



# Collaboration and coordination in the global political economy

*Vinod K. Aggarwal and Cédric Dupont*

---

• Introduction	29
• Goods: the incentives and obstacles to collaboration	29
• Games: modelling decision making	32
• Self-help or institutions?	40
• The formation and evolution of institutions	45
• Conclusion	47

---

## READER'S GUIDE

How can one understand the problems of collaboration and coordination in the global political economy? In situations of global interdependence, individual action by states often does not yield the desired result. Many argue that the solution to the problem of interdependence is to create international institutions, but this approach itself raises the issue of how states might go about creating such institutions in the first place. This chapter examines the conditions under which joint action might be desired and provides an introduction to game theory as an approach to understanding interdependent decision making. It then discusses the conditions under which international institutions are likely to be developed and how they might facilitate the processes of collaboration and coordination of state actions. The chapter concludes by examining possible conflicts among institutions over their mandates to regulate an issue area.

## Introduction

It is now commonplace to hear about the phenomenon of globalization. Much of this discussion concerns the increased movement of goods, services, ideas, people, and information across boundaries. Academics, policy makers, and the public actively discuss the pros and cons of globalization (see Part Four of this book). Much of the current debate on globalization has its roots in the international political economy literature on interdependence of the early 1970s (Cooper 1972; Keohane and Nye 1977). At that time, political scientists began to identify the characteristics of the changing global economy, including the increased flows of goods and money across national boundaries as well as the rise of non-state actors as a challenge to traditional conceptions of international politics.

While increasing interdependence among states was a relatively new phenomenon when considered against a baseline of the 1950s, high levels of interdependence had existed in earlier historical periods, including the period prior to the First World War (Bordo, Eichengreen, and Irwin 1999). This interdependence, however, was not matched by high levels of institutionalization in the form of the post-Second World War Bretton Woods organizations of the International Monetary Fund (IMF), the World Bank, and the General Agreement on Tariffs and Trade (GATT, and now the World Trade Organization). The debate on interdependence in the early 1970s was

thus also driven by the problems that institutions such as the IMF faced with the breakdown of the Bretton Woods dollar-based standard in 1971, the movement toward trade protectionism that appeared to undermine the GATT, and instability in the oil market with the 1973–4 oil crisis.

In considering the implications of interdependence, a key issue revolves around the question of how to achieve collaboration and coordination among states. In particular, scholars have examined how states respond to perceived problems in the global economy that they cannot deal with solely on their own. Importantly, interdependence can be distinguished from interconnectedness based on the costs of interaction. ‘Where interactions do not have significant costly effects, there is simply interconnectedness’ (Keohane and Nye 1977: 9). With costly effects (and high benefits), however, we can consider countries as mutually dependent on each other, or interdependent.

This chapter considers the problem of collaboration by first characterizing the situations that might require states to work with each other to achieve a desired outcome (the problem of the nature of the goods involved). It then turns to an exposition of decision theory, with a focus on basic game theory as an analytical tool to tackle the nature of collaboration or coordination efforts. Finally, we consider how institutions might play a role in enhancing the prospects for cooperative behaviour.

## Goods: the incentives and obstacles to collaboration

In examining the problem of collaboration, we begin by considering why actors might want to work together. We then turn to the obstacles that might impede such cooperation. To simplify the analysis, we first consider the domestic context of the production of goods, before turning to the international arena.

### Four types of goods: production in the domestic context

Within countries, private firms and governments produce many different types of goods and services. Examples include goods like wheat, clothing, steel,

## 30 VINOD K. AGGARWAL AND CÉDRIC DUPONT

and computers as well as the provision of financial, insurance, and other such services. Such goods are generally referred to as *private goods*, based on two characteristics: the goods are generally excludable and are not joint in production. The concept of *excludable* means that goods can be withheld from those who do not pay for them; *not joint in production* means that when a consumer utilizes the good, it is used up and cannot be used by others without additional production. In capitalist societies, private firms have generally produced such goods, but governments can also produce them. Indeed, in communist societies, the government produced most of these goods. Thus, the terms 'private good' refers to certain characteristics of a good, and *not* to the ownership of the entity that actually produces them.

In addition to private goods, communities may desire other goods such as national defence or parks. These goods, known as *public goods*, are characterized by the lack of ability to create exclusion (they are available to all regardless of whether people pay for them), and the jointness of production. Because anyone can have access to these goods, the private sector is unlikely to produce them, since producers cannot recover their investment and make a profit through their production. As a result, governments generally provide these goods. Of course, like firms, governments also face the problem that citizens may not be willing to pay for these goods. In the case of national defence, for example, if the government creates a nuclear deterrent through investment in submarines, missiles, and nuclear bombs, it is difficult if not impossible to exclude those who do not wish to pay for such goods. Thus, even those who might desire the good have an incentive to make it appear that they do not really care for the good, or to misrepresent their true preferences. Assuming the good is indeed produced, these actors will be able to consume the good without paying for it, engaging in what is known as *free riding* behaviour. For example, it is not a simple matter to specifically withhold the provision of a good such as a nuclear umbrella from citizens in various cities across the country that do not wish to pay for this good. At the same time, within limits, these goods can be extended to many users without the government accruing additional costs of production.

How do governments ensure that they will have the funds to provide such goods? Put differently, how can

they overcome the problem of free riding? The obvious answer is taxation, which for the most part is mandatory and which citizens find difficult to avoid. In some cases, if some type of exclusion mechanism can be introduced (a high fence around a park, for example), even the private sector may have an incentive to produce such goods because consumers can be charged for using the park.

Beyond these two types of goods, we can also examine two other types. First, if a good is characterized by lack of exclusion and also lack of jointness of production, then such a good is referred to as a *common pool resource*. Examples of such goods include fish in the oceans, or even as a limiting case, a public park. If one overfishes the ocean, fish will cease to reproduce and die out. Similarly, although parks are often seen as public goods, too many users of the park create crowding, which impairs the enjoyment of the good for others. Private actors will be particularly reluctant to produce such goods, and even governments will be concerned about the problem of too many users. As we shall see, in the international context, countries often find themselves particularly at odds when they attempt to cooperate to provide common pool resources.

Another possibility is that the good may be excludable, and yet be joint in production. These goods, known as *inclusive club goods*, include software, music, literature, and a variety of other goods. In such cases, the private sector has a great incentive to produce the good, since once a unit of the good is produced, it can be distributed at either little or no cost. Firms may quickly develop a monopoly in the production of such goods if they are the first movers who make the good. Often, such goods are subject to regulation by governments, or in some cases, even produced by governments themselves. For example, consider a firm launching a satellite to beam television programming to consumers. Although the initial cost of securing a rocket to put the satellite in orbit will be very high, once the satellite is up and running, the programming can be disseminated to large numbers of consumers. In the case of software or music, there is often a great incentive to copy the materials, and governments may enforce property rights through regulations such as copyright laws to prevent such copying. Private firms will generally attempt to regulate consumption themselves if they can. In the case of satellite television, for example, they could encode

		Jointness in production?	
		YES	NO
Exclusion possible?	NO	Public	Common pool resources
	YES	Inclusive club goods	Private

Fig. 2.1 Types of goods

the transmission to prevent free riding. The Figure 2.1 summarizes the four types of goods.

## Four types of goods: production in the international arena

How do the problems of providing various types of goods play out in the international arena, and what obstacles do states face in achieving cooperation? Consider the case of cooperation with respect to avoiding damage to the ozone layer. Chlorofluorocarbons (CFCs) and other chlorine and bromine containing compounds have many uses, including as coolants, aerosols, cleaning agents, and solvents. By the early 1970s, however, scientists began to argue that such compounds could damage the ozone layer that protects the earth against harmful ultraviolet radiation, leading to increased rates of skin cancer.

By the early 1980s, there was increasing scientific consensus that these products were indeed causing destruction of the ozone layer. Yet because CFCs have many valuable uses, the debate over how to reduce or eliminate these emissions became an internationally contentious issue. Protecting the ozone layer has characteristics of a public goods problem, and the temptation to free ride is high. With respect to crowding, at the extreme, protecting the ozone layer has common pool resource properties because jointness may be impaired if one country produces a huge amount of emissions that damages the ozone layer.

In response to demands from activists and governments for action to stop the destruction of the ozone layer, twenty countries signed a treaty in Vienna in 1985.

Soon thereafter the Montreal Protocol was negotiated in 1987 and ratified in 1989. The actual negotiations leading up to this agreement were complex, with sharply differing positions among the United States, European Union, and developing countries, among others. This agreement, though a step toward ozone layer protection, gave developing countries the right to continue production of CFCs for a significantly longer period than developed countries.

The public goods nature of the problem can be seen in the possibility of free riding by various countries who wish to benefit from the reduction in emissions of CFCs but who do not want to bear the costs of reducing their production. As some developing countries implied, actors such as the EU and the USA were actually such large producers of CFCs that the public good of ozone protection resembled a common pool resource—rather than simply a public good where any single actor's production would not impair 'consumption' of the benefits of having an ozone layer that protected against ultraviolet radiation. As we discuss below, both the problem of ensuring an adequate supply of public goods and of common pool resources can be analysed using game-theoretic tools and through an examination of the role that institutions can play in helping to enhance cooperation.

Turning next to inclusive club goods, the debate over intellectual property illustrates this problem well. At one level, greater knowledge is a classic public good, because my use of knowledge, say, to improve my health, will not generally impair your use of the same knowledge to improve your own. But some may argue that knowledge could potentially exhibit crowding or lack of jointness in a commercial setting. If I use knowledge to produce goods that can be sold on the open market, your use of the knowledge will crowd out my goods. Moreover, it may also be possible to create exclusion mechanisms to prevent others from using knowledge through the patent and copyright system.

These issues have been hotly debated in the international arena, and current negotiations in the World Trade Organization over the right to use generic versions of patented drugs illustrate the dispute over inclusive club goods. While developing countries often argue that they should have free access to drugs in view of their dire need for drugs to combat AIDS and other diseases, many firms in developed countries argue that access should be limited to those who are willing to pay

because the drugs that have been developed are a product of an expensive research and development effort. The counter-argument that developing countries have used is that pharmaceutical companies often discover medicinal plants in their countries and fail to compensate these countries for the use of the basic material from which new drugs may be developed.

As we have seen, then, different types of goods generate different types of bargaining problems in both the domestic and international arena. How these problems might be analysed and whether or not the creation of institutions may alleviate potential conflict or facilitate cooperation are the topics to which we now turn.

## Key points

- A key puzzle in international political economy concerns the question of how states negotiate over the provision of various kinds of goods.
- The four major types of goods are public goods, common pool resources, inclusive club goods, and private goods.
- Although actors may desire public goods, they may not be provided because of the problem of free riding.
- The provision of common pool resources is likely to lead to contested bargaining.

## Games: modelling decision making

Our discussion of types of goods has shown us that in many situations, actors may wish to cooperate, but such cooperation is not a foregone conclusion because of the incentives to engage in free riding behaviour. To understand how actors might be able to provide different types of goods, we must consider how actors make decisions. In particular, our focus is on decision making in situations of interdependence, a problem that has been successfully analysed using tools from game theory. Before we turn to game theory, however, we first examine the broader problem of decision making (of which game theory is one part).

The branch of analysis known as *decision theory* focuses on how actors make decisions under various types of conditions (Luce and Raiffa 1957; Harsanyi 1977). The four most interesting types of conditions, in broad brush characterization, are *decision making under certainty*, *decision making under risk*, *decision making under uncertainty*, and *decision making under interdependence*. As we shall see, these various conditions call for different analytical approaches to examine likely outcomes.

### Individual decision making

In the case of *decision making under certainty*, the state of the world is known prior to choosing an act. For example, if Country A invades Country B, Country B

will fight. The 'states of the world' in this scenario are 'Country B fights' and 'Country B surrenders'. More simply, when thinking about individual decision making, we can ask: Do you prefer Coke or Pepsi? To analyse such simple situations, we only need to know how actors evaluate their options in terms of the concept of 'utility'. Utility refers to an actor's subjective assessment of the benefits of a particular outcome or course of action (drinking Pepsi versus Coke). In this case, we can predict what an actor will do by simply examining how each actor evaluates his or her utility. We assume that actors will choose options that give them the highest utility.

Things become somewhat more complicated if actors cannot easily evaluate the exact utility of a particular action. In this case, we may find that they can only assign a certain probability to the event in question in evaluating utilities. Put differently, the environment in which they are operating will affect their preferred course of action, leading to a situation of *decision making under risk*. Here, each state of the world has a known probability of occurring, and these probabilities are based on known frequencies over many repetitions. The condition of risk occurs in most gambling games such as craps or roulette. In international relations, we can consider the somewhat unrealistic case where we might empirically observe that if Country A invades Country B, Country B will fight 90 per cent of the time, and surrender 10 per cent of

### Box 2.1 Decision making under risk

If one is trying to decide whether to watch television tomorrow or to go on a picnic, one of the key factors will be the probability of rain (at least for most people!). Let us say that John has the following preferences, given in terms of utilities and based on possibility of rain. If John goes on a picnic, but it rains, he assigns this a utility of 1. If, on the other hand, he picnics and it doesn't rain, he will give this a utility of 10 (since John likes to be outdoors in the sunshine). If he does not go on a picnic but instead chooses to watch television and it rains, he will give this a utility of 7. And finally, if he decides to watch television but then it does not rain, he will give this a utility of 3. Note that we assume for simplicity that John cannot change his mind on the next day, but has to make a commitment on the day before as to his course of action. How then might we predict what John will do? The key factor here is the probability of rain. Let us assume that the

probability of rain based on the weather forecast is 50 per cent. Then, calculating the appropriate course of action is simply a matter of filling in the following table.

	0.5 probability of rain	0.5 probability of no rain	Outcomes
Watch television	$0.5 \times 7 = 3.5$	$0.5 \times 3 = 1.5$	5.0
Go on a picnic	$0.5 \times 1 = 0.5$	$0.5 \times 10 = 5$	5.5

As we can see from the calculations, because 5.5 is greater than 5, John will decide to go on a picnic, based on his utilities and on the probability of rain.

the time. An illustrative example of calculating how actors make decisions under risk is given in Box 2.1.

What if it is difficult to even assign probabilities to the likelihood of various outcomes? In this case, we are faced with what is known as *decision making under uncertainty*. In such cases, one can work to narrow down the range of probabilities. Two methods that can be used are the creation of scenarios and the Delphi Technique. In the first approach, one can take the existing information that is available and generate a number of hypothetical scenarios. This technique may allow decision makers to work through the potential consequences of different factors, with an eye to reducing the uncertainty about outcomes and possibly assigning a better evaluation of risk. In the second approach, the Delphi Technique, one can draw on experts who examine different options and comment on their likelihood (generally anonymously to prevent group pressure). Some method of aggregating their predictions to narrow down the range of likely outcomes might also be used in such cases.

### Interdependent decision making

So far, we have operated under the assumption that in making decisions, actors are playing against 'nature' in the sense that in such situations, they need not

worry about how another actor might respond to their choice. Yet in most cases of international relations, actors—including individuals, governments, or other organizations—operate in a situation of interdependence. Put differently, one actor's choice depends on expectations regarding the choice another actor will make. Moreover, the types of interdependent situations also vary, thus further complicating the analysis of cooperation (Aggarwal and Dupont 1999; Cornes and Sandler 1996; Sandler 1992; Taylor 1987; Zürn 1992).

A game-theoretic perspective can help us understand likely behaviour in varying types of interdependent situations. Game theory provides a comprehensive toolbox that facilitates an in-depth exploration of actor's interactions. Game theory assumes actors' basic preferences and their strategic environment, and then helps us derive how actors rank the various policy options at their disposal and allows us to determine the likely outcome of the interplay among a variety of policy choices (see Box 2.2).

To keep this chapter's discussion of game theory as straightforward as possible, we focus on simple games with two persons and two strategies. Clearly, such modelling choices may appear to oversimplify real life examples, but as several authors have shown, simple models can clearly reveal the fundamental aspects of interdependence

### Box 2.2 Game theory and its critics

Game theory has become a standard tool for analysis of situations of interdependence in social sciences. Aside from its predictive aim, game theory has a strong appeal for anyone engaged in explanation, investigation, or prescription. It often makes ostensibly puzzling processes intelligible, without attributing causality to factors such as the incompetence, irresponsibility, or lack of concern of decision makers.

Whatever its value, however, the use of game theory poses severe methodological problems that have prompted intense debates in the literature. Critics have traditionally emphasized (1) the overstretching of the concept of rationality and (2) the gap between abstract theoretical concepts and real phenomena. Regarding the notion of rationality, most applications of game theory assume that players, interacting under conditions of imperfect information, possess a very high computational ability. To make their decisions, players must evaluate a host of possible worlds on the basis of the knowledge commonly shared with others or privately known. This kind of situation often implies that players engage in counter-factual reasoning about a large set of possible worlds. Leeway in their interpretation often leads to a myriad of possible equilibria, which significantly decrease the predictive power of game theory. To avoid this indeterminacy, most game theorists have refined the concept of 'rationality' to allow the selection of one or very few equilibria among the vast initial array. For example, one might assume that people always choose to buy the cheapest product available (even though we know that

many people buy based on brand name, reputation, or other factors) because it makes the choices of actors easier to map. Most of these refinements to the concept of rationality thus lack empirical grounding.

A more recent controversy has focused on the empirical contribution of rational choice approaches to politics, including game-theoretic work. According to the most forceful critics (Green and Shapiro 1994), a variety of pathologies have prevented rational choice theory from improving our understanding of politics. In particular, rational choice theorists are, according to these critics, method driven rather than problem driven. In other words, instead of focusing on building models that accurately reflect decision making in the real world, game theorists (according to critics) are more concerned with constructing 'neat' but unrealistic models of decision making. As a consequence, game theorists neglect issues of empirical testing which allegedly undermines the scientific value of rational choice theory.

Although there clearly remain weaknesses in most game-theoretic analyses of international relations, the link between theory and empirics has clearly improved over the last decade. Users of game theory have employed different techniques to check the validity of their models based on a comparison with reality. The dominant approach has been indirect testing through the statistical analysis using either large-N data sets or a series of case studies. Another approach has been to use case studies to trace the behavioural attitude of actors and check it with specific predictions of models.

(Aggarwal and Dupont 1999; Cooper 1975; Snidal 1985a; Martin 1992). Furthermore, we do not attempt to provide comprehensive insight into the problems associated with measuring actors' preferences. Instead, we simply consider some ideal-type situations that reveal how actors might make decisions. Lastly, we use what is known as non-cooperative game theory, which assumes that actors cannot enter into a contract of some type that binds the other actors to play in a particular way. This approach helps set the stage for understanding the role that international institutions might play in fostering cooperation.

We begin with one of the best-known situations of interdependence, the Prisoners' Dilemma. We then focus on coordination games, assurance games, and the games of Chicken, Called Bluff, and Suasion (these last two are specific examples of asymmetric situations). For each of these games, we assume that actors have extensive knowledge of the other actor's preferences but that they cannot observe his or her actual choices. Obviously, in real life situations, actors may have less information about preferences and may be able to observe the other's behaviour. Still, these simplifying assumptions help reveal the essence of the problem of interdependent decision making.

## The Prisoners' Dilemma

As we have seen from our discussion of goods, collective action is difficult because individuals have a tendency to seek gains but avoid costs. This problem of free riding or of shirking of one's obligations makes it difficult to produce desired goods. As the case of the Prisoners' Dilemma illustrates, even though actors may be better off cooperating, the structure of the bargaining situation may prevent them from achieving the collective gains that they desire.

The Prisoners' Dilemma is a story in which two individuals are involved in a robbery and are then caught near the scene of the crime. The District Attorney (the DA or prosecutor) does not have sufficient evidence to convict either of the suspects of robbery unless at least one of them reveals additional information to him but he has some evidence to convict both of them of a lesser crime (for instance, reckless driving or carrying a firearm). The DA wants more information to convict both suspects for a long period. The two prisoners are placed in separate interrogation rooms. The DA tells each prisoner that, if they confess and reveal the truth, they will get a much lighter sentence. If both prisoners confess, however (Strategy S2 in the game depicted in Figure 2.2 below) they each get a heavier sentence than if they both remain silent (Strategy S1 in Figure 2.2) and are charged with the lesser crime (when both confess, the DA has the evidence to convict both on the more serious offences). Confessing to the DA could bring the minimal sentence if the other one does not confess but could also lead to a lengthier sentence if the other turns him in. Remaining silent, on the other hand, may lead to either a moderate sanction if the other prisoner remains silent, or the maximum penalty if the other one speaks to the attorney. Facing this situation, and unable to communicate, the logical strategy

		Player Beta	
		S1	S2
Player Alpha	S1	3, 3	1, 4
	S2	4, 1	<b>2, 2</b>

**Fig. 2.2** Prisoners' Dilemma game (ordinal form)

Note: Nash equilibrium in bold.

for both prisoners is to choose to confess. They do so because confessing to the DA is individually always a safer strategy than remaining silent.

This story can be generalized using the game depicted in Figure 2.2. The numbers in the various cells indicate the preferences of players on an ordinal ranking scale, with four being the most preferred situation and one the least preferred. In the following figures, the first number in each box refers to Player Alpha's preference, while the second number refers to Player Beta's preference (thus '4, 1' is Alpha's most preferred outcome and Beta's least preferred outcome).

As Figure 2.2 shows, both players have a dominant strategy (to confess, that is, Strategy 2) that leads to what is called the *Nash Equilibrium* outcome, which is in the lower right cell of the matrix. A Nash Equilibrium is an outcome in which none of the players can improve his or her situation by changing their individual strategy. But if both switch to Strategy 1 (remain silent) together, both players will secure a better outcome (upper left cell). However, this collectively optimal situation is unstable because each actor can improve his or her own welfare by individually switching strategy to the cells in the upper right or lower left corners of the matrix.

The Prisoners' Dilemma has often been used to depict the problem of providing public goods. The problem of restricting access to these goods creates a temptation to use them without having to pay. Yet, this fact alone does not necessarily prevent the provision of such goods. Instead, restricting consumption of public goods requires that the other actor gains nothing (at best) from providing the good alone. As we argue elsewhere (Aggarwal and Dupont 1999), the Prisoners' Dilemma best corresponds to the problem of CPR goods, or common goods under open access, a situation analysed by Hardin with his metaphor of the 'tragedy of the commons' (Hardin 1968). Free riding by some actors not only affects the *cost* to the actor who provides the good, but it also affects the *benefit* that each actor receives in view of the rivalry in consumption.

From an international political economic perspective, the Prisoners' Dilemma has been widely used to illustrate the problem of reciprocal trade liberalization (Grossman and Helpman 1995; Hoekman and Kostecki 1995; Maggi 1999). The difficulties in monitoring partners' trade policies and the potential political benefits to governments from open export

### 36 VINOD K. AGGARWAL AND CÉDRIC DUPONT

markets and closed domestic markets often push states to back out of their commitments to reciprocal trade liberalization measures. As Conybeare shows (1984), this tendency particularly applies to countries with large domestic markets, as these countries are less dependent on the success of trade liberalization (this makes the utilities of the lower right cell in Figure 2.2 relatively acceptable) and they can also positively affect world prices through their tariff policy (imposing a tariff on their imports, because they constitute such a large share of the overall world market, lowers the price that other countries will receive for their exports). For smaller countries, though, the Prisoners' Dilemma is not an adequate depiction of their situation. Rather, smaller countries tend to have preferences that reflect the game of chicken, a situation which we discuss below.

Another typical application of the Prisoners' Dilemma in international political economy has been on the collective management of resources. Whereas countries producing particular commodities traded on world markets would prefer a situation where they all manage production so as to keep prices sufficiently high, they also are tempted to increase extraction or production of those commodities so as to maximize individual profits. As a result, acting collectively to keep commodities prices stable (in commodities such as coffee, tin, oil for instance) has been a daunting task, particularly for developing countries.

## Coordination games

A second class of games deals with the problems associated with choosing *among* Pareto efficient outcomes (Pareto efficient outcomes are defined as outcomes from which no actor could become better off without worsening the payoffs to another actor). Such cases are referred to as situations of *pure coordination* and are relatively easy to resolve when actors do not strongly prefer one outcome to another. But if actors have different preferences for various outcomes, the problem of cooperation quickly becomes more difficult. The game depicted in Figure 2.3 is a specific illustration of such a strategic interaction. Its name, 'Battle of the Sexes', comes from the story of a husband and wife who have to decide where to spend their evening after work. They either can go to the opera or go to watch a

		Player Beta	
		S1	S2
Player Alpha	S1	<b>4, 3</b>	1, 1
	S2	1, 1	<b>3, 4</b>

**Fig. 2.3** Coordination game (Battle of the Sexes) (ordinal form)

Note: Nash equilibrium in bold.

football match. Neither spouse derives much pleasure by being without the other one but they differ on the best choice for evening entertainment. The husband would prefer to watch football (Strategy S1 in Figure 2.3) whereas the wife prefers the opera (Strategy S2). In the scenario for this game, both are getting out of work and have to rush to either the stadium or opera. They cannot communicate to each other (say the batteries of their cell phones are dead!), and have to meet at one of the locations. If each of them follows their preferred solution, they end up at different locations, which both consider to be a bad outcome. If both of them want to please the other one by choosing the other's preferred entertainment, they also end up being separated. Thus, they have somehow implicitly to coordinate their behaviours, with one making a concession and the other getting his/her best choice. Figure 2.3 provides a generalization of that story.

In Figure 2.3, none of the players has a dominant strategy. Player Alpha prefers to play Strategy 1 when player Beta chooses Strategy 1 and prefers Strategy 2 when player Alpha chooses Strategy 2. With player Beta having the same preferences, the game has two equilibrium outcomes—the upper left and the lower right cells in Figure 2.3. These two outcomes are clearly preferable to the two other possible outcomes, but actors will disagree on which one to choose. Player Alpha prefers the upper left cell whereas player Beta prefers to end up in the lower right cell. Both players want to avoid being separated but each player prefers a different outcome. Accordingly, actors may fail to avoid this 'dilemma of common aversion' (Stein 1982) if they pay too much attention to the distributive tension between the two equilibrium outcomes.

In an international political economy perspective, efforts by developed countries to choose mutually

compatible macro-economic policies typically reflect games of coordination (Putnam and Bayne 1987). For instance, when there is high volatility on financial and exchange-rate markets, coordinated responses by leading countries would often be best but each country would like to choose the policy mix that best fits its own domestic constraints. Another prominent example is the choice of international monetary system (Cooper 1975). Discussions between the United States and Great Britain during the Second World War regarding the architecture of the future international economic order reveal that although both countries agreed on the absolute need for coordination, they fought over the details of the new order, with each trying to impose its own plan. A more recent example, the debate within the European Union over the design of monetary union, saw Britain, France, and Germany proposing different collective solutions (Wolf and Zangl 1996).

### Assurance games

A third category of situations deals with the possibility of being unable to seize an opportunity for co-operation that seems obvious. Players share one most preferred outcome but they do not have dominant strategies. As a result, in the game of 'Stag Hunt', there is a second, Pareto deficient, equilibrium outcome. The situation depicted in Figure 2.4 comes from the story of two hunters chasing a stag. They go out before dawn and take positions on different sides of an area where they think a stag is hiding. They have a mutual understanding to shoot only at the stag (Strategy S1 in the game depicted in Figure 2.4). Shooting at any other wild animal, say a hare (Strategy S2), would lead them to miss shooting the stag because the stag would be frightened by the noise and stay put in its hiding

		Player Beta	
		S1	S2
Player Alpha	S1	<b>4, 4</b>	1, 3
	S2	3, 1	<b>2, 2</b>

**Fig. 2.4** Assurance game (Stag Hunt) (ordinal form)

Note: Nash equilibrium in bold.

place. As time goes by and as dawn arrives, however, both hunters start thinking that going back home with a hare might be better than continuing to wait for the stag to come out of hiding. If each of them thinks that the other one will eventually yield to the temptation to shoot at a hare, they will both end up killing a hare—a better outcome than not catching anything but clearly much less attractive than sharing a stag.

In such a game, reaching the Pareto efficient equilibrium is not a foregone conclusion. Doubts about the willingness of one's counterpart to choose Strategy S1 (shoot the stag) might push a player to choose Strategy S2 (shoot a hare), which guarantees the highest minimal gain. Yet, such an outcome is rather unlikely because of the attraction of the upper left cell.

Assurance games accurately reflect the problem of providing goods when a situation requires the so-called 'weakest link technology'. In this type of environment, each actor's contribution is needed for the good to be produced, and thus players do not have an incentive to free ride. In the international political economy, the provision of financial stability in a globalized financial world (with high mobility of capital), exhibits some features of an assurance game (at least among the major financial centres, which all must cooperate if the desired outcome is to be realized). Similarly, exchange-rate stability cannot simply rely on a hegemonic power but also requires the active participation of other states, as shown by the collapse of both the fixed exchange-rate systems of Bretton Woods and the European Monetary System (EMS) when other states failed to cooperate with the dominant actor (the USA and Germany, respectively).

### Chicken, Called Bluff, and Suasion

We now turn to games that combine the three key essential dimensions of cooperation—actor preferences, actor capabilities, and communication between actors. The best example of this type of game is the game of Chicken, depicted in Figure 2.5. This game builds on the story of two cars, travelling in opposite directions, speeding down the middle of the road toward one another. Inside each car sits a driver who wants to impress his respective passenger that he is a tough person (that is, demonstrate resolve). The best way to do so is to continue driving straight down

## 38 VINOD K. AGGARWAL AND CÉDRIC DUPONT

		Player Beta	
		S1	S2
Player Alpha	S1	3, 3	<b>2, 4</b>
	S2	<b>4, 2</b>	1, 1

**Fig. 2.5** Chicken game (ordinal form)

Note: Nash equilibrium in bold.

the middle of the road (Strategy S2 in the game depicted in Figure 2.5)—even when the car coming in the opposite direction comes dangerously close. Yet, if at least one driver does not swerve, the outcome will be disastrous and both cars will crash, killing everyone. To avoid this undesirable outcome, at least one driver will have to yield and swerve (Strategy S1 in Figure 2.5), but both would like the other one to be the ‘Chicken’ who swerves.

When it comes to games of coordination, players do not have dominant strategies and there are two equilibrium outcomes. There are two differences between these games and the game depicted in Figure 2.5. First, distributional tensions tend to be higher in Chicken; second, there is a Pareto efficient compromise solution (upper left cell) that is problematic because it is not an equilibrium outcome. Therefore, the Chicken game combines the problems of coordination games with the free riding difficulties of the Prisoners’ Dilemma game (Stein 1982).

The Chicken game is a useful allegory for situations that deal with the provision of public goods, when each player has the resources and technology to provide the good and is anxious to avoid failures in the eventual provision of the good. Because the question of how the costs of production should be divided still remains, however, as each actor will want the other to carry the burden, there will be a resulting clash.

In the context of the global political economy, Chicken games are useful depictions of the complexity of burden sharing that occurs within a group of powerful players. For instance, when there is monetary and financial stability in the global economy, the United States and the European Union may tend to resist overcommitting internationally unless there is a clear sign that the other party will act similarly. Getting out of a trade negotiation stalemate or dispute can also be a Chicken-like situation in which

		Player Beta	
		S1	S2
Player Alpha	S1	3, 3	<b>2, 4</b>
	S2	4, 1	1, 2

**Fig. 2.6** Called Bluff (ordinal form)

Note: Nash equilibrium in bold.

each actor is unwilling to agree to any asymmetric solutions.

To this point, we have only considered cases where actors have symmetrical preferences. We now examine two interesting *asymmetric* games, the first of which has one player with Prisoners’ Dilemma preferences, and a second player with Chicken preferences. The resulting game, known as the game of ‘Called Bluff’, is depicted in Figure 2.6.

The predicted outcome is that player Beta gets her most preferred outcome, whereas player Alpha gets his second worst outcome. This scenario is often seen in situations where one player carries most of the burden of providing a good. This eventual outcome is caused from an asymmetry in the ability (resources) of both actors to provide the good or from a difference in sensitivity (vulnerability) to the good itself. The player with either weaker resources or less dependence on the benefits of the good (Beta in Figure 2.6) is able to free ride on the other player (Alpha in Figure 2.6).

The best illustration of this situation comes from Schelling’s theory of the ‘tyranny of weakness’ (1960). As Schelling shows, by playing his dominant strategy (which is to ‘defect’ from the provision of a good), the weaker party forces the stronger player to carry the burden of providing the good. A real world example of this particular concept is the monetary policy of Germany and Japan in the 1960s, in the context of the Bretton Woods fixed exchange-rate system. The stronger player, the United States, asked these countries to revalue their currencies to help boost the competitiveness of US exports and relieve the pressure on the dollar. These countries, however, refused to implement any significant revaluation of their currencies, thereby placing an increasingly costly burden on the USA, and ultimately causing the downfall of the Bretton Woods system (see Helleiner, Chapter 6 in this volume).

		Player Beta	
		S1	S2
Player Alpha	S1	<b>4, 4</b>	3, 2
	S2	2, 3	<b>1, 1</b>

**Fig. 2.7** Harmony (ordinal form)

Note: Nash equilibrium in bold.

		Player Beta	
		S1	S2
Player Alpha	S1	4, 3	<b>3, 4</b>
	S2	<b>2, 2</b>	1, 1

**Fig. 2.8** Suasion (ordinal form)

Note: Nash equilibrium in bold.

A second case of asymmetry is a game with one player having preferences oriented toward cooperation and the other one having Chicken preferences. In the game of 'Suasion', Player Beta has preferences similar to a player in a Chicken game but Player Alpha has preferences that are typical of another game, the game of Harmony. The basic feature of Harmony games (see Figure 2.7) is that both players not only dislike doing things differently (as in the case of coordination games) but they also do not differ on the best outcome. They both therefore have a dominant strategy to do the same thing. Cooperation is, so to speak, naturally guaranteed (as, for instance, in nineteenth-century liberal assumptions about international economic relations).

Combining a player with Chicken preferences and a player with Harmony preferences yields the game depicted in Figure 2.8, known as the game of 'Suasion' (Martin 1992).

The predicted outcome of the Suasion game shares some similarity with the game of Called Bluff illustrated in Figure 2.6 above. Both games feature a situation in which one player, Beta, gets her most preferred outcome. However, the difference between these two games is that in Suasion, the other player gets his second best outcome, which results from the choice of a dominant strategy by the stronger player (Beta) rather than the weaker one (the reverse of the Called Bluff

game). Put into the context of the provision of goods, this clearly reflects a group with an actor who values the good more than he values the costs associated with providing the good (what Olson 1965 labels the 'privileged' group). Because this actor (Alpha) absolutely wants to provide the good (always choosing S1), others actors (Beta) are in a situation whereby they will let him (Alpha) provide the good and thus enjoy it for free.

Even though one could also consider such a situation as one of the tyranny of the weak, the stronger player is not forced into an asymmetric outcome by the behaviour of the weak, but by his own preferences. From this perspective, the Suasion game features an opportunistic attitude by the weak rather than a deliberately tyrannical outlook. Martin (1992) argues that this game illustrates the Western world's restriction of technology exports to the Soviet Union during the Cold War. Control of technology sales to the Soviet bloc was done through the Coordinating Committee on Export Controls (COCOM). Within it, however, the United States had a dominant strategy to control technology whereas European states were more opportunistic. They could benefit from sales to the Soviet bloc without jeopardizing the overall balance of power between the two blocs. The USA was dissatisfied with this situation and had to persuade Europeans to participate fully with COCOM.

More generally, this type of game relates to situations where one actor (or group of actors) can provide a good that is immune (up to some degree) to the free riding behaviour of other countries. For example, tax havens in small countries have been 'tolerated' by bigger countries as long as the latter could use capital movement restrictions to secure financial stability. When capital restrictions were dismantled, there were significant increases in the efforts to circumvent the free riding behaviour of tax havens.

## Key points

- The four key types of decision-making models are decision making under certainty, decision making under risk, decision making under uncertainty, and interdependent decision making.
- Game theory can help us analyse interdependent decision making.

- Cooperation can be expected to fail either due to actors' incentive to cheat, to actors' sensitivity to distribution issues, or to lack of confidence in the other actor's behaviour.
- Problems of distribution and free riding may be combined in some games.
- Strong countries may sometimes be exploited by weaker ones.

## Self-help or institutions?

The discussion of collaboration problems in the global political economy highlights the varied nature of the challenges facing actors. We now turn to the question of how to address these challenges and focus on the key role international institutions can play in addressing collaboration problems. This analysis begins with situations where collaboration might be achieved without institutions and then turns to cases where institutions help the process of collaboration.

### Self-help?

In most of the games that we have examined, individual actions by both players lead, or may lead, to an outcome that we can characterize as collectively optimal because there is no welfare loss. Yet, this notion of optimality tends to be short-sighted because the asymmetric outcomes of the Called Bluff, Suasion, Chicken, and even coordination games are optimal only in terms of a narrow view of *collective welfare*. Such a conception of welfare does not obviate the problems of the distribution of gains that may either make the road to an agreement difficult or plague the likelihood of collaboration. As we discuss below, institutions may play useful roles in addressing these problems, but collaboration may also occur through individual actions.

Individual action, though self-help in nature, can also be optimal in the thorny case of the Prisoners' Dilemma. In order for individual actions to produce a collectively beneficial outcome, players must have repeated interactions through time or across issues (Axelrod and Keohane 1986; Cornes and Sandler 1996; Sandler 1992; Taylor 1987). When players expect to meet again in the future, they may be more willing to cooperate. Yet even under such conditions

of iteration, self-help may not be sufficient to ensure cooperation. For example, if the expected net value of cooperation is too low (for example, actors may overly discount the importance of future iterations owing to a dire economic or political situation at home for governments), defection may be likely. The Prisoners' Dilemma demonstrates that, if the cost of defection by one actor is too costly for the other actor (resulting in a lengthy prison sentence in Prisoners' Dilemma), or if actors cannot gather information easily, actors may not reach a Pareto optimal outcome.

Applied to the case of trade liberalization, self-help is difficult for governments that are under heavy domestic pressure, as the temptation to reap immediate gains through defection (offering protection to domestic constituencies) may simply be too big. Conversely, the cost of defection may be too high when actors invest heavily in cooperative efforts and value the outcome produced by cooperation. In such cases, they are significantly more reluctant to defect, even if others have defected.

Self-help is also not universally effective in securing the exchange of goods. As long as trading partners have access to other markets for their products, self-help can work in the context of global trade, since countries can simply turn to another market if a breach in the trading relationship occurs. However, if there is only one partner that is interested in the goods produced, or if it would be more costly to trade with other partners, such an option does not exist. If a country cannot threaten to 'defect' (sell the goods elsewhere), another country may take advantage of it. Another important qualification for successful self-help systems is if one (or both) of the parties have made relation-specific investments. In such case, these investments will discourage defection and may encourage cooperative behaviour.

What other factors might impede cooperation? Monitoring will be much more difficult if states only have limited information-gathering capability. If an actor has so little information that, for example, it is unsure whether the other actor 'defected' on the last go around, then the prospect of repeated interactions does not increase the chances of cooperation. Similarly, an expanding number of states, with an expanding range of trade products, that use increasingly sophisticated trade policies to intervene in markets makes monitoring trade policies increasingly difficult. It is therefore more difficult to detect non-compliance without the help of a third party.

## The role of institutions

As our discussion above suggests, actors often need to go beyond individual choices if they want to achieve collectively optimal outcomes. One way that individuals might be able to coordinate their choices to achieve desired goals might be through the creation or use of international institutions or regimes. International regimes have been defined broadly as 'sets of principle, norms, rules and decision making procedures upon which actors' expectations converge' (Krasner 1983). To refine this definition, we can distinguish between the principles and norms—the 'meta-regime' (Aggarwal 1985)—and the regime itself defined as the rules and procedures, to allow us to distinguish between two very different types of constraints on the behaviour of states. In this case, we can use the term institution to refer to the combination of a meta-regime and a regime. Moreover, institutions may be characterized in terms of their strength (the degree to which they constrain state behaviour), nature (the objectives promoted by the institution), and scope (across both issues and actors). Issue scope refers to the breadth of coverage of the institution, while actor scope indicates the number of actors who are members of the institution. We structure our discussion below around three major functions of institutions.

First, institutions can help actors settle on a collectively optimal, but unstable, outcome. Institutions play the role of a third party that enforces cooperation. To successfully overcome the tendency of players to defect, institutions should be strong, and look

more like binding contracts than conventions. Agreements that credibly restrain opportunism in trade and monetary policy, for instance, need to rely on some sort of enforcement mechanism. When self-enforcing agreements do not work (see our discussion above), actors may decide to delegate enforcement to an international institution. At its strongest expression, in the European Union or in the World Trade Organization, such a mechanism relies on an institutional entity (the EU has two such entities, the Commission and the Court of Justice) with supranational powers to monitor, evaluate, and sanction (if needed) the behaviour of its members (see Box 2.3).

Enforcement can also be enhanced through a different kind of centralization, one that ensures a prompt and undistorted dissemination of information. This type of facility helps identify the requirements of multilateral action and protects against possible defections. Enforcement can also be achieved through either positive incentives, as when the International Monetary Fund provides funds to countries that are following its policy recommendations, or through punitive action as when the World Trade Organization rules against a particular state policy (see Box 2.4).

Second, when actors face several optimal outcomes, institutions can help actors solve distributional problems. They may eliminate some sharply asymmetric outcomes and, through careful gathering of information about the preferences of actors, may help find or provide focal point solutions for both cost sharing and benefit splitting. Institutions with a firmly and widely established meta-regime tend to perform these tasks extremely well. Whereas there is some clear evidence that GATT, and its successor the WTO, have had a significant role in enforcing trade rules, the record of both institutions is less compelling when it comes to distributive issues. Deep disagreements among GATT members led in the 1960s to the creation of another forum on trade issues, the United Nations Conference on Trade and Development (UNCTAD), which less developed economies hoped would better serve their interests, and to serious hurdles in negotiations to extend the scope of GATT/WTO, as revealed in the difficulties in negotiating the Doha WTO round (see Winham, Chapter 4 and Thomas, Chapter 12 in this volume). Without a strong meta-regime, institutions may have difficulty generating potential solutions that are attractive to all members.

### Box 2.3 World Trade Organization (WTO)

Established in 1995, the 146-member World Trade Organization aims to promote freer trade at the international level. Trade concessions are expected to be non-discriminatory (with concessions made equally to all members) and should not be subject to unexpected changes. From that perspective, the WTO is first a forum for the negotiation of liberalization agreements. Second, it seeks to ensure that members comply with agreements, which include both monitoring and technical help. Third, it provides a mechanism for solving trade disputes between members.

On the negotiation side, the WTO brings together different groups of countries for the negotiation of large packages of trade issues. Most of the negotiation happens on a daily basis between member delegations to the WTO headquarters in Geneva, Switzerland. The secretariat of the WTO, with a staff of 550, provides technical and logistical support for these negotiations. The highest authority of the WTO, biennial ministerial meetings, are supposed to give strategic impulse to the negotiations as well as conclude the process. Agreements are then further approved at the level of the General Council of the WTO, where all members are represented. Currently, there are three basic sets of substantive multilateral trade agreements: agreement on trade in goods (GATT), agreement on trade in services (GATS), and agreement on trade-related intellectual property rights (TRIPS).

On the monitoring side, the Trade Policy Review Mechanism produces an overall assessment of members'

trade policy (for the four biggest traders, the so-called Quad—USA, Canada, European Union, and Japan—this happens every two years) with the goal to promote transparency of policies and therefore make trade more predictable. But a big part of monitoring, decentralized and indirect, happens through disputes between members. Each member can raise some matter of concern and use the dispute settlement mechanism to have another member stop practices that breach WTO obligations. The WTO dispute settlement, which seeks to settle disputes rather than pass judgement, is thus not a court in the traditional sense. If members cannot independently settle their disputes, the Dispute Settlement Body intervenes and may produce a report on the case at stake. When a country is declared to be in violation of some WTO obligations, it must change its policy. If it does not do so, other members may be authorized to get compensation or to retaliate with trade sanctions.

The default decision-making mode is consensus in the WTO. But decisions may also be made at unanimity (suspension of MFN treatment), at 75 per cent majority (interpretation of an existing multilateral agreement, or a waiver of an obligation for a particular country), or at two-thirds majority (for admission of new members for instance).

For more information, [www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/understanding\\_e.pdf](http://www.wto.org/english/thewto_e/whatis_e/tif_e/understanding_e.pdf)

Third, institutions can ensure that actors do not miss the opportunity of a collectively optimal, and stable, outcome. Rather than enforcing a particular outcome, institutions should enable actors to reach it (by pooling resources, for example). To help the integration of developing countries into the global financial system, the International Monetary Fund provides cheap credit opportunities through the contributions subscribed by all members. The World Bank finances the development of basic infrastructure in developing countries to help them reduce poverty. At the European regional level, the EMS has relied on a decentralized system of very short lending facilities among members to help them defend the parity grid that tightened them together (see Box 2.5).

To address enforcement and distribution problems, institutions should establish property rights that either define mechanisms of exclusion or determine compensation schemes. In relation to our previous discussion of games and goods, careful institutional design can sometimes 'privatize' problematic goods such as public or CPR goods. The reduction of trade barriers almost always applies to countries that belong to particular clubs, be they regional (see Ravenhill, Chapter 5 in this volume) or global. Assigning property rights can also produce decentralized cooperation when institutions also provide information about the preferences of actors and reduce transaction costs to their minimum. When actors are more certain about who owns and is

### Box 2.4 International Monetary Fund (IMF)

Conceived in July 1944 at a United Nations conference held at Bretton Woods, New Hampshire, USA, the IMF came into existence in December 1945. Its purposes, stated in Article I of its Articles of Agreement, have remained unchanged. First, and most generally, it seeks 'to promote international monetary cooperation through a permanent institution which provides the machinery for consultation and collaboration on international monetary problems' (Art. I, i). More specifically, the IMF has been a reaction against monetary disorder in the inter-war period and therefore its essential aim has been 'to promote exchange-rate stability, to maintain orderly exchange arrangements among members, and to avoid competitive exchange depreciation' (Art. I, iii). To help countries achieve exchange-rate stability, membership should 'give confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards' (Art. I, v).

As can be seen from its Articles of Agreement, the IMF should on the one hand monitor members' policies and on the other hand assist members in their efforts to achieve monetary and financial stability. On the monitoring side, the Fund conducts annual reviews of economic and financial developments in member countries. On that basis, it then gives policy advice to members. The assistance of the Fund is particularly important for members in times of difficulty. In addition to technical assistance, members can get financial assistance and lend reserves from the Fund's general pool of capital that comes from the quota subscriptions that members pay when they join the institution. Quota shares reflect countries' relative size in the world economy. Quotas have been regularly reviewed (eleven times since 1945) to reflect the evolution of the world economy and the needs of the Fund.

In terms of institutional structure, the Board of Governors is the highest authority governing the IMF, but the Executive Board carries the day-to-day work with the help of a large staff (about 2,800 people) under the leadership of a managing director. In contrast to the Board of Governors, where all members (currently 184) have a seat, the Executive Board consists of twenty-four executive directors representing directly or indirectly all members. The IMF's five largest shareholders—the United States, Japan, Germany, France, and the United Kingdom—along with China, Russia, and Saudi Arabia, have their own seats whereas the other sixteen executive directors are elected by groups of countries. For most, but not all, groups of countries, elections, each two years, may lead to rotation of directorship among countries.

An additional characteristic of the decision making in the Fund is weighted voting. Quota shares determine voting power. Hence the biggest contributor, the United States, has 17.6 per cent of the votes whereas Seychelles, the smallest, has 0.004 per cent of votes.

Although the normal decision-making mode is simple majority, all important issues are decided by qualified majority, either 70 per cent (suspension of one member's rights in case of non-respect of obligations) or by 85 per cent (for instance, modification of quotas, change in the seats of the Executive Board, provisions for general exchange arrangements). Qualified majority voting increases the power of the biggest contributors, in particular the United States, which has a veto power over issues requiring an 85 per cent majority.

A summary of the IMF's purposes, working, and recent development can be found at [www.imf.org/external/pubs/ft/exrp/what.htm](http://www.imf.org/external/pubs/ft/exrp/what.htm)

responsible for what (a result of the assignment of property rights), cooperation may result.

Under these conditions, as Coase (1960) suggests, actors do not need any centralized power to remedy the problem of negative externalities (Conybeare 1980; Keohane 1984) but should find a mutually satisfactory solution through financial compensation. The crucial aspect, in the Coasian framework, is to establish liability for externalities. The history of international monetary agreements provides several

examples of the difficulties associated with determining satisfactory schemes assigning responsibilities to the involved parties. For instance, the collapse of the fixed exchange-rate systems was largely due to the inability of IMF members to redistribute the burden of adjustment from the United States to Germany and Japan (see Helleiner, Chapter 6 in this volume). Difficulties in the so-called European Snake in the early 1970s led to a change in institutional design so that the European Monetary System was structured in

### Box 2.5 World Bank

The 'World Bank' is the common name for the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). Both institutions aim at assisting developing countries by providing them with low-interest loans, interest-free credits, and grants. In addition to IBRD and IDA, three other organizations make up the World Bank Group: (a) the International Finance Corporation (IFC), promoting private investment in high-risk sectors and countries; (b) the Multilateral Investment Guarantee Agency (MIGA), providing political risk insurance to investors in developing countries; and (c) the International Centre for Settlement of Investment Disputes (ICSID), offering a forum for settling disputes between investors and host countries.

The general aim of the World Bank Group is to facilitate investment in order to promote growth and alleviate poverty in the world. Over the past years, the World Bank

has put a particular emphasis on the provision of resources to activities with a potential global impact—named global goods—such as debt relief, HIV/AIDS programmes, water preservation and cleaning, or education. In the last decade, the Bank's main focus has been the reduction of poverty in the world.

Decision making within the institution closely resembles that of the IMF, both having been created during the 1944 Bretton Woods conference. Quota subscriptions determine voting (with slightly different shares by country, for instance 16.41 per cent for the United States) but they constitute a minor part of the Bank's resources, the bulk of them being raised by the Bank in the world's financial markets.

A summary of the World Bank's structure and activities can be found at [www.worldbank.org/wbsite/external/extaboutus](http://www.worldbank.org/wbsite/external/extaboutus)

such a way as to push strong currency members (in particular Germany) to intervene as much as weak currency members in defending existing parities.

The solution of enforcement and distribution problems is more likely to occur when institutions have a large scope and connect different issues. When actors have broad interests, linkages across issues help deter defection on a single issue (Lohmann 1997; McGinnis 1986). For example, members of the WTO cannot subscribe to the agreement on goods (GATT) without also accepting the agreement on services (GATS) as well as the agreement on intellectual property rights (TRIPS), investment (TRIMs), and the dispute settlement mechanism (see Winham, Chapter 4 in this volume).

A diverse set of issues can also provide greater ground for compromise when players have different preferences and when they do not assign equal value to all of the issues. For instance, trade liberalization or monetary cooperation in the European Union has often been facilitated by the development of social or regional policies or packages. But, as the case of agriculture in the GATT/WTO shows, having different issues on the agenda is not helpful when countries

exclude certain issues from consideration in making trade-offs.

Our discussion of the roles of institutions reveals the value associated with information gathering and dissemination. Long-term enforcement requires identifying the likelihood that actors will defect, finding a focal point based on the constellation of positions, and informing actors of the overall global context. Therefore, one of the most important roles of international institutions is to collect information about actors' behaviour, preferences, and the state of the international environment.

### Key points

- Institutions are key instruments to solve enforcement, distribution, and insurance problems.
- Institutions help assign rights and obligations to benefactors of cooperation as well as define those benefactors.
- Institutions help make the international scene an information-rich environment.

## The formation and evolution of institutions

We have seen that in many cases institutions can facilitate cooperation. But how might institutions be formed in the first place? In examining institutions, five different approaches in international relations have been brought to bear on this problem: Neo-realism, Neo-realist Institutionalism, Neo-liberal Institutionalism, Cognitivism, and Radical Constructivism (Haas 1992).

Neo-realists assume that in an anarchic international system, states must engage in self-help behaviour in order to ensure security. For neo-realist scholars, regimes, and international institutions have no significant role in international relations because power considerations are predominant in an anarchic world (Waltz 1979; Mearsheimer 1990). In this view, the only safe bet to ensure collaboration is on a self-help basis, and institutions have little role in fostering cooperation.

Within a power-based tradition, some scholars have examined changes in and the effects of international institutions. In this literature, labelled Neo-realist Institutionalism, the central concern is on how regimes affect the distribution of costs and benefits of state interaction. For analysts in this school (Krasner 1983; Aggarwal 1985; Krasner 1991; Knight 1992), institutions have distributional consequences (in other words, the benefits of cooperation may be unequal). Regimes, from this perspective, play a useful role as a device by which central decision makers control actors' behaviour, both that of other countries and/or that of domestic pressure groups (Aggarwal 1985). For example, from a domestic perspective, participation in regimes enables state elites to argue that their hands are tied and thus attempt to circumvent pressure for particular actions from domestic actors. Examples of this include the Mexican government signing onto the North American Free Trade Agreement (tying the hands of the Mexican government to a more open market posture in the face of domestic protectionist groups) or the American use of the Multifibres Arrangement (an agreement within the GATT that sets country quotas for exports from less developed to industrialized economies) to prevent textile and apparel interests from pressing for excessive protection.

With respect to the creation of regimes, a central theme in this literature has been the role of hegemonic powers in fostering the development of institutions through both positive and negative incentives (Kindleberger 1973; Gilpin 1975; Krasner 1985). Benevolent hegemons, for example, may provide public goods because their large size makes it worthwhile for them to take action on their own to overcome collective action problems. But while suggesting that regimes may form when powerful states desire them, this approach does not tell us much about the nature of regimes, and its focus on tactical, power-based linkages does not adequately account for new issue packaging. Moreover, scholars in this school overemphasize relative gains at the expense of understanding cooperative efforts that might lead to joint gains for all parties. And finally, this approach has little to say about actors' desire to pursue multilateral versus bilateral solutions to accomplish their ends.

Building on this critique, neo-liberal institutionalists have examined the specific incentives for states to create institutions—as opposed to simply engaging in ad hoc bargaining. This body of work, which builds on seminal research by Oliver Williamson (1975), examines the role of institutions in lowering transaction costs (the costs involved in choosing, organizing, negotiating, and entering into a social contract), and has garnered a considerable following (Keohane 1984). As we have seen, institutions provide many useful functions in helping actors to coordinate their actions or achieve collaboration. This theoretical approach assumes that action is primarily demand driven—that is, actors will create institutions because they are useful—but does not really specify a mechanism for how they would go about actually creating them.

An important theme of this work has been the implications of existing institutions in constraining future institutional developments (Keohane and Nye 1977; Keohane 1984). One aspect of this constraint is the possibility that existing institutions in broader areas will affect the negotiation of more specific institutions, leading to the 'nesting' of

regimes within a hierarchy (Aggarwal 1985). Thus, while the notion of transaction costs and sunk costs are central elements in this thinking, the role of regimes in providing states with information and reducing organizational costs can be distinguished from the role of existing institutions in constraining future actions.

A fourth approach to examining institutional innovation and change places emphasis on the role of expert consensus and the interplay of experts and politicians (Haas 1980; Haas 1992). New knowledge and cognitive understandings may lead decision makers to calculate their interests differently. For example, work by Ernst Haas focused on the efforts of politicians in international negotiations to use linkages to create new issue packages to form international regimes (Haas 1980).

Lastly, 'Radical Constructivists', while focusing on the role of ideas, argue that reality is in fact constructed in the minds of decision makers. These scholars, drawing from Ernst Haas's work, go much further than Haas in suggesting 'power and interest do not have effects apart from the shared knowledge that constitutes them as such' (Wendt 1995). Analysts in this school see norms and values as being dominant causal forces and ascribe considerable power to institutions in not only constraining actors, but in fundamentally altering their basic interests. In summarizing their view, Peter Haas notes that this school argues that 'there is no "objective" basis for identifying material reality and all claims for objectivity are therefore suspect' (Haas 1992). This makes it more difficult to objectively evaluate the role that institutions might play or how they might be constructed.

### Reconciling new and old institutions

When actors create new institutions, they generally do not do so in a vacuum. Thus, when new institutions are developed, they often must be reconciled with existing ones. One approach to achieving such reconciliation is by nesting broader and narrower institutions in hierarchical fashion. Another means of achieving harmony among institutions is through an institutional division of labour, or 'parallel' linkages. The challenge of institutional reconciliation is not, however, unique to the creation of new ones. In

lieu of creating new institutions, policy makers might also modify existing institutions for new purposes. When doing so, they must also focus on issues of institutional compatibility. Moreover, bargaining over institutional modification is likely to be strongly influenced by existing institutions.

A few examples will illustrate these ideas. One can think about the problem of reconciling institutions from both an issue-area and a regional perspective (Oye 1992; Gamble and Payne 1996; Lawrence 1996*a*). Nested institutions in an issue-area are nicely illustrated by the relationship between the international regime for textile and apparel trade—the Long Term Arrangement on Cotton Textiles and its successor arrangement, the Multifibres Arrangement (MFA)—with respect to the broader regime in which it is nested, the GATT. When the Executive Branch in the United States faced pressure from domestic protectionist interests simultaneously with international pressures to keep its market open, the USA promoted the formation of a sector-specific international regime under GATT auspices. This 'nesting' of the MFA within the GATT ensured a high degree of conformity with both the GATT's principles and norms as well as with its rules and procedures (Aggarwal 1985, 1994). Although the textile regime deviated from some of the GATT's norms in permitting the discriminatory treatment of developing countries, it did adopt and adapt the most-favoured-nation norm, which called for developed countries to treat all developing countries alike (for further discussion of this norm, see Winham, Chapter 4 in this volume).

The Asia-Pacific Economic Cooperation grouping (APEC), created in 1989, illustrates the concept of regional nesting. APEC's founding members were extremely worried about undermining the GATT, and sought to reconcile these two institutions by focusing on the notion of 'open regionalism'—that is, the creation of APEC would not bar others from benefiting from any ensuing liberalization in the region. APEC members saw this as a better alternative to using Article 24 of the GATT, which permits the formation of free trade areas and customs unions, to justify this accord. Rather than forming an institution that could conflict with the promotion of GATT initiatives, therefore, APEC founding members attempted to construct an institution that would complement the GATT (Aggarwal 1994; Ravenhill 2001).

An alternative mode of reconciling institutions would be to simply create 'parallel' institutions to deal with separate but related activities, as exemplified by the GATT and Bretton Woods monetary system. In creating institutions for the post-Second World War era, policy makers were concerned about a return to the 1930s era of competitive devaluations, marked by an inward turn among states and the use of protectionist measures. These 'beggar-thy-neighbour' policies were found across economic issue areas, and individual action by each state worked to the detriment of all. As a consequence, the founders of the Bretton Woods monetary system also turned their focus to creating institutions that would help to

encourage trade liberalization. By promoting fixed exchange rates through the International Monetary Fund and liberalization of trade through the General Agreement on Tariffs and Trade, policy makers hoped that this parallel institutional division of labour would lead to freer trade. Finally, on a regional basis, one can see the development of the European Economic Coal and Steel Community and the Western European Union as parallel organizations. The first was oriented toward strengthening European cooperation in economic matters (with, of course, important security implications), while the WEU sought to develop a coordinated European defence effort.

## Conclusion

This chapter has sought to provide a systematic analysis of the problem of collaboration in global political economy through the lenses of goods, games, and institutions. We have seen that states may need to collaborate or to coordinate their actions to provide various kinds of public goods and common pool resources that the private sector will not produce. Yet the central problem of dealing with free riders (actors who will benefit from the provision of goods, but who may attempt to avoid paying for them) remains a difficult issue and one that may impede the provision of goods—despite the desires of states to produce them.

The problem of free riding or the difficulty of finding a coordination equilibrium is a common one in a number of issues, including trade, monetary cooperation, the environment, human rights, and the like. Despite some limitations, game theory provides useful insight into the diverse set of problems that states may face in collaborating or in coordinating their actions. One of the most popularly used games, the Prisoners' Dilemma, has been used to show that in many issue areas, actors have a strong incentive not to cooperate despite the potential joint gains that they may receive from doing so. Yet as we have shown, the structure of many problems in international political economy is not that of the Prisoners' Dilemma game, but instead may be better characterized as chicken, assurance, suasion, or even harmony games. By carefully examining

the types of goods involved in the issue area in which actors may wish to collaborate or coordinate their actions, game theory provides a way of differentiating the various sets of problems involved.

It is worth keeping in mind that the preferences that go into creating games are often assumed as given by many analysts—particularly those in the neo-realist institutionalist and neo-liberal institutionalist camps. Where do preferences come from and are such preferences amenable to change? It is on this dimension that constructivist arguments focusing on the role of experts, changing knowledge, and possible shifts in preferences through learning may provide significant insight that can help us to create more logically compelling games.

Once we can establish the basic game structure that actors face, we can better examine what role institutions might play in ensuring more favourable outcomes. In some cases, contrary to the perspective often taken by neo-institutionalists, institutions may not really be necessary for ensuring cooperative state action. Hence, we differentiated between cases where self-help might lead to a positive outcome versus those in which institutions might play a genuinely useful role in overcoming collective action problems.

The role of institutions in fostering collaboration itself raises two puzzles: first, how might states collaborate in the first place to create institutions? This in itself raises an analytical problem that various theories have

attempted to address. As we have seen, hegemony may have strong incentives to create institutions to constrain the behaviour of other actors and possibly their own domestic lobbies. Other approaches such as neo-liberal institutionalism focus on the strong incentives that major states may have in creating institutions and suggest that small numbers of actors may be able to overcome the usual collective action problems that may lead to free riding behaviour.

Second, the creation of institutions rarely takes place in a vacuum. An important issue is thus the

question of how new institutions might be reconciled with old ones. This problem has arisen in the context of the Asian crisis, where efforts to create an Asian Monetary Fund faltered in the face of International Monetary Fund and United States opposition. In trade, the problems of the Doha Round have been followed by a renewed push to shift away from broad multilateral institutions to bilateral free trade agreements and regional accords. The extent to which such arrangements will further undermine the World Trade Organization remains an open question.

## QUESTIONS

- 1 What is the most frequent problem of collaboration in global political economy?
- 2 How does the nature of different types of goods affect the prospects for collaboration?
- 3 Which good(s) are the most difficult to produce in international politics?
- 4 What is the thorniest situation of collaboration in global political economy?
- 5 Under what conditions do individual decision-making models make sense? When might one need to use game-theoretic approaches?
- 6 Is a lack of information always problematic for reaching cooperation?
- 7 Can problems of information make collaboration easier?
- 8 What are the conditions for decentralized, self-help, cooperation to work?
- 9 How do institutions facilitate collaboration?
- 10 Can enforcement really be carried out in international political economy?
- 11 Under what conditions might old and new institutions work together? When might they be in conflict?

## FURTHER READING

- Aggarwal, V. K. (ed.) (1998), *Institutional Designs for a Complex World: Bargaining, Linkages and Nesting* (Ithaca, NY: Cornell University Press). A collective volume that focuses on the relationships between institutions and the stability of dense institutional settings.
- and Dupont, C. (1999), 'Goods, Games and Institutions', *International Political Science Review*, 20/4: 393–409. The original and technical presentation of our theory that links goods, games and institutions.
- Cooper, R. N. (ed.) (1989), *Can Nations Agree* (Washington DC: Brookings Institution). An insightful collection of work on coordination attempts of economic policies among nations outside of institutional settings.
- Hasenclever, A., Mayer, P., and Rittberger, V. (1997), *Theories of International Regimes* (Cambridge: Cambridge University Press). A collective volume on recent developments

on theories of international regimes with application to all domains of international politics.

- Kaul, I., Grunberg, I., and Stern, M. A. (eds.) (1999), *Global Public Goods: International Cooperation in the 21st Century* (New York: Oxford University Press). A collective volume with a range of examples of global public goods in economics, politics, environment with interesting lessons for the future provision of such goods.
- Keohane, R. O. (1984), *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press). The classic work on the links between regime change and change in power distribution.
- Koromenos, B., Lipson, C., and Snidal, D. (2001), 'The Rational Design of International Institutions', *International Organization*, 55/4: 761–99. Introductory article to the latest collective work on institutional design, using insights from game theory and considering various facets of institutions.
- Krasner, S. D. (ed.) (1983), *International Regimes* (Ithaca, NY: Cornell University Press). The seminal collective volume on international regimes that includes the classic definition of regimes as well as a range of examples in various domains of international politics.
- Olson, M. (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, Mass.: Harvard University Press). Classic work on collective action and the conditions under which groups of actors may produce public goods.
- Sandler, T. (1992), *Collective Action: Theory and Applications* (Ann Arbor: University of Michigan Press).

## WEB LINKS

### Game Theory

[www.gametheory.net/](http://www.gametheory.net/)

<http://william-king.www.drexel.edu/top/eco/game/game.html>