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Security: Are We Safe?

In *The Wealth of Nations*, Adam Smith argued that the origin of the division of labour, the growth of the market and thus the wealth of nations, was man's natural propensity to 'truck, barter and exchange'. But one might ask: why truck, barter and exchange when you can rob, pillage and loot? Of course, Smith considered this. In the *Theory of Moral Sentiments*, he argued that sympathy inhibited our baser instincts. In *The Wealth of Nations*, he argued that it was the duty of the sovereign to protect the nation from external violence; to protect the members of it from the injustice and oppression of each other; and to maintain public works and institutions. He also pointed out that the first duty of the sovereign, the protection of society, can only be performed by military force. Following Smith, I used to teach that it was the function of the state to maintain security by stopping people robbing, pillaging and looting. I qualified this after a student pointed out that in her country it was the state that did most of the robbing, pillaging and looting; not all states fulfil the first duty of the sovereign. This raises the issue of what constitutes security and how it may be provided and where we draw the line between the state robbing and taxing.

This chapter examines security at the level of the individual, the nation state and the global system and then considers three security issues: wars, oil and arms races. The division between individuals, states and system can only be rough. Individuals live in states and states exist in an international system and there is dispute about whether it is the nature of the individuals that shapes a society or the nature of the society that shapes the individual. Although rough, the division is useful. Security has various meanings, discussed extensively in Collins (2007). Individuals are secure if they are free from fear and can have enough confidence in their safety to be able to meet their basic needs, pursue a reasonable life and invest in their future. This view of security as the absence of fear largely matches the UN Development Programme definition of Human Security. 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.

All of these threats may be difficult to forecast or prepare against, but economic and strategic threats differ from natural disasters because they are the product of interactions between people; though war or economic disaster can appear, to the individuals that suffer them, just as blind and impersonal as the weather. These interactions between people are often modelled using game theory; Dixit and Nalebuff (2008) is an accessible introduction. We suppose that these games have pay-offs, like the winnings in poker, but measured in terms of security. 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). The tragedy is that what are potentially positive sum games are made into negative sum games by the structure of incentives. The 'prisoners' dilemma' game is the most famous example. In this game, the incentive to take advantage of the other leads both players to cheat or defect from an agreement, when they would both have been better off if they had cooperated. Trust and cooperation reduce the transactions cost in trade and increase economic efficiency, massively in many cases; but trust has to be created and maintained.

Individual security is reasonably straightforward but national security is a more problematic concept. It requires definition of the nation and how the security of its citizens gets aggregated to that of the nation. There may be national policies that make some individuals more secure and others less secure. In fact national security is rarely defined in terms of some aggregate of the security of its individuals. Often it is the interests of some elite or ruling class that defines national security and these are not always well aligned with the interests of their citizens. For instance, the security of the citizens might be greater if that particular nation state ceased to exist; but elites may not accept that as an acceptable outcome. Czechoslovakia is a rare exception, where a nation state peacefully split into two. The split of the Soviet Union into its constituent republics was not so peaceful. Some areas, such as Chechnya, did not want to be in Russia and areas in other republics, such as South Ossetia in Georgia, did want to be in Russia. National security may be narrowly defined in terms of the defence of the realm from attack, though how this defence may be implemented may not be clear for amorphous threats like terrorism. However, it is often broadened from the safety of the nation from attack to the safety of national interests, which in a globalised world are inevitably global. The global interests of a nation include its foreign investment, sources of essential inputs such as natural resources like oil, protection of trade routes, nationals abroad and export markets. Thus national security interests can easily be extended beyond protection of the nation from attack.

At the global level, there is the issue of how international public goods, like security, are provided. International or global security might be regarded as the security of most people in the world, though national leaders might see it as the security of most nations in the world, which is how the UN Security Council usually sees it. During the Cold War the major threat to the security of a large proportion of the world's population was the danger of a nuclear war. Now the major threats are probably environmental including global warming and pandemic diseases, against which military responses are ineffective. We now consider individual, national and global security in more detail.

Individual security

Imagine a world without a state to enforce laws. People consume what they produce themselves or gain by exchanging their products for the products of others; but they can also consume what they steal from others. They then have a choice about how much time and other resources they allocate to fighting (either to steal from others or to stop others stealing from them) as against how much they allocate to production. There are returns to specialisation and the division of labour, so it will pay some to invest in becoming specialists in violence, acquiring weapons and skill in using them. Thus there may evolve a dedicated warrior or bandit class. In practice, there is substitution between different roles. Despite the efforts of Scandinavian museums, the stereotype of the Vikings is of bearded warriors, with battleaxes and horned helmets, leaping from their long-ships to rob pillage and loot. This stereotype is misleading, since there is no evidence that they had horns on their helmets. However, the dispute about whether the Vikings were really pirates, traders or farmers seems irrelevant. From an economic perspective they were an adaptable people, with some effective technologies, who switched between occupations depending on the relative returns to each role, which would differ over time and place.

Having made the decision to invest in fighting skills, the warrior or bandit faces further economic problems. If he is, what Mancur Olson (1993) called, a roving bandit, he steals everything and rides on. But if he is a stationary bandit, who hopes to come back and steal again, it is not sensible to do this. If the bandit steals everything, all the peasant's grain, then the peasants will have neither seed to plant nor food to survive on; so the peasants will not be able to produce food for the following year. Thus there will be nothing for the bandit to steal the following year. Genghis Khan planned to depopulate northern China and turn it over to horses, until persuaded by an adviser that live Chinese paid more taxes than dead Chinese. Thus, if the bandit is stationary and expects to come back the following year, it is sensible to steal (impose a tax rate) less than 100 per cent, to encourage diligence and investment by his victims. The incentive to moderate this theft tax arises because the tax reduces his victim's ability and incentives to produce and thus the bandit's tax base. A stationary bandit has an incentive to encourage productivity because that increases what he can steal. This also provides incentives for the roving bandit to become a stationary bandit; by staying put he can deter other bandits, increase productivity and maximise the amount he can steal. By the point the bandit has got to this stage, he discourages people from calling him a bandit. Although it is not his intention, the stationary bandit may bring benefits to the people he steals from. To the victims, organised crime is often preferable to disorganised crime; without a Mr Big you are open to raiding by everyone else.

The strength of the incentive to moderate theft depends on the probability of coming back, how long the bandit will be around to steal from the population. This is reflected in the bandit's discount rate: how much he discounts future consequences. If the future is very uncertain (his gang may depose him as leader, the peasants may fight back, rival gangs may displace him), then his discount rate will be high; it is better to live for today and steal everything. Unfortunately, governments in some parts of the world have a high discount rate; they fear being deposed; so like the roving bandit they steal as much as they can now. There are economies of scale in bandit gangs, bigger is usually better, and this raises further economic problems. The leader has to worry about feeding his gang, ensuring that the attraction of being a bandit is as good as their alternative occupations, and establishing a more formal organisation that maintains his position. A fairly non-technical source on the economics of conflict is Hirshleifer (2001).

These economic calculations are implicit in many books and films. In the western *The Magnificent Seven*, based on a Japanese movie, *The Seven Samurai*, a bandit returns to rob a village again. The bandit never takes everything always leaving the villagers enough to live on, and subsequently worries that he had been too nice in the past (used too low a discount rate). He worries about feeding his men over winter (making required investments). To defend themselves against him, the villagers go off to the border and have to calculate the relative cost of buying guns or men with guns (capital–labour substitution). The villagers know that hiring gunmen will change their relationship with the bandit (implicit contracts and irreversible investments). Subsequently one of the seven opposing the bandit agonises about the relative attractions of being a gunman or farmer (opportunity costs of career choices).

One can think of security as being maintained by some level of enforcement of rights to life, liberty and property. The question 'where does such enforcement come from?' arises at all three levels: individual, national and global. If two parties interact, meet for trade or mutual celebrations, what stops one or both of them cheating, by stealing or using force? The enforcement may be third party: fear of the law or the social group who will punish cheating. It may be second party: fear of retaliation by the person cheated. It may be first party: morality or consideration of long-term self interest in reciprocity. Stealing from your trading partner now cuts you off from what he may bring you in the future: killing the goose that lays the golden eggs. It is often said that there is no international law because there is no supranational enforcement mechanism. But even at a national level enforcement may not be third party, from an external agency; other mechanisms may be equally effective. This is the basis of the Geneva Conventions and other aspects of international law. It is in the interests of the parties to follow them from concern about correct behaviour or about reciprocity: how the enemy will treat your troops held as prisoners of war will be influenced by how you treat their troops you hold prisoner. It was for this reason that many in the US military resisted the removal of restraints on the treatment of captives by President Bush during the Global War on Terror. Of course, many combatants do not abide by the Geneva Conventions, but that does not make them useless, since many do abide by them.

Some rules do not require enforcement. All one needs is that the rule, norm or convention is known; then it will generally be followed. Driving on the right is almost completely self-enforcing in countries that follow that rule. It is not generally in one's interest to drive straight into the oncoming traffic on the other side of the road. This is what is called a Nash equilibrium, after John Nash whose life was loosely interpreted in the film *A Beautiful Mind*. In a Nash equilibrium everyone plays their best strategy assuming that everyone else does the same. A Nash equilibrium may not be unique: driving on the left is also a Nash equilibrium if everybody does it. Just as in some countries everybody drives on the left and in others everybody drives on the right, in some countries nobody carries a gun and in others everybody carries a gun, or has a bodyguard who does. With multiple Nash equilibria, intermediate positions (heavy vehicles driving on the left, passenger cars on the right) are unstable, and the move from one equilibrium to another can be very rapid. Places like Beirut can move from an unarmed to an armed equilibrium, and back, very quickly.

If there is neither external enforcement nor internal norms, any rules must be maintained by the threat of retaliation: those that suffer a wrong will inflict punishment on those that committed it. In such circumstances a reputation for vengeance can be a useful deterrent to rule-breaking and it can become embodied in the norms of the society so that an individual's perception of honour or self-worth requires them to take revenge. Such norms, while functional in some circumstances, by acting as a deterrent, can generate highly dysfunctional blood-feuds and honour killings. As Mahatma Gandhi is supposed to have said, 'An eye for an eye makes the whole world blind'. Naci H. Mocan (2008), who gives the quote, reviews the literature on vengeance and analyses evidence from a large UN international survey on people's desire for vengeance, as expressed in terms of an appropriate punishment for a specified crime. The question asks

> people have different ideas about the sentences which should be given to offenders. Take for instance the case of a 20 year old who is found guilty of burglary for the second time. This time he has stolen a colour TV. Which of the following sentences do you consider appropriate for such a case?

The prison term thought appropriate differs between countries: about 40 per cent of people in China, Romania and Botswana prefer a prison sentence of 4 years or more as compared to about 1 per cent in Belgium and Spain. Heavier punishments are preferred in countries that are poor, have low levels of education, lack a rule of law or have experienced recent armed conflict. But responses overlap: poor people in rich countries are as vengeful as rich people in poor countries. There are, of course, many difficulties in interpreting such statistical data which

Mocan discusses. A colour TV is, relatively, much more valuable in poor countries and in countries where the usual penalty for burglary is losing a limb, 4 years in prison may seem extremely lenient.

Often establishing enforcement requires a group of people to act together. Such collective action problems are central to much of the analysis of the interaction of economy and strategy, at the individual, national and systemic levels. For instance, in an alliance there is an incentive for the smaller countries to 'free ride', let the bigger countries take the burden of enforcement. Olson points out in the introduction to Todd Sandler (1992) that sometimes, when each individual considers only his or her interests, a collectively rational outcome emerges automatically. This is the basis of market mechanisms, the so-called invisible hand. Here the term, 'collectively rational', has a very special meaning. It means that nobody can be made better off without making somebody worse off. This is what economists call Pareto optimality, which does not reflect how income is distributed. It is Pareto optimal for one person to have 99 per cent of the resources and the other person only 1 per cent, if the only way to make the poor person better off is to take away from the rich person. However, even under this very limited criterion, sometimes, no matter how intelligently each individual pursues his or her interest, no socially rational outcome can emerge spontaneously. Individual rationality is not sufficient for group rationality; some coordination between individuals to take collective actions or construct institutions is required.

In small groups people are usually able to negotiate collective actions between themselves, it is the basis of human survival; but in large groups it can be difficult. One must then examine the incentives that help or hinder people or nations working together in their joint interests. The costs and benefits of cooperation will determine whether individuals are willing to trade together, fight together against some common threat or jointly enforce some rules. Cooperation involves trade-offs. There are costs, particularly loss of autonomy, but there are also benefits from interdependence. When it is said that the international community should do something, such as intervene in Darfur, it tends to be assumed that this collective action problem has been solved, which it rarely has. Olson (1982) is a wide-ranging discussion of the rise and decline of nations in the light of collective action problems. It should be noted that the benefits may not be material benefits. Many factors, such as shared beliefs or community solidarity, may provide individuals with the incentives to solve collective action problems and cooperate as a group.

One can look at the world as a pessimist and ask 'Why is there so much conflict?' This is a common liberal or idealist response, starting from the perspective that people are naturally peaceful and war an unfortunate aberration caused by the vested interests of militaristic groups. Alternatively, one can look at the world as an optimist and ask 'Why is there so much less conflict than we might expect?' This is a common conservative or realist response, starting from the perspective that people are naturally acquisitive and will take what they can get. 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, peaceful cooperation can arise. It may do this, not because people are naturally peaceful, but 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, though the social meaning of trade then may be different from the social meaning of trade now. Paul Seabright (2004) discusses the evolution of trust, Avinash Dixit (2004) discusses how alternative institutions to support trade can arise in the absence of state enforcement; both from an economic perspective.

Recent behavioural and experimental economics suggest that people are less selfish and more cooperative and altruistic than traditional economic theory predicts. Optimists are delighted with this evidence that people are nicer than the hypothetical calculating 'economic man'. Pessimists worry that this selfless, altruistic cooperation within a group can be used to mobilise people to slaughter members of other groups. Economic man was too calculating to be a good soldier.

National security

The focus in most of this book will be the nation. But 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 states are more constrained and less able to meet their 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; it merely means that the costs of not doing so are very large. Countries can try to be autarkic, like Albania did for many years, but the costs are very high.

Though it is over-simple, it can sometimes be useful to think of states falling into three types. First there are predatory states, dominated by acquisitive individuals or groups who see power as an opportunity for personal gain. They are part of the globalising system, though not well integrated into it, and are subject to occasional interventions by it. They have little in the way of impersonal national bureaucracies and impartial legal structures; they have difficulty in establishing either legitimacy or stability and are prone to succession crises, since power is personal and easily challenged. Their rulers have a high discount rate. The kingdoms of feudal Europe and the modern kleptocracies are of this sort. For the international system and for international capital the problem is seen as 'state failure', the inability of governments in such countries to meet the minimal functions of a state: monopolising violence and maintaining order. When international firms operate in these countries (primarily in extractive industries or to sell them arms, since there are few other profitable opportunities) they are likely to provide their own order through heavily armed private security forces. Paul Collier (2007) describes the economics of development and conflict in such states. Predation is not confined to failed states and a recent book, *The Predator State* (Galbraith, 2008), is not about Mobutu and Mugabwe but about the US.

The second type of state can be thought of as the typical modern states which arose in Europe from the 17th century, though centralised states existed much earlier in China and elsewhere. In Europe, they are often dated from the Peace of Westphalia, which ended the Thirty Years War, in 1648. Such states are based on a permanent state apparatus and a notion of loyalty to a nation, often based on an ethnic identity. They rest on a notion of sovereignty as the state being the ultimate power within an area and subject to no power above it. One of the main characteristics of modern states in Europe was their tendency to fight each other to establish their claims over territories and resources and their relative power. In Europe, the process of state formation was a brutal business, the product of centuries of internal and external wars. Whether new states in the rest of the world need a protracted series of wars to establish themselves as modern states has been extensively debated (Cramer, 2006).

As states become more highly integrated both economically and socially into the international system they may evolve into a third, less warlike, type. Such states are typically rich and perceive the cost of military conflict as being very high and dispute resolution by non-military means as more effective. The cost of military conflict is high because it disrupts economic interdependence, provokes international reaction and because it is expensive to project force at a distance. As an example of the power of non-violent international reaction, Britain and France, both naturally warlike, were persuaded to withdraw from Suez in 1956 by threats to their currencies from the US. This interest in peace is reinforced by norms, developed over long periods of time, which reinforce that interest. These norms are most developed in traditionally neutral countries, like Sweden and Switzerland. However, the links between neutrality and military expenditure may be complex. During the Cold War Sweden and Switzerland tended to spend a higher share of their output on the military than similar small European states who were members of NATO and could free-ride on the alliance. Multilateral organisations can act as an alternative to the use of force, either through insurance, arbitration, international pressure or conflict resolution. Many see one of the great successes of NATO as stopping two of its members, Greece and Turkey, going to war. There are various international institutions and they play a crucial coordinating role on various important technical issues, where common standards are essential. But on many issues their effectiveness depends on the willingness of the nation states to support their activities, the collective action problem.

While the US is constrained by systemic interests, these interests constrain it in ways that are quite different from the ways that smaller states are constrained. It has this special position because of its unique ability to project military power and its central role in the global economic system. In the early 21st century, this hegemonic role allowed it to borrow cheaply and extensively from the rest of the world, in particular China, to finance large government and trade deficits. While such deficits are not sustainable, there is, at time of writing, no agreement about how adjustment might come about.

Nations remain important; the vast bulk of economic production and activity takes place within nation states, but it is the times that it does not, such as offshore gambling over the Internet and uncontrolled international financial transactions that attract attention. Most 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. Despite their importance, permeable economic and security borders make states nervous and they feel threatened by global movements, from outsourcing of jobs to the pressures of immigration, that seem outside of their control. It is unclear whether this nervousness is justified. Rather than there being a reduction in the power of nation states, it may be that states do have the power to act independently if they have the will; it is just that it is rarely in their interests to do so.

This discussion takes the definition of a nation as given, but the number of nations in the world and the size of each is determined by international politics and economics. Over history, nations come into being, expand, contract and sometimes disappear. There are economic forces that make bigger better for nations. There are fixed costs in being a nation, and spreading those fixed costs over more people is efficient. International representation is largely a fixed cost, having embassies in other countries, sending representatives to the UN and the WTO and the like, though these costs can be shared; the members of the EU have a common trade negotiator. There are also some increasing returns to scale, for instance, in trade negotiations: the EU carries more weight than any of its members would individually. There are also increasing returns to scale in defence: small states find it difficult to protect themselves against large predatory neighbours. Large nations find it easier to recruit world-class talents, whether athletes, central bankers or generals, since they can be chosen from a larger pool. Large nations have the resources to absorb shocks like banking crises, Iceland was not big enough to support its banks in 2008.

The political disadvantages of size come from heterogeneity, which may arise from ethnic, linguistic, religious or ideological differences within the nation. The larger the state, the more likely it is that some groups will feel that national policies do not reflect their interests. The EU spreads some fixed costs to the advantage of smaller nations, but also faces the political costs of heterogeneity and countries may feel that the EU trade negotiator does not represent their interests as well as a national negotiator would; for instance, France may feel that the EU trade negotiator does not care as much about French farmers as a French representative would. The heterogeneity may prompt disaffected groups to use violence to secede; from the UK in the case of Northern Ireland Republicans or from Spain in the case of Basque separatists. The disruptive influence of heterogeneity may be reduced either by repression or by encompassing institutions, such as those of Switzerland, which has four languages and religious differences. Post-colonial borders in Africa generated great heterogeneity since they rarely reflected political and economic realities, but given the potential for conflict, the convention that the borders were to be treated as sacrosanct was rapidly adopted. The optimum economic size may not match the optimum political size. In economic terms Belgium is too small; for economic purposes it often combines with the Netherlands and Luxembourg to form Benelux, an economic rather than a political entity. In political terms, Belgium is too large; the smooth running of the country is impeded by the disputes between the two major linguistic groups, Flemings and Walloons. The advantages of size are reduced when there is a degree of international order, so small countries do not need to fear invasion by large neighbours, and there is fairly free trade, so small countries do not have to rely on their own resources. This seems to be the current position and the number of countries in the world has steadily increased.

There tends to be a presumption that any state, however bad, is better than anarchy, no state at all. Since most of the discussions of the characteristics of anarchy have been rather speculative, there has been considerable interest in the consequences for Somalia of state collapse, which provides a rare modern example of a country without a state. Peter T. Leeson (2007) and Powell, Ford and Nowrasteh (2008) consider this case. The predatory Somali state collapsed with the fall of Siad Barre's dictatorship in 1991 and the country sank into civil war. The UN and US interventions from 1993 to 1995 failed, but following their withdrawal from 1995 to 2005 there was a period of relative peace until the attempt to restore a state, the Ethiopian invasion and renewal of Civil War in 2006. This period of statelessness was one of Somali progress on a wide range of development indicators. Economic performance during this period seems good, not only relative to its own history but also to the performance of comparable African countries with states. Various non-state mechanisms ensured the provision of law and means of exchange. Although this is only one example and the interpretation is controversial, people may be better off with no state at all than a bad state. The difficulty is that no-state is an unstable position: the incentives for internal and external groups to try to re-impose a state are very great.

Global security

At the systemic level, military 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 and the future of the dollar. The strategic environment is the sphere of nuclear proliferation, interacting national interests, threats and failed states. The main examples of analyses of the interaction of economy and strategy at the systemic level are historical works, such as Paul Kennedy's *The Rise and Fall of the Great Powers* (1988) that examines the interaction of economic change and military conflict since 1500 and Jared Diamond's *Guns, Germs, and Steel* (1998) that examines the interaction between material forces, particularly those shaped by geography, and power over the last 13,000 years. Diamond takes a very long perspective on the question of why Europeans and their offshoots in the US and Australia are so rich. He points out that the people of Eurasia had more crops and animals that could be domesticated compared to the Americas or Africa. Flows of peoples and ideas were easier along the east–west axis of Eurasia than along the north–south axis of the Americas of Africa. From their domestic animals, the Eurasians got diseases, to which they became partially immune. These diseases then wiped out peoples in the Americas.

In *Power and Plenty*, Findlay and O'Rourke (2007) provide a history of international trade over the last millennium. Early in the book (p. xviii) they comment: 'a feature of the book that may strike some economists as surprising, but will seem commonplace to historians, is its sustained emphasis on conflict, violence and geopolitics.' The interaction between politics and trade, the mutual dependence of power and plenty, has shaped world history. From about 1250 to 1350 a major spur to trade was the Pax Mongolica that followed the victories of Genghis Khan and his successors. This opened up the Central Asian Trade routes between Europe and China that allowed Marco Polo to make his travels. It was the closing of this route that spurred Europeans to find another way to the East that avoided the problems and predations of the sea route though Middle Eastern ports. In the explosion of European trade in the 17th and 18th century, commercial expansion was inter-twined with war between Dutch, English and French over trade routes and colonies. During this mercantilist period one could not make war without trade, because one had to acquire strategic naval supplies from abroad, and one could not trade without war, because countries used force to establish monopolies over crucial products and stop others using their trade routes. While the economic advantages of such monopolies may seem obvious, in fact they were a very mixed blessing, the costs, including the military costs, often outweighed the benefits. Many of the profits of mercantilism were more apparent than real, as was increasingly realised. The French revolutionary wars largely ended this period of mercantilism. The 19th century saw trends towards less restrictions on trade, stable currencies under the gold standard and increased globalisation. Such trends were ended by World War I.

In analysing the interactions between global economic and strategic processes there are various systemic theories. Mercantilism/Leninism sees strategic conflict as a continuation of economic competition by other means. Liberalism/idealism sees close trading links as inhibiting military conflict; there is more to lose from loss of economic integration. Both have their adherents today. There is a large literature examining whether increased trade increases or reduces the probability of war between states. Trade and economic integration is highest within states, but it is civil wars that tend to be the most violent, perhaps because the stakes are higher.

Globalisation is a vague term that is used to encompass various elements. One element is the internationalisation of economic processes through the movement of goods via trade; capital via foreign investment; labour via migration; and technology via knowledge transfer. A second element is the transformation of firms from being multinational, operating in many countries, to being transnational, having no home country. A third element is the tendency of global markets and international organisations to reduce the power and autonomy of national governments. A fourth element is a process of cultural homogenisation as nations share brands, movies, sports and music. The novelty and extent of these elements remains controversial.

The perception of globalisation is not new. In *The Manifesto of the Communist Party* of 1848, Marx and Engels say, 'Modern industry has established the world market ... This market has given an immense development to commerce, to navigation to communication.' That was 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, which took China joining the WTO as an event of historic significance comparable in importance to its opening after the Opium Wars. That was a case where Britain promoted free trade, in among other goods opium, by battering down the Chinese Walls against trade with real artillery. The first Opium War between Britain and China was from 1839 to 1842, so Marx and Engels writing in 1848 were possibly being ironic about the artillery.

The telegraph reduced the time taken to transmit a message from New York to London from 2 weeks to 2 minutes. Steamships disrupted European agriculture and politics in the late 19th century as cheap North American grain arrived. These changes in communications technology had effects that were as large as, or larger than, modern innovations. The 19th-century flows of labour were massive compared to the immigration some worry about today. On some measures, the world has only recently reached the degree of globalisation attained in 1913. This also makes it clear that globalisation is not inevitable; it was ended by World War I and the inter-war depression. It might be ended again.

As the system globalises, it increasingly requires forms of organisation and the provision of international public goods. There are large benefits, for instance, in having a common system of exchange which allows trade to take place far away. Some organisation arises spontaneously, but much comes from dominant states or international institutions. Empires have always provided one form of organisation. The conquests of Alexander the Great, the Romans, Islam or the Mongols all provided a stimulus to trade. But organisation by a dominant state can be more informal. During the 19th century Britain had a large formal empire but it also had substantial influence on the rest of the world, an influence often labelled hegemony. Although British hegemony was driven by its own interests, the Pax Britannica did have some benefits for the world as a whole. These included establishing freedom of the seas; acting to restrict slavery; encouraging free trade; and acting as a banker to the world, providing convenient means of exchange. Though Britain was a victor in World War I, it emerged impoverished, unable to maintain its hegemonic role. After World War II, the US took on a hegemonic role within the capitalist system, providing similar functions. Many explanations of the economic and political disruption of the inter-war period attribute it to the lack of a power able and willing to provide leadership, a hegemonic organising role.

The alternative to organisation by a dominant power is organisation by international institutions. Some had their origins in the 19th century, like the International Committee of the Red Cross established in 1863 and agreements to regulate post and telegrams; but they blossomed after World War II. Kennedy (2006, p. xi) says,

> In the course of the twentieth century, there occurred a development unique in the story of humankind. States, which had defined themselves from Thucydides to Bismarck by their claims to sovereign independence, gradually came together to create international organisations to promote peace, curb aggression, regulate diplomatic affairs, devise an international code of law, encourage social development and foster prosperity.

There are a vast number of such international organisations to provide the coordination that makes globalisation possible. They range from the overarching UN; through those with broad economic responsibilities like the IMF, WTO and World Bank; to narrow technical organisations, few have heard of, to negotiate the allocation of the electromagnetic spectrum and similar essential specialist details. Such international organisations tend to live on a fine line of effectiveness. They are subject to various restrictions which limit their effectiveness, but those restrictions enable them to maintain their membership. One of the most important of those restrictions is at the end of Chapter I of the UN Charter: 'Nothing contained in the present Charter shall authorise the United Nations to intervene in matters which are essentially within the domestic jurisdiction of any state.' Given such restrictions, the extent to which the international institutions will be able to inhibit major war is unclear. The EU, initially motivated by the desire to prevent another war between France and Germany, has become one of the most extensive international institutions and probably reduces the likelihood of war between its members.

A global system tends to be a system of alliances. Sandler and Hartley (1999) give a good non-technical discussion of alliance issues, particularly as they relate to NATO. When a country starts to increase in power, other countries have a choice between joining the bandwagon, becoming allies of the rising power, or balancing, forming alliances that will keep the rising power in check. British policy towards Europe was always one of balancing: joining or forming coalitions against any continental power that seemed likely to become dominant. This was nicely summarised by the fictional Sir Humphrey in the TV series *Yes Minister*.

> Britain has had the same foreign policy objectives for at least the last five hundred years – to create a disunited Europe. In that cause we have fought with the Dutch against the Spanish, with the Germans against the French, with the French and Italians against the Germans,

> and with the French against the Italians and Germans.... In other words divide and rule. And the Foreign Office can see no reason to change when it has worked so well until now. It was necessary for us to break up the EEC, so we had to get inside. We had previously tried to break it up from the outside, but that didn't work. Now we are in, we are able to make a complete pig's breakfast out of it. We have now set the Germans against the French, the French against the Italians, the Italians against the Dutch, and the Foreign Office is terribly happy. It's just like old times.
>
> Lynn and Jay (1981, p. 117).

As with nations, alliances provide both economies of scale and political diseconomies of heterogeneity. Economies of scale arise from military integration; since if nations pool their resources, they share fixed development costs and may be able to afford jointly large indivisible systems like aircraft carriers or military satellites that they could not afford individually. With longer production runs unit costs fall, as producers learn how to make the items more efficiently. A unified command avoids duplication, many small national forces trying to do the same thing on an inefficiently small scale. Having inter-operable weapons increases efficiency: shared training, shared supplies of ammunition and saving on logistics. While there are benefits of coordination, costs arise from divergence in perceptions of national interests, clashes between different military traditions and national political objections. Coordination costs are reduced if one nation dominates the alliance, as the Soviet Union did the Warsaw Pact. But this also reduces the benefits to the other members of the alliance, who may see membership as a cost rather than a benefit.

As an alliance expands, its borders expand. This increases its vulnerability. This is an issue in the extension of NATO to countries on the border of Russia, like Georgia and Ukraine. Alliances also involve commitments, such as collective security guarantees. Article V of the Washington Treaty which established NATO in 1949 requires all member states to come to the aid of any allied nation subject to an armed attack. There is some ambiguity in this requirement. The treaty says that if such an armed attack occurs, each of the members 'will assist the Party or Parties so attacked by taking forthwith, individually and in concert with other Parties, such action as it deems necessary, including the use of armed force'. Thus the decision to respond remains a matter for each individual state and 'such action as it deems necessary' may be no action at all. During the Cold War this commitment was given credibility by members stationing troops on the territory of vulnerable allies bordering the Warsaw Pact. When former Warsaw Pact countries joined NATO, there was no comparable forward basing of troops by other members.

War

Among the earliest humans, it seems likely that competition over reproduction and resources spilled over into violent conflict. This conflict probably took the form of opportunistic raids rather than pitched battles, but rates of violent death were high. Azar Gat (2006) discusses the pre-history of war in an evolutionary context. With the development of culture, the basic sources of conflict – reproduction and resources, sex and shopping – became elaborated with social elements such as status within groups and vengeance between groups. So by classical times, Thucydides thought that men fought for reasons of fear, honour and interest. Some see war as an inevitable consequence of the existence of separate sovereign states; others see it as an unfortunate accident that could be prevented by better national and international institutions. In either case, war requires the two groups to have both the desire and the ability to fight. The desire to fight often has economic dimensions, the ability to fight always does. In analysing wars there tend to be three questions: what causes them to start? what causes them to end and after how long? and what causes them to restart? The causes have got the most attention but the recurrence is also a major policy issue because of the prevalence of enduring antagonisms, both within and between countries, which cause repeated wars.

From an economic perspective wars are puzzling. Given the vast waste of life and resources involved, there ought to be a potential deal or agreement between the parties that would share the wasted resources between them to their mutual benefit, leaving them both, victor and vanquished, better off than they would have been after fighting the war. Nineteenth century economists, like John Stuart Mill and Jean-Baptiste Say, believed that the cost of war had made it obsolete. They were correct about the cost, but not the obsolescence. World War I cost the lives of perhaps 11 million people, though on most estimates this was less than the perhaps 25 million who died in the influenza epidemic that followed it. The war destroyed three empires, the Russian, German and Austro-Hungarian; completed the destruction of a fourth, the Ottoman; and impoverished a fifth, the British. One might imagine that the leaders of the combatants, had they anticipated its possible consequences, would have put more effort into prevention. Its proximate cause, the murder of an Archduke in the Balkans, was to the international system, if not the Duke, a minor matter. Its more fundamental causes, what it was really about, remain a matter of dispute. Among the many interacting causal influences, militarism and the fact that few anticipated such a long and brutal war were probably factors. The few European wars between 1815 and 1914 had been short, that in Crimea 1854–1856 the longest. Of course, judging what people then believed is difficult, though the data on bond yields discussed earlier do suggest that the war was unexpected, certainly by the financial community.

Agreements to prevent wars may not be possible because of the uncertainty about the outcome and the difficulties of enforcing a deal. While a deal could be based on the relative strengths of each side, there may be no way to determine relative strengths other than by fighting, because it is in the interest of each side to exaggerate their relative strength. In such circumstances, wars are just a costly way of communicating relative fitness. While an agreement may be beneficial, there are strong incentives to renege on the agreement once it has been made and great difficulties in pre-committing to future behaviour. Anglo-Saxon Kings bought off Viking attacks by the payment of the Danegeld, but that just encouraged the Vikings to return and ask for more Danegeld, rather than stay away. Wars recur because while both sides have incentives to make promises in advance, they have no incentive to keep them. Given that they cannot pre-commit to their future actions, both sides may fear that if they postpone conflict they will be in a weaker position later; thus it is better to strike now. Thucydides ascribed the cause of the Peloponnesian War to the growth of Athenian power and the fear that it inspired in Sparta. Economic explanations of war tend not to focus on specific motivations for fighting, but emphasise feasibility (can the two sides mobilise the resources to fight) and credibility (can the two sides have any confidence in alternatives to war such as peaceful agreements).

Despite the fact that most wars result from many interacting influences, there is always a temptation to ask what the war was really about. Even long after the war is over, there may be no agreement about the issue: whether the US Civil War was about the abolition of slavery or about state's rights, for instance. Students of history tend to think all wars have seven causes, one for each paragraph of a one-hour exam answer. The answers can fall back on stereotypes. During the Cold War, wars around the world were categorised as capitalists versus communists, though often the combatants were unsure of their ideology until they had determined which superpower was making the better offer.

The fashionable stereotype can change through time. The war between north and south Sudan has been variously characterised as capitalist–communist, Arab–African and Muslim–Christian. While it is common to use standard dimensions (reproduction, resources, class, religion, ethnicity, territory and ideology) they over-simplify and can be misleading. Not only do the causes of any particular war become more obscure with study, there are situations with similar antecedents where war was avoided. For instance, while demographic factors, such as the presence of a bulge of young men without employment, can be a force for war, some societies find other ways to occupy their excess of young men. The picture is complicated by the fact that many will take advantage of the disorganisation of war to settle their own private grievances, which may have nothing to do with the main conflict. Conversely even within countries that are scarred by war there are often pockets that escape violence for local reasons. During what were almost universally called the 'Troubles' in Northern Ireland, there were parts of the country that lived in complete peace. There are rarely sharp distinctions between war and peace; rather there is a continuum of violence with a complex pattern in who is killing who, how, why, where and when.

Many reasons have been given for the 2003 invasion of Iraq: weapons of mass destruction, countering global terrorism, stabilising the Gulf region, spreading liberal democracy, oil, profits, the need for US military bases and the relations between Bush the Father and Bush the Son; and its cause seems likely to remain a matter of dispute. Christopher Cramer (2006, p. 96) quotes Tolstoy in *War and Peace*: 'The deeper we delve in search of these causes the more of them do we discover; and each separate cause or whole series of causes appears to us equally valid in itself and equally unsound by its insignificance in comparison with the size of the event.'

Clearly a range of behavioural factors and cognitive biases contribute to the prevalence of war and these factors are important in finance as well as war. In both there is a tendency to look for evidence that confirms rather than questions one's beliefs; to overestimate one's own capabilities and underestimate those of the competition; to follow a strategy that has been successful; and to be unwilling to cut losses when that strategy runs into trouble. Both rogue traders in finance and wartime leaders can respond to large losses by taking bigger gambles in the hope of recovering their position.

In the liberal view, wars were the product of vested interests, such as aristocratic elites, who used their social dominance to shape popular perceptions to their own ends; and that increased trade, by increasing the contacts and dependence between states, would reduce the risk of war. The traditional socialist view was that wars were the product of capitalist interests, in particular their imperial interest to expand markets. The fact that the working classes in both Germany and Britain, as represented by the Second International, supported World War I was put down to false consciousness. While there are clearly interests that benefit from war, war can also become a source of meaning and identity for many.

While democracies are, on average, as warlike as other states, they do not seem to go to war with other democracies. This pattern is known as the democratic peace. The hypothesis of a democratic peace has been quite controversial, depending on the definition of democracy, of peace and of the historical periods considered. It may also reflect other factors, such as democracies tending to be richer and to trade more with each other, both of which may reduce the risk of war. Goldsmith and He (2008) also argue that democratic states were more likely to give their colonies independence without war; though this is a probabilistic relationship and there were democracies, like France, that fought decolonisation.

While it is natural to want to know how many wars there are at any particular moment and whether war is becoming more or less common, it is difficult to give a quantitative answer because there is no unambiguous definition of war. Definitions used in the literature usually involve a number of elements. War might be defined as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, at least one of which is the government of a state, results in a specified number of battle-related deaths. Relating the definition to the number of deaths is quite common. Lewis Fry Richardson, a Quaker meteorologist, was one of the founding fathers of the quantitative study of conflict. Richardson (1960a) provided statistics, not on wars but on 'deadly quarrels', where people were killed in the course of a dispute. Data on such deaths are highly skewed, a few large wars account for most of the deaths. Data on non-war violent deaths are also quite skewed. Homicide rates differ substantially between countries and are particularly high in Latin America. More people may die violently in countries that are at peace than in countries that are at war.

Using some threshold number for a certain type of death, such as 1000 battle deaths, is a common criterion for a conflict to count as a war. This excludes other militarised international disputes, like the Cod Wars between the UK and Iceland over fisheries, where despite their name not enough people died to be counted in lists of wars. Basing the criteria on battle deaths exclude the large number of deaths from general violence, massacres of civilians and the disease and malnutrition associated with war. Battle deaths can account for a small proportion of war deaths, often less than 10 per cent. Wars are usually distinguished from other deadly quarrels, such as homicides, by the involvement of a government. Where there is no government, as in Somalia, the conflict then does not count as a war. To distinguish wars from massacres or genocide it is also common to require that there be some resistance, so that the state doing the killing should also suffer some casualties. It is normal to distinguish wars between states, inter-state, from intra-state, civil, wars. A civil war which leads to the formation of a new state, such as between Ethiopia and Eritrea, then becomes an inter-state war. National liberation struggles which lead to the independence of colonies are sometimes labelled extra-state or extra-systemic wars, the system being the system of states. In some civil wars, the neighbours join in; these are labelled internationalised intra-state wars. Some ethnic insurgencies are against more than one country; the Kurds have fought Iraq, Iran and Turkey.

Dating wars raises further difficulties. World War II is usually dated by the British and French as starting in 1939, when they declared War on Germany, after the invasion of Poland. But for its first two years it was largely a European War, though the British Commonwealth and colonies were involved. It was only when Japan and the USA became involved in 1941 that it could be regarded as a World War, so it is sometimes dated 1941–1945. This shortens the war, some might want to lengthen it. One could treat the Spanish Civil War as a trial run, where fascist and communist powers tested their military technologies for the war they anticipated. Eric Hobsbawm (2007, p. 15) argues ‘The period from 1914 to 1945 can be regarded as a single “Thirty Years War” interrupted only by a pause in the 1920s, between the final withdrawal of the Japanese from the Soviet Far East in 1922 and the beginning of the Japanese attack on Manchuria in 1931.’ World War II also involved a large number of separate conflicts and a number of countries, including the Soviet Union and Italy, changed sides during the course of it, so specifying participants is difficult.

There are two major sources of data on wars: the Correlates of War (COW) project and the Upsala Conflict Data Program (UCDP). UCDP cover a shorter period than COW, since 1945, but give more detail. UCDP define a major armed conflict as a contested incompatibility concerning government or territory over which the use of armed force between the military forces of two parties, of which at least one is the government of a state, has resulted in at least 1000 battle-related deaths in a single calendar year. Once a conflict passes 1000 battle-related deaths in a particular year, it is maintained in the list until the contested incompatibility has been resolved or there are no recorded battle-related deaths. UCDP also count minor armed conflicts, more than 25 battle-related deaths, and provide lists of unclear cases. As UCDP note, often little precise information is publicly available on number of deaths. UCDP tend to be conservative in their estimates and for cases where they can be compared, World Health Organisation (WHO) estimates of deaths tend to be much larger. Identifying and dating wars raises formidable difficulties and Cramer (2007, chapter 2) gives a good account of them. These difficulties are real, but the attempt to compile a systematic list of wars in a database is useful, in that it does clarify the difficulties.

The bulk of the conflicts are intra-state, civil wars, in poor countries. Blattman and Miguel (2009) provide a survey of the economics of civil wars. Since 1945 there have been about four times as many civil wars as inter-state wars, causing about four times as many casualties. Inter-state wars are usually more intense, more deaths per year, but civil wars last longer. Civil wars usually have an international dimension; the intra-state parties gain support from abroad, either from foreign governments or from a diaspora: people from the country living abroad. These conflicts can last a long time, sometimes subsiding for a while before being rekindled. Colombia has a long history of intermittent violence, which is sometimes separated into distinct conflicts. While most conflicts are in poor countries, there are also long-standing violent conflicts in rich countries, which may or may not be counted as civil wars. These include the UK conflict with the IRA and various other paramilitary groups in Northern Ireland, which started in 1969 and may have finished in the early years of the 21st century, and the Spanish government conflict with the Basque separatist movement ETA, which also started in the 1960s and continues.

UCDP report figures on wars each year in a number of places; the figures below come from the 2007 SIPRI Yearbook. They are likely to be revised as new information becomes available. In three of the 17 major armed conflicts that were active in 2006, there were more than 1000 battle-related deaths: Iraq, Afghanistan and Sri Lanka. UCDP note that estimating the number of deaths in the August–July 2006 conflict between Hezbollah and Israel in Southern Lebanon was particularly difficult and it is unclear whether it should be treated as an aspect of the Israel–Palestine conflict or a separate conflict. Over the last 10 years there has been a downward trend in the number of major conflicts from a total of 26 in 1998 to 17 in 2006.

Locations of major armed conflicts, 1997–2006

Africa

Algeria, Angola, Burundi, the Democratic Republic of Congo (formerly Zaire), the Republic of the Congo, Eritrea-Ethiopia, Guinea-Bissau, Liberia, Ruanda, Somalia, Sudan and Uganda.

Asia

Afghanistan, Cambodia, India (Kashmir), India–Pakistan, Indonesia (East Timor), Myanmar (Karen State), Nepal, Philippines and Sri Lanka.

Middle East

Iran, Iraq, Israel (Palestinian Territories) Turkey (Kurdistan).

Americas

Colombia, Peru, US v Al-Qaeda.

Europe

Russia (Chechnya) and former Yugoslavia (Kosovo).

Some locations, such as Sudan and Uganda, had more than one conflict.

In the late 1990s a heated debate emerged about whether civil wars were better explained by 'greed or grievance', economic or political motives. Greed covers both the motive for conflict, to acquire resources, and the feasibility of conflict, how the combatants obtained the resources to fight. Like all good debates it was excessively polarised, obviously both matter; but it did prompt more examination of the economic dimension of civil wars. The book on the new economics of war edited by Arnson and Zartman (2005) is a recent survey which discusses the economic dimension and provides a number of case studies.

The source of the greed–grievance debate was unusual. The main sources were a technical piece of econometrics, Collier and Hoeffler (1998) in *Oxford Economic Papers* on economic causes of Civil Wars and an *Adelphi Paper* of the London-based International Institute for Strategic Studies (IISS) by David Keen on the economic function of violence in civil wars. Policy makers, including those at the World Bank, where Collier became head of research for a time, and NGOs picked up on the issues relatively quickly. This debate also contributed to the Kimberley

Process against blood diamonds and the extractive industries initiative, both of which aimed to stop these commodities financing war.

In the ensuing debate there was much emotion and many misinterpretations. Some wrongly interpreted the greed to refer solely to that of the insurgents, thereby having a conservative implication, but the greed of the incumbent state was as likely to be a cause. Greed and grievance may be two sides of the same coin: the greed of one prompting the grievance of the other. There were also disputes about method and the relative advantage of detailed case studies of particular conflicts as against statistical analysis of lots of countries. One of the results of the statistical analysis was that the degree of ethnic heterogeneity in a country did not seem to predict conflict. This was surprising since ethnic disputes (Serb–Croat or Hutu–Tutsi) seemed to play a role in a large number of conflicts. Subsequent work indicated that this result depended on how ethnic heterogeneity is measured. Although the usual measure of ethnic fragmentation does not predict conflict, a measure of ethnic polarity does seem to predict both civil wars and genocides. This is discussed by Montalvo and Reynal-Querol (2008) in a rather technical article. The example illustrates the care that must be taken in quantifying qualitative concepts.

Quantitative analysis over a large number of conflicts can often identify necessary conditions, which may be overlooked in individual case studies. But these conditions may not be sufficient and political entrepreneurs of violence, who mobilise both grievances and the resources to pursue the conflict, often play a crucial role. In a number of cases, the conflict was only ended with the death or capture of such entrepreneurs. For instance, it was only the death in February 2002 of Jonas Savimbi of UNITA which bought the long war in Angola to an end. The war had other dimensions. It dated from the national liberation struggle against Portugal, the colonial power, from the 1950s. At independence in 1975, there were three rival nationalist groups. The MPLA, the Portuguese initials of the Popular Movement for the Liberation of Angola, became the government; UNITA, the National Union for the Total Independence of Angola, led by Savimbi, became the insurgents; the third, the FNLA, the National Liberation Front of Angola, dropped out. The government was supported by Cuba, which supplied troops, and by the Soviet Union. UNITA was supported by South Africa and the US. Ironically, the government deployed Cuban soldiers to protect US-owned oil-installations, from attack by US-financed UNITA forces. The revenue from the oil-fields financed the Cuban troops and Soviet arms; UNITA financed itself by diamonds. With the end of the Cold War and the transformation in South Africa, there was a peace initiative in 1992, but the conflict only ended with the death of Savimbi. Other conflicts have also been ended by the removal of the entrepreneur. In Peru, the capture in 1992 of Abimael Guzman, the leader of Sendero Luminoso, Shining Path, led to the demoralisation of the insurgents and a reduction in violence.

Given the central role of charismatic leaders in many conflicts, one might consider how to remove them. They can be removed by bribing, capturing or killing them. The policy of offering senior figures in the insurgency large rewards to defect can be effective; the difficulty is identifying the seniority of the defector. It pays low-level defectors to pretend to be high level to collect the reward. Capturing or killing senior figures can be difficult. The US made a number of unsuccessful attempts to kill Fidel Castro and, at time of writing, has yet to kill or capture Osama bin Laden. There is also some dispute about the consequences; if, for instance, the attempted assassination of Hitler in 1944 by disaffected German Generals had succeeded. Such counterfactual question faces the difficulty that we can never know what would have happened if Hitler had been assassinated or if President Kennedy not been assassinated. If we try to draw conclusions from large numbers of cases we face the difficulty that relatively few leaders are assassinated and they may be atypical, not like the vast majority of leaders that are not assassinated. Jones and Olken (2007) try to get around this difficulty by looking at assassination attempts. Whether the attempt succeeded or failed is partly a matter of chance; there was an element of luck in the fact that President Reagan survived being shot, while President Kennedy did not. Their data set included 298 assassination attempts, over the period 1875–2004, of which 59 resulted in the leader's death. They note:

> Analyzing the effect of assassination is difficult. While some assassinations may be associated with historical turning points, the direction of causation is difficult to establish, especially since assassination attempts often occur (as we will show) in times of crisis, such as during war. To overcome this problem, we employ a large set of assassination attempts and use the 'failures' as controls for the 'successes'.

They found that assassinations of leaders in autocratic regimes produced substantial changes in the country's institutions, while assassinations of leaders of democratic regimes did not. A move to democracy was more likely following the successful assassination of an autocrat than following a failed attempt. There are, of course, the usual difficulties of measurement, interpretation and identifying causality.

Let us return from the leaders to the conflicts and how long they last. While the motivation for the insurgency is rarely purely economic, the means required to pursue the struggle are always economic: fighters need to be fed and armed; an army marches on its stomach. Thus an economic surplus that can be used to finance conflict is a necessary though not sufficient condition for war. Running a war, like running a business, requires that income is greater than expenditure. This applies to both sides. Sources of easy loot such as drugs, diamonds, minerals and oil have been the focus of attention; but other, more traditional sources of income may be important, such as taxing trade and peasants.

As the conflict proceeds, division of labour sets in; some specialise in fighting and some specialise in financing the fighters. Incentives then become important. Quite apart from their grievances, it can be the case that some actors have economic motives for continuing the conflict. This raises the policy issue: how do you construct alternatives for the combatants that are better than continuing fighting? These alternatives may be positive (a child soldier may think school is better than taking his or her AK47 back into the bush) or negative (the warlord finds that money laundering regulations mean that he has to stay in the bush rather than spend his loot in Monte Carlo). Changing incentives can be difficult and there are practical problems of implementing and enforcing what may appear obvious policy responses. This partly helps explain why conflicts can be so persistent.

Oil

The most common greed-based explanation in modern international relations is oil. Many see oil as a driving force in international politics and conflict, particularly in the Middle East. It is clearly an important factor: Saddam Hussein would probably not have invaded Kuwait in 1990, had Kuwait not had oil. But, it is far from a complete explanation: the 'it is all about oil' response is usually over-simple, as is any mono-causal explanation. For instance, if the US did invade Iraq in 2003 because of its oil, it seems a stupid thing to do. Oil prices would probably have been lower without the invasion, which added a geo-political risk premium to the price, and oil production higher. Oil also matters to the military because they are heavy users of it; tanks and fighter aircraft are not optimised for their fuel efficiency, so the oil price influences the defence budget.

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Different communities tend to focus on different aspects of the oil market: supply, demand or prices. Strategic analysts tend to focus on supply. If you like frightening yourself, as many strategic analysts do, this is an easy way to do it; since most of the supply and potential supply is in potentially politically unstable regions of the world. Five Gulf states control 60 per cent of known oil reserves, governments control 75 per cent and many sources of supply are potentially unstable. Many of the new sources of oil, such as the Caucasus, Central Asia or the Arctic, are areas of geo-political tension, with unstable governments and actual or potential border disputes. These tensions pose risks for the negotiation of exploration agreements, the oil production itself and the transmission of oil to market when the pipelines go through neighbouring countries. Europe is heavily dependent on Russian oil and gas with the risk that the Russians may use this leverage for political purposes. The Venezuelan president, Hugo Chavez, used oil to gain political leverage and the classic use was the OPEC embargo and price increase following the 1973 Israel–Arab war. Oil revenues have played a role in financing a number of wars, including Angola and Colombia.

For oil producing states, the surplus of price over the marginal cost of production provides them large rents which they can use for political purposes. This makes government revenues less dependent on taxation, which requires a degree of political consent. The instability in the oil price can leave producer governments vulnerable: low oil prices undermine their economic and political base. Expropriation of these rents is a potential source of conflict, in particular how it should be divided between states and the oil companies that develop the production. Although the oil companies in many countries, like Saudi Arabia, are state owned, they are dependent on multinational companies for the development technology. Without this technology, which only comes at a price, production starts to fall, which has been the case with a number of producers.

On the supply side, there are two marginal production costs that matter. The short-run marginal cost is what is required to get oil out of existing reserves; the long-run marginal cost is what is required to develop new reserves. The short-run marginal cost differs between oil fields, but can be very low. It is estimated to be $15 a barrel in Saudi Arabia. This leaves a large rent available to be fought over. The long-run marginal cost is much higher but very uncertain, perhaps around $80. It appears that there are diminishing returns. The easy reserves have already been exploited. New reserves are deeper, in more hostile environments or require more expensive refining; all of which raises marginal cost. However, if the oil price stays high enough for long enough it may still be profitable to develop these expensive sources. Given the geological constraints, some suggest that the world is close to peak oil: the point in time beyond which world oil production will fall each year rather than rise. The International Energy Agency estimates that output from existing fields will fall at about 9 per cent a year and increases in oil production will depend on the development of new fields.

Strategic analysts, particularly in the US, tend to present the supply position as an existential threat, which requires thinking the unthinkable and taking extreme, possibly military, measures. However, the unthinkable possibilities that they consider have rarely extended to a sharp increase in the US federal tax on gasoline; to an economist, if not a US politician, the obvious solution. OPEC as a supply-side cartel has an interest in maintaining high prices. However, as OPEC has found, international cartels are difficult to maintain, the price collapses in 1985 and late 2008 being examples. There are always incentives for some producers to increase production, under-cutting both the price and the cohesion of the cartel. Probably the only successful, sustained, international cartel is the De Beers' monopoly of diamonds; there is little indication that oil producers can be as effectively organised as diamond producers.

Environmentalists tend to focus on the demand side. Rich countries are profligate in their use of oil, and rapid growth in large poor countries, like China and India, is also boosting demand for oil. This demand depletes a non-renewable resource; causes environmental damage when extracted from fragile ecosystems like Alaska and the Arctic; and generates carbon-dioxide and other greenhouse gases which increase global warming, raising further geo-political threats. From this perspective, high oil prices are a good thing: they reduce demand. Economists measure the sensitivity of demand to price, by the price elasticity of demand: the percentage reduction in demand that follows a 1 per cent increase in price. Goods where the elasticity is greater than 1 (a 1 per cent increase in price causes a more than 1 per cent reduction in demand) are called price-elastic. Goods where the elasticity is less than 1 are called price-inelastic. Economists also distinguish between the short-run elasticity and the long-run elasticity. In the long-run people can replace their gas-guzzling cars with more fuel-efficient vehicles, reducing their demand. Oil demand is inelastic in the short-run, but can adjust quite a lot in the longer run. Estimates of the medium-run elasticity are around -0.3. A doubling of the oil price, a 100 per cent increase, will reduce oil demand by around 30 per cent. In the long-run with technological substitution to more fuel-efficient equipment and the use of alternatives to oil, the effect may be larger, though it is difficult to estimate. Where the price mechanism tends not to work on demand is within the oil producers. These often subsidise domestic oil products, because they can afford to and because it provides political benefits. Even for an oil producer, the opportunity cost is what could be got on the world market. Being a producer provides no economic reason to provide cheap oil to your population, though it may provide a political reason. Because the effects of price on the demand and supply are rather small, it is sometimes said that the price mechanism does not work in this area. Rather it is that prices have to work harder, with bigger movements to balance demand and supply.

Developing new oil-fields, alternative energy sources or new fuel-efficient equipment requires large investments. Whether these investments seem profitable depends on the expected future oil price; but it is very difficult to predict oil prices. The best statistical model of oil prices seems to be a random walk: tomorrow's price equals today's price plus a large unpredictable positive or negative shock. In the long-run fundamental factors, such as the long-run marginal cost of production, must matter. But the long-run can be very long and the long-run cost of production is very uncertain. Without faith in fundamentals, markets do not know what the price should be; so prices can become volatile, jumping around wildly. In 2008 oil prices started below $100 a barrel, rose to $147 in mid-July, then falling back dropping below $100 again in September. Prices then jumped from $90 to $130 in a week, before falling below $40 in late 2008. The late-September spike reflected a financial factor, called a short squeeze. You are long on a commodity or stock if you hold it in expectation of the price rising; you are short, if you sell it in expectation of the price falling. Many traders had gone short on oil. Expecting prices to fall they had sold oil forward, for delivery in the future. They did not own the oil when they sold it, expecting to be able to buy it more cheaply just before the delivery date. When the delivery date arrived they had to buy the oil to cover their contracts, driving the price up and making their short sales unprofitable. Short selling has a long history. Like most financial innovations it seems to have originated in the Netherlands in the 1600s and the dangers of it were captured by the 19th-century US financier Daniel Drew: 'He who sells what isn't his'n, must buy it back or go to prison.'

Normally the solution to high prices is high prices. High prices tend to reduce demand and increase supply, putting downward pressure on prices solving the problem. The effect on demand is discussed above.

Short-run supply adjustments, increasing output from existing wells, are relatively straightforward, but there is the complication that a price increase may be taken by producers as signalling the start of a trend towards steadily increasing prices. In this case, they have an incentive to leave the oil in the ground so that they can sell it at the expected future higher prices. Thus there may be a perverse supply response, because of expectations. Long-run supply responses depend on the development of new fields. These will be developed if the expected long-run price is greater than the cost of development, which usually involves large fixed costs and political negotiations. If prices are very volatile, like oil prices, or if the politics are very unstable, which they often are in potential oil producing countries, oil companies may not have any confidence in their estimate of long-run price and costs. Without confidence they may be unwilling to risk the investments in new fields. From an environmental point of view, high and volatile prices are a good thing: they depress demand but do not encourage the expansion of supply.

Oil is clearly an important factor in military economics, but it is a very random and unpredictable factor. Economists are often accused of being complacent about problems such as resource depletion. They are seen as complacent because they argue that the system will adjust through various economic processes, such as changing relative prices, the introduction of new technologies and national and international changes in the level and distribution of income (impoverishing people reduces the demand for oil). Economists point to previous scares that did not materialise. Thomas Malthus at the beginning of the 19th century predicted that population would outstrip food production. William Stanley Jevons at the end of the 19th century predicted that the world would exhaust its coal reserves. The 1972 *Limits to Growth* book and the Club of Rome report predicted rising prices of primary products and constraints on growth before the end of the 20th century. Perhaps a better charge against economists than complacency is political insensitivity. Probably, as in the past, the system will adjust through the usual process of creative destruction; but economists tend to forget that people do not like creative destruction, find adjustment very unpleasant and may find preparation for war preferable to the usual economic process of adjustment.

Arms races and arms control

Preparation for war often involves an arms race. A country may increase its military expenditure in the hope of raising its security against a potential enemy, but if its antagonist raises its military expenditure in response, this security benefit is nullified; both countries are spending more but neither has increased their security. This is a particular example of the more general security dilemma: the steps you take to make yourself secure make others insecure. An arms race can easily escalate if both countries want to have more arms than the other; something which is mutually impossible, but may drive continual growth. Even if they do not want superiority, over-estimating their antagonist's capability can lead to the same effect. Arms races – enduring rivalries between pairs of hostile powers, which prompt competitive acquisition of military capability – appear to be a pervasive phenomenon. From the Cold War competition between the US and USSR, to regional antagonisms, such as those between Greece and Turkey, China and Taiwan or North and South Korea, arms races remain a matter of continuing concern. The case of India and Pakistan is discussed in the next chapter.

Arms races cause concern because they consume scarce resources; because they can have repercussions for the whole international community, particularly when the arms are nuclear; and because of the danger that they may increase the probability of war. Whether arms races do increase the probability of war or whether they deter war is a hotly debated topic. The classic mathematical model of an arms race is due to Richardson (1960b). This is a mechanical action–reaction pattern, in which each side tries to have more than the other side, subject to some fatigue effects as the cost of arming slows acquisition. Despite a vast literature, the statistical evidence for a mechanical Richardson-style arms race is quite limited (Dunne and Smith 2007); but at a more qualitative level there is considerable evidence for the existence of arms races, as the list above indicates. Arms races are usually seen as a bilateral interaction between two countries; but the decision to arm is usually taken in a wider strategic context and the behaviour of third parties can often have considerable influence on the dynamics of arms acquisition.

An arms race can take various forms. Until the East–West arms race of the Cold War, most arms races were naval; while armies were labour-intensive, navies were capital-intensive. Before World War I, Britain had a policy of maintaining a fleet of warships that was as large as that the next two largest fleets combined. When Germany tried to construct a fleet that was as large as Britain, this gave rise to a typical Richardson-type reaction function. This arms race was quantitative, numbers of battleships, and symmetric, both acquired the same weapons. The nuclear arms race between the US and the USSR was partly a quantitative symmetric arms race, in numbers of missiles and warheads, and partly a more qualitative technological arms race. A qualitative and asymmetric arms race was that between fortifications and siege trains in the late mediaeval period, where there were evolutionary improvements in the technology of both, until the advent of gunpowder changed the balance between besiegers and fortifiers. The current increasing returns to scale in military technology leads to a virtual monopoly of military force by the US. This gives its opponents, including terrorists, incentives to choose asymmetric warfare and an asymmetric arms race. Data on preparations by terrorist groups, as distinct from actual attacks, are limited. The 9/11 Commission estimated that the cost of preparing the attack by the four planes was between $400,000 and $500,000, tiny compared to typical military expenditure numbers.

A common game theory model for many strategic interactions is called the prisoners' dilemma. If neither side arms, both are better off, they are secure and have saved the money. However, if one side arms and the other does not, the side that arms gains a great advantage. Thus the incentives are for both sides to arm, gaining no more security but at great cost. The interest of the game is that under this sort of pay-off the rational strategy is for both to arm (defect), whereas they would both be better off not arming (cooperate); but there is no way that they can ensure this. This little model has been very fruitful in a range of areas. Dixit and Nalebuff (2008) provide an introduction to game theory.

Although the prisoners' dilemma model has been widely used, the game depends on rather special circumstances. The participants are isolated, unable to communicate; the game is one-off, not repeated; and there are no external sanctions, no punishment of cheaters. If the game is repeated, the position is somewhat different. In stylised games the strategy 'tit-for-tat' does well. This strategy is to cooperate in the first period, then subsequently copy what the other actor does. This is 'do unto others as they have done to you' rather than the golden rule: 'do unto others as you would have them do to you'. As a strategy tit-for-tat is clear, nice (it starts by cooperating), easily provoked (responds immediately to non-cooperation) but is forgiving (it switches back to cooperating as soon as the other person does). It is vulnerable to misperception, mistakes about whether the other person has cooperated or not. Since the strategy never accepts defection without punishing it, an initial misperception of defection can generate long-standing feuds of repeated mutual retaliation. In this sense, it is too easily provoked and too unwilling to conciliate. Long sequences of mutual retaliation are characteristic of many conflicts, such as Israel–Palestine.

Robert Axelrod (1984) uses tit-for-tat to discuss the evolution of cooperation and analyses (1997) the complexity of cooperation.

One response to arms races is to try and establish arms control measures. Arms control aims to reduce the probability of war; to reduce the adverse consequences of war should it occur; and to reduce the cost of military preparations. Schelling and Halperin's *Strategy and Arms Control* (1962) is a classic text. Arms control measures are also seen as confidence-building measures to establish trust between the two parties. But for arms control measures to work, the two sides have to trust each other, which adversaries may not. This tension has been the basis of a criticism of the whole idea of arms control, by Colin Gray (1992) among others. The difficulty is that when arms control is possible, because the two sides trust each other, it is not needed; and when it is needed it is not possible, because the two sides do not trust each other. In 1817 the US and Britain agreed to limit naval vessels on the Great Lakes and Lake Champlain, but because subsequent relations between the countries were good, compliance was never an issue. However, the Washington Naval Agreements of 1922 were widely evaded (Craft, 2000). The agreements focussed on the number of battleships over 10,000 tons allowed for each of the participating powers. These limits could be evaded by switching to alternatives to battleships, such as aircraft carriers, or constructing technologically advanced warships, pocket battleships, below the 10,000 ton limit.

Arms control works best when: there are a small number of parties involved, then it is easier to negotiate a deal that provides benefits to all parties; there is an identifiable object, such as a particular type of equipment, that can be easily monitored; that object has an unambiguous military purpose (which is often not the case with nuclear installations); and control of that object restricts destabilising military capability.