

International Security, Defence Economics and The Powers of Nations

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Introduction

The title is not mine, like the other speakers I was given it by Jacques Fontanel. Being an English empiricist, I prefer narrow technical questions, where you can look at the evidence. But since I cannot resist a challenge, I will try to see if I can sound like a French *philosophe*, talking about the central *probematique* of International Security, the power of the Nation State and all that sort of stuff. However, I should warn you that when English empiricists try to adopt French theoretical wings, they tend to splash down in the middle of the Channel, as I fear I may do, not quite making the transition from the empirical detail to the meaning of it all.

I have always seen defence economics not as a subject, but as a series of questions that arise in the intersection between the spheres of strategy (the art of a general, the specialist in the use of force) and the sphere of economy (the processes of production, distribution and incentives in exchange). This overlap between economics and strategy occurs at the individual, the national and the systemic levels. This intersection or overlap is a contested terrain since economists and strategic studies specialists bring very different presuppositions to the party. Defence economics must study and take account of the realities of strategy, but the models it brings to the party are those of an economist. I do not apologise for that, one of the dominant figures in modern nuclear strategy, was Thomas Schelling, who drew on economic models, see his Nobel Prize lecture Schelling (2006).

I am going to use a very simple framework to try and organise a lot of questions about defence economics. The framework is the interaction between the spheres of economy and strategy, producing as one output security or insecurity, happening at an individual, national and systemic level.

Security

The Definition of Security

We need to be quite specific about security, since it has a variety of meanings. Individuals are secure if they can have reasonable confidence in their safety and their ability to meet the basic needs that allow them to pursue a reasonable life. Threats to

security can come from many sources: from natural environmental forces, such as disease, earthquakes and floods; from economic forces, such as financial crises and mass unemployment, and from strategic forces, such as war or terrorism. My focus is strategic threats, which are inherently different from natural or economic threats because they involve interactions between actors, rather than exposure to impersonal forces. Depending on the context, the mechanism of the game, strategic games may be zero-sum (increasing one person's security reduces the other person's security by the same amount); negative sum (the actions of both reduce both of their security as in some arms races); or positive sum (the actions of both increase both of their security as in confidence building measures).

For nations, security might be thought about as the aggregate of the security of its citizens. But this is not how national security is normally defined because the interests of the elites who define national security are not well aligned with the interests of their citizens. So, for instance, the security of the citizens might be greater if that particular nation state ceased to exist. But the cases where elites will accept that as an acceptable outcome are rare, Czechoslovakia is the only example I can think of. Thus I think that national security is a problematic concept.

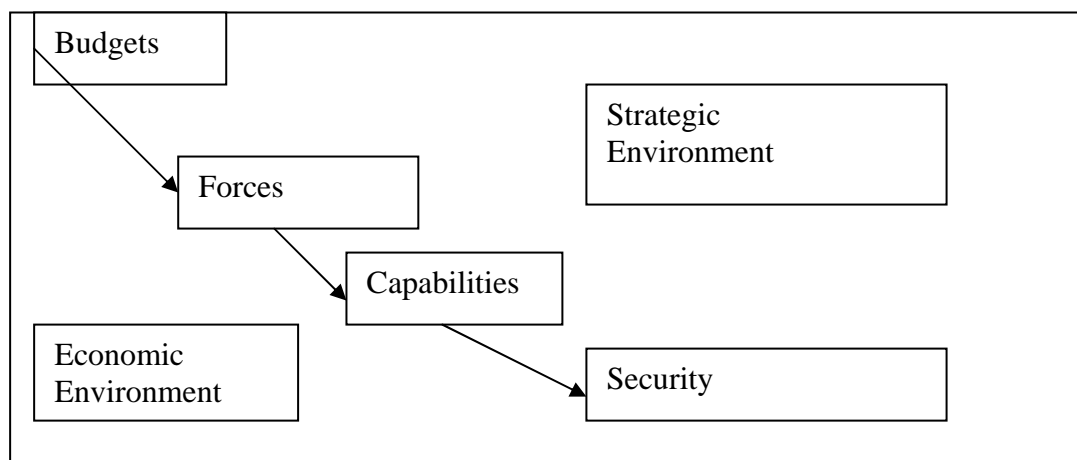
International security is I think less problematic because it can be regarded as the security of most people in the world, though some might want it to be the security of most nations in the world. Threats to international security are threats to the security of a large proportion of the world's population. During the Cold War the major threat to international security was the danger of a nuclear war. Now the major threat is probably global warming.

The production of security

At each level (individual, national, global) within this interaction of economics and strategy one can imagine an input output process of linked elements. Agents decide how much to allocate to their security budget, in the light of the economic and strategic environment. The budget is used to procure forces. These forces provide military capabilities such as the probability of winning certain types of conflict. These capabilities are used to try and acquire security, the desired outcome. This process is most obvious at the national level, but it operates at all three.

In the figure below, I have drawn arrows between the boxes, but these linkages are not simple processes. There is massive variability and uncertainty in the links and the strength of each link is subject to economic and strategic influences, the main strategic influence being threats. There should also be lots more arrows in the box, connecting economy and strategy to each element, but that would have made the figure too messy.

Inputs and outputs to the security production process.



At the individual level, economics emphasises Adam Smith’s observation of man’s natural propensity to “truck, barter and exchange”. But the strategist asks: why truck, barter and exchange when you can rob, pillage and loot? The interaction of these two spheres is the subject of a large literature on the economics of conflict. There is the literature on the optimal allocation between production and expropriation, the classic being by Hirschleifer (2001). Of course, Adam Smith got there first; both in the Theory of Moral Sentiments, which argued that empathy inhibited baser instincts, and in The Wealth of Nations on the duties of the sovereign to maintain property rights. Following Smith, I used to teach that it was the function of the state to stop people from choosing to rob, pillage and loot. I stopped saying that after a student pointed out that in her country it was the state that did most of the robbing, pillaging and looting.

This question “where does enforcement come from?” arises at all three levels. If two parties interact why does one or both of them not cheat, e.g. by stealing or using force. Enforcement may be by a third party: the law or the social group who will ostracise the cheater. It may be second party enforcement, e.g. retaliation by the other party. It may be first party enforcement through morality or considerations of a long term self interest in reciprocity. What is central to many of these analyses of the interaction of economy and strategy, at the individual, national and systemic levels, is solving collective action problems. What are the incentives that cause people or nations to work together in their joint interests: the costs and benefits of cooperation, whether to trade together or to fight together against some common threat. Cooperation involves trade-offs. There are costs, particularly loss of autonomy, but there are also benefits from interdependence. When we talk about the international community we assume that this collective action problem has been solved, which it rarely has.

One can look at the world as a pessimist and ask “Why is there so much conflict?” Alternatively, one can look at the world as an optimist and ask “Why is there so much less conflict than we might expect?” Quite a lot of the interesting economics of conflict is now about the economics of lack of conflict: how, even without legal

enforcement of property rights, cooperation can arise. It may do this because cooperation dominates conflict in terms of self interest. Cooperation within a group has been central to human survival since pre-historic terms, lone individuals could not survive. Cooperation between groups is more problematic but again evolved very early as the evidence for pre-historic long-distance trade shows. Seabright (2004) discusses the role of trust, Dixit (2004) shows how alternative institutions to support trade can arise in the absence of state enforcement.

National Security

At the national level, defence economics has traditionally been about the economic aspects of defence policy. Again, defence policy lies in the intersection of the spheres of economics which provide the resources that supply defence output and strategy, that provide the demand for it. The classic question is: “how much is enough?”, what is the right share of output to devote to defence?

As noted above in this national overlap between the two spheres, there is a set of input-output relations, each of these with links to the economic and strategic environments. At the top there is the defence budget, the twenty five billion pounds the UK pours into the system. This buys forces, the things listed in the IISS publication *The Military Balance*: the number of personnel, tanks, aircraft, etc. These forces provide military capabilities: the ability to do things, in particular to prevail in specified sorts of conflicts. These military capabilities can then be used for defence or deterrence to provide security, measured in terms of some confidence in the safety of the society.

All these links are problematic. In the mid 1970s the CIA doubled its estimates of the share of output that the USSR devoted to the military. This was not because they thought that they had underestimated the forces that the Soviets could field, but because they had over-estimated the efficiency of the Soviet defence industry. They now thought that it cost twice as much as they had previously estimated to field those forces. Although the revision was widely interpreted as indicating that the Soviets were more threatening, in fact it indicated that they were less threatening, only half as efficient.

How much capability you get for your forces depends on all those military skills: leadership, training, strategy, tactics, logistics, morale, maintenance of the equipment, etc. How military capabilities translate into security is a matter of grand strategy. In particular, there may be more effective means of maintaining security than military means. In 1946 France had been invaded by Germany three times in the last 75 years. It could have constructed another Maginot Line to protect itself, but instead worked at creating such economic interdependence that war would be impossible. Of course, to be on the safe side during the Cold War, it did keep its nuclear missiles targeted on Germany. The standard defence economics model of security is through an arms race with a similar competitive nation, but this often loses many of the interesting features, see Dunne and Smith (2007).

This input-output structure provides a way of determining the defence budget by thinking forward, working out where you want to be, and reasoning back. In principle

national powers look at the threats to their security; work out the capabilities required to deter or defend against those threats; establish the forces necessary to mount those capabilities; and cost those forces to get the budget. At its optimum the marginal security benefits of the defence budget are equal to its opportunity cost: the benefits got from spending the budget on other needs.

I am not saying that defence budgeting is done this way, industrial and political interests, inter-service rivalry and a variety of bureaucratic forces are often more important. Rather, I am saying that to an economist this is the way that you should think about it. Examples of models involving such calculations can be found in much work on the demand for military expenditure, e.g. Smith (1995). While the process is simple in principle, in practice it is difficult and highly controversial, even without the operation of vested interests. What are the possible threats to the UK or France and how likely are they? Some would say currently there are no likely threats and the threats we do face, global warming, terrorism etc are not amenable to a military solution. This would suggest a defence budget of zero, like Costa Rica or Iceland. Others would say, while there are no obvious military threats you never know what may happen, so it is sensible to maintain a military as an insurance policy. Then it is a question of what is a sensible insurance premium: two percent of output? one percent? How much is enough?

But of course, the government may then decide that while it is only willing to pay a basic insurance premium for the military, but having paid that premium it does have military forces, so it may be tempted to use them. This is certainly the case in the UK where the forces have been sent off to Sierra Leone, Afghanistan, Iraq and a variety of other places. In the case of the UK this has produced what is called overstretch of the armed forces because of the failure of the government to match the commitments it incurs with the capabilities that it is willing to pay for. I think the UK Treasury is quite sympathetic to the fact that the UK armed forces are overstretched, but it is deeply suspicious of the resource allocation process in the Ministry of Defence. The Treasury worries that if it provides more money, it will not go to relieve overstretch but will be poured into those equipment black holes like Eurofighter-Typhoon, the proposed new aircraft carriers, replacement of the Trident nuclear systems, and the like.

Military Budgets and the Economy

I first got into defence economics looking at the effects of military budgets on the economy, the macroeconomic effects of military expenditure, often called the “guns and butter” issue. But I am now inclined to think that they are not very interesting, when shares of military expenditure are around the level we observe now. In financing large wars of course, the macroeconomic effects are crucial, but under about 5% of GDP they may be small. Currently, decisions about defence budgets should be taken in terms of threats and opportunity costs, not macro-economic effects. If you are concerned about macroeconomic issues there are more effective economic policy instruments than the defence budget.

Higher military expenditure means other government expenditure is lower, taxes are higher, or the budget deficit is higher. Higher budget deficits may mean higher interest rates, which may reduce consumption and investment. A lot of the peace dividend in the 1990s in the US and UK following the post Cold War reductions in

military expenditures came through budget surpluses and lower interest rates. If there is unemployment, higher military expenditure boosts demand and can reduce unemployment. This happened after the Great Depression of the 1930s a period of high unemployment when military expenditure went up for World War II. With relatively full employment, using labour in the armed forces or ministry of defence diverts them from other productive activities. Military Expenditure may reduce investment, perhaps through the crowding out caused by higher interest rates as a result of government deficits. There may be an effect on technical progress. The arms trade may have effects on the balance of payments. I do not think any of these effects are particularly large. There is a vast statistical literature, a lot of it written by me, on this “guns and butter” or “swords and plowshares” issue, as it is described in the Bible. Some get positive effects, some negative, some near zero. Overall the literature has no definite conclusion. In this respect, the literature is the same as the bible. In Isaiah 2:4 the Bible says “They will beat their swords into plowshares and their spears into pruning hooks. Nation will not take up sword against nation, nor will they train for war anymore”. However, Joel 3:10 says “Beat your plowshares into swords and your pruning hooks into spears. Let the weakling say, ‘I am strong’”. There is also a large micro-economic literature on the details of beating swords into plowshares: the conversion of military resources to civilian use, through local reconstruction after base closures, conversion of arms factories to commercial products, etc.

The reason that there are no clear conclusions is that there is a classic identification problem, discussed in Dunne et al. (2005). There are both positive (demand) and negative (supply) relationships and the net balance will depend on the threat influencing the demand for military spending and the growth potential of the economy influencing the supply side. As a result anything is possible; you can observe all four combinations of high and low growth and high and low share of military spending in GDP.

- Countries with a high threat so high military expenditure but great growth potential, like South Korea and Taiwan in the 70s and 80s, show a high share of military and a high growth rate.
- Countries where a high share of military expenditure did displace productive investment and other factors were inimicable to growth, like the Soviet Union, where the share was probably over 20%, show a high share and low growth.
- Countries like post-war Japan and Germany that restricted their military expenditure and could devote it to investment showed low shares and high growth.
- Countries like most of Sub Saharan Africa where shares of military expenditure are low, but so is growth.

Budgets and Forces

How many forces you get for your budget, the “bang for a buck”, is a more microeconomic issue. It depends on labour market issues (e.g. national wage rates and unemployment with volunteer forces); product market issues (the efficiency of the defence industry in building the weapons; the costs of other inputs, fuel, food, etc.); technological issues (spin-off versus spin-in) and public economics issues (the size of the non-fighting bureaucracy and the efficiency of the expenditure and acquisition process itself).

In the labour market there is the issue of the relative advantage of volunteers and conscripts. This is not an issue in the UK, but recently has been in a number of European countries and has resurfaced in the US. Economists are strongly in favour of volunteer forces, just like they tend to favour free trade. The labour market issues overlap with the wider issues of the relationship between the armed forces and civil society, such as the role of the warrior ethos and the treatment of gays and women in the armed forces.

In the product market, there are a range of standard defence economics questions about: importing-collaborating-producing-exporting; defence industrial strategies; types of procurement process, cost-plus versus fixed price etc.; the balance between quality and quantity of equipment; the problems of time and cost over-runs; the value of arms exports etc. Some of these issues are addressed in Dunne et al. (2007) and there are vast economic literatures on all these topics.

In technology there has been substantial debate about the value to civilian society of spin-offs from military technology. There certainly have been spin-offs, the internet was originally developed by DARPA and GPS was originally a military system. But this is not a justification for military spending any more than the fact that the world wide web was developed at CERN is a justification for spending on particle physics. The important issue is how does the military get the technology it needs to meet its military objectives. In the UK there is now a defence technology strategy that tries to address that issue. In many cases the military gets the technology from commercial sources, spin-in. In the UK this is known by the acronym COTS: commercial off the shelf. But this can cause real problems because military time-scales are so different from commercial ones. By the time the weapon system enters service, not only are the electronic components in it obsolescent, they are often no longer even being produced. Since that system may be in service for thirty years or more, this causes big problems with spares. Big commercial producers like Microsoft are also unwilling to provide the guarantees that military customers have traditionally demanded.

Forces and Capabilities.

The transformation of forces to capabilities, the ability to win, depends on all the standard military virtues: training, logistics, leadership, morale, tactics and strategy and because of the vagaries of all these things it can be a very uncertain transformation. Voltaire commented that “God is on the side of the big battalions”. If so, God’s help does not seem to have been an asset: it is very often the case that the small battalions win particularly when those smaller forces fight in ways that the big guy was unprepared for, so called asymmetric warfare, e.g. the references in Dunne et al. (2006). This means that the contest success functions used in much of the conflict literature must be a lot more complicated than is usually the case.

International Security

Globalisation

At the systemic level defence economics concerns the overlap between the global economic environment and global strategic environment. The economic environment is the sphere of trade, globalisation, the price of oil, the future of the dollar, etc; the

strategic environment is the sphere of nuclear proliferation, interacting national interests, threats, failed states, etc. The main examples of analyses of the interaction of economy and strategy at the systemic level are historical works, such as Kennedy (1988) who examined the interaction of economic change and military conflict since 1500 and Diamond (1998) who examines the interaction over the last 13 thousand years. There are a variety of less complex systemic theories. Mercantilism/Leninism, which sees strategic conflict as a continuation of economic competition by other means and Manchester Liberalism which sees close trading links as inhibiting military conflict both have their adherents today.

Although globalisation is the current buzz word, it is important to note that globalisation is neither new nor inevitable. To note that it is not new, consider this quote

'Modern industry has established the world market ... This market has given an immense development to commerce, to navigation to communication.'

That was Marx and Engels in the Manifesto of the Communist Party in 1848, over 150 years ago. They go on to say

'The bourgeoisie, by the rapid development of all the instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian, nations into civilization. The cheap prices of its commodities are the heavy artillery with which it batters down all the Chinese walls, with which it forces the barbarians' intensely obstinate hatred of foreigners to capitulate.'

This passage was quoted in an article on the implications for China of joining the WTO. The article took joining the WTO as an event of historic significance comparable in importance to China's opening up after the Opium Wars. That was a case where Britain, promoted free trade, by battering down the Chinese Walls against trade with real artillery. The first Opium War between Britain and China was from 1839-42 so Marx and Engels writing in 1848 were possibly being ironic about the artillery. Again it is the intersection between economy and strategy.

So globalisation is not new. The impact of the telegraph and steamships, which disrupted European agriculture and politics in the late 19th century as cheap North American grain arrived, were as large as modern changes in communications technology. The 19th century flows of labour were much larger proportionately than the immigration we worry about today. On some measures we have only recently passed the degree of globalisation observed in 1913. That also makes it clear that globalisation is also not inevitable, it was ended by World War I and the inter-war depression. It might be ended again.

The historical perspective is also useful in looking at an industry where economy and strategy interact and which has been quite slow in globalising: the arms industry. Because more advanced weapons give a potential advantage to adversaries, restriction on their transfer has been common: in the 8th century Charlemagne declared the death penalty for Frankish merchants selling swords to Vikings. Organised arms production on a large scale, e.g. naval dockyards and royal arsenals, has a long history; but the modern arms industry dates from the mid 19th century and from the beginning it was global. Nobel's dynamite and cordite, both dual use systems, were produced in subsidiaries around the world. Technological developments in metals production in the second half of the 19th century were rapidly applied to arms by Krupp in Germany and Armstrong and Vickers in Britain, all of whom relied heavily on foreign sales. Sir

Hiram Maxim, an American operating in Europe, sold his guns all over the world. By the beginning of the 20th century there was a dense multinational network of interlinked arms firms and specialised arms merchants. George Bernard Shaw's play of 1905, *Major Barbara*, addresses the issues of international arms manufacture as perceived in the early 20th century. This phase also ended with World War I, which was attributed by many to the "Merchants of Death" and subsequently states intervened in their arms industries much more extensively. In the late 20th century, the involvement of nation states slowed the process of globalisation of the arms industry, compared to other industries, but that phase may be changing.

The Power of Nation States

Both in the economic sphere and in the strategic sphere there is a perception that the power of the nation state to act is reduced, that it is more constrained and less effective at meeting its national goals. This should not be exaggerated. There is a saying that economists study how people make optimal choices, while sociologists study how people have no choices to make. So it is with nation states. The fact that it is often optimal for nation states to surrender sovereignty, does not mean that they have no choice about it, merely that the costs of not doing so are very large. Countries can try to be autarkic, like Albania did, but the costs are very high.

Nations remain very important. The vast bulk of economic production and activity takes place within nation states, but it is the times that it does not, e.g. offshore gambling over the internet, that attract attention. The vast bulk of nation states provide at least the minimal law and order and infrastructure that is required for economic activity to proceed. But again it is not the majority but the minority of failed states that attracts attention. There are international institutions, but their effectiveness depends on the willingness of the nation states to support their activities. But permeable economic and security borders make states nervous and they feel threatened by global movements, from outsourcing of jobs to the far east to the pressures of immigration, that seem outside of their control. Is this hypochondria? they are not ill, nation states really have the power to act if they have the will, or is there really a reduction in power?

Life in this overlap between economics and strategy can be difficult. Firstly, there is "separate tracking" of issues in the two spheres. The people who go to international economic negotiations are not the same people who go to international security negotiations. The people who go to the World Trade Organisation meetings are not the same as the people who go to the meetings of the Wassenaar Arrangement. Oddly while we have just one organisation, the WTO, to regulate trade in goods, we have four for weapons (Wassenaar Arrangement, conventional; Australia Group, chemical and biological; Nuclear Suppliers Group, nuclear; Missile Technology Control Regime, missiles). Garcia-Alonso and Smith (2006) discuss these issues. Similarly, the people who go to the UN and NATO are not the same as the people who go to meetings of the World Bank and IMF. This separate tracking can be good in that it insulates the spheres, countries can be in dispute in one sphere and cooperating in another, but there is a danger of actions in one sphere having unintended consequences in another.

Conclusion

I began by saying that I saw defence economics as a series of questions that arose in the interaction of the economic and strategic spheres, some of which we can answer to a degree. But I do not see an overarching philosophical explanation, which pulls these answers together, life is just too messy for that, at least to an English empiricist. One thing is quite clear however. The pace and nature of change in the spheres of economics and strategy is quite different. In economics change is fast but gradual, things are changing all the time, albeit with fluctuations and the occasional crisis. The Strategic sphere is more like plate tectonics, tensions build up, often as a consequence of economic pressures, but nothing happens for a long time, the system is locked in stasis. Then there is an earthquake, a rapid and extreme adjustment which upsets the system. Often these geopolitical earthquakes are associated with major wars, but not always, as was the case with the collapse of the Soviet Union. Since earthquake forecasters, of both the geophysical and geopolitical kind, have an even worse record than economic forecasters, I will not make any forecasts.

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