

September, 2000

# Optimal Number of Governments

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This working paper is part of a book,  
THE STRATEGIC CONSTITUTION (Princeton University Press, forthcoming)  
by Robert Cooter.

The working paper consists of the introduction to Part II of the book  
and the first chapter in Part II, which is Chapter 5, “Intergovernmental Relations.”

Abstract: According to the usual economic formulation, corporations are hierarchies bounded by markets. The optimal extent of hierarchy in firms and the optimal number of markets pose the same problem. Just as the private sector consists of markets and hierarchies, so the public sector consists of governments and hierarchies. In democracy, the citizens elect the governments, so democratic states are hierarchies bounded by elections. Centralized states require fewer governments and more hierarchy, whereas decentralized states require more governments and less hierarchy.

I apply the problem of the optimal number of governments to intergovernmental relations. The constitution can prescribe separate governments for separate purposes, or the constitution can prescribe multi-purpose governments. Narrowing the scope of each government creates obstacles to bargaining across issues by political factions. Consequently, narrowing the scope of each government tends to replace bargaining over multiple issues with majority rule over each issue (median rule). When bargaining among political factions tends to fail and politics spins its wheels, a better constitution emphasizes many governments with narrow responsibilities. Conversely, when bargaining among political factions tends to succeed, a better constitution emphasizes few governments with broad responsibilities.

## **Part II. The Optimal Number of Governments**

According to the usual economic formulation, corporations are hierarchies bounded by markets (Coase 1937; Williamson ). Small firms require less hierarchy and more markets, whereas large firms require more hierarchy and fewer markets. For example, an automobile manufacturer can buy tires for its cars from another corporation or make tires in a subsidiary. Buying tires involves two firms using a market, whereas making tires involves one firm using hierarchical organization. The relative efficiency of buying or making a private good depends upon the relative efficiency of markets and hierarchies. The optimal hierarchy in firms and the optimal number of markets pose the same problem.

Just as the private sector consists of markets and hierarchies, so the public sector consists of governments and hierarchies. In democracy, the citizens elect the governments, so democratic states are hierarchies bounded by elections. Centralized states require fewer governments and more hierarchy, whereas decentralized states require more governments and less hierarchy. For example, the national assembly can direct the ministry of education to provide schools for all localities (centralized), or boards elected in each locality can provide local schools (decentralized). The relative efficiency of centralized and decentralized states depends upon the relative efficiency of hierarchies and elections. The optimal depth of hierarchy and the optimal number of governments pose the same problem.

Part II applies the principles of electing, bargaining, and administering developed in Part I to the problem of the optimal number of governments. Chapter 5 concerns intergovernmental relations, Chapter 6 concerns competition among governments, and Chapter 7 concerns ministries and state agencies. In theory, governments facing zero transaction costs will bargain to efficient agreements, regardless of the organization of intergovernmental relations. In reality, the organization of bargaining affects outcomes. Unanimity rule and majority rule are two ways to define threat values in bargaining among associated governments. Unanimity rule tends to cause holdouts, which weakens the bargaining position of governments that gain most from collective action by the association. Conversely, majority rule tends to enable a majority to shift costs to the minority, which weakens the bargaining position of governments excluded from the majority coalition in the association.

Breadth of purpose also affects bargaining among governments. The constitution can prescribe separate governments for separate purposes, or the constitution can prescribe multi-purpose governments. Narrowing the scope of each government creates obstacles to bargaining across issues by political factions. To illustrate, a constitution can separate the school board from the town council, or the constitution can merge them. Bargaining among factions over issues – say schools and police – is harder with separate governments than with merged governments. Consequently, narrowing the scope of each government tends to replace bargaining over multiple issues with majority rule over each issue (median rule).

When bargaining among political factions tends to fail and politics spins its wheels, a better constitution emphasizes many governments with narrow responsibilities. Conversely, when bargaining among political factions tends to succeed, a better constitution emphasizes few governments with broad responsibilities.

A unitary state replaces political bargaining with hierarchy. A single government with deep administration requires a steep hierarchy and few elections. Too many elections can drain the reservoir of civic spirit that animates voters, in which case the constitution should replace governments with hierarchies. Conversely, too deep administration dilutes democratic purposes and gives too much discretion to administrators, in which case the constitution should hierarchies with elected governments.

Democracy relies upon competition for office. Limited or missing forms of political competition include direct democracy and competition among governments. Direct democracy factors issues, inhibits bargaining, and allows the median voter to prevail on each dimension of choice. Mobility of citizens and stipulation of jurisdiction in contracts create competition among governments. Changes in the legal framework to induce more competition by facilitating direct democracy and choice of jurisdiction for local public goods.

## Chapter 5 Intergovernmental Relations

"The [US] federal system was created with the intention of combining the different advantages which result from the magnitude and the littleness of nations."-- Alexis de Tocqueville .<sup>1</sup>

"Think globally, act locally." –popular bumper sticker on cars in Berkeley, California.

Like a Bach fugue, states develop, dissolve, and reorganize around persistent themes. Western European nations fuse into the European Union, while ethnic groups within these nations try to secede. In the Americas, Mercosur in the south and NAFTA in the north emulate Europe's common market, while French nationalists struggle to secede from Canada. In Eastern Europe, new nations emerge as the communist block shatters. While these events grab headlines, novel governments with particular responsibilities quietly flourish, such as the World Trade Organization or a special district supplying water to several US counties.

Different states offer different models for answering positive and normative questions about allocating power among levels of government. Centralized states like France and Japan subordinate regions and localities to the national government, federal systems such as the United States and Switzerland reserve powers for the states or cantons, and confederations like the British Commonwealth and the Commonwealth of Independent States (former Soviet Union) provide a loose framework for cooperation.

I will approach the problem of "the magnitude and the littleness of nations" much like economists analyze corporations. As explained in the introduction to

Part II, corporations are hierarchies bounded by markets. For example, an automobile manufacturer can buy tires for its cars in the market or manufacturer tires in a subsidiary. The relative efficiency of buying or making depends upon the relative efficiency of markets and hierarchies.

Similarly, as explained in the introduction to Part II, democratic states are hierarchies bounded by elections. Decentralized states require more governments and less hierarchy, whereas centralized states require fewer governments and more hierarchy. For example, boards elected in each locality can provide local schools, which requires many governments and little hierarchy, or the national assembly can direct the ministry of education to provide schools for all localities, which requires one government and much hierarchy. The relative efficiency of centralized and decentralized states depends upon the relative efficiency of governments and hierarchies.

In market economies, successful firms expand and unsuccessful firms contract, so competition ideally produces the most efficient combination of small and large firms. In democratic politics, candidates and parties compete vigorously for office, but successful states do not automatically expand and unsuccessful states do not automatically shrink. To illustrate, if the state performs better in France than Germany, the boundary between them does not automatically move east. Under current conditions, democracy produces intensive competition for office, but competition does not automatically adjust

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<sup>1</sup>Alexis de Tocqueville, Democracy in America, Vol. 1 at 168 (Phillips Bradley, ed., New York: A.A. Knopf 1945), quoted in Wallace E. Oates, "Federalism and Government Finance," paper presented at

jurisdictional boundaries to secure what de Tocqueville called the “different advantages which result from the magnitude and the littleness of nations.”

When competition sorts winners from losers, institutions can evolve and improve by trial and error. Weak competition among jurisdictions, however, blunts competitive processes, so states must improve by design. This chapter analyzes the consequences of alternative designs for intergovernmental relations, including unanimity versus majority rule, single-purpose versus multi-purpose government, and redistributive transfers. My approach uses the technical character of public goods as the starting point for analyzing strategic behavior. I will address such problems as the following:

Example 1: In most countries, the central government provides the nation’s military defense and local governments provide city parks. What characteristics of “defense” and “city parks” help to explain this fact?

Example 2: A town holds a referendum to decide whether to govern local schools by the town council or a separately elected school board. What difference does the organization make to the predicted outcomes?

Example 3: Some member-states want the European Union to remain a loose confederation, whereas others favor relatively strong central government. Which alternative is more likely to give people the public goods that they prefer?

### **Character of State Goods**

The state directly supplies some goods and regulates the supply of others. I will relate the technical characteristics of goods to the best level of government for supplying them. Technical characteristics of goods can cause markets to fail (Arrow and Hahn 1971). Market failure provides the conventional economic justification for state supply and regulation of goods. Economic theory has analyzed the forms of market failure and proposed remedies for them. (Breyer



1982; Schultze 1977). Following this line of analysis, I will develop and criticize a conventional prescription for the best level of government to supply public goods.

## **Pure Public Goods**

To develop the theory of public goods, first recall their definition. *Pure* public goods are *nonrivalrous*, meaning that one person's enjoyment does not detract from another's. For example, military expenditures can provide security from invasion, and the security enjoyed by one citizen does not detract from the security enjoyed by another citizen.

Besides being nonrivalrous, pure public goods are *non-excludable*, which means that it is infeasible or uneconomic to exclude individuals from enjoying their benefits. For example, no resident of the US during the cold war was excluded from the benefit of deterring a Soviet missile attack. Similarly, no one is excluded from driving on local streets, presumably because collecting access fees is uneconomic.

When exclusion is infeasible or uneconomic, individuals have an incentive to free ride by not paying for public goods. Free riding prevents suppliers from earning a profit, thus precluding the private supply of public goods. The state can prevent free riding by collecting taxes to finance public goods. To prevent free riding completely, the state must tax everyone who benefits from the public good.

Everyone in the nation benefits from *pure* public goods. The central government can tax everyone in the nation more effectively than state or local

governments. These facts imply a prescription: *When a public good is pure or nearly pure, the central government should provide it.* This prescription is the beginning of the conventional theory of federalism, which I will explain and criticize.

### **Congestable Public Goods**

Instead of being pure, however, many public goods have local characteristics that influence the spread of benefits and the scope of free riding. Congestion is a local characteristic afflicting many impure public goods. To illustrate, as a park becomes crowded, one person's enjoyment of it detracts from another person's enjoyment. Similarly, one more commuter on a congested road slows down other commuters.

Supplying efficient quantities of congestable public goods requires information about their use. A local government usually has more information about local congestion of public goods than the central government. In addition, local residents can effectively monitor and discipline local officials. Local officials, consequently, have more information and better incentives than central officials for supplying many congestable public goods. These facts imply a second prescription: *When a public good suffers local congestion, local government should provide it.*

To illustrate, assume that a city neighborhood needs a small park for local residents. The local residents have the information to balance costs and benefits in siting and scaling the park. Local residents also have strong incentives to

monitor the officials responsible for creating and maintaining local parks. These facts favor assigning power over city parks to local governments. In contrast, assume that people from all over a nation could benefit from establishing a large park in the mountains. Responsibility for this park should fall upon officials who have a national political perspective.

### **Spillovers**

As explained, the distinction between pure public goods and congestable public goods motivates the conventional economic prescription for allocating responsibility between national and local government. Some public goods, however, do not fit into either of these categories. Water and air pose a special problem because they circulate in regions formed by natural contours such as rivers and mountains, which correspond imperfectly to political boundaries. Pollution, consequently, spills over from one government jurisdiction to another. Spillovers create an incentive for each government to free ride on pollution abatement by others.

To avoid free riding by localities, the government with primary responsibility for abatement should encompass the natural region effected by pollution. For example, a special district for controlling the pollution of a river basin may encompass all residents living along the river, regardless of their town, county, or state. These facts imply a third prescription: *When the effects of a public good or bad spill over jurisdictions, a special district should provide the good or control the bad.*

Special districts are more important than visible. For example, few residents of California know that their state contains over 5,000 special governments such as water districts, school districts, park districts, and transportation districts. The residents of a California special district typically elect a board of directors with the power to propose taxes for approval by the voters and spend revenues to pursue the special district's purpose. Later I discuss the proposal of two economists who envision special districts creating a European *market for governments* (Frey and Eichenberger 1995).

## Conventional Prescription

Figure 1 summarizes the three conventional prescriptions connecting the technical character of public goods to the best jurisdiction for supplying them. These three prescriptions reduce to one: *Assign power over public goods to the smallest unit of government that internalizes the effects of its exercise.*

Figure 1: Character of Public Goods			
<u>good</u>	<u>character</u>	<u>market failure</u>	<u>best jurisdiction</u>
pure public good	non-rivalrous & non-excludable	individuals free-ride on taxes	central government
local public good	congestable	localized congestion	local government
spillover	externality	localities free-ride on abatement	special district

### Questions

1. Make a list of five goods provided by different levels of government in a country of your choice. Use Figure 1 to predict the level of government that will provide each good most efficiently. Compare your predictions to reality.
2. Assume that government *must* set standards for building offices and wiring toasters. Argue that local government should set construction standards and central government should set wiring standards.

3. In the 1980s, the federal government in the US imposed water pollution standards on reluctant states, whereas the government of Europe allowed the European national governments more freedom to develop their own policies towards water pollution. Use Figure 1 to explain why water pollution on major rivers was typically worse in Europe than America at the time.
4. Discuss the difference between the central government pricing a spillover and regulating it (Revesz 1996).
5. Germany is privatizing telephone services and also taking the lead in creating a European currency. Make an economic argument for decentralizing telephones and centralizing currency.

### **Bargaining and the Character of State Goods**

The preceding prescription for allocating power to different levels of government seems antiseptic compared to the dirt and danger of politics. In reality the supply of public goods in a democracy responds less to efficiency and more to politics. To understand intergovernmental relations, I will apply some political principles developed in Part I.

Recall that the *Coase Theorem* asserts that players will bargain to an efficient allocation of resources provided that transaction costs do not impede the process. (See Chapter 3 for details.) Applied to intergovernmental relations, the Coase Theorem asserts that, when transaction costs are low, bargaining will correct the oversupply or undersupply of public goods. The organization of relations among governments does not matter to the efficiency of the outcome. *Assuming zero transaction costs of bargaining, the supply of public goods is efficient regardless of the number of governments.*<sup>2</sup>

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<sup>2</sup> Here is the equivalent proposition for the private sector: *With zero transaction costs of bargaining, the supply of private goods is efficient regardless of the number of markets.* The choice between markets and hierarchies only matters to efficiency because of transaction costs.

## Incentive Effects

In reality, the organization of bargaining affects its outcomes. To explain these effects, I first relate the technical character of public goods to the problem of bargaining among governments. The *internality* of an act refers to the cost or benefit enjoyed by the actor, whereas the *externality* refers to the cost or benefit conveyed by the act to non-actors (Schelling 1978). Internalities and externalities can be positive (good) or negative (bad). Figure 2 depicts the four possibilities.

Figure 2: Spillovers and Incentives			
		<u>externality</u>	
<u>internality</u>	<u>positive</u>	too little	too much
	<u>negative</u>	too little	too much

This chapter concerns intergovernmental relations. Consequently, I will interpret “internalities” in Figure 2 as effects of an act of government upon the people residing within its jurisdiction, and I will interpret “externalities” as *spillovers* from one jurisdiction to another. Under this interpretation, I will explain the cells in Figure 2.

Researcher in a state university may discover new ideas that profit the state (positive internality), and other states may profit from borrowing these ideas (positive externality). New ideas are a *boon* to everyone. Self-interested actors tend to under-supply boons that benefit themselves and spillover to benefit others.

When supplying water to residents (positive internality), a local government may degrade the water available in other localities (negative externality). Pollution is a harmful *byproduct*. Self-interested actors tend to over-supply products that benefit the actors and incidentally harm others.

Sometimes a rugged coastline without harbors requires a lighthouse. A local government that maintains a lighthouse bears its costs. If no ships dock within its jurisdiction, the residents of the local government gain little or nothing from the lighthouse. In such circumstances, maintaining a lighthouse is a beneficence. Self-interested actors undersupply a beneficence that costs them (negative internality) and benefits others (positive externality).

If an act produces positive and negative internalities, a self-interested actor will curtail the act to reduce the negative internalities. A self-interested actor, however, will not curtail the activity as much as required when taking account of the negative externalities. For example, a local government that removes water from a river for drinking probably considers the harm to local fishing within its jurisdiction (negative internality) more than the harm downstream in other jurisdictions (negative externality). Consequently, the southeast cell of Figure 2 is labeled “too much”.

### **Spontaneity and Organization**

According to this interpretation of Figure 2, a government tends to supply too little of a public good whose benefits spill over to other jurisdictions (a boon or beneficence), and a government tends to supply too much of a public bad whose

costs spill over to other jurisdictions (harmful byproduct). In this context, government “supply” refers to production directly by the state and to state regulation of private activity by its citizens.

When public goods or bads spill across jurisdictions and cause inefficiencies, everyone can benefit in principle from a remedy. The best remedy depends upon incentives created by the technical character of the public good or bad. Boons create coordination problems that people often solve spontaneously with little or no government organization. In contrast, byproducts and beneficence often create problems of cooperation whose solution requires organization. Sometimes a solution requires coercion. I will discuss coordination, cooperation, and coercion as alternative remedies to externalities.

### **Coordination**

Conflicting interests provide the usual obstacle to cooperation. In Chapter 3, however, I characterized pure *coordination games* in which the interests of the players converge perfectly. When interests converge perfectly, everyone who possesses the necessary information agrees about the best action. In pure coordination games, imperfect information provides the only obstacle to cooperation.

To illustrate, consider adhering to a common standard. As their economies entwine, adjacent towns benefit from adopting the same standard for weights (“metric system”) and time (“Paris time”). Similarly, a firm that adopts a common industrial standard may increase its profits (positive externality) and also increase the profits of other firms supplying peripheral products (positive



externality). In these examples, coordination increases the internality, so a common standard is a boon to everyone.

If coordination increases the internality, then behavior will tend to converge towards closer coordination. Convergence is spontaneous in the sense that unorganized actors voluntarily adopt the same behavior for their own advantage. Spontaneous convergence goes to the best result when the problem has a uniquely stable solution. When coordination games have multiple equilibria, however, spontaneity may converge on an inferior result. Obtaining a superior result may require organization and planning. Also, actors may disagree over the preferred standard because the one who must change will bear transition costs, or because someone owns the preferred standard and can charge its users.

To illustrate, the users of personal computers would benefit from adopting the same operating system, but obstacles to coordination include technical disagreements, transition costs, and ownership rights. Similarly, everyone in Europe would benefit from driving on the same side of the road, but Britain and the rest of Europe settled into different equilibria. A uniform standard requires someone (presumably Britain) to pay the costs of transition. The same argument applies to the different gauge of railroad track in France and Spain, or Russia and most of western Europe.

When coordination games have multiple equilibria, converging to the best equilibrium may require creating private or public organizations to exchange information. Thus countries and companies often organize conventions to

promulgate international standards for products in world trade. Similarly, the Commonwealth of Independent States (former Soviet Union) provides a framework for exchanging information among members without coercing them. In spite of obstacles, actors usually solve coordination games spontaneously or with non-coercive organizations (Sykes 1995); (Sykes 1996).

### **Cooperation**

I discussed boons in which the interests of different actors converge. For byproducts and beneficence, however, the interests of different actors diverge. Correcting the oversupply of harmful byproducts or the undersupply of beneficence requires cooperation, not just coordination. Cooperation typically requires bargaining among people whose interests partly converge and partly diverge. When bargaining each party tries to secure the cooperation of others, which is productive, on terms favorable to himself, which is distributive. In bargaining problems, distribution is the obstacle to production.

Bargaining typically involves costly negotiations. In bargaining among governments, the transaction cost of negotiating and the bargaining power of the parties depends partly on the constitution. For example, unanimity rule creates different incentives from majority rule, as I will explain.

### **Unanimity or Majority Rule?**

Laws made by the majority bind everyone in a typical democracy, whereas international treaties only bind those states that sign them. Unanimity rule is the strongest form of super-majority rule. So majority rule and unanimity rule define two poles of intergovernmental relations.

I apply the phrase *pure centralization* to a political system requiring a *national majority* of citizens or their representatives to make a law. By “centralization,” I mean that a national majority can dictate to the states or regions. Unitary states like France, Japan, and New Zealand approach pure centralization. I apply the phrase *pure decentralization* to a political system requiring *unanimity* among separate states to make a law. Examples of pure decentralization include the European Union when operating under the original rules of the Council of Ministers.

Unlike the two pure types, *federalism* often mixes unanimity and majority rule, depending upon the type of law. To illustrate, the US constitution reserves some powers for the states, so harmonization of laws in these areas requires unanimous agreement, whereas a majority in the federal legislature can impose laws on the states in other areas. As another illustration, when Canada “repatriated” its constitution in 1992, it sought unsuccessfully the agreement of all its provinces, whereas the federal legislature follows majority rule.<sup>3</sup>

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<sup>3</sup> Until 1982, the Canadian constitution was merely an 1867 Act of the British Parliament which defined the respective rights of, and the division of powers between, the Canadian federal and provincial governments. It was binding on the federal government and Canadian provinces. The constitution was repatriated in 1992 by acts of the British Parliament and Canadian federal government. All of the Canadian provinces and the federal government agreed to the repatriation except for the province of Quebec, which has still not given its formal consent to the repatriation or to the Canadian Charter of Rights and Freedoms. Although Quebec's formal consent was not required, and Quebec is subject to the Canadian Constitution Act 1982 and the Charter of Rights and Freedoms, attempts to persuade Quebec to agree to a

Assuming zero transaction costs of political bargaining, the Coase Theorem predicts an efficient supply of public goods under decentralized or centralized politics.<sup>4</sup> The Coase Theorem, however, is the beginning and not the end of analysis. Political bargaining consumes time and provokes strategic behavior, so transaction costs are high. A realistic analysis concerns the effects of centralization and decentralization upon the transaction costs of bargaining.

#### Unanimity and Holdouts

In Chapter 3 I asserted that a switch from unanimity to majority rule reduces transaction costs. The transaction costs of bargaining increase geometrically with the number of bargainers. So unanimity-rule *paralyzes large organizations and majority-rule animates them*.

As an organization grows, it may switch from unanimity to majority-rule in order to avoid paralysis. For example, as more countries join the European Union, the Council of Ministers increasingly follows majority-rule rather than its original unanimity-rule. (See Chapter 7.) Similarly, switching from unanimity to majority-rule may make an organization more willing to accept new members. For example, the shift towards majority-rule makes the Council of Ministers more willing to accept new countries into the European Union.

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further amended new constitution have been ongoing since then. My thanks to Bradley J. Freedman for this information.

<sup>4</sup> Technical qualification: Given strong “income effects,” substitute “efficient” for “same” in this prediction. For details, see Cooter, Robert. 1987. The Coase Theorem. In *The New Palgrave*, edited by J. Eatwell, M. Milgate and P. Newman. New York: Stockton Press..

A successful federal system with unanimity-rule must have few members, whereas a successful federal system with majority-rule can have many members.<sup>5</sup> In general, *a shift from unanimity-rule to majority-rule increases the optimal number of governments in a federal system.*

I explained in Chapter I that the Coase Theorem simplifies reality by treating strategy as part of the transaction costs of interaction, whereas a more satisfactory approach explicitly models strategy. Now I will use strategic theory to explain why unanimity-rule paralyzes a large organization.

As a coalition grows, each player who joins demands a fraction of the resulting increase in the coalition's value as the price of cooperation. With increasing returns to the scale of a coalition, the last member to join increases the coalition's value more than previous members, so the last member to join can demand the best terms. Everyone who recognizes this fact has an incentive to hold out in order to join the coalition last.

This proposition applies to bargaining among governments under unanimity-rule. Unanimity-rule makes each government decisive for collective action. Assume that collective action is more efficient than individual action, so returns to the scale of a coalition increase sharply as the last government joins. Each government who recognizes this fact has an incentive to hold out and join

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<sup>5</sup> Perhaps the only institution of modern western government that formally operates by a unanimity rule is the jury. However, some Japanese say that their government proceeds by consensus, some Poles cherish memories of its tradition 'liberum veto' system, and some business of the United Nations is conducted by a consensus technique under the direction of the Secretary General (so-called 'consensus resolutions' under Art.10 of the U. N. charter.)

the coalition last, in order to extract the best terms. *In general, increasing returns to the scale of cooperation among regional or local governments creates a problem of holdouts.*

To illustrate, assume that 5 local governments have jurisdiction over segments of a lake's shore. The 5 governments want to use the lake for recreational swimming, which requires all of them to stop polluting. The governments negotiate to distribute abatement costs. An agreement among any 4 governments is worthless without participation by the 5th government, so returns to the scale of cooperation increase sharply when the 5th member joins the coalition. If any 4 governments reach a tentative agreement, the 5th government can refuse to cooperate unless the others pay most its abatement costs. Any government, however, could be the 5th government to agree. Recognizing this fact, all 5 governments may hold out, which paralyzes abatement efforts, and so the lake remains polluted

In reality, small groups solve the problem of holdouts under unanimity-rule, whereas large groups cannot solve it.

### **Majority and Stampedes**

Having explained why unanimity-rule paralyzes large organizations, now I will explain why majority-rule animates them. Majority-rule creates competition to become the decisive member in a majority coalition. To illustrate, in an assembly of 101 persons, a coalition of 51 members forms a majority. To form a majority coalition, a minority coalition of 50 members must attract one additional member. Instead of holding out and risking exclusion, many of the 50 outsiders

may hasten to join the majority coalition. In general in a democratic assembly with  $1+n$  seats, people compete to join a coalition of  $n/2$  members in order to share in the advantages of power.

To illustrate by the preceding example, assume that 5 local governments form a council with the power to impose a pollution abatement program on its members by majority vote. A coalition of 3 local governments can impose an abatement plan on the other 2., including making the outsiders pay a disproportionate share of abatement costs. A minority coalition with 2 members must attract an additional member to create a majority coalition. The 3 players outside this coalition may want to join in order to avoid being excluded from power. Competition to become the decisive member of the majority coalition can prevent holdouts and sometimes provoke a stampede.

The switch from unanimity to majority-rule typically solves the problem of holdouts in a large organization, and creates many new problems. By facilitating collective action, majority-rule enables the governing coalition to do more good or more bad. Contests over distribution exemplify the bad. The members of the governing coalition may provide local public goods for themselves and tax non-members disproportionately. In general, *central provision of local public goods creates opportunities for rent-seeking that increases with the size of the state* (Persson and Tabellini 1994).

Rent seeking is stable when a persistent majority redistributes wealth to itself. Conversely, rent seeking is unstable when majorities cycle. I explained in Chapter 3 that majority-rule games of distribution with symmetrical players have

an empty core. The practical implication of this fact is that rent seeking can undo itself and cycle.

To illustrate, consider the example of a counsel of 5 local governments that can impose a pollution abatement program on its members by majority vote. Assume that a coalition of 3 local governments makes a plan requiring the other 2 local governments to pay most abatement costs. Each of the 3 local governments in the majority coalition can credibly threaten to quit if it does not receive a disproportionate share of the coalition's value. These considerations may destabilize any potential coalition. Overcoming the instabilities of majority-rule requires natural affinities and specific institutions discussed in previous chapters, such as political parties.

### **Terms**

I have discussed how centralization and decentralization affect the likelihood of successful bargaining. Now I consider how centralization and decentralization affect the terms of an agreement. The terms of an agreement depend upon the bargaining power of the parties. Bargaining power depends upon the consequences of bargaining failure. If bargaining fails, each party must do its best without cooperation from the others. The parties who benefit least from cooperation have the most bargaining power. (See the discussion of the Nash bargaining solution in Chapter 3.)

How well each party can do on its own without the cooperation of others depends upon the collective action rule. First consider unanimity-rule. Failed bargaining under unanimity-rule paralyzes collective action. Consequently, *when*



*bargaining under unanimity-rule, the regions and localities with least need for cooperation can demand the best terms.* To illustrate, upstream jurisdictions have less need for cooperation in controlling water pollution than downstream jurisdictions. When bargaining under unanimity-rule, the upstream jurisdictions can extract favorable terms of cooperation from the downstream jurisdictions. In a regional plan to abate pollution, unanimity rule causes the downstream jurisdictions to pay a disproportionate share of abatement costs.

Now consider a change from unanimity-rule to majority-rule. With centralization, a national majority can impose its will on the minority. When governments bargain, they recognize that failure to agree will result in the majority imposing on the minority. Bargaining strength lies with the potential members of a majority coalition. When *bargaining under majority-rule, the regions and localities inside the national coalition can demand the best terms of cooperation from outsiders.*

To illustrate, return to the example of bargaining over a regional plan to abate pollution. Assume that downstream jurisdictions, which outnumber upstream jurisdictions, form a majority coalition. Under these assumptions, the downstream jurisdictions can extract very favorable terms from the upstream jurisdictions. The final agreement will require the upstream jurisdictions to pay a disproportionate share of abatement costs. In this example, the downstream jurisdictions benefit from majority-rule, whereas the upstream jurisdictions benefit from unanimity-rule.

In general, *a change from unanimity to majority-rule transfers bargaining power from the parties who need collective action least to the parties inside the national coalition.*

### **Questions**

1. Predict some consequences of changing from unanimity-rule to majority-rule in Europe's government.
2. Use the Coase Theorem to explain why the state must supply some lighthouses. Assume that a federal government consists of 5 peripheral governments that border on the ocean and 10 peripheral governments without coastline. Contrast the consequences of majority-rule and unanimity-rule for the number of lighthouses and their financing.
3. Explain why computer software flourishes without government standards to assure the compatibility of different products.
4. The central government or peripheral governments can provide social insurance in federal systems. A recent study concluded that centralized social insurance chosen by voting provides over-insurance relative to the standard of economic efficiency, whereas an intergovernmental transfer scheme chosen by bargaining provides under-insurance (Persson and Tabellini 1996). What might cause this result?

## **Instruments of Central Control**

I have contrasted centralized decisions subject to national majorities and decentralized decisions requiring regional or local unanimity. Now I will discuss how central governments can influence peripheral governments through money grants and orders.

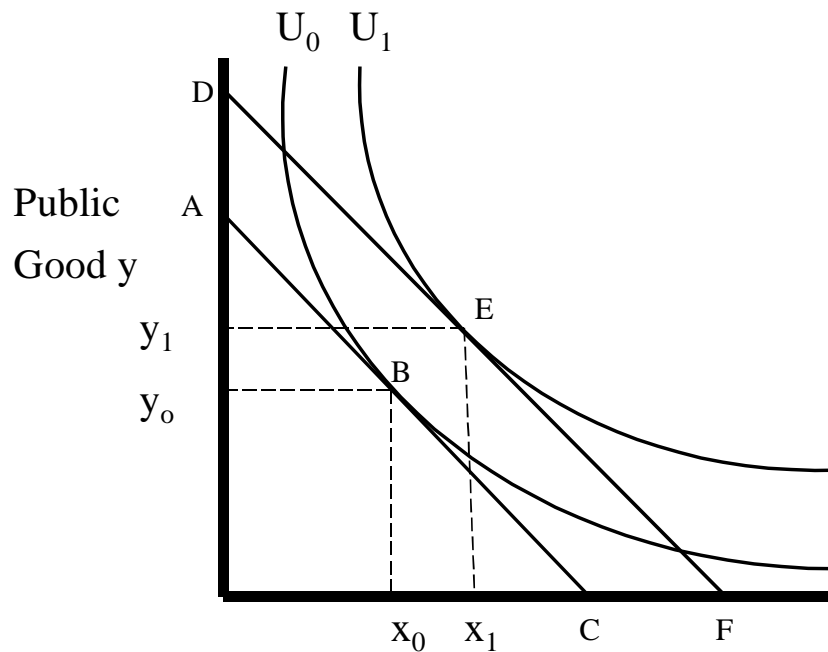
### **Block Grants, Tied Grants, Matching Grants**

Central governments collect taxes and allocate some funds for peripheral governments to spend, possibly with "strings attached." *Block grants* are funds given to peripheral governments to spend in any way they wish, with no strings attached. Block grants thus give the recipient discretion in using the funds. In contrast, strings are attached when the central government makes the grant's amount depend upon its use. Strings may take the form of *tied grants that*

require the recipient to spend funds for a particular purpose, or *matching grants* (subsidies) that augment the recipient's own expenditures on specific items.

What difference do strings make to the actual pattern of expenditures by recipients? Economics provides a simple answer, which I explain with figures. Assume that a peripheral government has consistent preferences over public goods  $x$  and  $y$ , as depicted by the indifference curves  $U_0$  and  $U_1$  in Figure 3. Initially, the peripheral government, which receives no funds from the central government, faces a budget constraint indicated by line  $AC$ . The peripheral government initially chooses the combination of public goods corresponding to point  $B$ , where  $AC$  is tangent to  $U_0$ . At point  $B$ , the combination of goods is  $(x_0, y_0)$ .

Figure 3: Block Grant



Now consider the consequences of a block grant from the central government to the government depicted in Figure 3. A block grant, which the peripheral government can spend as it wishes, shifts the budget line up from AC to DF. The slope of the budget line does not change because the block grant does not change the relative prices of goods  $x$  and  $y$ . Given the budget line DF, the peripheral government chooses point E, where DF is tangent to  $U_1$  and the combination of goods is denoted  $(x_1, y_1)$ . Thus a block grant causes the consumption of public goods to shift from  $(x_0, y_0)$  to  $(x_1, y_1)$ . In general, *block grants to peripheral governments change their expenditures on public goods*.<sup>6</sup>

Instead of a block grant, assume that the central government ties the grant to the purchase of public good  $x$ . Tying requires the peripheral government to use all the grant money to purchase good  $x$ . The horizontal line segment AG in Figure 4 represents the tied grant, which must be spent to purchase good  $x$  in the quantity  $x_b$ . After exhausting the grant, the peripheral government can use its own funds to buy more of good  $x$  or good  $y$ . The line segment GF represents combinations of  $x$  and  $y$  from which to choose. Thus the tied grant creates a budget line with a kink, as given by line AGF.<sup>7</sup>

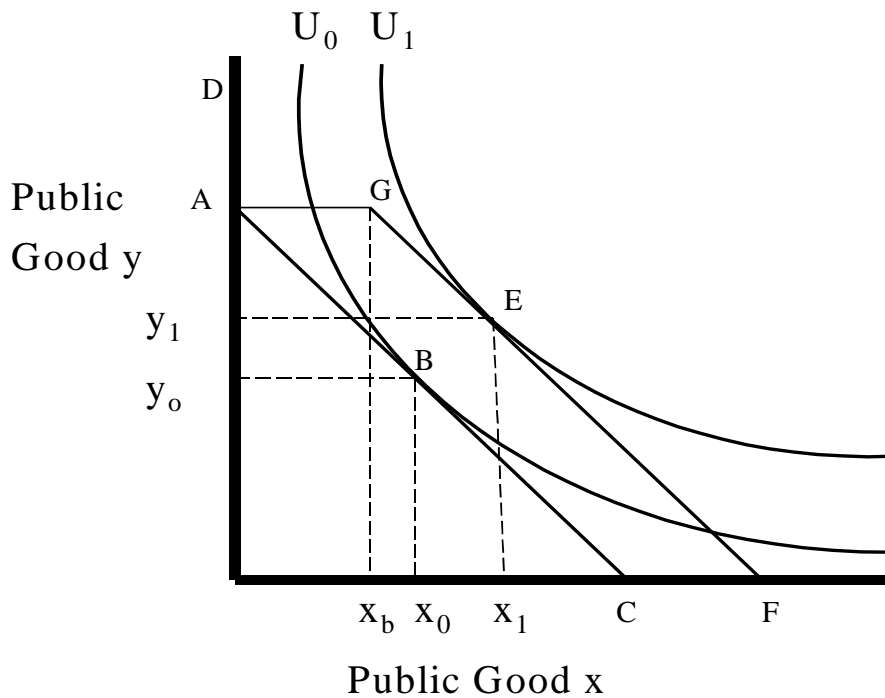
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<sup>6</sup> Block grants can also stimulate reductions in local taxes, with no change in expenditure on public goods. This outcome, however, is unlikely in practice.

<sup>7</sup> Let  $g$  denote the grant tied to good  $x$ . Let  $I$  denote the peripheral government's income. Let  $p_x$  and  $p_y$  represent the price of  $x$  and  $y$ , respectively. The kinked budget line is given by

$$\begin{aligned} I &= p_y y & \text{for } g > p_x x \\ g + I &= p_x x + p_y y & \text{for } g \leq p_x x. \end{aligned}$$

Figure 4: Tied Grant



Given the kink in the budget line  $AGF$ , the peripheral government chooses point  $E$ , where  $AGF$  is tangent to  $U_1$  and the combination of goods is denoted  $(x_1, y_1)$ . Thus the tied grant in Figure 4 causes the same consumption of public goods as the block grant in Figure 3. Tying funds is ineffective in Figure 4 so long as the budget line is tangent to an indifference curve at a point beyond the kink. Beyond the kink, the peripheral government supplements the tied grant with its own funds to purchase more of the tied good. In general, *tied grants have the same effect as block grants of equal value so long as the peripheral government uses some of its own funds to purchase the good to which the grant is tied.*

Instead of a block grant or a tied grant, assume that the central government gives a matching grant to purchase good x. In other words, the central government uses its funds to match a given percentage of the peripheral government's expenditure on good x. In contrast to good x, the peripheral government must use only its own funds to purchase good y. Thus a matching grant lowers the relative price of the matched good for the recipient. The fall in price causes the peripheral government to purchase more of the matched good. In general, *matching grants increase consumption of the matched good more than block grants or tied grants of the same magnitude* (Oates 1972).

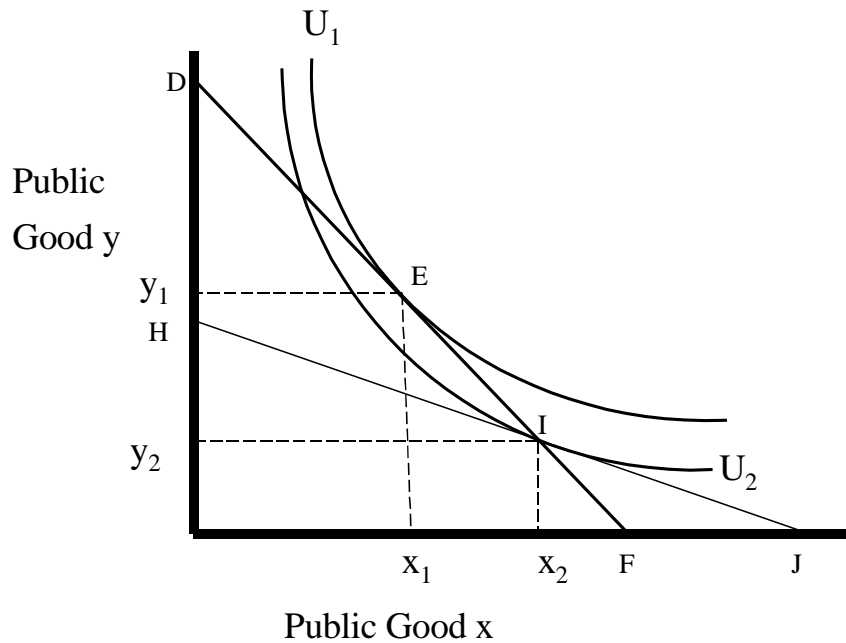
With a matching grant, the central government conditions the size of the subsidy upon the amount of its own money that the peripheral government spends on the matched good. The peripheral government would prefer to have money unconditionally rather than conditionally. In general, *block grants satisfy the preferences of the recipient more than matching grants of the same magnitude*.

To illustrate, Figure 5 compares a block grant and a matching grant, holding constant the total subsidy paid by the central government to the peripheral government. The peripheral government's budget line is DF under the block grant, which causes the peripheral government to choose point E. Now consider the consequence of changing from a block grant to a matching grant. The slope of DF indicates the relative price to the peripheral government of buying the two public goods. A matching grant changes relative prices. Let HJ indicate the peripheral government's budget line under the matching grant, which

causes the peripheral government to choose point I. Thus a shift from block grant to matching grant causes the peripheral government to shift from point E to point I.

Notice that points I and E are on the budget line DF, so the total subsidy paid by the central government is the same for the block grant and the matching grant. However, the shift from block grant to matching grant causes an increase in the matched good from  $x_1$  to  $x_2$ , and a decrease in the unmatched good from  $y_1$  to  $y_2$ . Also, the shift from block grant to matching grant causes a fall in the peripheral government's utility from  $U_1$  to  $U_2$ . In general, matching grants cause more consumption of the matched good and less satisfaction by the recipient government than block grants of equal value.

Figure 5: Matching Grant



### Stability

I distinguished pure centralization under majority rule and decentralization under unanimity rule. In practice, intergovernmental relations typically mix unanimity-rule for some decisions and majority-rule for others. Mixed systems provide room for dispute over centralization and decentralization. The same group of people may form a permanent minority in a federal system and a permanent majority in a peripheral government. In general, *a permanent minority in federal government with a permanent majority in a peripheral government typically exerts pressure for decentralization.*

To illustrate, French-speakers are a minority in Canada and a majority in Quebec. Independence from Canada for Quebec would increase the power of its



officials, who press for decentralization. (Better to be prime minister of a country than governor of a province.) Similarly, the Flemish induced Belgium to create regional Parliaments corresponding to the major ethnic divisions.<sup>8</sup> (Better to be leader in the Flemish parliament than a follower in the Belgian parliament.)

Conversely, if a majority coalition emerges as a stable winner at the national level, it can use central government authority to redistribute power and wealth towards its members. Thus a stable national majority coalition stands to gain by centralizing power. In general, *a stable national coalition exerts pressure for centralization in a mixed system.*

To illustrate, for many years the Democratic Party and the Republican Party have alternated in controlling the US federal government. The predictable success of these parties creates pressure from their leadership for centralization. Thus the US Constitution gives federal authorities the power to regulate interstate commerce (Article I, Section 8). Over the years, federal authorities have increased their control by expanding the interpretation of this clause from the channels of interstate commerce (e.g. rivers for steamboats, railway lines), to goods in interstate commerce (e.g. wheat, automobiles, lottery tickets), and finally to whatever affects interstate commerce (e.g. farming, manufacturing).<sup>9</sup> Resistance to centralization of power in the US especially comes from the

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<sup>8</sup> Belgium has four Parliaments representing the nation, Brussels, Wallonie (French), and Flanders (Flemish). French speakers traditionally dominated in national government. Now, however, the Flemish are a majority. Even so, Flemish nationalists prefer to govern a Flemish nation rather than governing Belgium.

Southern states that historically formed a permanent minority in the federal system.

### **Questions**

1. Predict differences in the effects of tied grants and matching grants for improving public transportation such as subways.
2. A central government agency that wants to increase automobile safety must choose between a design standard and a performance standard for brakes. The design standard requires installing anti-lock disk brakes on all new cars, whereas the performance standard requires all new cars to pass a test of braking effectiveness. Compare the efficiency of these two kinds of regulations.
3. State the economic interpretation of the principal of subsidiarity. Does the economic formulation exhaust its meaning?

### **Comprehensive Or Single-Purpose Government? Horizontal Divisions**

Centralizing and decentralizing concerns the vertical allocation of power among governments at different levels. Now I turn to the horizontal allocation of power among governments at the same level. Decisions can be made in one government with broad jurisdiction or in several governments with narrow jurisdiction. For example, the town council can control police and schools, or the town council can control police and a separately elected school board can control schools. Changes can be dramatic as in New Zealand where 466 local authorities were amalgamated into 7 in 1989 [Memon, 1993 #5958]. I will contrast multi-purpose government and single-purpose government.

### **Splicing and Factoring**

Broad jurisdiction *splices* independent issues together like the strands of a rope. In contrast, narrow jurisdiction *factors* politics into independent issues like a mathematician dividing a large number into prime numbers. What difference

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<sup>9</sup> The steady expansion of the definition of interstate commerce was stopped, at least temporarily, in *U.S. v. Lopez*, 115 S. Ct. 1624 (1995), which held that regulating guns near schools is not a proper exercise of the commerce clause.

does it make whether jurisdiction is spliced or factored? I answer this question using the analysis from Chapter 2 that contrasts voting on single and multiple dimensions.

Splicing widens the scope for bargaining by lowering the transaction costs of political trades. Politicians often bargain successfully by combining issues and “rolling logs.” Just as people benefit most from trading widely in markets, so political factions benefit most from bargaining widely in politics. Splicing has the advantage of increasing the surplus realized by political cooperation.

Splicing also has a disadvantage. Assume that voters’ preferences are single-peaked in one dimension of choice (x-axis), and also single peaked in another dimension of choice (y-axis). Given these assumptions, voting separately on each issue gives the median as the unique winner on each dimension of choice. The same voters’ preferences, however, may be double peaked on a curve in two-dimensional space. Given this assumption, voting in two dimensions cycles. In this example, factoring yields the median rule and splicing yields intransitivity. In general, splicing increases the probability of cyclical voting.

To conclude, splicing facilitates bargaining across issues, and successful bargaining across issues satisfies the preferences of voters more completely than allowing the median voter to prevail on separate dimensions of choice. But, if bargaining fails, splicing increases the probability of cycling, whereas factoring allows the median voter to prevail on separate dimensions of choice. Median rule on separate dimensions of choice often satisfies the preferences of voters more efficiently than an unstable contest of

distribution. Single-purpose government is like a safe stock with a modest yield, whereas multi-purpose government is like a risky stock that pays a lot or nothing.

### **Example: City Council and School Board**

To illustrate these facts, assume that expenditure on police and schools are the two major political issues in a small town. First consider a town council that decides both issues (spliced). The council provides a forum for bargaining and cooperating. If bargaining succeeds, council members who care intensely about police may trade votes with council members who care intensely about schools, so that each one gets what it wants most. If bargaining fails, the council members may waste resources in an unstable contest of distribution.

Second consider a town council that controls police and a separately elected school board that controls schools (factored).<sup>10</sup> Factoring denies a forum for bargaining and cooperating over the two issues. With single-peaked preferences, the median voter prevails on each dimension of choice.

Figure 6 sharpens the example with numbers. Assume that voters in a town are divided into equal numbers of liberals, conservatives, and moderates. Expenditure can be high or low for schools and police, with the resulting net benefits for each group of voters indicated in Figure 6.<sup>11</sup> The liberals intensely prefer high expenditures on schools and mildly prefer the savings in taxes from low expenditures on police. The opposite is true of conservatives, who intensely

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<sup>10</sup> Another way to factor is by allowing the citizens to vote directly on expenditures for schools and police, with the two issues separated on the ballot.

prefer high expenditures on polices and mildly prefer the savings in taxes from low expenditures on schools. The moderates mildly prefer the tax savings from low expenditures on police and schools. The row labeled “total” indicates the sum of net benefits to the three groups.

**Figure 6: Voters’ Net Benefits**

	<u>school expenditures</u>		<u>police expenditures</u>	
	<u>low</u>	<u>high</u>	<u>low</u>	<u>high</u>
liberal	0	11	1	0
conservative	1	0	0	11
moderate	2	0	3	0
total	3	11	4	11

Assuming majority-rule, contrast the consequences of splicing and factoring issues in Figure 6. If the issues are factored, then 2 out of 3 voters (conservatives and moderates) vote for low expenditures on schools, so factoring results in low expenditures on schools. Furthermore, 2 out of 3 voters (liberals and moderates) also vote for low expenditures on police, so factoring results in low expenditures on police. Thus factoring results in low expenditures on schools and police.

If issues are spliced, the voters must choose among 4 combinations of public goods depicted in the columns of Figure 7. The net benefits to voters depicted in Figure 7 are calculated from the numbers in Figure 6. For example, (low,high) indicates low expenditure on schools and high expenditure on police,

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<sup>11</sup> **Error! Reference source not found.** implicitly assumes additive separable utility functions for each group, so any group’s total utility equals the sum of its utility on each of the two issues.

which results in a payoff of 0 for liberals, 12 for conservatives, and 2 for moderates.

Figure 7: Voter Net Benefits from Combinations of Public Goods

<u>Expenditures on Schools and Police, Respectively</u>				
	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
	<u>(high,high)</u>	<u>(low,low)</u>	<u>(high,low)</u>	<u>(low,high)</u>
<u>liberal</u>	<u>11</u>	<u>1</u>	<u>12</u>	<u>0</u>
<u>conservative</u>	<u>11</u>	<u>1</u>	<u>0</u>	<u>12</u>
<u>moderate</u>	<u>0</u>	<u>5</u>	<u>3</u>	<u>2</u>
<u>total</u>	<u>22</u>	<u>7</u>	<u>15</u>	<u>14</u>

The numbers in Figure 7 can be used to deduce the winner in a vote between any two alternatives. If voters simply vote their preferences in Figure 7, without bargaining or trading, then an intransitive cycle results. Specifically, 2 of 3 voters (liberal and conservative) prefer (high,high) rather than (low,low). 2 of 3 voters (conservative and moderate) prefer (high,low) rather than (high,high). 2 of 3 voters (liberal and moderate) prefer (high,low) rather than (low,high). And, finally, 2 of 3 voters (conservative and moderate) prefer (low,high) rather than (high,high). Thus voting in Figure 7 results in an intransitive cycle.

Figure 6 and Figure 7 illustrate the general principle that splicing dimensions of choice can cause intransitivity where none exists on any single dimension of choice. Instead of simply voting their preferences, however, splicing may cause the voters to bargain with each other and cooperate. Since liberals care more about schools than police, whereas conservatives care more about police than schools, they could profitably trade votes. A platform calling for high expenditure on schools and police allows the liberals and conservatives to

get what they want on the issue that each one cares the most about, as required for efficiency.<sup>12</sup> Stabilizing such an agreement requires the parties to abandon the majority-rule game of distribution, which has no core,<sup>13</sup> and cooperate with each other.

Whether comprehensive government and single-purpose governments satisfy the preferences of political factions better depends upon the ability of politicians to cooperate. In general, *splicing increases the gains from cooperation and factoring issues decreases the losses from conflict*. Finding the optimal number of governments requires balancing these considerations. These facts suggest the prescription, “Splice when cooperation is likely and factor when conflict is likely.”

#### Questions

1. Suppose the population of a town is heterogeneous, consisting of several distinct cultures and ethnic groups. When does heterogeneity commend factoring jurisdictions, and when does heterogeneity commend splicing jurisdictions?
2. Assume that the legislature faces a choice in its rules. Either the whole legislature can decide all issues, or the legislature can delegate decisions on specific issues to specific committees. Apply the analysis of factoring and splicing to determine the optimal committee structure.

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<sup>12</sup> Cost-benefit efficiency requires choosing the level of expenditures that maximizes the sum of net benefits, which occurs with high expenditures on schools and high expenditures on police.

<sup>13</sup> Since the voters preferences form an intransitive cycle, any coalition formed simply by trading votes in **Figure 7** is dominated by another coalition (empty core). For example, a liberal-conservative coalition to obtain (high,high) is dominated by a liberal-moderate coalition to obtain (high,low); a liberal-moderate coalition to obtain (high,low) is dominated by a conservative-moderate coalition to obtain (low,low); and so on. Thus the liberal-conservative coalition might not prove stable. To guarantee its stability, the parties would need the ability to make side-payments. With side-payments, the liberal-conservative coalition dominates other possible coalitions, and no possible coalition dominates the liberal-conservative coalition.

## **Summary and Conclusion**

I have approached intergovernmental relations as a problem of bargaining among governments. If political bargaining were costless and always succeeded, then governments would always cooperate to supply efficient quantities of public goods. With zero transaction costs, any number of governments is optimal. In reality, however, political bargaining is costly and sometimes fails. Consequently, the optimal number of governments minimizes the transaction costs of political bargaining required to secure cooperation in supplying public goods.

According to the conventional prescription, power over public goods should be assigned to the smallest unit of government that internalizes the effects of its exercise. In contrast, a strategic approach emphasizes the politics of bargaining. A unanimity rule creates a problem of holdouts in large organizations and gives bargaining power to the parties who need collective action least, whereas majority-rule can create a contest of distribution and gives bargaining power to the majority coalition. Multi-purpose government facilitates comprehensive bargaining, whereas single-purpose governments prompts median rule.

Central governments use various instruments to influence peripheral governments. Tied grants and block grants have much the same effect, whereas matching grants cause relatively more consumption of the subsidized good. Central laws that dictate ends and not means (directives) allow peripheral governments to use local information when implementing policy, whereas central



laws that dictate means (regulations) require central authorities to possess extensive local information.

Centralizing creates one government with deep bureaucracies, whereas decentralizing creates many governments with shallow bureaucracies. In this chapter, I analyzed principles for organizing intergovernmental relations. In the next chapter, I analyze relations between governments and bureaucracies.

