Regional Coordination for Reduced Military Spending: Potential and Design

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1. **Introduction:**

In most developing countries military spending is a major claim on public resources. In Figure 1 I show the recent trends, region-by-region. Broadly, military spending continues to rise. As we will see, only a tiny fraction of this spending is actually put to use in warfare. It is essentially a massive pool of idle resources.

**Figure 1: Military Spending in Constant Dollars**
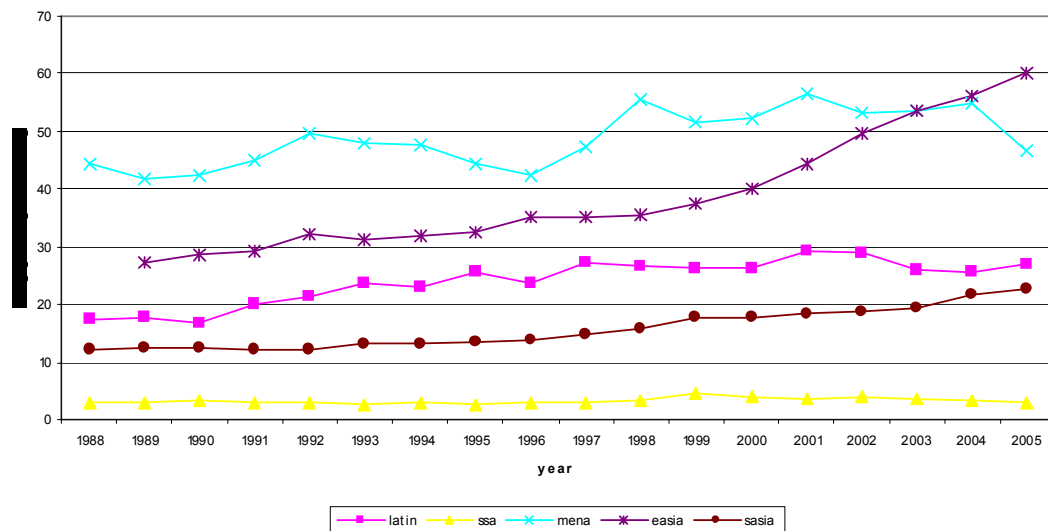
Notes: Total military expenditure is not available for China for 1988. We thus exclude East Asia's total military expenditure for 1988.

At best these idle resources function as deterrence. Since no government wishes to suffer military defeat, if the rising levels of military spending shown in Figure 1 are necessary for security then they are justifiable. However, as I will argue, the link between security and military spending is surprisingly weak. The trend to rising spending may not be making the world more secure. It may instead reflect the failure to use superior, cooperative technologies for security, and it may also reflect an inadvertent drift in a weakly managed component of government budgets.

It is not inevitable that military spending should rise. When the figures are depicted as shares of GDP instead of absolute amounts the pattern is rather different, as shown in Figure 2.

Figure 2: Military Spending as a Share of GDP, by Region, 1988-2005.
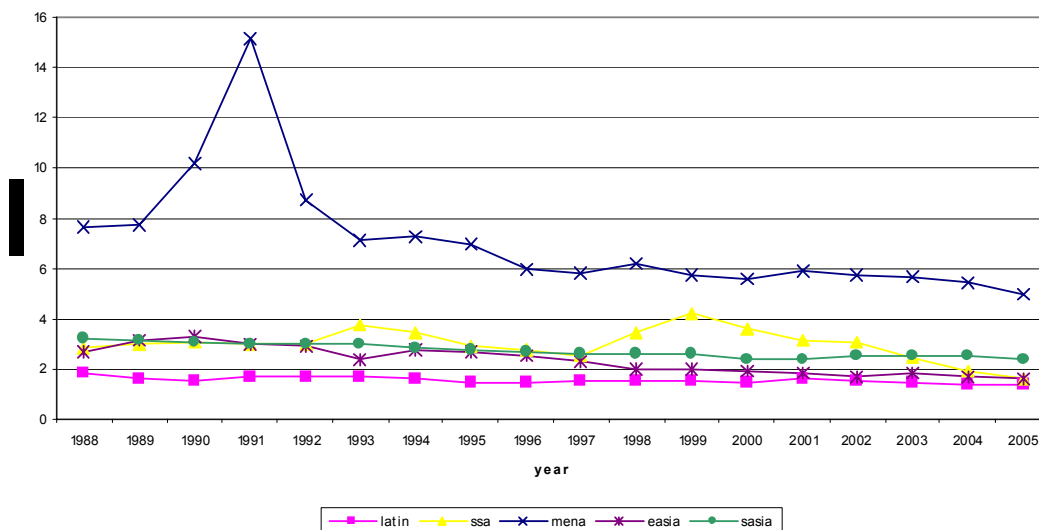
Military spending as a share of GDP has sometimes fallen quite substantially in some regions, notably Africa since 1999. Such lower spending reflects enhanced security achieved through means other than military spending.

There is also considerable variation between regions in the share of GDP they devote to military spending. As a proportion of GDP, Latin America already spends less on the military than other regions. However, at current prices this now amounts to $30bn (the figures in the Table are for constant dollars at the price level in 2000). Military spending has not grown recently in Latin America but this is because the region has not grown very rapidly. The trend in East Asia illustrates how military spending can grow dramatically even if budget shares stay constant once regional growth takes off: there military spending has mushroomed from around $30bn to around $60bn.

Why, in a largely peaceful world, are so many resources spent on the military? Why does it continue to rise? Why does it vary so much between regions and does this suggest that there is scope for reduction? There are good reasons for believing that in the absence of regional coordination, military spending is liable to be excessive. In Part I of this paper I investigate the potential for a harmless reduction in military spending. By harmless, I mean one that should not jeopardize reasonable concerns about security.

Having established that the likely ballpark potential of regional cooperation to reduce military spending is very valuable, I turn in Part II to how cooperation might work. I first review some pertinent examples of existing international cooperation to curtail public bads. I then set out the simple analytics of cooperation, and finally focus on the practical design of a process of cooperation.

Whereas Part I establishes that the magnitude of the potential benefits are large, Part II suggests that regional coordination to achieve these gains is potentially feasible. Part III brings these two conclusions together in a brief manifesto for regional action on this issue.

Part I: The Potential Gains from Reducing Military Spending

I now build up an estimate of the savings in military spending that regional cooperation might potentially achieve. In Section 1 I set out the analytic foundations of the presumption that, in the absence of regional coordination, military spending is likely to be excessive. In Section 2 I turn to the empirical evidence on what motivates military spending, showing that the typical military budget meets multiple purposes which can be quantified. In Section 3 I bring together the analytics and the empirical decompositions of spending, quantifying 'excess' military spending, region by region.

1. Why uncoordinated military spending is likely to be excessive

Military spending is one means by which most societies attempt to increase their security. Security is a classic public good, and so on the face of it military spending seems a reasonable use of public resources. However, the rationale for military spending is much weaker than it might at first appear. It is very far from being a normal public good. Six complications cumulatively make chosen levels of military spending liable to be excessive. I take them in turn.

Problem 1: military spending is an inferior security technology

National security is a public good. The most straightforward threat to national security is the potential threat posed by neighbouring countries. The extent of the threat depends upon the military potency of neighbouring governments relative to the military capability of the threatened nation. Treating the decisions of other countries on military spending as given, a country can increase its national security by increasing its military spending. However, in this case military spending is a beggar-thy-neighbour strategy. Although military spending generates the national public good of security, it does so at the cost of generating reduced national security in neighbours. A group of neighbouring countries might in principle achieve the same overall security with *any* common level of military spending, the only difference being that higher levels of spending incurred opportunity costs for all of them. This gives military spending the quality of being at the same time a *national* public good but a *neighbourhood* public bad. The concept of a neighbourhood public bad is simply a scaled-down version of the more familiar concept of a global public bad such as carbon emissions. Whereas carbon emissions from any country adversely affect all other countries though global warming, military spending by one country adversely affects its neighbours.

All public goods face potential collective action problems, the normal solution being provided by government. The contrast between strong government at the level of the nation and weak government at the level of the neighbourhood consequently generates an unfortunate outcome. The national public good of security is supplied by military spending, whereas there is no countervailing process of neighbourhood government to contain the neighbourhood public bad.

The public good of national security can potentially be supplied both more reliably and more cheaply by neighbourhood cooperation. If the neighbourhood could credibly commit to respecting the security of each country by maintaining mutually low

military spending, national security would be enhanced relative to the more precarious peace of mutual deterrence, and resources would be spared for other uses. In effect, military spending is an inferior technology for achieving the objective of national security.

Problem 2: chosen levels of military spending are interdependent

The external security achieved by military spending depends upon the scale of the military threat posed by neighbours. This creates a seriously dysfunctional interdependence. If the neighbour spends more on the military, this lowers the benefit from my own existing level of military spending but raises the *marginal* benefit of increasing it. In the simplest case, I am secure as long as I match my neighbour's spending but insecure if I spend less. If we start with the same level of spending and my neighbour increases its spending, then my security declines but can be restored if I match the increase. Hence, my decision as to how much to spend depends upon my neighbour's decision.

This makes military spending a particularly damaging form of international public bad. To return to the example of carbon emissions, although a public bad, carbon emissions do not have this feature of interdependence. An analogy of a public bad with interdependence is a noisy radio. Two neighbours each want to listen to different radio programs on their radios. Because each interferes with the enjoyment of the other the noise from their radios is a public bad. But the special feature which they share with military spending is that in order to hear above the noise of the neighbouring radio each listener turns up the volume of his set. Eventually, both radios are blaring but neither program can be properly heard.

Problem 3: lags in implementation of military spending decisions create a 'first mover' advantage

The interdependence of decisions alone might lead to a swift recognition that it was sensible mutually to curtail spending. However, if one country decides to increase its spending because the other country can only follow suit with a lag, the first country gains a temporary advantage. In security, even a temporary advantage can be massively advantageous, and so there are benefits to pre-emptively increasing spending unless decisions are fully and instantly visible. Given this advantage to pre-emption, both countries race to a high level of spending. The race only stops if there is a point at which each country finds that spending is so costly that further temporary advantages are not worth purchasing. Although the race stops at this point, it cannot be unwound without trust and coordination because the first mover to reduce spending suffers a temporary disadvantage. The ultimate disaster of 'first mover advantage' was the run-up to the First World War. As prospects of war increased, the pay-off to being the first mover also increased, and so each country took further pre-emptive steps which, since they could be interpreted as aggressive, triggered the need for a further round of pre-emptive steps.

Problem 4: military spending generates both internal deterrence and external threats, regardless of whether both are desired.

Achieving security from external threats is by no means the only motivation for military spending. As demonstrated below, governments spend on the military partly for reasons of internal security from rebellion, and partly to placate a powerful military lobby. Unfortunately, if a government increases its military spending due to such an internal reason, it nevertheless inadvertently increases the threat perceived by neighbours. That is, internal security and external threats are *joint products*. Because an increase in the one produces the other, this rebounds on the previous problems. In particular, extra spending motivated by something other than external security nevertheless generates a regional public bad and constitutes a further round in the neighbourhood arms race which other countries are liable to follow.

Problem 5: multiple neighbours make reciprocity harder

When the security problem involves only two countries, or blocs of countries, as it did during the Cold War, it is quite likely that the two parties will manage to reach an agreement on limiting military spending because the nature of the interdependence is obvious and, even more important, *reciprocal*. However, neighbourhood arms races are considerably more difficult than the Cold War because there are many countries involved, each with a somewhat different set of neighbours. In a two-bloc world security is precisely reciprocal. However, in a *neighbourhood* reciprocity does not apply. For example, country A might haves neighbours B and C, but country B have neighbours A and D, and country C have neighbours A and E. Thus, A cares about what B and C do, but B does not care about what C does whereas it does care about what D does, but this does not matter to A. In this example, the neighbourhood is of five countries, A,B,C,D,E. This is the group needed for agreement, but none of these countries cares about all the other four. In the two-country world of reciprocity, it is highly likely that at some stage the two parties convene a negotiation: they have a mutual interest in negotiating. By contrast, neighbourhood interdependence requires all the pertinent countries to be convened, and the act of convening is itself a public good. Because neighbourhood interdependence is not reciprocal it is also far less obvious than bilateral interdependence.

Problem 6: the returns to military spending are not observable

With most public goods the benefits of additional spending are measurable. With military spending the benefits are very hard to observe. Conceptually, the marginal benefit to military spending is a reduction in the risk of war. However, for virtually all of the time, most countries are at peace. Not only is the risk of war very low, but a small change in that small risk is very hard to judge. Because such a pay-off cannot be observed, the level of military spending is in practice often set by other means than estimating its marginal benefits. Instead, it becomes natural to match the spending of neighbours. This need not be due to a perception of threat, although this is one possible interpretation. If the neighbours are indeed a threat then matching spending has a clear rationale in terms of security pay-off. However, even if the neighbours are not a threat, their chosen levels of spending can be accepted as norms in the absence of other information on a sensible level of spending. In such a case military spending becomes more analogous to spending on fashion than on true public goods such as preventative health care: each government simply wants to look like other governments.

An implication

These features of military spending can be summarized as follows:

> It is a neighbourhood public bad.
> An increase by one country induces an increase by others.
> Each country has an incentive to get ahead of its neighbours' spending.
> An increase in spending for whatever purpose constitutes an external threat.
> Neighbours matter most, but each country has different neighbours.
> Norms, not pay-offs, are the basis for budgeting.

Each of these features leads to spending being excessive relative to what governments would chose were they able to cooperate. I will now show that this is indeed the case.

2. What determines military spending?

Although Costa Rica has eliminated military spending, the objective of regional cooperation should probably be more modest: namely, to eliminate that part of military spending that is motivated by concerns that could reasonably be better addressed by regional cooperation. Hence, the first step is to decompose actual military spending into the various pressures and needs that generate it.

For this I draw upon a substantial new empirical analysis of the influences upon military spending (Collier and Hoeffler, 2007) which enables us to simulate the effects of suppressing some influences through regional cooperation. While all academic studies are subject to the risk of error, this one has been published as the leading article in a statistical journal of good repute and has thus been rigorously peer reviewed. The fact that I am one of the co-authors ensures that the present application is not a miss-use of that study. I first summarize the key results of that study, showing the various influences upon military spending. I then apply these results to estimate the reductions in spending that might arise from different types of regional cooperation. It generates dollar estimates, region-by-region. Since these savings would be persistent, I use them to estimate a discounted present value of each type of cooperation.

Our approach used global data for the period 1960-99. Data on military spending are not always readily available. We rely upon two data sets put together annually by the World Bank and the Swedish International Peace Research Institute (SIPRI), which are generally considered to be the most reasonable estimates available. The global average level of military spending has been around 3.4% of GDP, but around this average there is huge variation. The lowest observed level of spending is a mere 0.1% of GDP, whereas the highest observe spending is 46% of GDP. Our approach is to explain the share of military spending in GDP, country-by-country, and year-by-year, in terms of other observable characteristics that proxy the need for security and the influence of the military as a lobby. I consider the influences on military spending in turn.

Security during war

The most obvious need for military security arises during times of international war. Unsurprisingly, if a country is engaged in an international war, on average it spends around 1.5 percentage points of GDP more on the military. However, international wars are now rare and short-lived, so that spending during war is only a tiny component of total military spending.

Security from perceived external threats

A much more important driver of military spending is deterrence towards perceived external threats. Recall from the first problem raised in Section 1 that while military spending for this purpose is a national public good, it is also a neighbourhood public bad.

One proxy for whether a country perceives itself to be subject to an external threat is if it has been involved in an international war in the past, even though it is now at peace. Globally, around one fifth of all nations have participated in an international war since 1945, although being currently at peace. The effect of this previous experience of war is to increase government spending on the military by 1.8 percentage points of GDP, an amount not significantly different from that spent during war. The most likely explanation is that the experience of war constitutes a warning signal to the society that it needs to be defended. We investigated whether this effect fades over time. While over some period it presumably must fade, we could find no such tendency in the period since 1945. *A disturbing implication is that much of the costs of an international war accrue after it is over*: the society continues to be burdened with substantially higher military spending on a permanent basis. Thus, while actual fighting has a clear end-date, the perceived threat and consequent need for military spending is highly persistent.

The Cold War constituted an instance of a perceived threat not triggered by an episode of actual warfare. Further, unusually for perceived threats, it had a clear end-date, namely the collapse of the Soviet Union. The end of the Cold War thus constitutes a revealing 'natural experiment' for the effect of a coordinated removal of a perceived threat. This is useful because one of the potential contributions of regional coordination of security issues is to reduce perceived threats across a neighbourhood by means of a political agreement. If the end of the Cold War is accepted as such an indicator of potential it is encouraging. In the period following the end of the Cold War global military spending fell significantly and substantially, by 35%.

While past warfare and the stance of the Soviet Union are evidently both pertinent proxies for perceived threats, a further potentially important proxy is the military capability of neighbouring nations. Recall that the second problem raised in Section 1 was that military spending was likely to be interdependent in a neighbourhood. Collier and Hoeffler find that in setting its military budget, the typical government is indeed significantly influenced by the military spending of its neighbours. If the neighbours spend an additional 1 percent of their GDP on the military, the country itself reacts by spending an additional 0.1 percent of GDP. In turn, this produces a response from the neighbours, so that military spending gradually ricochets upwards as each country reacts in an uncoordinated way, trying to re-establish the desired balance between national and neighbouring military spending. This creates a multiplier for military spending: if the countries of a neighbourhood initially decide

independently to increase their military budget by 1 percent of GDP, the typical chain reaction will lead each of them to further increase its budget in response to the increase in the expenditure of their neighbours. We term this the 'Arms Race Multiplier', and estimate that on average it is around 1.11, meaning that a planned addition to the military budget of $1m ends up costing $1.11m.

A further effect of external threats on the size of the military budget is the country's population. Populous countries spend a lower share of GDP on the military than small countries. This is presumably because security is subject to scale economies so that small countries feel that they need to spend proportionately more in order to reach the same level of security. *A corollary is that neighbourhood effects are particularly important for neighbourhoods with many small countries*, such as Central America and Africa: they are the countries with most to gain from regional agreements to limit spending.

Security from internal threats

Societies also face internal threats of organized private violence in the form of rebellion leading to civil war. The risk of civil war varies enormously between countries according to an identifiable number of characteristics (Collier and Hoeffler, 2004). We have used these objective estimates of differences in the risk of civil war to see how governments respond to these risks through military spending. As the objective risk of civil war increases governments indeed increase their military budgets. The effect is large: by the time a society faces an objective risk of civil war of 60% it has typically increased its military budget by the same extent as if it were actively engaged in an international war. Recall from Section 1 that the fourth problem of military spending is that expenditures motivated by the need to enhance internal security also unavoidably generate external threats and so fuel arms races.

The effect of military lobbying

I next turn to the military as a lobby group. All public sector workers lobby to increase public spending on their own activity. This is both inevitable and legitimate. However, the military is in a unique position in having recourse to illegitimate pressure, namely the threat to overthrow the government and seize power. Further, the secrecy surrounding military spending makes military procurement atypically prone to corruption, creating an additional pressure for high spending. These illegitimate pressures can result in two different processes whereby military spending is increased. One is that periodically the military does indeed seize power. We would expect that military governments spend systematically more than democratic governments. A further testable corollary is that we would expect that following a coup the military would use its newly acquired power to reward itself with increased military spending. Both of these propositions are supported by the data (Collier and Hoeffler, 2006, 2007). Severely autocratic societies, which are either explicitly military governments or inevitably derive their power from the support of the military, spend more on the military. Controlling for other influences on military spending, the effect is significant and very substantial, namely an additional two percentage points of GDP. While this is a comparison across societies with different forms of government, we can also compare over time, seeing how military spending changes following a military take-over through a coup d'etat, and how that spending gradually changes as the time since

the coup d'etat lengthens. Again controlling for other influences, the difference in military spending between the first year following a coup and after a long period of being coup-free is one percentage point of GDP.

The above evidence demonstrates that *the military indeed uses its unique capacity to control the state to increase military spending*. Note that these estimates control for whether the country is at war, and for objective measures of the risks of both internal and external future war. Hence, they cannot reasonably be interpreted as a response by a military government to greater objective needs for military spending. It is far more likely to represent the simple brute fact that the military likes to spend on itself and, when it controls the state, has an opportunity to do so.

There is a further mechanism by which the military can exert unreasonable pressure for increased spending, without taking over the government. If the government perceives that there is a substantial risk of a coup d'etat it might attempt to reduce the risk by a pre-emptive increase in the military budget. We are able to measure objectively the risk of a coup d'etat, country-by-county, and year-by-year. We find that when the risk of a coup becomes high – in the range of a 10% risk in any year, - governments indeed response to the risk by pre-emptively increasing military spending. Further, this extra spending indeed succeeds in reducing the risk. These behaviour patterns look disturbingly like 'grand extortion', although fortunately they only set in at these high levels of risk of a coup d'etat. However, in some contexts, notably parts of Africa, these risk levels are indeed prevalent. To give a recent and highly publicized example, during 2005 the government of Chad was desperate to divert its new oil revenues from the social spending it had agreed with the international community to increased military spending to ward off a coup, there being several attempts during that year. As with other internal security motivations, such increases in military spending inadvertently generate an external threat and so fuel the neighbourhood arms race.

Neighbours as a benchmark for levels of spending

I now return to the issue of how neighbours influence military spending. I have already shown that there is solid evidence for neighbourhood 'arms races' in which each country in a neighbourhood sets its military spending in the light of what its neighbours are doing. There are, however, two different ways in which this can occur. Above I interpreted this evidence as an indication of a response to a perceived external threat. In some contexts this is indeed the most reasonable interpretation. To take a non-contentious example, the neighbouring countries of Ethiopia and Eritrea have periodically been in open warfare with each other and even very recently have been fighting a proxy war in Somalia. It is therefore natural for each country to set its military budget with reference to that of the other country since this is the main perceived threat that each nation faces.

However, in many other contexts the interdependence of neighbourhood military spending does not reflect perceived threats: neighbouring governments are not normally regarded as menacing. Yet even in the absence of any perceived threat the spending choices of neighbouring governments can matter due to the apparently benign process of comparison. Such neighbourhood comparisons are much more likely in respect of military spending than other components of public spending

because, by its nature, in normal times military spending has no measurable benefits. Thus, it is not possible to decide how much to spend on the same basis as other components of public spending. For example, a proposal to build more schools can be assessed by estimates of the school-age population, and one to build a road can be assessed by cost-benefit methods. By contrast, in the absence of reasonable estimates of the benefits of marginal changes in military spending, a natural method of determining spending priorities is by comparison against those of other countries with which the society is familiar and are seen as similar. The military lobby is likely to be adept at making these comparisons to its advantage. Thus, if one government decides to make a new expenditure, for example acquiring a new type of military equipment, then the military in other countries will use this as an argument to justify acquisition. As a consequence, the decisions of neighbours are likely to be influential even if they are not seen as threatening. This is a possible alternative explanation for the 'arms race multiplier' to that based on perceived threats.

There are thus two radically different ways in which neighbours might influence budgets – perceived threats versus comparisons. Hoeffler and I were able to distinguish between them empirically by the following simple approach. If the motivation for copying neighbours is that their spending poses a threat, the key aspect of their spending is not *its share of GDP*, but its *absolute amount*. Thus, for example, Ethiopia is clearly influenced by the level of military spending in Eritrea, but it does not aim to match the Eritrean *share* of GDP spent on the military. Because the Ethiopian economy is much larger than that of Eritrea, to match the absolute size of the Eritrean military Ethiopia only needs to spend a far lower share of GDP on the military and indeed does so. By way of contrast, if comparison is the motive for interdependence then it is the *share* of GDP that will be influential, not the absolute level of spending. Belgium is probably influenced by its neighbour, France, but its objective is to spend a similar share of GDP on the military rather than a similar level, because France is not perceived as a threat. In fact the two countries are partners in NATO and much of NATO partners' military expenditure is determined by sharing a common defence burden (Hartley and Sandler, 1999).

We find that the interdependence between neighbours is much better explained statistically by the share of GDP that neighbours choose than by their absolute amount of spending. Thus, for most neighbourhoods the interdependence is better seen as due to benchmarking and emulation than as responses to perceived threats. In practice this may come down to legitimate forms of lobbying by the military. For example, the army may point out to the minister of defence that the ministers of defence in neighbouring countries have increased their budgets by a larger percentage than that proposed for the budget and that he himself should therefore press for a larger increase. It is well established that bureaucracies to an extent judge their performance by the size of their budget increase, and so such pressures are natural and inevitable.

The distinction between neighbourhood interdependence due to external threats and that due to benchmarking is important. Although both types of interdependence present the same opportunity for mutual curtailment of a public bad, the atmosphere of trust that cooperation requires is evidently much easier if interdependence is due to benchmarking. With benchmarking, governments in a neighbourhood can all gain from jointly setting a lower benchmark and they have no strong reason to break the agreement. If interdependence is due to a perceived external threat then although there

is still an incentive to agree on a lower benchmark, there is also a strong individual incentive for each country to renege on its agreement, thereby getting a military advantage and enhancing its perceived security more cheaply than if other countries were going to match its spending.

Capacity to Finance Spending

The final influence upon military spending is the capacity to finance it. Two such influences matter, economic growth and foreign aid.

It is often imagined that military spending on security is a basic necessity. However, the defining feature of a necessity is that as income rises a declining percentage of income is spent on it. Military spending, in contrast, displays the features characteristic of a *luxury* form of spending. As per capita income rises in a society, typically the government increases spending on the military at a rate that is higher than the growth of income so that its share in GDP gradually rises. The effect is quite large: if GDP doubles then military spending as a share of GDP rises by almost the equivalent of switching from peace to active engagement in an international war. Military spending can thus be thought of as *luxury public consumption*. A corollary is that *as a region gets richer it has an increasing incentive to forge a regional agreement to limit such spending.*

Military spending is explicitly excluded as a use of foreign aid. However, there are various ways in which aid can have the indirect effect of augmenting the military budget. One of these is the phenomenon known as 'fungibility'. By this is meant that although aid ostensibly finances a particular project, say a school, if the government would in fact have financed this project even without the aid, the aid has the effect of releasing government funds for any other use that the government chooses. Another route is that aid indirectly augments the capacity of the society to import since it is an inflow of foreign exchange. Typically, not all of this foreign exchange is spent on the project itself since the aid also covers some local currency costs. The imports which this foreign exchange finances pay duties which legitimately augment government revenue. There have been numerous claims that aid inadvertently finances military spending and we were able to investigate it. We confined our analysis to 'development assistance', that is aid that is explicitly meant for development purposes and so explicitly excludes military uses. We found that *on average around 11 percent of this aid ends up augmenting military spending*. While this is not a high rate of leakage, in those contexts where aid is large, notably Africa and some other low-income areas, it implies that a considerable proportion of military spending is financed by aid. We estimate that in Africa the proportion is around 40%. With aid inadvertently financing such a large proportion of military spending in these contexts, the donors have a legitimate basis for encouraging and supporting attempts to reduce military spending in such a way as not to jeopardize the security of aid-recipient countries. Further, they have a legitimate basis for explicitly linking their allocation of aid to such a process. Even in Latin America, where aid levels are much lower at around $6bn, if leakage approximates to the global average around $660m of aid would inadvertently be augmenting military spending.

The neighbourhood interdependence of military spending combines with this inadvertent leakage of aid to give donors a further reason for active involvement in

the curtailment of military spending. Aid to one country not only increases the military spending of that country, but inadvertently inflicts the perceived need in neighbouring countries to increase military spending. Thus, through this route aid to one country inflicts a public bad on neighbouring countries unless the donor also takes active measures to offset the effect of additional finance. In other words, aid-financed military spending triggers an 'arms race multiplier' which globally averages 1.11. Thus, continuing with the Latin American example, the $660m of aid-financed military spending induces a further increase of around $73m in neighbours, which must then be financed by a diversion from other spending priorities.

3. The Potential Value of Regional Cooperation

Having established and quantified the different pressures globally on military spending, I now extend the analysis to generate estimates of the potential in each region for reducing military spending as a result of cooperation. I first discuss how some of the pressures on military spending could be reduced by particular types of regional cooperation. I then estimate the contribution of each of these specific pressures to the military spending of each region, using the distinctive characteristics of each region to make my estimates, rather than the global data used above. From this I estimate the actual quantitative potential, region-by-region, for regional cooperation to reduce military spending.

Neighbourhood interdependency and the regional public 'bad' component of military spending.

Some of the motives for military spending discussed above inadvertently generate neighbourhood public bads that could be addressed by various forms of cooperation.

The most evident neighbourhood public bad that could be rectified by coordination is that part of military spending that is induced by emulation of the spending of neighbours, or perceived threat from the spending of neighbours. The results from Collier and Hoeffler (2007) can be used to simulate how much military spending is accounted for by these effects.

An interesting thought experiment that simulates the potential for regional cooperation is to use the observed influence of neighbours in reverse. In the simulation analysis explained below, were the military spending of neighbouring countries zero, - that is, were a country bordered by those adopting the policy of Costa Rica – then for the typical country the desired level of military spending would fall by 12%. Since this effect usually comes from emulation rather the reduction of perceived external threats, it is not an unreasonable approximation of the potential for coordinated peer pressure.

The potential for regional public goods

In addition to coordinating directly on target levels of military spending, governments can coordinate to generate public goods that indirectly induce lower spending. The three types of regional public good that can have this effect are mutual security agreements against common external aggression, mutual security against aggression from each other, and mutual commitments to democratic governance.

Containing common external threats through regional cooperation

This was the principle behind NATO. As discussed above, the effect on military spending is at best ambiguous since part of the rationale for the agreement is to curtail free-riding in defence. As discussed below, it was the starting point for Latin American military cooperation through the 1947 Rio Treaty. However, for most regions it is not particularly pertinent.

Containing neighbourhood threats through regional cooperation

A more pertinent way of enhancing security is through explicit commitments not to resort to warfare against neighbours, potentially backed by commitments of support in the event of breaches. Such mutual security was clearly dominant in the initial impetus for European cooperation. Over a period of half a century, Western Europe has successfully transformed expectations of military threats from neighbours from the high level inherited from the catastrophe of three major regional wars during the preceding seventy years. The difficulty with such an approach is its credibility. Indeed, the essence of the European approach was to make intra-European war *infeasible* because economies would be so interdependent. An alternative way of making intra-regional war infeasible is the reduction in military spending. Hence, although a credible commitment to peace would reduce the need for military spending, in practice, reductions in military spending are likely to be necessary to make any such commitment credible.

Inhibiting Autocracy through regional cooperation

Recall that the military is a uniquely powerful lobby that sometimes increases military spending either by seizing power or threatening to seize power. Potentially, neighbourhoods can effectively discourage this illegitimate use of military power by setting standards. As noted above, globally the swing from severe autocracy to full democracy has been associated with a reduction in military spending by two percentage points, and the swing from regimes that have just come to power through a coup d'etat to societies free of coups has been associated with a reduction of one percentage point.

The European Union provides a good model for the transformation from autocracy. Even as late as the 1970s Portugal and Spain were long-standing dictatorships, and Greece was under military rule following a successful coup. Now such conditions would be unthinkable. The key provision was that membership of the EU was made conditional upon democracy. When Eastern Europe escaped from communism, the newly formed EBRD was given an explicit mandate that required it to confine its activities to democracies. While it would be nice to think that all regions are now immune from coups and the consequence militarization of government, even since 2005 there have been successful coups in Thailand, Fiji and Mauritania.

Figure 4: The Incidence of Coups d'Etats

year

global □ ssa □ latin
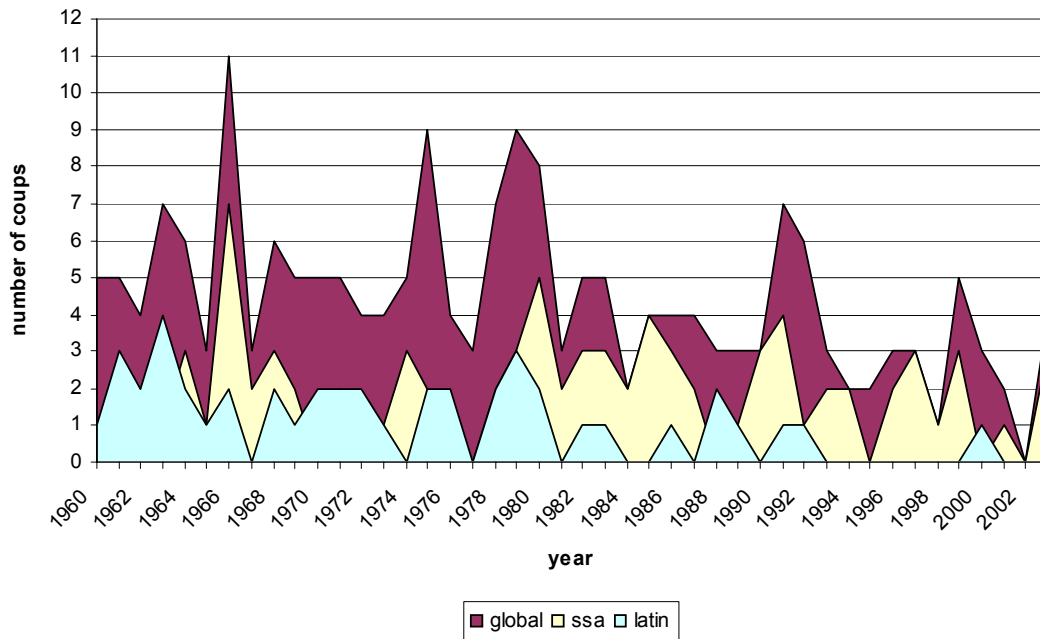
It may well, therefore, be worthwhile for regional groupings to introduce some minimum standards of democracy. Even with modest standards, if over time this guards against severe autocracies it would reduce the pressures for high military spending. Regional coordination to curtail military spending is made much harder if the region includes a military government that does not share the common interest in reducing military spending.

I simulate the effect of a modest improvement in democratic standards across a region: I take a two-point increase on the 21-point 'Polity' scale, the conventional scale used in academic political science. In the typical region, if the region could collectively enforce such an increase, military spending would be reduced by 11%. Note that this is not the same as the existing neighbourhood interdependency of military spending which directly generates a regional public bad. Rather, it reflects the potential for governments in a neighbourhood to organize their affairs jointly in such a way as to generate some elements of security as a regional public good, the value of the public good being the reduction in military spending that governments are then able to implement since they face less pressure from the military lobby.

Under what circumstances would these reductions in military spending generate inadvertent costs?

Although military spending is motivated by a range of different reasons, as discussed above, it can be used for multiple purposes. Thus, the same money that rewards the perpetrators of a coup d'etat also protects against threats from neighbours and the threat of internal rebellion. This creates the possibility that reductions in military spending due to the elimination of one need inadvertently increase other risks. How important are such multiple uses and what can be done about them?

There is some evidence that the deterrence of internal and external threats is interdependent. Thus, when both types of threat are high, governments do not increase

military spending by as much as would be predicted were each need entirely separate. This is potentially important since the threat from internal rebellion is much less amenable to regional action than is the external threat from neighbours. Evidently, when governments find themselves engaged in a civil war they need to have a high level of military spending and this should not be seen as a breach of any regional agreement. However, the pre-emptive deterrence of rebellion through high levels of military spending appears not to be effective. We have investigated this both in normal situations and in the context of post-conflict (Collier and Hoeffler, 2006, 2007). We find that in normal peacetime situations high levels of military spending by the government do not significantly reduce the risk of rebellion. While this may seem surprising, the early stages of rebellion are more effectively addressed by good intelligence and policing than by a large army. Where rebellion is intrinsically feasible, for example due to the conjunction of mountainous terrain providing safe havens, and natural resources providing a source of revenue, an army is effective neither at detecting its early stages, nor at suppressing its formation. Obviously, if a rebel force develops to the level of a serious standing army, then a corresponding government army is required, but for this it is not necessary to maintain a large army on a permanent basis. Indeed, in the peculiar context of post-conflict situations there is a significant effect of high levels of government military spending but it is perverse: if a government sets a high level of military spending this significantly and substantially increases the risk of reversion to civil war. An implication of these findings is that regional agreements to curtail peacetime military spending do not in general backfire inadvertently into a higher risk of civil war. The regional agreement needs to exempt periods of actual civil war from pressure to conform to the regional norm, but otherwise it does not need to take into account any risk of rebellion. *Military spending is necessary to oppose active rebellion but is ineffective in deterring rebellion.*

The potential value of regional action

In one sense the potential for reducing military spending is simply the current level of military budgets. Costa Rica has eliminated military spending and sustained it for a long time without any sign that this has jeopardized its security. However, for the region to adopt the Costa Rica norm would require a profound *change* in government preferences. A more modest, but probably more realistic goal for regional coordination is to accept preferences as they are. Instead, the goal would be to change objective circumstances in such a way that even with these unchanged preferences governments choose to reduce military spending. The issue is then whether, within the bounds set by the extent to which objective circumstances can reasonably be changed by regional coordination, the induced reduction in chosen levels of spending is sufficiently large to be worth the coordination effort. This is the task of the present section.

The above discussion enables us to estimate the overall potential for collective action at the regional level to reduce military spending without adversely affecting perceived security concerns. Indeed, if the region were able to deter coups d'etats it would also significantly reduce the incidence of civil war since coups often trigger the descent into prolonged internal violence as demonstrated by the recent experience of Côte d'Ivoire.

To quantify the potential for regional cooperative action I now use the Collier-Hoeffler model that predicts military spending country-by-country as a reflection of security needs and the power of its military lobby. I first take a hypothetical country with the characteristics of the average prevailing in the region, and predict the level of military spending that would prevail under current conditions for this hypothetical country. For example, globally over the entire period 1965-99 the predicted level of military spending is 3.89% of GDP. I then simulate the level that would prevail under some counterfactual policy. An advantage of this approach is that, by simulating both the actual and the counterfactual, the estimated effect of the policy is not contaminated by any error in the initial forecast and this is indeed the standard approach in estimating policy counterfactuals. The simulation enables a series of influences on military spending to be varied one-by-one. As these influences vary, the simulation predicts a different level of military spending. The proportionate change in the simulated level is then be applied to the baseline *actual* level of spending to get an estimate of the likely effects.

For concreteness, I initially take Latin America as the focus of the simulation, and then extend the results to other regions and groupings of countries, and finally to the world. Latin America is not a high-spending region. Its average military spending since 1965 has been 1.99% of GDP, and current regional spending is $30bn. I first create a hypothetical country with the average characteristics of the Latin American countries over the entire period since 1965. I then vary one characteristic of this hypothetical country at a time.

To benchmark the benefits of coordination, I first imagine that by chance the region had managed to avoid active warfare both international and internal, but that all the deterrent and lobbying motivations for military spending remained as at present. This counterfactual might reasonably be conceptualized as *precarious peace,* since there is no explicit means by which it is maintained. The pay-off to such a *de facto international peace* is shown in the seventh row of Table 2, and the corresponding rows in Tables 3 and 4. How much would such a peace have reduced Latin American military spending? The answer is that peace alone would have achieved surprisingly little in terms of reduced spending. In the typical country over this period it would have fallen by less than 3%. As we will see, benchmarked upon the avoidance of war, regional cooperation achieves very much larger pay-offs.

I now investigate the pay-offs to changes that might feasibly be achieved by regional cooperation. First, I estimate the pay-off that would now accrue to Latin America were it to adopt the strategy already discussed above using peer pressure equivalent to that currently implied by having neighbours like Costa Rica. The simulation estimates that due to the distinctive characteristics of Latin America the percentage reduction in military spending would be 7%, this being rather less than the average of 12% that such a strategy would have globally. However, since military spending in Latin America is currently around $30bn, such a 7% reduction would save around $2.1bn per year. It is striking that the pay-off in terms of reduced military spending merely from coordinating peer pressure might be far larger than the attainment of precarious peace. Overwhelmingly, military spending is not incurred due to active warfare but due to normal budgetary practices of granting annual increments that are similar to what others are receiving, plus the influence of perceived threats and of pressure from the domestic military lobby.

Now suppose that instead of cooperating on a norm for spending, the Latin American region was able to provide credible security guarantees against neighbourhood aggression. I have suggested that as a free-standing approach this might not be credible, although it was the strategy of the European Union: economic interdependence was intended to make intra-European war infeasible. How much would this be worth? To estimate this I set the proxy for international threats, namely previous participation in an international war, to zero. In effect, we are erasing the memory of past international conflicts, or at least the consequences of these memories for the perceived need for military spending. The elimination of perceived external threats also reduces chosen military spending by 7% and so generates another saving of $2.1bn per year.

The third type of regional coordination tries to reduce the power of the military lobby through raising democratic standards across the region with minimum standards and codes of good practice. As discussed, this has been a policy of the European Union over its history. Suppose that this approach gradually somewhat raised the level of democratic practice across the region. To be specific, Table 1 shows the conventional political science 'Polity' ratings for Latin American countries as of a decade ago. The average for Latin America in 1997 was 7.6, while the global average was 4.9. Figure 3 shows that there has been a strong upward trend in the average democracy score for Latin America. As in the previous global counterfactual, I simulate the benefit were regional action gradually to raise the average rating by 2.0, equivalent to raising the typical score from the political conditions prevailing in Nicaragua in 1997 to those prevailing in Costa Rica in 1997. Given the current high democracy ratings of the region, this could equivalently simulate a regional strategy that successfully prevented retrogression. Recall that globally, such an increase tends to reduce the influence of the military lobby and hence reduce chosen military spending. What would the consequences be for Latin America? The simulation shows a reduction in spending of 12%, implying a large saving of $3.4bn.

Table 1: Democracy Scores for Latin America in 1997

Country	Score	Country	Score
Argentina	7	Haiti	7
Bolivia	9	Honduras	6
Brazil	8	Jamaica	9
Chile	8	Mexico	6
Colombia	7	Nicaragua	8
Costa Rica	10	Panama	9
Dominican Republic	8	Paraguay	7
Ecuador	8	Peru	3
El Salvador	7	Uruguay	10
Guatemala	8	Venezuela	8
Guyana	6		

Notes: Index ranges from 0 to ten with higher values indicating more democratic regimes. Source: Polity IV data set, http://www.cidcm.umd.edu/polity/

Figure 3: Average Democracy Scores
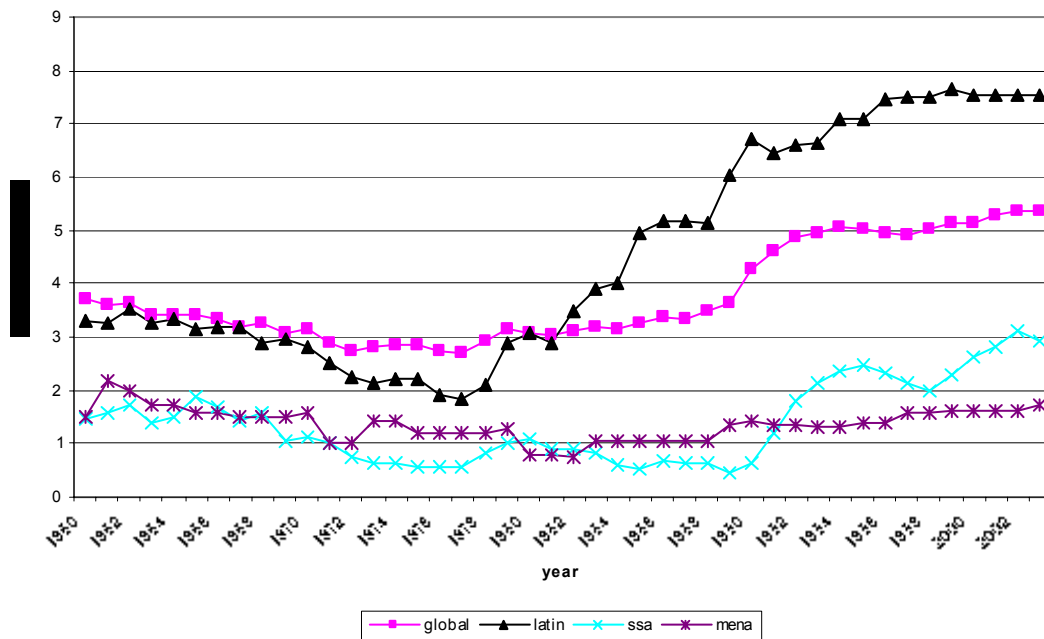
Above, I have taken each possible form of regional cooperation in isolation. However, it is also possible to estimate the consequence of a package which combines all three of these regional efforts. That is, the region uses peer pressure on levels of spending, generates the regional public good of security guarantees against external aggression, and generates the regional public good of greater democracy, so that the individual gains cumulate. This package reduces military spending in the typical Latin American country by 23.1%, implying a saving of $7.1bn on current levels, or 0.46 percentage points of GDP.

Lest the number 0.46% might be misinterpreted as being small, it should be noted that it is recurrent. It is therefore appropriate to value it as a discounted present value. A conventional discount rate for much present value analysis is 5%. So discounted, the present value of this reduction in military spending would be $142bn, this therefore representing the ball-park potential pay-off to an effort at regional cooperation. To put this in perspective it is more than double the combined funding initiative of Bill Gates and Warren Buffet that recently rightly made world headlines. So, the same number can be made to seem either very small or very large.

I should note that these estimates come from a straightforward application of an existing empirical model that explained chosen levels of military spending.[1] Although the model happens to be well suited to the present purpose of estimating the pay-off to regional cooperation, it was not developed for that purpose and has already been subject to the normal academic peer review, being published as the lead paper in a respected journal of statistical analysis. Thus, although the application has been commissioned in the context of a plan to reduce military spending, the model used for the estimation of the benefits is independent of this political context. While the results

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[1] The paper is downloadable from http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1468-0084.2006.00439.x?cookieSet=1

are subject to the usual caveats concerning statistical error, they are not generated to suit any particular political agenda.

So far I have focused upon the benefits to Latin America. However, the analysis is readily extended to other regions. Since the political potential for regionally coordinated reductions in military spending is not confined to Latin America, these numbers are themselves of interest. Table 2 shows the potential benefits from each of these forms of regional cooperation, and from the package of three types of cooperation, region-by-region, and globally. For the five regions of the developing world in aggregate the potential gains would be in excess of $50bn per year, and thus would be approximately equivalent to the current scale of global aid.

Table 2: The Simulated Defence Burden under various Policy Experiments
(in percentage points of GDP)

	Global Average	Typical Aid Recpient	Latin America	Sub Saharan Africa	East Asia	South Asia	Middle East and North Africa
Actual military expenditure	3.36	3.60	1.99	2.51	3.25	2.22	10.51
Estimated military expenditure	3.89	3.81	3.26	3.19	3.76	2.95	8.32
Burden with cooperation							
with emulation pressure (1)	3.43	3.34	3.03	2.85	3.35	2.74	6.71
Burden if external threats eliminated (2)	3.46	3.43	3.03	3.12	3.45	2.48	6.30
Burden if democracy reinforced (3)	3.46	3.38	2.90	2.83	3.34	2.62	7.40
Burden with package of cooperation (1)+(2)+(3)	2.71	2.67	2.51	2.48	2.73	2.05	4.52
Some comparisons							
de facto international peace	3.77	3.67	3.21	3.16	3.49	2.69	7.30
de facto internal peace	3.81	3.70	3.19	3.10	3.52	2.77	8.03
double GDP	4.59	4.49	3.84	3.76	4.43	3.48	9.81
half population	4.01	3.92	3.36	3.28	3.87	3.04	8.57

The first row provides the means of the actual defence burden in percentage points of GDP, and the second row the estimated defence burden at the mean of the variables. The following rows show the defence burden as a result of a particular policy experiment. The comparisons are as follows. *De facto international peace* has already been discussed: it is the fortuitous absence of international war but without any mechanisms to reduced perceived threats. Analogously, *de facto internal peace* is the fortuitous absence of civil war. *Double GDP* simulates how the burden will grow if levels of GDP are doubled, such as might occur after a prolonged period of growth, but with no other changes in the incentives for military spending. *Half population* depicts the burden were countries to have half their actual population size: the

purpose of this simulation is to demonstrate the additional burden that falls on states with small populations. All figures are based on Collier and Hoeffler 2007.

Table 3: Changes in the Defence Burden due to the Policy Experiment
(in percentage points of GDP)

	Global Average	Typical Aid Recpient	Latin America	Sub Saharan Africa	East Asia	South Asia	Middle East and North Africa
Actual military expenditure	3.36	3.60	1.99	2.51	3.25	2.22	10.51
Predicted military expenditure	3.89	3.81	3.26	3.19	3.76	2.95	8.32
Gains from Cooperation							
potential from emulation pressure (1)	-0.12	-0.12	-0.07	-0.11	0.05	-0.07	-0.19
potential from eliminating external threats (2)	-0.11	-0.10	-0.07	-0.02	0.08	-0.16	-0.24
potential from reinforcing democracy (3)	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11
Package of cooperation (1)+(2)+(3)	-0.31	-0.30	-0.23	-0.22	-0.14	-0.31	-0.46
Some Comparisons							
de facto international peace	-0.03	-0.04	-0.02	-0.01	0.09	-0.09	-0.12
de facto internal peace	-0.02	-0.03	-0.02	-0.03	0.10	-0.06	-0.04
double GDP	0.18	0.18	0.18	0.18	0.18	0.18	0.18
half population	0.03	0.03	0.03	0.03	0.21	0.03	0.03

Table 4: Simulated Annual Estimates of the Effects of the Policy Experiments
(in $ billion)

	Latin America	Sub Saharan Africa	East Asia	South Asia	Middle East and North Africa
total military spending in 2005 (bn US$)	30.619	4.685	72.025	27.352	57.699
Gains from Cooperation					
potential from emulation pressure (1)	-2.1	-0.5	3.7	-1.9	-11.2
potential from eliminating external threats (2)	-2.1	-0.1	5.8	-4.3	-14
potential from reinforcing democracy (3)	-3.4	-0.5	-8	-3	-6.4
Package of cooperation (1)+(2)+(3)	-7.1	-1.0	-10.4	-8.4	-26.4
Some Comparisons					
de facto international peace	-0.5	-0.04	6.8	-2.4	-7.1
de facto internal peace	-0.7	-0.1	7.4	-1.6	-2
double GDP	5.5	0.8	12.9	4.9	10.3

half population	0.9	0.1	15.3	0.8	1.7

Notes: All figures in billions of US$.

In the first row we list the total military expenditure for each region in 2005. This number was obtained by multiplying the current GDP by the percentage of military expenditure in GDP for each country. Data source: WDI 2006. We added this total military expenditure across the region. The following columns show by how much total military spending would decrease (increase) as a result of the policy experiment. All figures are expressed in billions of current US$.

Part II: Modalities and Incentives for Regional Cooperation

Part I established that were cooperation to reduce military spending feasible, it would be valuable. The ballpark estimates of the pay-off are large. Yet despite these large gains from cooperation, to date it has not occurred: the potential has not been realized. That such large potential gains should go unexploited for many decades immediately tells us that there must be some important obstacles: coordination cannot be straightforward or it would already have happened. I now turn to the problems faced by coordination and how they might be overcome.

Coordination for addressing the neighbourhood public bad of military spending is somewhat analogous to other international public goods problems and so in Section I I review this experience. In Section 2 I turn to the particular characteristics of military spending that make effective solutions to the coordination problem distinctive. In Section 3 I discuss the practical measures implied by these distinctive solutions.

1. Analogies with other international public goods problems

Military spending

Since our concern is military spending, the obvious place to start is with previous approaches to the international coordination of military spending.

Globally, the most prominent were the SALT and START agreements to contain the arms race between the USA and the USSR. These were greatly simplified because the arms race was between only two countries so that interdependence was evident. Not only was it obvious that each country's spending was a public bad for the other country, it was also obvious that if one country increased its spending the other country would retaliate. Reciprocity made it much easier to internalize these externalities, but recall that reciprocity is not a feature of a neighbourhood except in the unusual circumstance of an island divided into two countries.

A successful multi-country agreement on military spending was NATO, (Hartley and Sandler 1999). Over the years the members of NATO indeed learnt how to cooperate. However, its purpose was to get a group of countries to overcome the free-rider problem in meeting a common threat, and so it coordinated minimum rather than maximum levels of military spending.

Latin America has had a long history of attempts to build regional cooperation on security. The first attempt, the Rio Treaty of 1947, mirrored NATO in focusing on common external threats to the region. In a sense, this addressed the wrong security problem: unlike NATO, the key security threats facing Latin America were internal to the region and so what was needed was a cooperative process of military de-escalation. The focus on mutual military de-escalation started in 1974 with the Ayacucho Declaration. Since then there have been numerous steps, including practical specifications of supporting measures, the authorization of regional institutions to get involved in the process, and the creation of specialist committees. However, to date these efforts have not produced decisive change. Other regions also have processes of coordination at various stages of development, ranging from civil society movements

in West Africa, to formal accords in the Balkans. The components recognized as important in such agreements are transparency of behaviour, verification of military provision, and agreed target levels.

Trade policy

Trade policy provides a close analogy with military spending but one in which there has been far more international experience, and indeed, far more success. It therefore provides a useful basis for learning about how international cooperation can succeed.

During the period 1918-1945 most developed countries resorted to trade restrictions as a means of combating unemployment. This was a beggar-thy-neighbour policy that in aggregate left all countries worse off, but by 1945 trade restrictions had accumulated to high levels. With the discovery of Keynesian macroeconomic management, after 1945 it was evident to policy makers that the developed world would mutually benefit from removing these restrictions. However, the problem was that there was little incentive for unilateral trade liberalization. Although unemployment was no longer the problem, unilateral trade liberalization would worsen the balance of payments and therefore require currency depreciation and its corollary of inflation. Only mutual trade liberalization would leave the balance of payments approximately neutral, but there was initially no mechanism by which each government could agree with others that they would all liberalize trade together.

This was the rationale for the GATT, which was a club within which developed countries could negotiate liberalization. The institutional architecture of reaching agreements was the concept of a *negotiating round*. Only once everyone had reached agreement as to what each country would do did the commitments come into effect, although if a country reduced its tariffs unilaterally during the round this would be banked as a contribution. There was some notion of proportionality and fairness: governments had to make similar magnitudes of cuts, otherwise other countries refused to make cuts themselves.

The advantage of this negotiating round style was that a country could make a commitment conditional upon being satisfied that others were making similar commitments. Further, once all these conditional commitments had been made and had been negotiated into a form in which they were mutually consistent, each government knew that it had to honour its commitment. A refusal to honour a commitment would have incurred two types of penalties. One was that within the rules, other countries would have been entitled to retaliate, but the more important one was that the whole credibility of the process would have been undermined so that further gains from mutual rounds of trade liberalization would have been sacrificed. The process was gradual, creeping towards the final goal of complete trade liberalization in manufactures through several rounds of negotiations stretched over several decades. Overall, it took around fifty years, but the pay-off was enormous.

Parallel to the global reductions in trade restrictions, there have been many regional processes. By far the most successful is that of the European Union, but Latin America also has several arrangements. The regional agreements all have the same goal of the total removal of trade restrictions within the region. They usually offer a time-scale for reaching this goal in steps.

Paradoxically, although regional trade agreements are far more common than regional agreements to limit military spending, they are liable to be much more problematic. This is because, except in the case of a very large union such as the European Union, the gains from freeing trade are offset by costs of diverting it, and the diversion generates powerful redistributions among the members. As a result there are liable to be losers as well as winners, causing inevitable frictions. By contrast, mutual reductions in military spending can be designed so as to leave all parties better off and so are in principle much more straightforward.

Why, despite these disadvantages, have trade agreements been so much more popular than security agreements? Partly, it is because the benefits of regional free trade have probably been over-estimated. However, a second factor is that the benefits of a trade agreement can be very precisely confined to participants by the principle of *reciprocal preference*. Trade barriers are lowered only on those countries that reciprocate. This enables trade blocs to be smaller than the geographic region, and indeed to start small and grow, as did the European Union. By contrast, *all* neighbouring countries benefit from a reduction in a country's military spending whether they reciprocate or not. Hence, if two neighbours agree to reduce their military spending, other neighbours of these countries benefit more by not matching the reduction than by matching it. Third, it is very easy to monitor whether other governments are complying with the agreement and easy to retaliate if they do not because the removal of trade restrictions can easily be reversed. Military spending is more difficult to observe, and it is more costly to reduce spending and then reverse it.

Carbon emissions

Carbon emissions are a global public bad which is beginning to be addressed. The key design features of global control have recently been well-articulated in the *Stern Review of Climate Change*. The basic principle is that the control system should have two stages. The first is an agreement on a quantitative ceiling to emissions of carbon. The second is the creation of incentives that limit emissions to that ceiling through permits to emit carbon which are then traded on a world market.

Reaching agreement on the first of these stages is likely to be easier than the second, because such a market would generate large financial redistributions between countries. However, the advantage of a market in carbon permits is that it provides the incentive to limit the public bad at the least global economic cost and it is has already been established in Europe.

The implication: Two Viable Models

These different experiences suggest that either of two different approaches might be taken to a regionally coordinated reduction in military spending. One is analogous to the GATT process in which although there is an overarching objective, this is not converted into a target, and the eventual rate of adjustment emerges from whatever governments are willing to negotiate through many bilateral deals. The other is to get a pan-regional agreement on some common targets, whether in levels or rates of change or both, and then to create incentives for implementation.

2. Designing coordinated reductions in military spending: some principles

I now build on the above examples to develop some principles. Let us return to the special features of military spending that make uncoordinated decision-taking excessive.

> It is a neighbourhood public bad.
> Neighbours matter most, but each country has different neighbours.

The fact that it is a neighbourhood public bad tells us that neighbourhood coordination is going to be necessary to internalize the externalities. However, because each country has different neighbours, the group necessary for coordination is going to be larger than the neighbourhood. There are very powerful reasons for believing that coordination gets more difficult the larger is the negotiating group: the 'free-rider' problem is more severe. Hence, the right size is the smallest group of countries that have no pertinent neighbours other than each other. This group is normally the region. Hence:

The region is the appropriate unit for cooperative efforts to reduce military spending.

However, regional public goods are under-supplied because the normal solution to the collective action problem inherent in public goods, namely government, is not available. Hence, regional public goods face the problem of free-riding: no one government has an incentive to contribute to them. It is thus not enough to establish that were a regional public good supplied it would yield large benefits. The key to public goods delivery is to design an effective incentive mechanism which induces the needed collective action.

As with all public bads, decision-takers need to be faced with incentives that better reflect the true costs of their actions. It is now recognized that the best way of doing this is through setting the socially desired quantity, and then using incentives to get to this quantity. For example, this is the principle behind the regulation of carbon emissions through setting target levels and then creating a market in the rights to emit up to these levels. The extent to which market incentives need to be used depends upon how many decision-takers are involved. Where there are many decision-takers, as in carbon emissions, the market greatly enhances efficiency, but where there are few decision-takers, as in regional coordination among governments, creating market incentives may be unnecessary or indeed inappropriate. For example, even if it were feasible, a market in permits for military spending would run into a difficulty not encountered by a market in carbon permits. Unlike carbon emissions, governments care about *which* other countries are spending on the military, not just on how much is being spent in total across the region. If, in a future carbon trading system, all the emission rights were bought by Chinese companies this would not matter for the problem of containing emissions, but if all the regional rights to military spending were bought by one country this would not be immaterial to the region's security. However, with or without market mechanisms, the first step is reaching agreement on target levels.

Two of the characteristics of military spending are important in setting targets:

> Norms, not pay-offs, are the basis for budgeting.
> An increase in spending for whatever purpose constitutes an external threat.

The first suggests that potentially any level of spending is acceptable, in which case the most socially efficient is evidently the Costa Rican choice of zero. However, the second suggests that this may be overly ambitious. If some countries have valid reasons other than external threats to maintain positive levels of military spending, then, because these choices then inadvertently constitute a threat to neighbours, no agreement will be reachable. In Latin America the only rationale for military spending that cannot be removed by regional security agreements is the resistance to actual rebellion. A country fighting an insurgency will need to have higher military spending than other countries. To limit defensive retaliation by neighbours this exception has to be accommodated into the norm of regional targets. Hence:

Agreed target levels of spending must distinguish between legitimate needs and illegitimate pressures.

If it is inappropriate to think in terms of a market in the rights to military spending, how else can incentives be created that induce governments to meet these targets? Recall that one of the features of military spending is interdependence:

> An increase by one country induces an increase by others.

The unrecognized interdependence of spending further increases the costs of uncoordinated decision taking relative to an ordinary public bad. Military spending is like a noisy radio rather than just like carbon emissions. However, it also points the way to how regional cooperation can be built. If interdependence could be made powerful and explicit then it would increase the recognized costs of military spending. Each government would know that if it increased its own spending this would be fully matched by neighbours. Clear reciprocity is thus the means of changing incentives. However, before relying upon reciprocity it is important to recall the final feature of military spending:

> Each country has an incentive to get ahead of its neighbours' spending.

Even if neighbours eventually respond by matching an increase in spending, a country can still gain a temporary advantage if it can implement an increase before its neighbours have time to respond. This creates an incentive for pre-emptive increases in spending shrouded by secrecy. This problem of secrecy needs to be countered before reciprocity can be an effective incentive for curtailing military spending. Hence:

Incentives need to be changed by making spending decisions transparent and explicitly interlinked.

3. Practical modalities: some options and some essentials

In this final section I turn to three practical features of cooperation. The first concerns who should negotiate with whom: should the process be bilateral or pan-regional, and what is meant by a 'region'. The second concerns the incentives for participation. The lack of incentives to date accounts for the lack of progress in reducing military spending. I consider three types of incentive: reciprocity, social and peer pressure, and financial rewards. The final practical feature of cooperation is to enhance the credibility of any agreement through making adherence verifiable, predictable, and subject to impartial adjudication.

Who should negotiate with Whom?

The review of examples of inter-government cooperation suggests that either of two modalities might be feasible. One model is the establishment of an agreed goal combined with incentives: this typifies both regional trade agreements, and the prospective approach to controlling carbon emissions. The other model is coordinated bilateral negotiations conducted in rounds, which characterizes the GATT and WTO. The details of these two approaches and their advantages and disadvantages are the first issue considered in this section.

What is a 'region'?

Whether the process of spending reduction is that of repeated coordinated bilateral negotiations, or through one initial negotiation that establishes a common target and and incentives, success is more difficult the greater the number of participants. That is one reason why the WTO faces more difficulties than its predecessor, the GATT since its membership is virtually global.[2] Above, I have suggested that the smallest pertinent grouping for negotiation is the 'region'. I am now going to be more precise. The relevant universe for the negotiation of military spending is for most purposes confined to each single land mass. Essentially, governments are interested in what their neighbours do, and the neighbour effect largely stops at the coast. Hence each continental landmass is the maximum unit that is usually necessary for a negotiating group, and regions generally approximate to this concept. In Latin America there is a further important simplification. Costa Rica has already eliminated military spending and sustained that policy over a long period. Hence, *it has nothing to negotiate with its neighbours*. Fortuitously, Costa Rica is strategically located between Central America and South America. Because the country has already attained or surpassed whatever target might be adopted, it breaks the negotiating chain between Central and South America and this permits the region to be divided into two distinct negotiating groups, one to the North of Costa Rica consisting of Central America plus Mexico, and the other to the South. Further, since it has an interest in both groups but is not a party in either negotiation, Costa Rica can play a convening role for both processes. Both of these characteristics greatly simplify negotiations.

Coordination through a regionally common agreed target

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2 See Collier (2006).

As the present impasse in the WTO demonstrates, coordinated bilateral negotiation can sometimes prove to be very difficult. An alternative is to have a single, multi-country negotiation with the more ambitious objective of setting a target, as in the Kyoto model. As demonstrated by the subsequent problems of Kyoto, a common target is not enough, there has to be some incentive mechanism for implementing the target.

A common target could stipulate a common *ceiling* for military spending, or a common *rate of reduction*. However, since countries start off from different levels of military spending, a common target ceiling will imply different rates of reduction, and a common rate of reduction will imply different final ceilings. This is likely to be an impediment to reaching agreement on either specification of the target. Disagreements are likely to be accentuated once the target is linked to an incentive system. Should the incentives go to those countries making the biggest reductions, or to those with the lowest levels?

The tension between ceilings and rates can potentially be overcome through two distinct approaches. One is to agree on a freeze in real levels of military spending. Each country simply maintains its existing real level of spending. Since the average Latin American country has approximately done this for the last decade, this is a relatively undemanding commitment and this in itself makes it an attractive starting place for getting agreement. The first phase in the coordinated containment of military spending across the region could be to reach agreement to freeze spending levels for a certain period of years. Note from the discussion above that this agreement could be reached separately by either Central America or South America. There is an important pay-off to a freeze. Recall that taking the long sweep of 1965-1999, military spending was *income-elastic*, that is, as GDP increased, military spending tended to be a *rising share* of GDP. In Latin America over this period, a doubling of GDP on average was associated with an increase of 18% in the share of military spending in GDP. Since the mid-1990s this long term trend has been countered by what may be merely the one-off reductions in the level of spending as a consequence of the end of the Cold War. Hence, now is a good time to lock-in to the current historically low levels of spending.

A somewhat more ambitious way of reconciling the tension between a common ceiling and a common rate of reduction is for the common rate of reduction to be reinterpreted to mean that all countries adjust to the common ceiling at the same *proportionate* rate. For example, each country might be expected to move half-way towards the common ceiling over a five-year period. This is analogous to a standard tariff-reducing negotiating formula. Rewards can then be linked to compliance, defined as reducing tariffs at the agreed rate, so that countries already at or below the ceiling would automatically be compliant.

The agreed ceiling has to emerge from a negotiation and so cannot be determined ex ante. However, for illustrative purposes I use the estimate of Part I that around a quarter of Latin America's military spending has been influenced by factors which regional coordination could reasonably be expected to address. Hence, a reasonable common ceiling which the region might aim gradually to approach would be for the share of military spending in GDP to be harmonized at three-quarters of its current

average across the region. At present levels of GDP this would imply a reduction for the region as a whole of about $7bn. If the reduction were spread evenly over a decade, then, for a country currently at the regional average, the rate of reduction relative to GDP would only be 2.5% per year. Thus, if GDP grew at 2.5%, the military budget would merely need to stay constant in real terms for the country to be fully compliant. Obviously, higher-spending countries would need to reduce their military budgets by more than this. If the first phase of a freeze is successfully achieved, then it could be followed by this more ambitious phase of agreement on a common ceiling and a common proportionate rate of reduction towards it.

If this second phase were also successfully achieved the basis of prolonged cooperation would have been created that might enable a more ambitious common ceiling as a third stage. This would be the Costa Rica solution of zero military spending, subject to the exception that governments engaged in opposing active internal rebellion would be exempted from the ceiling for the duration of the conflict. Part of the rationale for achieving a common ceiling at a relatively high level of military spending, prior to trying to reach agreement on the far more ambitious ceiling of zero, is that by the time governments contemplate the abolition of military spending they have already eliminated issues of relative advantage.

To summarize, the proposed approach for agreed regional targets is in three phases: a freeze, a common ceiling and common proportionate reduction towards it, and finally gradual adjustment to the Costa Rica model.

Regionally Coordinated Bilateral Negotiations

The common target approach is ideal, but difficult to achieve and so it is also worth considering the other model of coordinated bilateral negotiations. After all, trade liberalization has proceeded using both models in tandem.

Neither the GATT nor WTO imposes proportionality on the contribution of each participant. Approximate proportionality emerges as a consequence of a host of bilaterally negotiated deals with benefits spread by the MFN clause. The reason for avoiding such a proportionality rule is that it is judged to be too demanding for countries to agree in advance to implement it, given the varied pattern of trade restrictions. Approximately common behaviour emerges from smaller negotiations, and so countries are willing to participate: no advance commitment is necessary and each country can end up agreeing only to the specific terms that it has itself negotiated and once it sees what everyone else has also conditionally negotiated.

The peculiar problem of military spending is that decisions are interdependent across a *region*, but the interdependence is driven by concerns about *neighbours*. Yet the property of being a neighbour, although reciprocal, is not symmetrical. If A has B as a neighbour, then of course, B must have A as a neighbour. But if A also has C as a neighbour it does not follow that B also has C as a neighbour. Thus, each country has concerns that are parochial, and these parochial concerns although pair-wise reciprocal, are not symmetrical: there is no sub-group within the region that can coordinate in such a way as to internalize the concerns of all its members.

An implication is that the incentive to participate in negotiations is driven by an interest in the spending of neighbours. The most efficient form of negotiation is one in which the number of participants is as small as possible, and in the case of military spending this means restricting them to neighbours. Indeed, since there is no sub-group of a region that has reciprocally common neighbours, the most efficient discussions are likely to be bilateral, with agreements being conditional upon what other neighbours agree to do.

Bilateral bargaining on military spending is easier than on tariffs because there is an automatic MFN clause that relates to neighbours. A cut in military spending against one neighbour is automatically a reduction against all other neighbours since the same military forces are involved.

The negotiating round closes when all countries that wish to do so have participated and when the offers in aggregate are compatible with the conditions that countries have imposed on their own offers. As in trade bargaining, countries that are trying to free-ride on the process, and those that are insisting on better offers from recalcitrant countries, must judge whether by refusing to make a better offer that will sink the whole negotiations and thereby lose all the gains.

The 'negotiating round' would thus take the form of a whole set of paired bilateral negotiations between neighbours. Each negotiated bilateral reduction would be conditional upon the satisfactory conclusion of the other bilateral negotiations. An implication of the automatic neighbourhood MFN clause is that country A can anticipate that it neighbour B will reduce its spending conditionally as a result of B's own negotiations with D. Knowing this, A is more willing to agree to a reduction in spending in its bilateral discussions with C. However, it does not need to take risks since it can make its offer to C conditional upon what B does. Further, since all reductions will be synchronized at the end of the negotiating round, it does not need to worry that the reduction in B's spending will occur after its own reductions, so creating a phase when it is disadvantaged relative to B.

In this process there is a need for a coordinator, which as discussed in Latin America could be Costa Rica, but there is no need for a common agreement on either a ceiling or a rate of reduction. Rather, the coordinator simply launches the negotiating 'round' with a time scale, and at the end of the round checks whether the set of conditional bilateral offers are in aggregate such that participants find it to their mutual advantage to implement their offers. If so, the round 'succeeds' and offers are implemented. As with the WTO, there is likely to be a need for some process that enables appeals against breaches of agreements, essentially by sanctioning retaliatory increases in military spending by the injured parties to agreements that have been broken.

Combining the two processes

As noted, in trade liberalization the two processes have run in parallel, with the target of free trade at the regional level and the looser bilateral negotiating rounds at the global level. However, whereas trade is important both regionally and globally, military interdependence is primarily regional and so this cohabitation of approaches is not appropriate. The two processes might nevertheless be combined by switching between one and the other. Essentially, bilateral negotiation in rounds is considerably

less demanding of consensus than is the quest for a common target. Hence, during periods in which some countries are irreconcilably opposed to the whole idea of mutual reductions in military spending and so would block a region-wide approach, the coordinated bilateral approach can be used to maintain momentum. After all, the WTO is not a truly global organization and had trade liberalization depended upon global agreement it would never have got started.

Incentives

As with any public good, if the problem of incentives is not addressed nothing will happen. Incentives need to be created. They can be grouped into reciprocity, pressure, and finance.

The incentive of reciprocity

The paradox of military spending is that although it is interdependent, the interdependence is not sufficiently powerful and explicit to be helpful. Powerful and explicit interdependence, as during the Cold War, makes cooperation easy as in the SALT and START agreements in which mortal enemies were nevertheless able to cooperate. Instead, current regional interdependence is unrecognized and consequently increases the damage done by military spending. The key incentive for reducing military spending is to introduce a rule of reciprocity in spending reductions, making them at least approximately proportionate.

To see both the problem and the potential that a rule of reciprocity generates it is helpful to take an analytic example although the rest of this section can be skipped if the power of reciprocity is accepted. To simplify, I will suppose that there are only two neighbours such as might occur on an island divided in two: say Haiti and the Dominican Republic.

Unrecognized interdependence

The first possibility is that although spending is interdependent its implication for the cost of each country's spending is not recognized. Consider what this would imply for how budget-setting would interact. Because each government sets its level of spending in part in relation to the spending level of the other country, an increase in spending by one country induces an increase in the spending of the other country, and in turn this further increases the desired level of spending in the first country. Thus, the initial spending decision has a multiplier. Supposing that each country spends an extra $5 if its neighbour spends an extra $10, then an initial increase in spending of $100, will induce the neighbour to spend an extra $50, and this in turn will induce the first country to spend a further $25. These echoing increases continue and in this example eventually cumulate to $33. Hence, instead of being an increase of $100, the decision leads inexorably to further increases and ends up costing $133.

On an island with only two countries it would be unlikely that such interdependence would go unnoticed, but in a regional landmass on which each country has several neighbours, none fully reciprocal, it is highly likely. In this case, military spending is clearly excessive even from the narrow perspective of the country's own true independent interests.

It is helpful to illustrate this with a diagram, although it is not essential to follow it. Figure 4 gets us going. The axes plot different levels of military spending by each country, A and B, and each curve shows a given level of government A satisfaction, with its own spending traded-off against that of B. A's ideal is to have positive spending itself while B sets its spending at zero. If B sets its spending at *m* and A fails to spot the interdependence, then the best that it thinks it can do is to choose the level *a*. The line A-A, known as A's *reaction function*, shows each different level of spending that A chooses for different choices by B.

Figure 4: Country A's Preferred Military Expenditure Depends up that Chosen by Country B
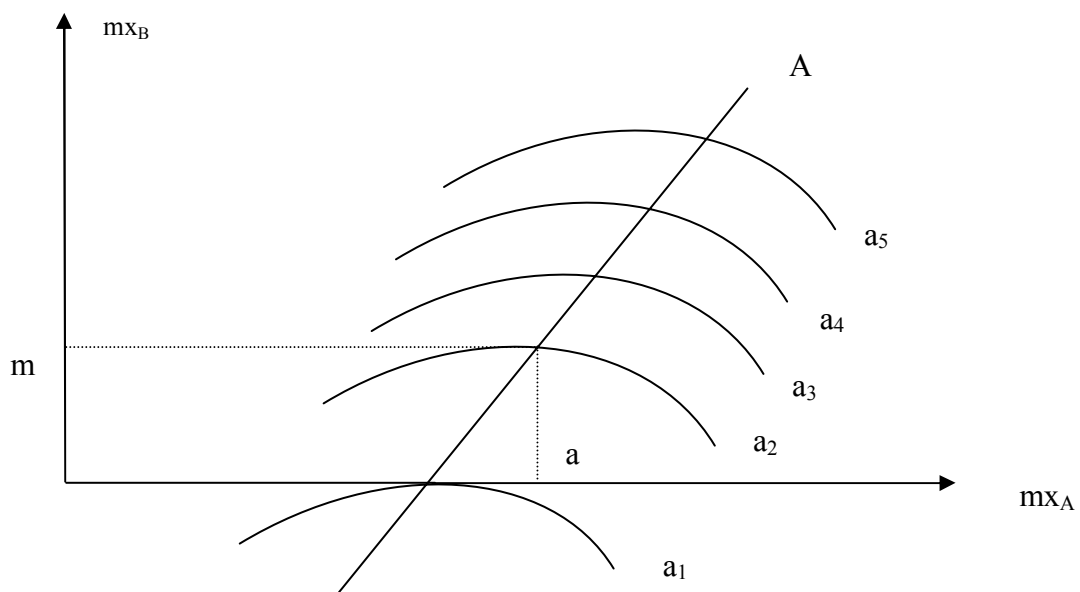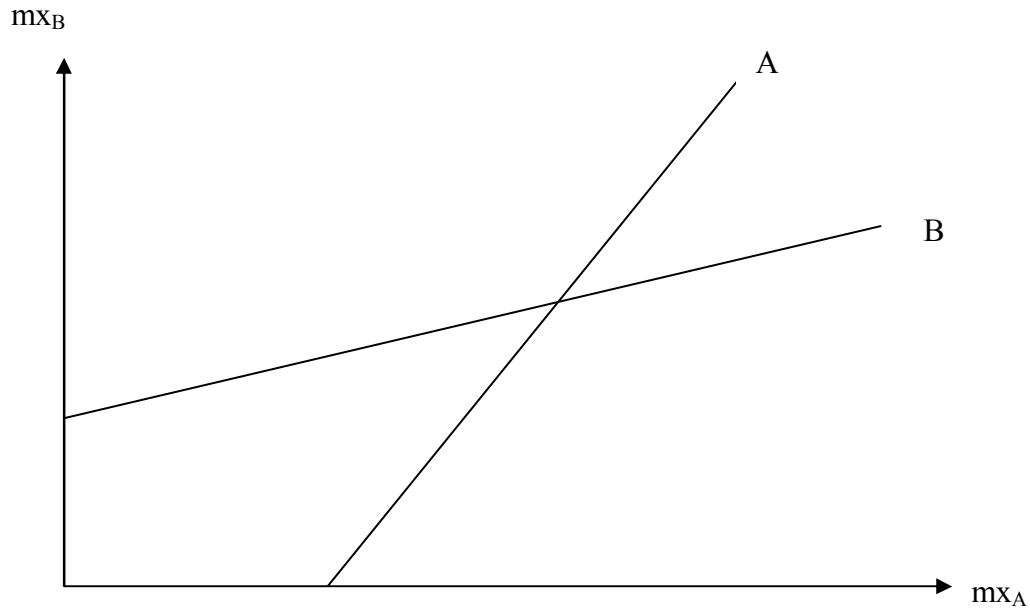

Figure 5 brings together A's reaction function with the corresponding one for B, and shows the equilibrium resulting from this unrecognized interdependence. Both countries could do much better than this.

**Figure 5: A's Choice depends on B, and B's Choice depends on A**

Recognized, but non-cooperative interdependence

Now, suppose that both countries realise that their spending is interdependent but fail to cooperate. The move from unrecognized to recognized interdependence induces both countries to lower their spending.

In terms of the illustration, this is depicted as follows. A sees that it could do better than choosing *a* because its marginal military spending is actually costing it more than it thought, given B's reaction. Taking B's reaction function as given it can do better by cutting its spending to a_4 (Figure 6). However, since B does the same thing, the eventual equilibrium is reached only after several rounds of cuts in spending. It is depicted in Figure 7 as R, and compared to the initial equilibrium at U. At R both countries are better off than they were at U, but they could still do much better.

Figure 6: A's Choice once it recognizes that B reacts to A's Choice
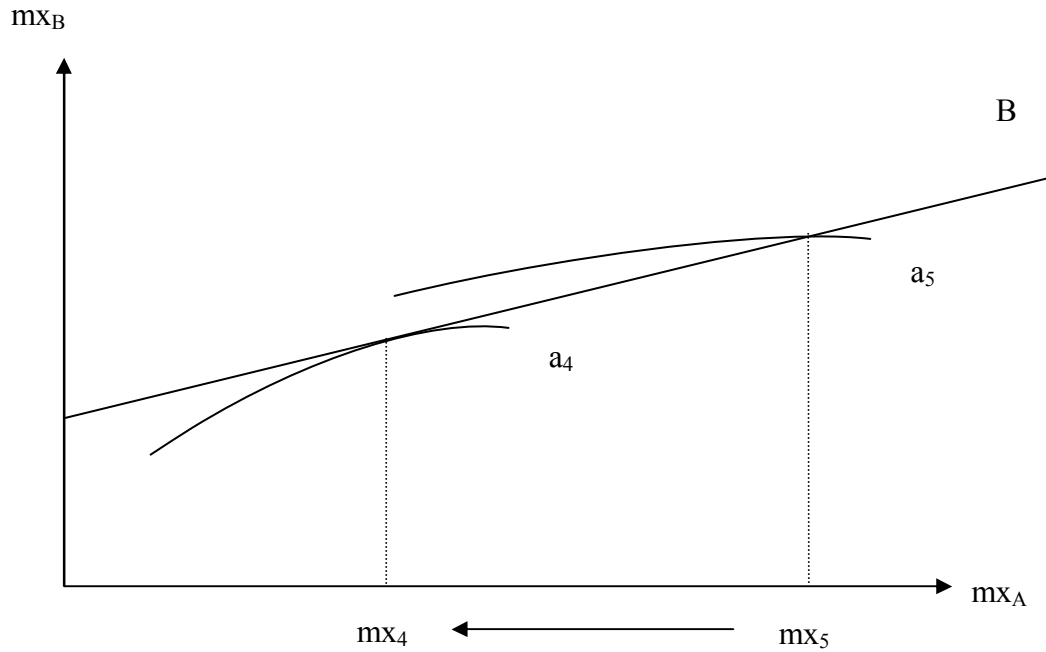
Recognized and cooperative interdependence

While the equilibrium resulting from the recognition of interdependence is an improvement for both countries over the initial situation of unrecognized interdependence, it is still far from ideal: both countries could do better by cooperating. Cooperation would result in both countries further reducing their military spending.

Figure 7: Eventual Choices when both Countries Recognize Interdependence
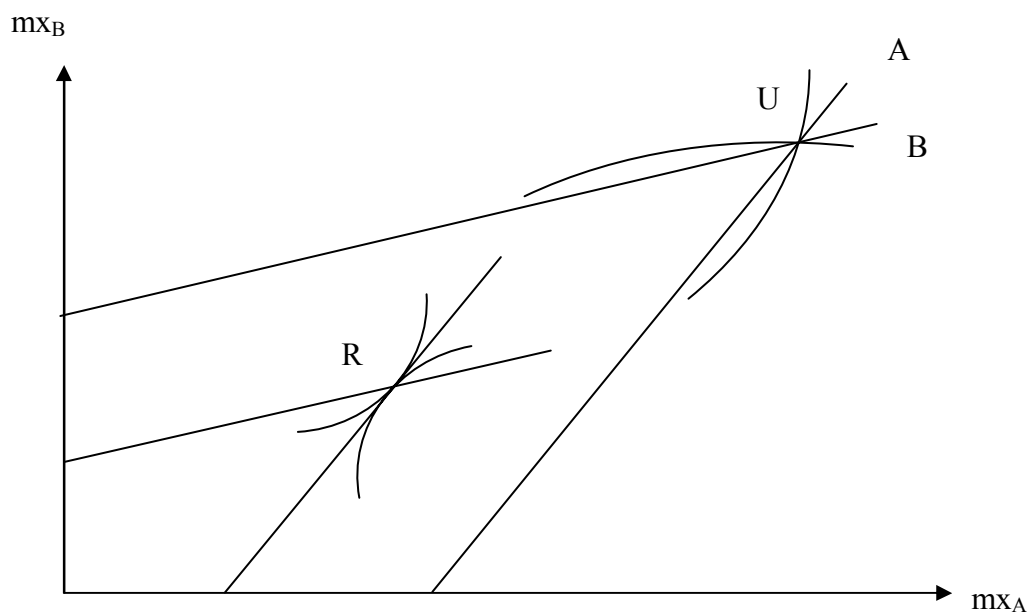
In terms of the illustration, the best the two countries could achieve by cooperating is at a point such as C in Figure 8, where neither country can do better without the other country doing worse. In fact, there is not one single point, but a whole set of points with this characteristic but a different distribution of the mutual gains between the two countries. Depending upon their relative skill, with efficient bargaining, A and B will reach some point at which they are both better off than at the non-cooperative equilibrium, R.

Now we reach the really important point. If there are only two countries they may be able to reach a mutually advantageous outcome simply by bargaining, but with many countries it is much more likely if incentives are changed through a rule of reciprocity. Each party might agree that reductions should be proportionate to the initial level of spending. With such a formula both countries will want to make reductions in spending although possibly by different amounts. Reciprocity provides the incentive for each country to cut its spending because the costs of not doing so are now fully internalized. Each country now realizes that any increase in its military spending would be *fully* matched by the other, instead of only partly matched which is the expectation in the case of recognized interdependence. Figure 9 illustrates a bargaining rule which requires proportionate reductions from the initial level of spending, R. As depicted, there is disagreement about the eventual target level for mutual reduction, with county A preferring point a, and country B preferring point b. The eventual deal will be a compromise target reduction such as C, between these two points.

Figure 8: The Potential Mutual Gains from Cooperation
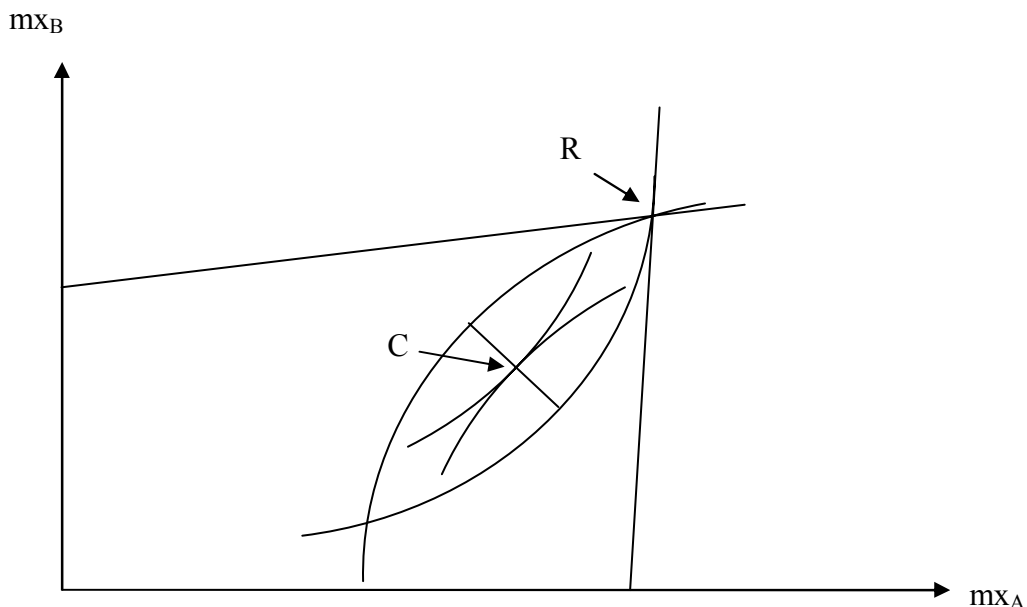
Figure 9: Cooperation Enforced by a Rule of Reciprocity
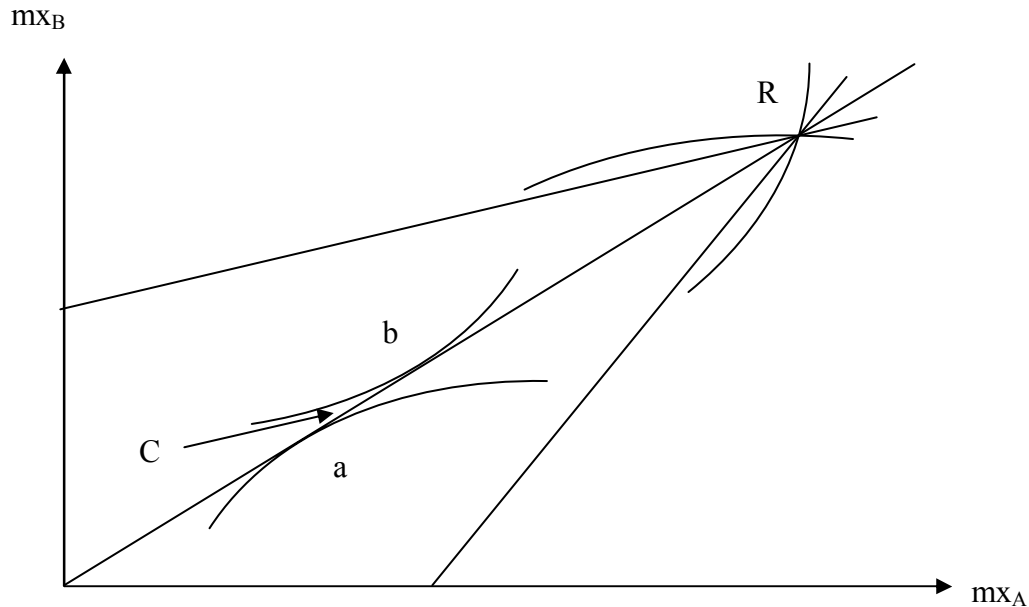
Hence, starting from a position in which interdependence is unrecognized, there is considerable potential for cooperation. Cooperation achieves both recognition of interdependence and increases the extent of interdependence. Both of these reduce the desired level of military spending.

Recall that in the hypothetical case illustrated above, an increase in spending by one country increased spending in the other by half of that increase. Recognition of this interdependence reduced spending because the initial increase is now seen to be less useful, given that the other country will copy part of it. Cooperation, with a proportionality rule, essentially locks country's military spending together. Thus, an increase by one country triggers an equal increase in the spending of the neighbour: *the response is 100% instead of 50%.* Always, the move from a failure to recognize interdependence to a cooperative proportionality rule reduces the incentive to spend because the assumed response rises from 0% to 100%. How this is divided between the recognition effect and the cooperation effect depends upon the actual magnitude of interdependence in the non-cooperative case. The larger is the interdependence, the more important is recognition, leaving less for cooperation.

Hence, in assessing the potential for regional cooperation it is important to know what the revealed interdependence effect is. The statistical analysis of Collier and Hoeffler (2007) finds that on average over the period since 1970 the degree of interdependence has been around 11%: an increase of $100 induces neighbours to increase their spending by 11%. An implication is that the recognition effect is not going to provide the major impetus towards reduced military spending. The major impact on incentives must come from the move to cooperation rather than just recognition.

Although the above analysis is illustrated in a stylized region of only two countries, the concepts carry through almost directly to the real world of multiple neighbours. The only difference is that the magnitude of the recognition effect is further reduced. If, for example, a country has four neighbours, then the degree of interdependence

found empirically implies that if country A increases its spending by $100 the neighbours *in aggregate* would increase their spending by $10, but each one individually would increase by only $2.5. Hence, although the adverse externality to the region stays the same, the recognition effect is now only one quarter of what it was when A only had one neighbour.[3]

The implication is that regional cooperation can generate an incentive for reduced military spending by introducing a rule of reciprocal proportionality.

Recall that in a regional trade agreement it is very straightforward to exclude those countries that do not reciprocate reductions in trade restrictions. The problem of military spending is that such exclusion is technically not feasible: tariffs can discriminate between to which countries they apply, whereas military spending cannot discriminate between which neighbours it might potentially threaten. However, exclusion can be approximated by the notion of a *deal breaker*. If several countries refuse attempt to free-ride, it will not be worth any countries implementing their offers of reductions in spending. Hence, each country has to judge whether by aiming for the big reward generated by successful free-riding it risks being a deal breaker and so sacrificing the smaller gains attainable from participation in reciprocal reductions. This is why it is important to keep numbers down to a minimum: in smaller groups it is easier for countries to recognize that they are potentially deal breakers.

The incentive of pressure

Reciprocity is an important incentive for reducing military spending but it is not the only potential incentive. A second type of incentive comes from harnessing the power of lobbies.

I have already shown the extraordinary power of the military lobby itself. I now suggest a simple approach to generating a powerful offsetting lobby, this is to *link reductions in military spending to increases in social spending.*

At present, if military spending is reduced in a way that does not jeopardize security everybody in the society potentially benefits. Unfortunately, because everybody potentially benefits we encounter the standard public good problem: nobody has any particular interest in using lobbying pressure to bring about this objective. As a result, there is no strong countervailing lobby to military spending. As with all public goods problems, the solution is to internalize these external benefits. By linking the reduction in military spending to specific beneficiaries, those beneficiaries have an incentive to exert effort in lobbying for the outcome. Of the potential uses of the resources released from military spending, social spending on health and education has the advantage of being manifestly beneficial and of having clear groups that would benefit. One group is large, namely potential users of enhanced services, while the other is much smaller, namely employees in the health and education sectors. It is useful to have both large and small groups as potential beneficiaries. Having a large

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[3] This is an implication of equation 12 in Collier and Hoeffler (2007) which gives the ARMNE for the multi-country case. To get the total increase in the military spending of neighbours the numerator of that equation must be multiplied by the number of neighbours, n-1, and this collapses it to b, which is the ARMNE in the two-country case. The denominator is different in the two cases, but is always very close to unity given the observed value of b.

group of beneficiaries makes the strategy attractive in terms of votes, whereas having a small group of beneficiaries is preferable for inducing serious political lobbying.

While there are good grounds for avoiding the hypothecation of tax revenues for specific spending purposes, these arguments do not extend to the earmarking of reductions in military spending for other uses. On the contrary, citizens are better able to assess proposed *reallocations* of spending than changes in overall levels: hence the common pre-election phenomenon of misleading promises of overall increases in public spending. An explicit link between commitments to reduce military spending and increases in social spending might work as follows. First, each participating government would choose some component of social spending that it would increase with resources released. The chosen link does not need to be common across countries. Indeed, it increases the incentives for overall compliance if, within the broad category of social spending, each government is free to specify that component which it wishes to prioritize. Thus, some governments might prefer to link reductions in military spending to *Progresa*-style schemes to expand enrolment in education, while others might prefer to link to an expansion in rural health clinics. The only common requirement that governments should impose on each other is that each should publicize information about its chosen link within the society. Once the scale of the commitments to reduced military spending was determined, this too would be publicized. As discussed below, the government would be under a common obligation to establish a verification system with the pertinent domestic interest groups. However, the details of this do not need to be specified or internationally enforced, since there is a reasonable presumption that in most societies domestic interest groups for particular components of social spending are sufficiently well organized to promote their own interest once they are aware that the government has made a commitment of additional money.

Creating a link between military and social expenditures should generate pressure within a society, but there is also potential for generating pressure between societies. This key to achieving such peer pressure is to create clear quantitative targets which are then either achieved or missed, and an authoritative source of comparative information about performance. A good example is the European Central Bank targets on fiscal deficits under the Stability Pact. A fiscal deficit is by its nature on a continuum: there is little objective difference between a deficit of 2.9% of GDP and 3.1%. However, by setting a target level of 3% the Stability Pact created high political costs of allowing the deficit to increase beyond that threshold: the government was sure to be pilloried for failure, especially when other governments were achieving the target. It is important to set the threshold at a level where most participants will achieve compliance. In the case of the Stability Pact, apparently the decisive factor for the Italian government was the announcement by the government of Spain that it would meet the conditions. Hence, the Italian government would be seen as failing relative to several other governments and not just Germany and France. This is an important feature of encouraging compliance: pressure is considerably greater if most other participants are expected to meet the threshold.

This is one advantage of the agreed target approach over the coordinated bilateral negotiations approach, since with the latter there is no clear benchmark for performance. However, with either approach there is a need to create an independent authority that reports military spending, such as a regional central bank.

The incentive of finance

As discussed above, the importance of financial incentives depends upon the number and type of decision taker that needs to be influenced. In the case of carbon emissions financial incentives will be central to success, whereas in the case of government agreements on military spending reductions they are less central: after all, a reduction in military spending automatically rewards the government with released resources.

Supposing that some financial 'reward' can be found, how might it be linked to behaviour on military spending? To provide an incentive the reward would have to be tied to the degree of compliance. Fully compliant countries would be those that either had already reached the target spending level, or, if still above the ceiling, had met or exceeded the target reduction. Countries that made smaller reductions than the target might be given proportionately smaller rewards, or for greater incentive power the rewards could be confined to those that achieved the threshold. For reasons discussed below, the target reduction should be set at a sufficiently modest level that most participants were likely to achieve or exceed it. Countries that exceeded the threshold should be allowed to 'bank' the excess towards their target for the next round of negotiations. The reward would be triggered by completion and implementation of the negotiating round.

Regionally self-financed incentives

There are two ways in which a reward-system can be regionally self-financing. Either it includes a new system or revenue or it diverts some funds that are already accruing to the governments of the region for other purposes. Including a revenue-raising component in the scheme is attractive because it can itself be designed as an incentive. Indeed, the natural approach to the curtailment of a public bad is to tax it. Just as carbon taxes are now recognized as an appropriate response to global warming, the equivalent in the present context would be a tax on that part of military spending above the agreed ceiling level. However, while such a tax is appropriate, the likely issue is ensuring sufficient compliance. One way of encouraging compliance is to set the tax at a very low rate initially, gradually building up for each subsequent year that spending remains above the ceiling. The escalation of penalties is a design feature of the European Union Stability Pact 'fines' for non-compliance with fiscal deficit targets. By making the initial level and the escalation gradual, the design attempts to avoid a situation in which it is worthwhile to suffer the costs of non-compliance. A second, complementary, way of reinforcing compliance is to confine eligibility to rewards to those who are in good standing regarding any prior tax dues. Rewards would accrue not only to those countries already at the ceiling, but to those that were reducing their spending towards the ceiling at the agreed pace. Thus, taxes and rewards could be structured so that even countries that were not at the ceiling would have their tax liability fully offset by a reward as long as they were achieving the target reduction. Thus, a government that decided not to pay could be criticised by its own society as sacrificing the possibility of benefits.

It might be useful to put some illustrative numbers on the proposed reduction in military spending and the supporting taxation system. Let us maintain the objective of gradually reducing military spending to a ceiling which is around three-quarters of

current average spending levels. Hence, over time, spending as a share of GDP would be cut by around one quarter. This would eventually save around $7bn. Suppose that governments, having agreed this target ceiling, also agreed to levy a regional tax on the extent to which each country's military spending exceeded the ceiling. Presumably, any agreed tax rate would be low: consider the implications were it set at 5%. In this case, since it would take governments some years to reduce spending to the new ceiling, in the interim they would be liable to the tax, the initial lead being of the order of $350m (that is, 5% of the initial excess spending of $7bn.). Suppose that the region decides to reduce military spending to the new ceiling over the course of three negotiating rounds, each of three years. Then, for the typical country, there would be a gradual reduction of military spending as a share of GDP cumulating to 25% but spread over 9 years, so that the annual rate of reduction in military spending as a share of GDP would only be around 3%. For the region as a whole, the 3% annual cut would imply that military spending would decline by around $900m per year relative to the counterfactual of keeping the budget constant as a share of GDP. The revenue from the tax on excess military spending, initially around $350m, would gradually taper to zero as countries approached the target ceiling. Any financial reward mechanism for compliance would evidently need not to exceed these tapering revenues: a simple system would be for those countries in compliance in a particular year to share the revenue pool for that year. Thus, in the early stages of the reduction, the annual revenue would be around $350m and the annual reduction in military spending would be around $900m. Each dollar of reduced military spending would attract a reward of around 40 cents, so that the government would release $1.40 for other uses for each dollar of spending it reduced. This is quite a powerful financial incentive, despite the low rate of taxation of excess spending. It is possible for a low tax rate fully to fund a powerful incentive for compliance because, *by taxing the level of excess spending but rewarding the change in spending, tax rates on levels can be low and yet finance powerful incentives for change*. As military spending declined towards the target ceiling, the revenues from the tax on excess spending would dwindle so that the financial incentive for compliance would diminish. Indeed, if all governments complied with the process, after nine years they would all be at or below the ceiling so that there would be no further tax liability but also no further need to finance incentives for reductions. Hence, the entire financial mechanism would end. The tapered structure of the incentives for compliance is itself attractive. By setting the incentives for reducing spending higher initially than later they are concentrated where they are most needed, namely, in the inception phase. Once precedents of compliance have been set, it becomes easier to sustain momentum.

There may be scope for other sources of funding from within a region. For example, the regional development banks may be able to arrange with their members to use some of their existing funds to help finance the reward mechanism. Because the entire system of incentives is designed to be temporary, no permanent call on resources is implied, and because the incentives are linked to changes in spending, the scale of funding required is modest. One advantage of this approach is that it reflects the structure of the problem: a regional public good, reduced military spending, is financed by what is in effect an agreed levy on the region. A second advantage is that the agency providing the finance is also in a good position to adjudicate on compliance with commitments made during the negotiating round. This makes the link between finance and compliance more credible. A third advantage is that the

ultimate source of the finance, member governments of the region, is likely to be more secure, since they are directly benefiting from the cooperative arrangement.

Externally financed incentives

Where aid or the repayment of official debt is significant for a region, there may be some scope for linking either aid or debt relief to reductions in spending. The key reason why aid providers should be interested in using aid as an incentive is that, as discussed in Part I, they are inadvertently funding the military spending of aid recipients. Recall that the means by which aid is diverted may be entirely legitimate and indirect, so that it is not possible by means of stricter controls on the uses of aid to curtail the problem. The only approach likely to be effective is to use some aid to provide a countervailing financial incentive to reduce military spending. Collier and Hoeffler (2007) estimate that around 11% of aid is inadvertently financing military spending, so this is the extent to which military spending is currently subsidized. Thus, in order to provide a completely offsetting incentive it would be necessary to make military spending more costly to aid-receiving governments by the same amount. Hence, another 11% of aid would appropriately be earmarked as an incentive for reductions in military spending.

For Africa, which receives aid inflows far in excess of its military spending, judged simply in terms of financial feasibility there would be no difficulty in linking some of the aid allocation to reductions in military spending. For Latin America, total aid inflows are around the same level as the target reduction in military spending that I have suggested might be feasible, namely $7bn.

While the current unfortunate and inadvertent link between aid and military spending gives donors a powerful rationale for designing an offsetting link, it is by not the only reason why they should dedicate resources to the reduction in military spending. An explicit link that provides an incentive for reductions in spending can powerfully gear up the effectiveness of aid. There are two reasons for such gearing up. First, suppose that a dollar of aid given for some purpose which both the recipient government and the donor value could induce a dollar reduction in military spending which is then switched to social spending. Since the donor values the increase in social spending, the donor gets two dollars of desired expenditures for the cost of one dollar of aid. Donors commonly worry about fungibility: the diversion of their aid to purposes of which they do not approve. Fungibility 'gears down' aid, the donor ends up with less than a dollar of approved expenditure for each dollar of aid. By linking aid to reductions in military spending, in effect donors achieve 'fungibility in reverse' and so gear up aid. The second reason for gearing up, which is indeed likely to be much more powerful than the first, is that the link to aid is only needed temporarily during the process of reaching the target ceilings, whereas the benefits are likely to be persistent. Continuing with the above example, if the dollar of aid reduces military spending by a dollar in the year in which it is received, but the reduction is then permanent, the present value of the reduction is $20 (adopting a 5% discount rate). The incentives are likely only to be needed during the relatively brief phase during which spending is reduced. Once targets are attained it is relatively easy for a regional community to lock into them since compliance is reinforced both by past compliance and inertia. Between them, 'reverse fungibility' and the long term pay-offs to

temporary spending gear up aid used as an incentive for reducing military spending, yielding potential returns far in excess of conventional uses of aid.

Complementary Arrangements for Credibility

Military spending is an area where governments should expect not to be trusted by other governments. This feature is by no means unique to military spending, but it is particularly acute. I suggest three complementary ways in which credibility can be increased.

Verifiability

One distinctive problem of military spending is that a government can gain an advantage from misstating its military capability. As a result, accurate information on military spending is liable to be deliberately concealed. Clearly, it is not possible to coordinate military spending unless it is properly observed. Hence, a core first step in coordination is an agreed system for monitoring what each government is actually spending, both in total and in composition.

Technically, being observable is not sufficient, and what is needed is for spending to be *verifiable*. In my own research I use data from the Stockholm Peace Research Institute, which had the best public comparable information. However, these data are acknowledged to have weaknesses.

Such a mechanism should essentially cover two components. First, all military spending should be included in a satisfactory internal audit system for public spending, so that figures reported in budgets are verified as accurate by some independent national process of scrutiny. Secondly, the categories of reporting must be intelligible to others. In practice, many countries have idiosyncratic budgetary reporting systems: there is no equivalent in budget categories to product classifications in international trade. An important step is therefore to standardize budget categories across the region to assist cooperation. For example, it is important to make a clear and sharp distinction between expenditures on police, and on non-offensive categories of military spending such as pensions, and expenditures on serving military personnel and the purchase of equipment. It is these categories where governments need to adopt common definitions. However, all this information is already gathered internally: military spending is not literally beyond control. Further, each government well understands the mechanisms of internal reporting and external concealment. Hence, while there are currently asymmetries in *information* which need to be addressed, there are no asymmetries in *understanding*. The problem of establishing sufficient information for reassurance among a regional group of governments is, for example, far less daunting than, say, that of rectifying the information and knowledge asymmetries between workers and pension companies, and yet these asymmetries have not precluded pension transactions.

There has indeed been some progress towards this in Latin America, led by an agreement between Argentina and Chile. That the impetus should come from this bilateral agreement illustrates that incentives for cooperation are more powerful at the bilateral level. It also demonstrates the potential for sequential support between

bilateral and pan-regional approaches: the standards agreed between Argentina and Chile might now conveniently be adopted across the region.

Not all aspects of military capability can be observed through budgets. Hence, it is useful to supplement budgetary transparency with direct reciprocal observation, achieved, for example, by having some representatives of neighbouring military forces embedded in the country's own forces.

If reductions in military spending are linked to increases in social spending then the latter also require some verification process. This is, however, considerably simpler than the verification of military spending. Social spending is not generally shrouded in secrecy. Further, since the constituency to be reassured is the domestic interest group that favours increased social spending, there is no need for a common internationally standardized definition. Each country could have a verification system agreed with the appropriate domestic interest groups.

Predictability

A second distinctive problem of military spending is the 'first mover advantage'. As long as the lag between an increase in spending and the matching response that it provokes is sufficiently long, there is an incentive to raise spending pre-emptively.

Part of the counter to this is that the verification process needs to be timely as well as robust. However, there are evident limits to the speed of financial reporting and so there is a need for the supplementary approach of *pre-announcement*. That is, governments agree to a specific minimum time between the announcement of a unilateral change in military spending and its implementation, thus giving neighbours time to react should they regard it as necessary. As with verification, pre-announcement need not be confined to financial decisions but can include operational decisions such as military exercises.

Adjudication

Even in cooperation over trade liberalization disputes regularly arise over whether a particular government is in compliance with an agreement. Such disputes are considerably more likely in matters concerning military spending than in matters of trade. A key feature of both the WTO and the European Union, two successful examples of international cooperation, is that they have an independent adjudication system for settling disputes. It is probably unreasonable to assign the role of adjudicator directly to the regional institutions since this risks contaminating them in highly political decisions. Rather, it may be better to recognize that adjudication is an intrinsically political process that needs to be undertaken by the governments of the region subject to evident exclusions. One important exclusion principle to be followed in the construction of a credible adjudication system is that no country that borders on the countries in dispute should be an adjudicator. Something analogous to this was recently adopted by the African Union in determining that peacekeeping forces should not normally be drawn from neighbours. Thus, a potential standing adjudication panel might be all countries in the region minus neighbours of those in dispute. An alternative is for adjudication to be handled by a panel of mutually respected former

political leaders from the region, chosen by a system of nomination subject to a right of veto.

III. Conclusion: and a Manifesto

In this paper I have set out the case for a regional effort to curtail military spending. The analysis is most pertinent for those regions which are geographically self-contained, and which face limited military threats external to the entire region. The two regions to which the analysis is most applicable are thus Latin America and Africa.

First, it is useful to summarize the argument. I began, in Part I, by showing that in a region with such characteristics there is a reasonable presumption that if the decisions on military spending are taken purely at the national level and not coordinated, they will lead to socially excessive levels of spending. Not only is military spending in such a context a neighbourhood public bad, but it has characteristics which make it even more problematic than the typical such public bad. I then turned to the evidence on what motivates military spending. From this evidence I built up estimates region-by-region of the scope for mutually beneficial reductions in spending such as might be achieved by cooperation. For Latin America I estimated the potential as being of the order of 0.47% of regional GDP, yielding a present value of around $142bn. In Part II I turned to how this enormous potential might be harnessed through regional cooperation. I first reviewed some other salient examples of international cooperation to curtail public bads, highlighting two potential models of pan-regional agreed targets or coordinated bilateral negotiating rounds. I then turned to the principles of cooperation, focusing on the special features of military spending that would need to be addressed. Finally, I proposed a range of practical steps that might guide the process. How the curtailment of spending might be divided into three phases, how incentives of various types might encourage participation, and what complementary measures need to be taken to provide credibility.

My conclusion is that regionally coordinated reduction in military spending has three striking features. One is how much more feasible it is than many other types of international coordination. Unlike most other international problems it does not require complex and fraught schemes whereby winners can compensate losers: for example, unlike regional trade liberalization everybody stands to gain. Nor does it involve individual costs compensated by global gains as with the reduction in carbon emissions: every individual government stands directly to gain financially. The second striking feature is that the pay-off is large. For example, the potential gains are larger than reasonable estimates of the pay-off to regional free trade. The third striking feature is how little effort has gone into such coordination in all regions other than Europe which set military cooperation in the context of an extensive panoply of regional cooperation. In many respects military spending is the ideal topic to be addressed at the regional level: it cannot be addressed at a lower level of cooperation and does not need to be addressed at a higher level. By addressing it, a region can both directly benefit its own governments and pioneer a model which could profitably be emulated by other regions.

This conclusion leads to my manifesto. If regional cooperation to reduce military spending is feasible, has a high pay-off, and has not yet been seriously attempted, it is surely time to make a start. Recall two characteristics that each make a regional group well-suited for such cooperation. One is if the member countries are small: military

spending is proportionately considerably higher in countries with small populations, and so it is groupings of small countries that have most to gain. The other characteristic of suitability is if the number of countries is quite limited: cooperation becomes more difficult as the number of participants increases. The region in the world that most manifestly combines these two characteristics is Central America. Recall that fortuitously, because Costa Rica has already eliminated military spending it breaks the negotiating link between Central America and South America: the countries in these two groups should negotiate separately.

Costa Rica not only breaks the negotiating chain, it is a neighbourhood role model, demonstrating the feasibility of a sustained reduction in military spending. Thus, Central America is the ideal grouping in which to launch what should eventually cascade into being a series of regional processes enabling global reductions in military spending. Central America can both benefit itself and lead the world.

If this is to happen, the countries of the region need to establish a process and a timetable. This would be considerably eased were a trusted regional economic agency to take ownership of the objective and guide it along. The component parts of such a process are implied by this paper: the agreement of a target ceiling and a path for getting there; agreement on mechanisms that provide incentives for compliance; agreement on linkages to increases in social spending; and agreement on a clear definition of pertinent military spending and how reductions can be verified. The obvious candidates for such a role would be the IADB, the CABEI, and the CAF. Being myself a European, I can credibly claim that the motivation behind this manifesto is not tainted by national self-interest. However, both my identity and my experience limit my understanding of the Central American region. At this point I have reached the limits of what it is sensible for an outsider to propose. I hope, however, that I have convinced you that you face a historic opportunity, and that you act upon it.

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