more specific about the questions to be addressed and the way in which they are to be analysed. There are choices to be made many of which will be conditioned on the theoretical perspective adopted and the data availability.

\*Determining the level of abstraction at which the empirical analysis should operate:

\*Operationalising the theory: identifying the concrete concepts to be used in the empirical analysis guided by the theory.

\*Deciding the type of empirical analysis: qualitative, quantitative, historical, institutional or some combination of these.

\*Choosing the time period: long run or short run analysis, time period of available data.

\*Selecting the sample: which countries to be chosen

\*Choosing the empirical method: regression, correlation, discriminant, factor analysis have all been used.

There has been some confusion within the literature as a result of not recognising these differences. For example, there have been criticisms of general studies comprising large numbers of countries, arguing that the variety of countries suggests case studies are more relevant (eg Kaldor, 1991). While case studies are extremely valuable they are providing different information to general studies and are answering different questions. It is surely a

different question to ask if there exists a general relation across all developing countries, than to identify one across groups of countries or individual countries. Also, to ask what the fundamental dynamics of military spending are is different to asking if a sample of countries, or individual countries exhibit a particular correlation over a particular period. Indeed, it is possible that military spending may have a different effect at different times, providing a boost to industrialisation but in the end providing a drag on further development (Smith, 1977).

It is important to emphasise that the empirical results of studies are likely to be very sensitive to the measurement and definition of the variables, to the specification of the estimated equations (especially the other variables included), the type of data used and the estimation method. In addition, the theoretical positions discussed above have generally been developed in the analysis of developed countries and applied to developing countries with some discussion of the nature of developing countries and some adjustments to the empirical model when operationalised. This has been criticised for failing to relate to the specific literature on developing countries. A recent contribution by Park (1993) makes just this point in a study of South Korea. Arguing that the literature has failed to consider the competing hypothesis of dependency theory and foreign direct investment, the role of the developmental state and the world system perspective. While a bit unfair on some studies, eg Smith and Smith (1980) have considerable discussion of development issues, his point is valid. The variety of studies that have resulted from such factors make comparisons very difficult and explain some of the seemingly contradictory findings.

Before moving on to consider the empirical analysis it is useful to summarise the particular channels through which military expenditure is expected to influence economic growth. Smith and Smith (1980) categorise these as:

- Resource allocation and mobilisation: military expenditure can have a direct opportunity cost in diverting resources from investment and other welfare expenditures. It is also possible that a strong state can use military expenditure to improve infrastructure, mobilise resources and create demand.
- Organisation of production: A large military sector can have a modernising effect, through linkages with military industry and training. On the other hand, it can introduce high tech sector divorced from the economy and its needs.
- Socio-political structure: The military can be used to provide a strong state, to control opposition, break worker resistance and modernise. On the other hand a military government can be an economic disaster.
- External relations: Military expenditure can provide security, provide respect internationally, and allow development. On the other hand it can lead to dependency on aid and might increase the likelihood of conflict.

Increasingly it is being recognised that economic security and indeed environmental security may be as important as military security (Gleditsch, 1992). This reduces the apparent value of military capability and also suggests that the concept of development needs to be widened to include environmental issues.

Whether or not the overall impact of military spending on development is positive or negative depends upon the relative magnitudes and signs of these channels and in the absence of any theoretical consensus, this can only be determined empirically. In addition, when moving on to

consider the economic effects of reductions in military spending (rather than the impact of military spending per se) the theoretical discussion can only guide our understanding, we also need some form of empirical analysis to evaluate the effects and to determine the necessary policy mix for successful disarmament.

In considering the empirical analysis of the effects of military expenditure, it is not possible to ignore the interdependence between the demand and supply side. The determinants of military expenditure in a country or group of countries can shape the nature of that expenditure and hence its economic impact. Indeed, in the simultaneous model approaches which try to deal with the indirect effects of military expenditure, one has to include an equation for the determination of military expenditure. The next section deals with the existing literature on the determinants of military expenditure in developing countries, with section 5 dealing with the economic effects.

#### **4. Determinants of Military Expenditure**

There are two broad groups of empirical studies in the literature on the determinants of military spending. First, the arms race models developed from Richardson's (1960) seminal work, which presented arms increase in an action-reaction framework. These models have been developed in a number of ways but there are still many problems with them, both in general and in the specific application to developing countries. They are clearly more suited to analyse situations in which countries are in conflict, such as India-Pakistan (Deger and Sen, 1990) and are therefore of limited applicability. But more importantly they have failed to perform well empirically (Mohammed, 1992; Deger, 1986; Smith 1989).

Second, there are those studies which focus upon the economic, political and military determinants of military spending. These vary across disciplines, with international relations, political science, sociology, and economics all contributing studies within the focus of their disciplines. The most satisfactory empirical analyses have tended to take a comprehensive approach, combining all of the plausible economic, political and military influences and operationalising as many of them as possible.

In many studies the unit of analysis varies from attempts to include all countries to case studies of individual countries (Hartley and Sandler, 1990). In addition, various techniques are used to analyse the data, including correlation analysis, factor and discriminant analysis, and econometric analysis.

Econometric analysis of the determinants of military spending requires some theoretical framework to allow a specification of causality, functional form, relevant variables and the testing of implied restrictions. A formal model also allows hypotheses can be well defined and tested, assumptions become explicit, and the number of parameters needed can be reduced through tests of restrictions. This approach is most consistently applied within a neoclassical framework using a model of the state as a rational actor maximising social welfare subject to a resource constraints. The social welfare function can be determined by the state, based on individual preferences, or based on some voting rule such as the median voter. Military expenditure is then determined by balancing its opportunity cost and the security benefits it



provides. Smith (1980) and Hewitt's (1991) public choice study are examples of this approach. Gonzalez and Mehay (1990) use a formal theory of bureaucracy.

There are also case studies which are less formal in approach but which nevertheless make important contributions. At their best they can bring together a considerable amount of historical and institutional information to complement regression analysis and can be aware of the limitations of their estimates (eg Dommen and Maizels, 1988).

No matter how formal the approach, in analyzing developing countries the specific nature of these countries have to be taken into account. Indeed, such factors lead to serious questions being raised about the computational ability and rationality of actors assumed in formal neoclassical models (eg Park, 1994). In many countries military expenditure is often independent of economic conditions and generated mainly by the internal logic of the state. The overall economic environment may provide a constraint on military burdens over time, but the importance of the strategic factors, security and threat perceptions, both internal and external, has to be recognised. In estimating demand functions the income variables need to be specified and these political and strategic effects quantified.

GDP per capita is often used to reflect the income effect. Higher income is likely to lead to higher military spending, which may or may not translate into a higher military burden. Also, higher income can lead to structural changes, inequalities and hence conflict requiring higher military spending to maintain internal control (Maizels and Nissanke, 1986). The share of total government expenditure in GDP is used to account for the fact that the military will likely benefit from high government expenditure per se (McKinlay, 1989). The effect of incorporation of a country into the world economy is measured by the share of trade (exports plus imports in GDP) (Rosh, 1988). In addition, there are attempts to model the dynamics of the government spending process. Allowing for inertia due to some hangover from previous expenditures, commitments to programmes (Dunne et al., 1984), or simply a ratchet effect as in Peacock and Wiseman (1967). This can be incorporated by estimating a dynamic model where the lagged dependent variable will pick up such effects. There are also many attempts to introduce political factors within the countries. The type of government can effect military spending, with military governments most likely to be higher spenders, though there is unlikely to be a simple dichotomy between military and non military governments. The situation in developing countries is a bit different than in developed countries as there is less likely to be arms production. There will, however, still be a 'military industrial complex' with vested interests in maintaining or increasing military spending, comprising the civil servants, industrialists, officials, and workers involved with arms imports.

The results of the studies are mixed but do tend to suggest that in developing countries economic conditions are not the most important determinant of military burden. Studies have found clear differences in the different types of countries and their types of governments, to the extent that some argue that the determinants are country specific and not amenable to generalisation (Hartley and Sandler, 1990). This is disputed by a recent contribution by Hewitt (1991) who finds for a wide sample of countries evidence of economic and financial determinants which are common to the sample.

## 5. The Economic Effects of Military Spending

As discussed in Section 3 any analysis of the economic effects of military spending is contingent upon the theoretical understanding of its role in capitalist development. In undertaking empirical work it is possible to use casual empiricism, such as correlation analysis, to support arguments based upon theoretical reasoning, or to set up a simple reduced form model based upon an underlying theory. But the most satisfactory way is to specify a formal model to deal with the interactions of military spending and the economy and to estimate it and it is this approach which has dominated the literature.

Much of the applied literature is located within a Keynesian theoretical framework which emphasizes the potential role of military expenditure in increasing national output through income multiplier effects, in the presence of inadequate effective demand. This framework was developed by Smith and Smith (1980) and has provided the basis for most of the subsequent studies of the economic impact of military expenditure (for example, Deger, 1986; Scheetz, 1991). It has been more successful as a means of studying the economic effects of military expenditure in developing countries than those studies which adopted a neo-classical approach, which perceives the State as a class-neutral actor balancing the opportunity costs and security benefits of military expenditure in order to maximize a well-defined national interest (Biswas and Ram, 1986). Nevertheless, the neoclassical approach retains its adherents and recent examples include Adams et al. (1992), Linden (1992), Mintz and Stevenson (1992) and Landau (1994). There are also a number of studies which do not use such a formal approach but which are important in relating the issue to the process of development, for example Ball (1988).

In the empirical literature the impact of military spending on economic growth has been identified theoretically as acting through 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. The main channels are:

\*Labour: An important problem in developing countries is creating adequate skilled and educated labour as the economy develops. Military spending can have both positive and negative effects. The military can train soldiers and conscripts with valuable technical and administrative skills which they take into civilian life. It can also have modernising effect, with organisational skills and modern attitudes tending to break up social rigidities (Benoit, 1978). On the other hand these effects may be insignificant and the military may attract scarce skilled labour and valuable resources away from the civilian industrial sector and place a fetter on growth. The transferability of skills may be limited and the military may be no more, or less, modern than civil institutions (Deger, 1985). Military spending might be at the expense of education and training expenditures as discussed below (Nabe, 1983).

\*Capital: Military spending can have positive or negative effects on both savings and investment. It is argued that if increases in military expenditure are funded by taxation, then if these expenditures are reduced in the future savings propensities may increase. In developing countries, however, raising new revenue from taxation can be difficult, thus military expenditure may be funded by increased money supply which may lead to inflation which can reduce savings. A direct impact can result from military expenditure being directly at the expense of education and health, requiring increased private provision and lowering private

savings (Deger, 1986).

Again the impact of military expenditure on investment is an empirical question. On the one hand it is hypothesised that it can crowd out investment (Smith, 1980). On the other hand it can boost demand, output and profits and lead to increased investment (other forms of government expenditure could also have the same impact). It is possible, however, that bottlenecks could prevent any significant positive effect. In addition, the effects of infrastructural investment by the military can be either to benefit industry, or be purely of military value remote and irrelevant to the civilian sector.

\*External relations: The impact of military expenditure on the Balance of Payments will depend upon whether or not a country produces arms and whether or not it receives military related aid. In most developing countries imports of weapons will place a huge burden on the economy, through using scarce foreign exchange, and will make trade deficits difficult to avoid. Indeed, Grobar et al (1990) suggest that arms imports in the early 1980s accounted for almost 10% of all developing country imports. This may be offset by military related aid, exports of arms and import substitution, but in general military spending is likely to be a burden on the trade balance. In addition, evidence suggests that military related debt in developing countries is substantial and that the financial burden of earlier arms imports via debt service has grown over time (Brzoska, 1983).

On the other hand the military may provide security from threats, encourage foreign investment, and have links with foreign powers with an interest in the region that can be beneficial to trade, investment and aid. However, this must be weighed against the possibility of involvement in conflict and the damaging effects multinational investment and aid can have on weak client economies (Smith and Smith, 1980).

\*Demand: Clearly military spending in common with any form of government expenditure will have effects on aggregate demand and in situations of less than full employment will lead to increased output, with income multiplier effects and accelerator effects through investment (Adams et al., 1992). Developing countries are unlikely to be resource constrained, but given their supply constraints, in terms of physical and human capital, the impact of increased expenditure may be relatively small. It is also open to debate whether military expenditure is the best form of government expenditure to use for expansionary growth.

\*Socio-Political: Military expenditure may provide the conditions under which development can take place. The military may provide control and discipline of labour, reduce internal conflict, and be a modernising influence. As discussed above, they can impart discipline on conscripts, making them more suited to industrial labour when they leave the forces, and can provide skills which can be of value in the civil sector. It is, however, possible that the military sector and its technology is capital intensive and so far removed from the rest of the economy as to impart little of value in terms of spin offs. It may also take skilled labour away from the civil sector and military regimes may be conservative, corrupt and inefficient and a fetter on economic development.

The debate in the empirical literature on the economic effects of military spending started with the contribution of Benoit (1973, 1978) which purported to show that military expenditure and

development went hand in hand. Ball (1983) provided a comprehensive critique of Benoit's work, undermining the conclusions drawn. This led to considerable research activity using econometric analysis to overcome the deficiencies, most of which has tended not to support Benoit, but there is still no consensus view.

There are three types of econometric studies:

The first are the single equation analyses which use economic growth as the dependent variable and military spending (burden, per capita or absolute value) as the, or one of the, independent variables. Looney and Frederiksen (1983a) reexamined Benoit's data, including more factors in the estimated equation and dividing the group of countries into resource constrained and not resource constrained. The significant relation for military expenditure on growth only held for the resource unconstrained group (negative for resource constrained), similar results for an updated data set are found in (1983b). A number of studies using other data have followed and are outlined in the appendix. Overall, this approach has generally found a positive or insignificant effect of military expenditure on growth.

A major problem with the approach is that it explicitly assumes that military expenditure is exogenously determined and that the causality goes from military expenditure to growth, both of which were brought into question by Joerding (1986). This concern is the result of a failure to derive the final equation, which can be thought of as a reduced form from an explicit structural model which would provide a causal chain. There was some discussion of the equations being interpreted as having an underlying but implicit structural model, with some, such as Lim (1983), deriving the estimating equation used from an explicit structural model. Other studies took an alternative path and investigated the causal links (using statistical definitions of causality referred to as "Granger causality" to distinguish the concept from theoretical causality) between military expenditure and economic growth, with, in general, the studies finding no dominant result, Looney (1991), Chowdhury (1991), Kusi (1994) and the case studies of China, Chen (1993) and Hasan (1994) disagreeing. A further criticism of these models is that while the reduced forms may be interpreted as providing estimates of the net effect of military spending on growth, the specifications they employ, implicitly or explicitly, fail to pick up the indirect effects adequately (Deger, 1986).

Second, there are studies adopting simultaneous equation systems, which emphasise the importance of the interdependence between military spending, growth and the other variables. As the Appendix shows the majority of the studies including Deger and Smith (1983), Gyimah-Brempong (1989) Mohammed (1992) and Scheetz (1991), tend to confirm the existence of negative impact of military expenditure on economic development. On the other hand, a number of influential studies such as Dixon and Moon (1986) have suggested the existence of a positive impact on developing economies. The studies do vary in their use of data. Some deal with cross section averages (eg Deger and Smith, 1983), others with time series estimates for individual countries (eg Scheetz, 1983), while others are more comprehensive (eg Dunne and Mohammed, 1995). The Appendix presents other examples, including time series estimates for individual countries. As with the single equation approaches attempts have been made to investigate sample stratifications. Brauer (1993) reestimates Deger (1986) study dividing the sample between arms producers and others and finds differences in the subsample results.

Third, there are studies which use macroeconomic and other forms of world models. A pioneering study by Leontief and Duchin (1980) used a macroeconomic model of the world economy to analyse the global effects of disarmament in the major powers and a transference of the resources to low income countries. The overall impact was found to be positive, though not particularly significant. Cappelen et al (1982) made similar findings. Gigenhack et al (1987) use the Systems Analysis Research Unit Model (SARUM) and an arms dynamics equation, of the action reaction type, to simulate the effects of different security scenarios. Other world models which have introduced forward looking expectations mechanisms find that reduced military spending will have positive effects if announced, even without the reallocation of the savings, through a real interest effect resulting from the fall in the budget deficit (eg McKibbin (1995), Szymanski (1995)) This is in direct contradiction to Keynesian models which do not have the same real interest rate effect and indeed fail to find such an effect in their econometric analysis (eg Adams et al., 1995). There are also a few individual country studies for developing countries using relatively large macromodels for obvious reasons. One exception is Adams et al (1992), which finds a positive effect of military spending in the Philipines, using a Keynesian macroeconomic model, though not considering the opportunity cost.

The dominant approach to studying the economic effects of military expenditure using Keynesian or neoclassical models has come under some attack. It fails to consider the particular nature of developing countries and the alternative development literature (eg Park, 1994). There have also been some developments of these models, Berthelemy et al (1994) have used models of endogenous growth based on Romer's work to analyse the impact of military spending on growth and to consider the welfare and security effects. Using simulation analyses for India and Pakistan the study suggests there are considerable economic costs to militarisation.

A further literature has developed which focuses on the opportunity cost of military spending, or the trade off between military spending and other forms of welfare expenditure. While this approach is somewhat problematic, as it suggests that if money was not spent on military spending it would be spent elsewhere and it often does not allow for the fact that it is possible to have more of both with economic growth, there are some interesting studies. In general the share of military spending is analysed over time or across countries to see if any increase in military expenditure matches falls in other forms of welfare expenditure. There is no consensus, with some studies, eg Dabelko and McCormick (1977), Verner (1983) and Looney (1986), finding weak evidence of military spending crowding out spending on education and health in developing countries over the 50s and 60s but Harris et al (1988) and Hess and Mullen (1988), not finding this result. Verner (1983) and Looney failed to find trade-off between military and other forms of government spending in Latin America, although by improving upon the data provided by international sources Scheetz (1992) found clear evidence of crowding out for Argentina, Chile, Paraguay and Peru as did Apostolakis (1992) using the usual data for the whole of Latin America. Davis and Chan (1990) found no significant impact for Taiwan. In addition, Gyimah-Brempong (1992) found that in Sub-Saharan countries governments tend to favour defence budgeting when budgets are tight and discriminate against them when budget resources are increasing.

There are a number of researchers who argue that despite the valiant attempts of researchers, the experience of the developing countries is so varied, the data is so poor, and the equations open to a number of alternative interpretations that further investigation requires case studies (Kaldor,

1991). While not disagreeing with the value of case studies as we have argued above it really depends on the question the researcher is asking, there have been a number of case studies and studies of more homogeneous groups of countries which have provided valuable results but they should really be seen as complementary to our understanding rather than substitutes. Recent examples are: Park (1994) of Korea, Dunne and Mohammed (1994) of Sub-Saharan Africa, Scheetz (1991) of Latin America.

Considering the applied studies outlined in the appendix the conclusion is that, while there is no clear 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. Certainly there are few studies post-Benoit that claim to have discovered a positive effect. Indeed, if we distinguish between the supply side models and those which have a demand side, there is some consistency in the results. Models allowing for a demand side and hence the possibility of crowding out investment tend to find negative effects, unless there is some reallocation to other forms of government spending, while those with only a supply side find positive, or positive but insignificant, effects (Hartley and Sandler, 1995). This means that there is the potential for developing countries to cut military spending with, at worst, no harm to economic performance and, at best, higher economic growth. However, the macroeconomic nature of such results does tend to obscure the problems of structural adjustment which may occur within countries. The next section deals with these issues.

## **6. Disarmament and Development**

As we have seen, the evidence of the empirical work on military spending in developing countries suggests that it is determined mainly by strategic factors, with the superpowers playing an important role in escalating conflicts. It is also clear that military spending does not have the positive effect on economic development suggested by Benoit's initial study. This suggests that changes in the strategic environment for developing countries can allow a reduction in military expenditure and that it will not have a negative effect on economic growth in the long run. Whether it has a positive impact will depend upon the effects of changes in military expenditure on the economy and the policies taken to ease problems of adjustment. As Hartley (1993) argues disarmament needs to be seen as an investment process with short run costs but with the potential for long run benefits. As with any investment sound planning is required and there are risks.

Individual developing countries will also have their own particular problems which may limit the potential for cuts. There will be political problems caused by ongoing civil and regional wars; highly militarised security webs; military regimes; the use of the military for internal repression; ethnic/religious conflicts. Ongoing disputes can mean that decreases in military expenditure may be destabilising and actually undermine the process of disarmament. The international community has to find some way to deal with such problems. This will need new approaches to security; the provision of effective international mediation; the promotion of non military solutions to conflicts; the support of democratisation processes.

Institutional structures within developing countries will provide opposition to cuts. While few developing countries have an arms industry of any magnitude, they do have a form of "Military

Industrial Complex" that will resist any reductions in military spending. There are bureaucrats/politicians; salesmen/importers; corporate interests, private and state; workers/managers all benefiting from the import of weapons and the maintenance of a strong military group. Their power and resistance is helped by foreign companies with their hard selling techniques and the well known corruption surrounding the arms trade (Ball, 1988). Some groups include those who will lose out even if the civil sector grows, while others will only be effected by the short run economic costs of adjustment. As we have noted in the short run unemployment may result from demobilisation and reduced numbers of related civilian workers and indirect employment effects. There may be a decline in corporations/companies, involved in arms production/importation. There are also likely to be effects on local communities dependent on bases or factories.

Cuts in military spending will cause different problems depending on whether the country has an arms industry or not. It may also depend on what form that industry takes. Many developing countries have small arms and munitions production facilities but some have major industrial sector eg Brazil, Chile, Israel, South Africa, Egypt (Katz, 1986 and Anthony, 1993). The effects of cuts in military expenditure will be contingent on nature of government and the policy responses. The main effects are likely to be:

- reducing demand in the economy. Which could lead to reduced output and unemployment, though resources will also be freed for alternative uses.

- demobilisation. Which may lead to unemployment and may be destabilising.

- reducing the role of the army in the non military sector. Which may mean that any training, infrastructure, national cohesion that this may have provided will need to be replaced.

- reducing imports of arms. Which will free scarce foreign exchange but will also lead to a reduction of employment of bureaucrats and of workers involved in the trade.

All of these will have an impact on the corporate sector and could lead to the closure of facilities, the demise of companies, and further unemployment. To overcome such problems require some supply response, some alternative use of released resources, otherwise there will be adjustment problems. Taking a "hands off" approach and leaving the adjustments to "market forces" could be costly as the experience of the UK shows (Dunne and Willett, 1992).

If there is an arms industry then these problems can be compounded. An arms industry can of course vary from simple munitions production eg Nigeria and Sudan to weapons systems production, Egypt, Brazil, Chile and South Africa (Katz 1986, Anthony 1993). With a significant arms industry the strength of the MIC will be greater and so will the opposition to cuts. There will also be greater problems of structural adjustment, in moving from arms production to other civil production, especially as the linkages of defence companies in some countries can be very important. If the use of scarce skilled/technological resources by the military has contributed to the underdevelopment of the private sector then disarmament could increase the difficulty of responding to alternative demands if provided. Even if released, the transfer of skilled workers is not straightforward because of skill differences across sectors. An export drive is also unlikely to work given the increasing competitiveness of the world market, although this is the route a number of countries seem to be taking.

Structural adjustments are always easier in a growing economy but could be rather difficult when the WB and the IMF are forcing "austerity" programmes. In the past the WB/IMF structural adjustment packages required cuts in public expenditure with averse effects on

inequality an unemployment often leading to political tensions and social instability. The spread of low level violence can lead to pressure to increase military expenditure, especially if it includes the police and paramilitaries. Military expenditure has often been the last to be cut in austerity packages, especially if it was tied to aid given previously. Even though the WB and IMF are now requiring client countries to reduce military expenditure, this is still part of a general policy of reducing total government spending and this limits the possibility of governments being able to reallocate military expenditure savings to other uses to provide the supply responses discussed above.

While developing policy proposals is beyond the scope of this paper, it is clear from the survey that if disarmament is to be successful in developing countries it will be necessary for the international community to provide support. Firstly, regional conflicts will need to be defused, the arms trade controlled, and moves to democracy encouraged and demanded, a task made easier by the end of the Cold War. Secondly, some form of economic assistance will be required to aid the development of developing countries and to provide alternatives to military production, to allow them to attain "economic security" rather than military security. The role of aid and foreign investment remains controversial but it is clear that to achieve disarmament and development will require international coordination on an unprecedented scale. This is a challenge for the United Nations which might prove the ultimate test of its credibility.

## **8. Conclusions**

With the end of the superpower arms race and the removal of superpower involvement in regional conflicts some of the poorest countries in the world have been given the opportunity to reduce their military spending. While there are clearly some regional differences it is an opportunity many countries have taken. While there are problems with data on military expenditure, especially when attempting to make comparisons, all of the available data does suggest a clear trend reduction in military spending, in both the developed and the developing world. The expectation is that this reduction in the burden of military spending will lead to improved economic performance, or a "peace dividend" for the developing world. Yet there has been considerable debate in the literature over whether military spending is in fact an economic burden or whether it has positive effects. This chapter has provided a survey of the issues and empirical studies involved in the debate

As a starting point for a comparison of the empirical studies a survey of the methodological and theoretical issues was undertaken. There are a number of schools of thought -neoclassical, Keynesian, institutionalist and Marxist- but only one, the underconsumptionist has military spending as an integral part of the theory. There is, however, no consensus in these general theories on the impact of military spending on economic growth. In fact much of the empirical work has focused on Keynesian and neoclassical models and when attempts are made to operationalise the general theories, outlining the channels through which military spending can effect growth, the question of whether or not it is positive is seen to be an empirical one.

It is important to recognise the interdependence of the demand and supply side and to consider the determinants of military spending. The results of the empirical studies are mixed but do tend to suggest that in developing countries economic conditions are not the most important



determinant of military burden. Studies have found clear differences in the different types of countries and their types of governments, to the extent that some argue that the determinants are country specific and not amenable to generalisation, though this is disputed.

The survey of the empirical analyses of the economic effects of military spending, mainly within the Keynesian framework, suggested that military expenditure has at best no effect on growth but is likely to have a negative impact, certainly there is no evidence of a positive effect. Most of the studies finding positive effects (often insignificant ones) adopted a single equation estimation approach. At best they are derived from an explicit underlying theoretical model and at worst are purely atheoretical. Some studies have investigated the statistical causality of military spending and economic growth but with no dominant result. Studies which have attempted to develop simultaneous models to allow for a variety of indirect effects have tended to find that military spending has a negative impact on growth. Overall, these results suggest that disarmament need not be costly and does indeed provide an opportunity for improved economic performance. There are still problems, however, in moving to lower levels of military spending and policies of conversion are required at a national and international level, including assistance from the developed world.

In an influential study Smith and Smith (1980) suggested that:

"If analysis suggests a weak causal relation between high military spending and unmet basic needs, and implies that there is no automatic mechanism, no 'hidden hand', to direct resources released by disarmament towards development, then attention must be given to the forms of political and social intervention required to direct resources to the desired end. In other words, if there is a relationship between disarmament and development, it may be one that has to be constructed politically, not one that is pre-given by economic forces."

It would appear from this survey that their suggestion remains relevant. As Kaldor (1991) reemphasised the problems to disarmament are indeed political and institutional and operate at both a national and domestic level. What has changed is that we are now observing reductions in military burdens in developing countries. The potential for a "peace dividend" for the developing world remains, but only as part of an international policy for disarmament and development. The potential reward is an unprecedented contribution to human survival and welfare but we can only ask if the political will really does exist.

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