

Introduction to International Relations

Lecture 14: Public Goods and Institutions

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Overview. We now begin the analysis of how states can avoid problems where individual incentives result in behavior that produces socially bad outcomes. We look at public goods and identify the free-rider problem, the collective analogue of the prisoner's dilemma. We then ask how groups can get individual members to contribute to the provision of public goods and identify several strategies, one of which (repeated interaction) is then examined in detail. We define institutions as self-enforcing systems of humanly-designed constraint on behavior and then analyze how international organizations can be constructed to implement them formally.

OUTLINE OF LECTURE 14: PUBLIC GOODS AND INSTITUTIONS

1. Public goods

a) Characteristics

- indivisibility: radio, cable TV, national defense
- non-excludability: radio, national defense, fish in open sea

b) Free-rider problem

- once public good provided, everyone gets it
- personal contribution costly, overall impact very small
- why contribute?
- individually rational actions lead to socially suboptimal outcomes
- under-provision due to market failure

c) Provision of public goods

- coercion (IRS, but U.S. problems in getting NATO contributions)
- convert to club good (toll roads, intellectual property rights)
- selective rewards (North Korea and non-proliferation)
- hegemon (British Navy/piracy, U.S./financial stability 1944-71)
- self-enforcing agreements in repeated interaction

2. Transaction costs

a) Repeated interaction

- long-term relationship must be valuable
- concern with future bad consequences encourages cooperation
- conditionality and reciprocity

b) Need to overcome costs associated with

- monitoring: verify compliance (information)
- enforcement: incentives to carry out punishment (credibility)
- coordination: multiple possible bargains (negotiation)

3. Institutions and organizations

a) Social, humanly-designed constraints on behavior

- creation: who has bargaining power?
- function: self-enforcing agreements (explicit or implicit)
- must provide incentives to uphold institution itself

b) Informal (norms) and formal (organizations)

- transparency (information): UN, IMF, World Bank, OECD
- commitment/coordination: Paris/London Clubs, NATO
- future interaction: UN, GATT
- standards: WTO, IMF, OPEC

1 Public Goods

Imagine that the U.S. and Canada want to set environmental standards for limiting the pollution of the Great Lakes. The situation is such that even if one of them agrees to cease harmful emissions, the quality of the environment would improve sufficiently to sustain enough fish and recreation for both. However, limiting these emissions is costly, so each country would rather that have the other one do it. There is an additional problem that if a country implements the higher (costly) standards, its products manufactured in the plants where these standards are implemented become less competitive than products from polluting plants (that operate at lower costs).

Suppose that a sufficiently clean lake is worth \$2 billion to each country, and that limiting pollution costs \$1 billion. If both cooperate, the lakes are clean, and each gets the benefits net of cleanup costs, or \$1 billion. If both defect, neither pays the costs but neither enjoys the benefits, so payoffs of zero for both. If an actor defects while the other cooperates, the lakes are sufficiently clean and the payoff is \$2 because the defecting actor pays no costs. However, the “sucker” suffers both the costs and the additional revenue loss from not being competitive because of relatively expensive products (trade loss is \$2 billion). So its payoff is the benefit of clean lakes net of the cleanup and trade disadvantage costs, or -1 . The situation is depicted in Table 1.

		Canada	
		<i>C</i>	<i>D</i>
U.S.	<i>C</i>	1, 1	-1, 2
	<i>D</i>	2, -1	0, 0

Figure 1: Provision of a Public Good: Pollution in the Great Lakes.

This is the familiar Prisoner’s Dilemma and we already know that in such a situation both actors would defect. Given the incentive structure, defection is better than cooperation no matter what the other actor does. The outcome is dirty lakes, a bad result for both actors. Under anarchy actors cannot credibly commit themselves to not defecting, and so they cannot enforce the cooperative outcome. Behavior that is individually rational leads to a suboptimal group outcome.

Protecting the environment is a good with two special features. First, it is **indivisible**—one’s consumption does not diminish the amount available to others. One’s enjoyment of a clean environment does not diminish the enjoyment of others. Radio transmissions are also indivisible because one’s reception of radio programming does not reduce the amount of programming available to others. Cable TV, low inflation, economic growth, arms control, security, military victory, and financial stability are all indivisible goods.

Second, it is non-exclusive. That is, clean air cannot be withheld from a member of the group. Indivisible goods can be excludable; for example, cable TV can only be made available to subscribers (and people with descramblers).

Even though one's own consumption of cable programming does not reduce the amount available to others, people without subscriptions can be excluded from consuming it. On the other hand, radio is non-excludable: once it goes on the air, everyone can receive it and nobody can be prevented from doing so.¹

Thinking about divisibility and excludability allows us to come up with three more categories of goods:

		Excludable	
		yes	no
Divisible	yes	private good: bread, cars	common good: sea fish
	no	club good: cable TV	public good: radio, defense

Table 1: Categories of Goods

A good that is both indivisible and non-excludable is called a **public** good. The governments are usually in the business of providing public goods, like security, safety, public roads, public health, and so on. Take, for example, public roads. Once an interstate highway is built, everyone can use it (although arguably one's use does diminish somewhat the usability for others, as residents of Los Angeles can attest). Where does the government get the money to build it? From you and me. Public roads are jointly supplied by our taxes at work. We pay our taxes, the government then disburses the funds to pay for the provision of various public goods.

Now, my own contribution to the national tax income is negligible but personally it is quite costly. I know that even without my individual contribution, the government will build the highway anyway. Hence, if I withhold my tax payment, I will not jeopardize the provision of this (or any other) public good. Further, I still get to drive my car on that highway. In other words, I can avoid paying for its construction and still use it once built. My individual incentive therefore is to avoid the personal cost of paying for the provision of the public good. I am tempted to become a **free rider** on the contributions of others (you).

This logic extends to every individual who is supposed to pay taxes. Why do it, especially if one knows that there are free riders and one does not want to be the "sucker": why do it if everyone else shirks? But if enough people attempt to free ride on the efforts of others, the total decrease in tax receipts will be significant enough to compel the government to drop the highway project. The public good can go unprovided or under-provided if too many people shrink from their responsibility to pay the personal cost of supplying it. The outcome would be bad roads, otherwise known as socialism. The **free-rider dilemma** is thus a collective version of the Prisoner's Dilemma: individual incentives result in socially suboptimal outcomes.

Take, for example, collective security. As you should recall, the idea is that

¹Some authors (e.g. your book's) refer to indivisibility as the good being *jointly supplied* because once supplied to one member of the group, it is supplied to all. This definition may make it hard to distinguish between this characteristic and exclusiveness.

an aggression against one member will be met by the collective response of everyone else. Presumably, this would be an ideal deterrent because the group is much stronger than each individual state, and hence its military response would be overwhelming. Well, maybe. The argument does not take into account the incentive to free ride. Collective response to aggression is a public good to the members: once provided, all will enjoy the victory. However, individual contribution is costly and there is a strong temptation to free ride when the time comes to pay for it. That's why aggressive governments know that most of the time collective security will fail as individual members would attempt to find ways to pass the buck onto others, delaying the response or nullifying it altogether. Of course, the bickering and the general stalemate in the U.N. (and the League of Nations that preceded it) are the most obvious manifestations of the problem.

2 Provision of Public Goods

In addition to security, many other areas in world politics exhibit features of the free-rider dilemma. Trade, alliances, monetary policy, non-proliferation, environmental issues, and international law, among others, require group coordination that has been studied using the public goods approach. What are then some of the strategies of achieving adequate provision of public goods? That is, how can nations avoid the free rider trap and cooperate successfully.

First, actors can be induced to contribute through **coercion**. We all know that the IRS can poke in our private finances if it has reason to suspect we have been less than forthcoming with our taxes. The IRS also has pretty extensive enforcement rights (e.g. masked commandos barging through your walls to arrest non-contributors). Generally, governments and organizations have many ways to force contributions by members. This type of coercion is very difficult in international relations. The U.S. attempted to force its Western allies to share some of the burdens of running NATO for years during the Cold War with no success: its threat to withhold provision of security was not credible, and hence the allies did not feel compelled to pay their fair share of the costs.

Instead, states usually have to rely on another strategy that is based on **rewarding** cooperative behavior. This usually involves promising private goods in return for contribution to the public ones. For example, in return for cooperating on nuclear proliferation, North Korea obtained a promise from the U.S. to build two nuclear reactors for peaceful energy purposes. There are many possibilities for *side payments*; that is, exchange of one type of good in return for contribution on another. This, of course, means that one must have something desirable to offer.

Very powerful actors can simply provide the public good unilaterally by paying the entire cost required to do so. Such an actor does not care about the contributions of other actors because these are insignificant and not worth the effort to obtain. Needless to say, this strategy is extremely expensive and usu-

ally well beyond the means of all states except a **hegemon**, a state that is much more powerful than others in that particular area. For example, throughout the 19th century, the British Royal Navy patrolled the high seas and ensured relatively safe passage for everyone by getting rid of pirates. Although the British did so out of self-interest (they need to ensure steady access to their colonies), they felt no need to ask anyone else to help and in fact probably would have rejected any such notion altogether. Similarly, following the Second World War, the United States acted as the unilateral provider of financial stability for over two decades.

Finally, another (and perhaps most interesting) strategy for the provision of public goods is to induce individual contributions by establishing self-enforcing agreements in ongoing relationships. We now focus on the provision of public goods through repeated interaction.

3 Repeated Interaction and Transaction Costs

For the remainder of this lecture, we shall call any desirable international behavior “cooperation.” That is, cooperation in trade means maintaining free trade (no tariff or non-tariff barriers), cooperation in environmental matters means not polluting, cooperation in arms races means not engaging in competitive armaments, cooperation in collective security means fulfilling one’s obligations to respond to threats, cooperation in international law means not violating it.

As we saw in the discussion of enforcement of international law, one of the basic mechanisms to achieve cooperation is repeated interaction. Actors do not engage in one-shot encounters but have to reckon that they will face each other over and over again in ongoing relationships. This alters the strategic calculations quite a bit because now each actor has to take into account not only the costs and benefits of current actions but their possible ramifications for the future. On the most basic level, an actor can be induced not to yield to temptation today if one can threaten to withhold benefits tomorrow. If the actors cares enough about the future, then these costs would outweigh any potential gain from non-cooperative behavior today. For example, if the two countries are heavily engaged in trade, then imposing a tariff is beneficial in the short run because of increased income for the government doing the imposition. However, in the longer run trade will decline and perhaps the other country would retaliate by imposing a tariff on its own. Even if it does not, it may still divert trade to more hospitable markets, thereby decreasing both trade and revenue for the government in the long run.

In ongoing relationships, self-enforcing cooperation can emerge spontaneously under anarchy. The strategies that can achieve cooperation usually depend on **conditionality** and **reciprocity**. Conditionality means that present behavior is conditioned on (depends on) past behavior of the other actors. That is, one would examine how others have behaved in the past to determine, in part, one’s own behavior. Reciprocity specifies how one responds to past behavior

of others—by retaliating against non-cooperation and rewarding cooperation. Perhaps the most famous such strategy is **tit-for-tat**. An actor using it would cooperate as long as the other actor cooperates and would punish non-cooperation by ceasing to cooperate until the other resumes cooperative behavior.

Although cooperation in ongoing relationships is possible in principle by the use of conditional reciprocal strategies, its emergence critically depends on several factors: (a) actors must value the relationship enough or else they would not care about the benefits they would forego by disturbing it; (b) actors must be able to monitor behavior to verify compliance or else they would not know whether to punish or reward it, (c) actors must have incentives to enforce the punishments or else threats to punish would not be credible, and (d) if there are several possible cooperative arrangements, actors must be able to coordinate on one among them.

Most of these activities are costly. For example, it is costly to organize meetings and negotiate terms of agreements (recall that the Uruguay Round of trade negotiations lasted seven years). It is costly to monitor compliance because one must organize inspections, order analyses, and then interpret evidence. Enforcement is costly itself because it usually means foregoing some benefits from the relationship with the actor that is being punished for non-compliance. Let's look in a bit more detail at these costs.

Monitoring. Ascertaining compliance can be very tricky. There is a lot of uncertainty, and so easy to disclaim responsibility for an outcome. For example, suppose U.S. observes more pollution than expected. It accuses Canada of having defected from the cooperative arrangement. Canada, however, claims full compliance and counters that the U.S. has failed to monitor its own producers properly, then produces new studies that show that pollution really is not up, and finally demonstrates that it is actually down along the Canadian shore, ending with an accusation that the U.S. has blatantly flaunted the agreement while Canada has been dutifully implementing all its provisions. Should the U.S. retaliate by defecting next? Verifying compliance is a problem because it may involve substantial costs (in this example, commissioning new studies, wasting time and effort to prove one's position right instead of doing something more productive, even monitoring own factories).

Enforcement is also costly, in this case because it involves suffering higher levels of pollution while punishing the other. Enforcement under anarchy usually takes the form of actions that are costly not only to the actor being punished but also to the one doing the punishment. Economic sanctions, for example, are not only detrimental to the target, but also to the sender, which is why very often they are not well implemented, which in turn shows why very often they fail to work at all. Although, as we have seen before the "hurt-more" criterion does not apply (that is, it does not matter who gets hurt more by the action, what's important is that the one being punished is hurt sufficiently relative to not being punished), when the action is costly, the credibility of the threat to carry it out is diminished.

Enforcement also has monitoring costs of its own: the punisher must verify compliance with its requirements so it knows whether to stop the punishment or continue it. This is also difficult: every target has incentives to claim it has complied. When the punishment involves more than one actor acting in coordination with the others (e.g. economic sanctions), there are also costs associated with making sure the others are cooperating in the punishment phase instead of secretly defecting, avoiding paying the costs, and free-riding on the punishment efforts of the others.

Multiple Agreements. The simple fact that there are more than one way to optimally play the game, and that each depends on the actors' expectations of each other's behavior poses at least a coordination problem in itself. In games of pure coordination even minimal communication could, in principle, resolve the uncertainty. Of course, once we get into distributive conflict, this is no longer the case. Unless communication is costly, it will probably be ineffective in conveying information. So how do actors coordinate their expectations?

We have seen that bargaining is a way to do this, and one can view coordination on some optimal agreement as a result of a bargaining process between the actors. Which particular agreement gets selected would then depend on the bargaining power of each actor but in general unless the process yields something that is an equilibrium it would have been a waste of effort because at least one actor would find it worthwhile to subvert the outcome by defecting from the arrangement. This is why sometimes an agreement may not reflect the interests of the conventionally stronger actor: to ensure compliance in the future it may be necessary to settle for something that is not thoroughly disadvantageous to the other.

So bargaining can help coordinate expectations and select one of the many possible equilibria. However, bargaining is costly, sometimes very costly. It involves both time and effort that the actors could productively spend elsewhere. Given the incentives to secure the best possible deal, the outcome may also be either no agreement or an agreement that is not self-enforcing, which usually means that actors would have to renegotiate in the near future, spending all the time and effort again.

Generally, most international interactions involve a lot of effort that goes into organizing, negotiating, implementing, monitoring, and enforcing even the simplest agreements. The costs associated with these activities are called **transaction costs**. These costs provide high barriers to cooperation. If it is difficult to monitor because it's too costly, conditional strategies may not work because it will not be clear whether the conditions for punishment have been met, and so whether retaliation must be triggered. Also, enforcement costs diminish the credibility of the threat to punish defections, which weakens deterrence, and so reduces the chances for cooperation. Finally, bargaining costs may prevent efficient coordination on a mutually beneficial agreement and actors may end up selecting a suboptimal one.

Countries have interests in cooperating on the provision of a wide variety of

public goods: financial stability, environmental crises, development assistance, arms control, and collective security. All these issues involve substantial transaction costs associated with locating a mutually acceptable bargain, implementing it, and then enforcing the agreement. In the anarchic international world then, actors who are interested in cooperation will look for ways to facilitate its emergence by designing solutions that reduce the transaction costs involved. They do so by creating **organizations** whose rules and capabilities are such that they reduce transaction costs and implement the **institutions** that produce cooperation.

3.1 Institutions: Self-Enforcing Agreements

Rational actors who are aware of transaction costs and the fact that many of them are generated by the presence of asymmetric information, would naturally attempt to address them by creating institutions that mitigate uncertainty and otherwise reduce the transaction costs.

Institutions are enduring systems of social, humanly-designed, constraint on behavior. This constraint makes it possible for rational actors to credibly commit to complex actions, vastly expanding the scope of opportunities available to them. Institutions define the set of common expectations, through which actors achieve “order” in their interactions.

Usually, institutions are taken as granted, as part of the environment that determine what actions are physically available to the actors, or the information available to them. But while we do have to ask the important question of how institutions shape behavior, we need to ask the even more important ones of (a) how they are established in the first place, and (b) how are they supposed to function.

The central question is how institutional constraints can be maintained when actors are rational, and have at most only an instrumental interest in the institution for its own sake. That is, actors do not care about the institution itself but about the results it produces.

You should now be anticipating the answer from everything we have done thus far in the course: *Institutions themselves should be viewed as self-enforcing agreements of rational behavior*. An institution is a type of agreement, either implicit or explicit, where an actor’s behavior is conditioned on past behavior of others, and on its expectations about how other actors would react to its actions. That is, an institution is a long-lived pattern of rational behavior in some underlying game that the actors are engaged in.

Institutions arise from the bargaining context between the participants, and its provisions must match the potential enforcement problems. Enforcement of rules is endogenous: that is, the rules are not taken for granted by arise out of the self-interested behavior of the actors. This requirement guarantees the credibility of the punishment threat, and therefore ensures that enforcement will work.

To understand an institution, we must examine how it establishes and main-

tains endogenous incentives for cooperation among rational selfish actors, which (from our foregoing discussion) means that we must examine how they manage to coordinate expectations in complex settings. As before, the role of communication is great, but that of bargaining is even more important.

We can distinguish between **informal** and **formal** institutions, depending on how centralized behavior is. Let's clarify the differences. Think about many actors engaged in a repeated free-rider dilemma. If each actor simply follows a reciprocating conditional strategy with everyone else, then we do not have an institution in the usual sense of the term because there is no involvement of the group in whether individual actors cooperate or not. Each act of cooperation benefits only the partner of the cooperating actor, and each defection is punished only by the wronged actor.

An informal norm of reciprocity would involve all actors. For example, suppose that in each period, following the play of the free-rider dilemma, each actor sends a costly message to all other actors except its current partner telling them whether this partner cooperated or not. An actor reported to have defected inappropriately is then subject to subsequent punishment by all other actors, who defect whenever they get to play with this actor until the wrongdoer makes amends by cooperating once unilaterally. It is possible to demonstrate that such strategies can be optimal in supporting cooperation by everyone and, very importantly, no actor has an incentive to transmit untruthful messages about the behavior of its partners.

As the number of actors gets larger, there is an alternative institutional form that can generate even better payoffs. This requires centralized communication, and so it represents a formal institution, something that we shall call a **formal organization**. Suppose we designate an actor to be the "director." Then, each of the remaining players periodically reports the identity of his partner to the director at some cost, and the director responds (for free) whether the partner is in good standing. Actors then cooperate with partners reported to be in good standing and defect against partners in bad standing. Following the play, actors communicate (at cost) to the director whether their partner has defected inappropriately (that is, when not supposed to). Again, the only way to escape bad standing is to make a unilateral restitution.

It can be shown that these strategies can also be optimal. Moreover, actors cooperate, do not lie about their partner's behavior, and the director reports status honestly. Moreover, this behavior is easier to sustain when the number of actors gets larger, and the payoffs actors get are higher than the informal one before (mostly because of the costliness associated with communication).

But we have just described a formal institution which resembles an organization we are likely to see. One actor is designated to be the official who acts as the communication hub for everyone else, but individual actors are the ones who carry out the punishments. This finally leads us to international organizations, which from our perspective are simply formal institutions.

3.2 International Organizations: Implementing Institutions

Although creating an organization is costly itself, it may have lasting benefits that outweigh the costs of maintaining it. Organizations can reduce uncertainty by providing transparency (U.N. agencies, IMF, World Bank, OECD), defining standards (WTO rules, IMF conditionality, OPEC summits and quotas), reducing bargaining costs, helping establish credible commitments (cross-default clauses, Paris and London Clubs, NATO), and encouraging expectations of future interactions (U.N.).

Organizations are formal sets of rules and regulations that govern the interactions of their members. They help coordinate member expectations about each other's behavior. As we have seen many times already, behavior in strategic situations crucially depends on what one expects the other participants to do. These mutually consistent expectations may be difficult to form, especially when there are many potential ways of doing so, but they point to different answers. Essentially, one may think of organizations as providing focal points around which to coordinate expectations. Note how this helps with the third problem: selection of agreements. Even if the cooperative agreement is one among many others, an organization can coordinate the expectations of its members such that everyone expects everyone else to expect the cooperative behavior, and so everyone cooperates.

One way to think about an organization is as the formal physical entity that implements an institution. For example, the IMF implements the institution of international financial cooperation by (a) acting as a lender of last resort, (b) ensuring that member governments comply with its fiscal macroeconomic policies. How does enforcement work? First, the IMF distributes its aid in tranches, with subsequent disbursements conditional on government's performance. It is important to note that this **IMF conditionality** works for small countries, like Poland and Bulgaria, but not for big ones, like Russia because (a) the U.S., who is the most important donor of the IMF has vested strategic interests in ensuring Russian stability, and (b) the Russian economy is too important for the region to allow it to go down the drain, both of which weaken the IMF's threat to punish noncompliance. As a result, the Russians have been getting money and mostly not implementing the reforms.

Second, the IMF has another lever, which is its **seal of approval** that it bestows on countries that meet their targets. This approval opens the doors for borrowing on the international markets. The private banks usually do not have enough resources to ascertain the likelihood of the debts being repaid (for which sound economic policies are necessary), so they use the IMF as an informational shortcut to determine how safe an investment would be. A country that is being blasted by the IMF is very unlikely to find alternate money to borrow on the private markets.

Generally, when you analyze an organization, you first should ask what institution it is supposed to implement. Then you ask how this institution is supposed to work: What inducements are there to encourage cooperation, and

what threats are there to discourage defection? Most importantly, you should ask how these commitments are made credible; that is, how this institution is self-enforcing. If it is not, then the organization is likely to fail because it implements something that is not equilibrium behavior. In other words, it tries to force actors to behave against their interests without ensuring that the threat to punish them for misbehaving is credible.

One example of such failed organization is the predecessor of the United Nations, the League of Nations. It had several severe problems from the outset, the most important one being the fact that the U.S. was not a member. There were no adequate provisions for enforcement either, and countries relied mostly on economic sanctions, for which there were no adequate monitoring provisions to ensure that the countries supposed to punish were actually punishing (which is costly to them). In the end, the League failed to stop Italy from aggression in Africa against Abyssinia, then failed to stop Japan from aggression in Asia against China. It then fell apart.

The U.N.'s virtue in that respect is that it included the victors of the Second World War, and so the institution reflected the bargaining power of the most important states. One problem with the current setup is that this is no longer true. The Security Council does not take into account two extremely important and powerful states, Germany and Japan, or one may argue that it perhaps takes too many interests into account given that the U.S. is disproportionately stronger than everyone else. This brings me to the interesting question: is the U.N. going to be irrelevant by rubber-stamping everything the U.S. demands, or is it going to be irrelevant by opposing it, and then getting ignored?

4 The Monetary and Trade Regimes

Imagine the following simple scenario involving the U.S. and Mexico. Each can choose to either trade freely or impose a tariff. Each state can export \$10 million worth of goods to the other, and so if they trade freely, each gets a benefit of \$10 million. Each state can choose to impose a tariff of, say, 20% on imports from the other. Further, because the imports increase in price, this also reduces the amount sold by 50%. In other words, if a 20% tariff is imposed, the total amount sold by the exporter declines to \$5 million, which, after \$1 million in taxes is subtracted, results in only \$4 million profits. The actor that imposes the tariff gains \$1 million. This situation is described in Figure 2.

		Mexico	
		<i>F</i>	<i>T</i>
U.S.	<i>F</i>	10, 10	4, 11
	<i>T</i>	11, 4	5, 5

Figure 2: The Tariff Game.

There are four possible outcomes ranging from a tariff war to free trade. If

neither actor imposes a tariff, each can trade the full \$10 million worth of goods, and so each actor would obtain a payoff of \$10 million. If the U.S. imposes a tariff and Mexico does not, the U.S. can export its \$10 million and obtain \$1 million in tariff revenue, so its payoff from this outcome is \$11 million. Mexico, on the other hand, loses \$1 million because of the American tariff and thus only gets \$4 million in revenue because it cannot sell all of the more expensive goods now but only \$5 million worth of them. Finally, if both actors impose tariffs, each exports \$5 million worth of goods to the other, loses \$1 million in tariff payments, and gains \$1 million in tax income. That is, both get \$5 million.

This is the familiar Prisoner's Dilemma and we already know that in such a situation both actors would defect by resorting to protectionism. Given the incentive structure, defection (protectionism) is better than cooperation (free trade) no matter what the other actor does. The outcome is a trade war, a bad result for both actors. Under anarchy actors cannot credibly commit themselves to not defecting, and so they cannot enforce the cooperative outcome. Behavior that is individually rational leads to a suboptimal group outcome. As we have seen, free trade is great. However, it requires the cooperation of all actors involved. The problem is that states have strong incentives to engage in various degrees of protectionism.

This problem cropped up in the 1930s contributing to the Great Depression. Following the stock market crash of 1929, the U.S. passed the Smoot-Hawley Tariff Act (July, 1930) which sharply increased tariffs on imports across the board. The goal was to protect domestic production, encourage employment, and generate revenue for the government. If other countries did not impose tariffs too, the outcome would have been great for the U.S.: it could export its own products, generate a large income, and maintain a favorable trade balance. However, the other countries did impose high tariffs too. Some did it in retaliation to the American measure, and others probably trying to achieve exactly what the U.S. was. After all, running a trade surplus with a trading partner means that it is running a trade deficit, which worsens its income, and puts pressure on domestic import-competing sectors. The trade war resulted in a significant decrease in trade, which slowed economic growth, and deepened the depression.

By the end of the Second World War, the victorious allies determined to avoid the mistakes that had led to the depression (which was seen as a major contributing factor to the rise of Nazism). In 1944, delegates met at Bretton Woods, NH to hammer out an agreement about the management of the economic world system, in particular they had to devise rules for commerce and financial relations that would prevent the beggar-thy-neighbor policies of competitive devaluations and protectionism that had aggravated the depression.

Three major institutions formed the Bretton Woods system (BWS): the International Monetary Fund (IMF) to govern financial transactions and act as lender of last resort, the International Bank for Reconstruction and Development (IBRD, or World Bank) to assist with major economic and developmental projects, and an International Trade Organization (ITO) to oversee the free flow of goods. The

ITO never came into being, and instead countries relied on a provisional agreement, the General Agreement on Tariffs and Trade (GATT) until 1995 when the World Trade Organization (WTO) finally made its provisions permanent.

The BWS fixed the U.S. dollar at \$35 per ounce of gold and required each country to adopt an exchange rate of its currency within a fixed value. The U.S. unilaterally provided an anchor for international finance by making the dollar as good as gold. With the IMF provision of financing temporary payment disbalances, financial stability was guaranteed. This lowered the risk and encouraged trade. As long as the U.S. maintained the gold standard (that is, it had as much gold reserves as dollars in circulation at the fixed price), the system worked.

However, in the 1960s, Johnson's Great Society and Vietnam War caused an increase in government spending without sufficient increase in taxes. Prices in America went up and exports decreased. The result was a serious inflation and a worsening balance of trade. As the dollar got too expensive, the pressure was on the other governments (in particular Germany and Japan) to devalue their currencies, thus making their exports less competitive. Naturally, they were unwilling to do that. Governments like it when their own currency is undervalued because it encourages exports and turns trade deficit into surplus (more income). An overvalued currency leads the government to print more money to dilute its value and bring down exchange rate. However, this option was not open to the U.S. because of its commitment to convert dollars for gold: it could not print more dollars than it had gold in reserve. The only other option was to devalue the dollar by going off the gold standard. Speculators anticipated this move and began buying gold because of the expected increase in its dollar price. The situation worsened in 1970, and the overvalued dollar had produced an expectation of devaluation in the markets. On August 15, 1971 Richard Nixon took the U.S. off the gold standard, allowing the gold's dollar value to be determined on the open market. He also imposed a 10% tax on imports until others revalued their currencies. More devaluations followed in 1973, and the Bretton Woods system came to an end. The world moved to a floating currency system, abandoning the pegs to the dollar. This is the system we live in today.

The trade regime under GATT was multilateral: preferential trade agreements were made almost illegal, any grant of most-favored-nation (MFN) status by one member to another country automatically extended to other members. The MFN principle means that the least restrictive trade conditions (the ones with the "most favored nation") automatically apply to all others. Export subsidies were banned except in agriculture, as were import quotas except to deal with severe market disruptions. Any new tariffs were to be offset by reductions in existing ones. The 1967 Kennedy Round of negotiations managed to decrease agricultural tariffs by 35%. In 1986, the Uruguay Round began, then moved to Geneva before concluding in 1994. It led to a 40% fall in tariffs (these were already quite low, so not as large of a drop: from average of 6.3% to 3.9%), liberalization of agriculture and clothes, and new rules for government procurement (governments to buy from foreign firms, not just non-competitive locals, which

was a form of subsidy given how huge these contracts usually are). The other important result was GATS (the General Agreement on Trade in Services), meaning that services were now covered—banking, insurance, and consulting, about 60% of output from industrialized countries. The Uruguay Round also created the World Trade Organization (WTO), the long-awaited implementation of the ITO vision. The WTO adopted the GATT principles and now provides a rather substantial institutional structure for negotiating trade rules (new as well as existing ones) and resolving disputes.

Unlike the IMF and World Bank where voting power depends on the country's economic importance, WTO decisions are determined by consensus where each member gets one vote. The most recent failures at Seattle (1999) and Cancun (2003) occurred precisely because developing countries refused to accept the proposals before continuing Western protectionism was placed on the agenda. In a way, the WTO is more democratic than the monetary/development institutions because of the voting scheme. Enforcement is provided by an international trade court that can authorize sanctions against countries who fail to live up to WTO decisions.