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Fiscal federalism and redistributive politics

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Abstract

We consider the interaction between redistributive politics at central and local levels in a federal system, and characterize the factors influencing success in redistributive politics in both federal and unitary systems. We examine how the political characteristics of different states and groups give them better or worse outcomes in a federal system as opposed to a unitary system. We examine possibilities of multiple equilibria with divided government between the two layers. We analyze the choice between block grants and matching grants. We also examine the impact of federalism on the incentives for geographic mobility. © 1998 Elsevier Science S.A.

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1. Introduction

The political process redistributes income among groups using a variety of tax, transfer and expenditure programs. In a federal governance structure with multiple layers of jurisdictions there is a theoretical or normative case for keeping redistribution purely at the highest (central) level of government. But in practice the lower tiers have access to many policy instruments that have redistributive consequences. Then the policies of the various levels of government interact, and the observed distribution must be understood as the outcome of such interaction.

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Our aim in this paper is to explore this issue. In other words, we contribute to the positive political economy of fiscal federalism.

Federalist fiscal politics has become important on both sides of the Atlantic in recent years. In the United States, many programs that were formerly directly administered and financed by the Federal government are being transferred to the states. Central financing in the form of block grants will continue, but states will have considerable powers to decide the specifics. The states can also rearrange their own budgets, diverting the money they would have spent on programs receiving subsidies from the central government to other uses. Therefore the ultimate effect or “incidence” of the program can be quite different from the original intent of the Federal block grant. In the European union, there are numerous funds that transfer money among the member countries – the Common Agricultural Policy is the largest, but there are various regional and industrial development plans. Each member country can then choose its own national budget and economic policies in its own national interest, perhaps undoing some of the intended effects of the union-level policymakers.

These interactions between the policies at the central and local levels have an important asymmetry: redistribution at the central level affects the resources available to redistribute at the local level, but not vice versa. Net interregional transfers change the size of the resource base available for each local government to tax or transfer within its jurisdiction. In contrast, income redistributed at the local level does not remove resources from the central governments jurisdiction.¹

Redistribution has an ideological (egalitarian) dimension as well as a tactical (electoral politics) dimension. The former is a central point of contention between the major political parties in most settings. However, the latter dimension is perhaps an even more important element of everyday politics: redistribution that is used to solidify the support of biddable groups of voters who have weak ideological attachments to the parties and whose support is pivotal for winning elections. Such groups receive bipartisan generosity as political parties with very different ideologies seek to outbid one another for their support. For example, in national politics farmers get subsidies and price supports, senior citizens get health care, and defense companies and workers get lucrative government contracts. In urban politics the streets of electorally key neighborhoods receive priority attention after blizzards, and frequent police patrols after dark. Such “tactical” redistribution is our focus here.²

¹Of course income redistribution at either the local or the central level may alter incentives, so that policies creating dead weight losses at the either level reduce the entire tax base, restoring some symmetry to the relationship. Here we focus on redistributive effects that persist even when efficient tax instruments are available.

²For a model where income distribution is itself a component of the voters’ and the parties’ ideology, see Dixit and Londregan (1998).

2. Relation to the literature

There is a vast literature on the politics and the economics of fiscal federalism. Much of this takes a normative approach, and attempts to find the socially optimal assignment of different economic policies to the different tiers of government. Some recent positive analyses examine the economic and political equilibria under alternative assignments. Here we mention a few selected items in order to clarify the relation of our paper to this earlier work.

1. Centralized decision-making can better exploit economies of scale in the provision of public goods, and can better internalize spillovers across local jurisdictions. Important contributions on these issues include Weisbrod (1964); Williams (1966); Oates (1972); Starrett (1980). Gordon (1983) is the most general synthesis showing how central policies can improve upon an inefficient Nash equilibrium among localities. Our analysis is also concerned with interactions among the different tiers, but the subject is redistribution of private consumption, and the central tier is not a benevolent social-welfare-maximizer but a political process.
2. The center's policies can provide insurance to the localities against idiosyncratic risk subject to the usual informational constraints (moral hazard and adverse selection). These issues are analyzed by Persson and Tabellini (1996), (1997); Bordignon et al. (1996). Since insurance involves state-contingent transfers and therefore redistribution, these models are more closely related to our paper. However, to focus on issues of risk-sharing, they make some simplifying assumptions about politics. Their governments are either social-welfare maximizers or reflect the preferences of the median voter (subject to the appropriate information constraints). Our focus is on the tactical political game where parties bid for the support of swing voters; therefore we ignore issues of risk and spell out the political game in greater detail.
3. Localities can better serve variations of tastes for public goods. This analysis goes back at least as far as Tiebout (1956); Oates (1972), and focuses on the role of location choice and mobility across jurisdictions. Migration to take advantage of redistributive benefits available in some localities remains an important question in our analysis, too. However, tractability of the model has thus far forced us to limit the analysis of mobility. We set out the main model assuming that individuals cannot move from one local jurisdiction to another. Then we examine their incentives to move away from the initial equilibrium without mobility, but do not determine the equilibrium with full mobility. We find that politically motivated mobility may be Pareto worsening. While we hope to improve upon this analysis in future work, the model as it stands seems especially appropriate for the European Union, where labor mobility is very limited in practice even though it may be nearly free in law.
4. Some work in the transaction cost framework has examined which jurisdiction can better economize on such costs in different kinds of transactions and

policies; see Breton and Scott (1978); Inman and Rubinfeld (1993). While economists have concerned themselves with the optimal division of powers between the two tiers of government, political scientists have recently examined the credibility of such arrangements; for example, Bednar et al. (1996).

3. The underlying model of redistribution

Here we give a very brief exposition of our basic approach to modeling the tactical electoral politics of redistribution, to set the stage for its development in the context of federalism in the sections that follow, and to simplify some of the mathematical details there. The model, discussed in detail in Dixit and Londregan (1996), synthesizes and extends Cox and McCubbins (1986); Lindbeck and Weibull (1987), and also relates to Myerson (1993).

We depict two parties competing for the votes of several groups. Taxes and transfers to individuals can be differentiated by their group membership. The characteristics that define a group might be quite specific: age, occupation, level of education, and gross income or productivity. In the context of federalism, the groups may also break along regional lines, so that steel workers in different states belong to different groups. What is crucial is that the political parties cannot directly observe the policy preferences of individuals, but must instead rely on group membership when allocating redistributive benefits.

Each voter cares for two things: his or her private consumption, and a “position” issue. Position issues are ideological elements of public policy that are not reducible to private consumption³, for example laws controlling handgun sales or restricting access to abortion affect all citizens. Their effects cannot be targeted to specific groups of voters; one cannot outlaw abortion for “pro-life” voters and legalize it for “pro-choice” voters. We assume that over the horizon of our analysis the two parties have fixed policies as regards the position issue; this reflects the reality that party ideologies are very slow to change.

But the parties can quickly change their tactical promises of taxes or transfers to different groups in their search for electoral advantage. Within each group there is diversity of preferences about the positional issue. Therefore if a party promises more private consumption to each member of a particular group, this does not shift the votes of all the members of that group, but only of those who were previously close to the margin of indifference between the parties, balancing their preferences for ideology and consumption. The two parties compete at this margin for the votes of members of this group.

There is an overall budget constraint, and offering more to members of one group means offering less to members of some other group or groups. Therefore

³See Stokes (1963).

the parties must also calculate the relative advantage of wooing one group versus another.

Assume that the ideological or position issue can be represented in one dimension. Call the two parties *L* and *R*, and label their locations X_L and X_R , with $X_L < X_R$.⁴ Let N_g be the number of people in group g for $g = 1, 2, \dots, G$. We assume that the N_g are fixed and exogenous. The people are regarded as a continuum; suppose they are distributed along the position issue spectrum according to a distribution function $\Phi_g(X)$ and the corresponding density function $\Phi'_g(X)$. In response to the transfer policies of the two parties, these people will split into voting for one or the other. For each group g there will be a critical level called the *cutpoint* X_g , such that all its members with $X < X_g$ will vote for party *L*, and all those with $X > X_g$ will vote for party *R*.

To illustrate the parties' calculation most simply, for the moment let there be just two groups. Suppose party *L* contemplates shifting a dollar in the budget toward group 1 and away from group 2. There may be dead-weight losses in the policies, so only $(1 - \delta_1)$ may reach group 1, while $(1 - \delta_2)^{-1}$ may have to be taken from group 2. Then each member of group 1 gets $(1 - \delta_1)/N_1$, and this is the increase in his/her consumption C_1 . Suppose each marginal dollar of consumption shifts this group's cutpoint by dX_1/dC_1 . That translates into $N_1 \Phi'_1(X_1) dX_1/dC_1$ voters. Thus the total number of votes from group 1 gained by party *L* as a result of this marginal shift of its transfer policy is

$$\frac{1 - \delta_1}{N_1} N_1 \Phi'_1(X_1) \frac{dX_1}{dC_1} = (1 - \delta_1) \Phi'_1(X_1) \frac{dX_1}{dC_1}.$$

Similarly, the number of votes of group 2 lost is

$$(1 - \delta_2)^{-1} \Phi'_2(X_2) \frac{dX_2}{dC_2}.$$

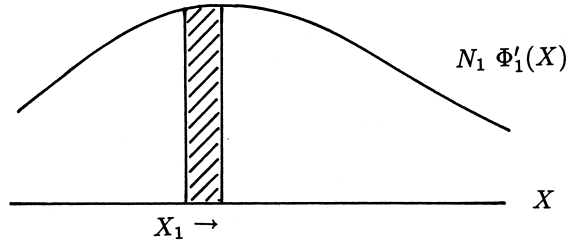
This is illustrated in Fig. 1. The contemplated shift is desirable for party *L* if the gain exceeds the loss. In equilibrium, no such further marginal net gains will be available for either party, given the policy of the other.

This formula quickly identifies the factors that will be conducive to a group's success in tactical redistributive politics:

1. Total numbers are irrelevant; N_1 and N_2 cancel out in the calculation. More numerous and therefore more absolutely vote-rich groups also cost proportionately more of the scarce budgetary dollars.
2. Groups that have relatively high density at the cutpoint are favored. But groups whose high density lies away from the cutpoint, meaning that a large proportion

⁴Here these are merely arbitrary labels, and need not carry any of the usual connotations of 'left' and 'right'.

Group 1: Votes gained $\frac{1 - \delta_1}{N_1} N_1 \Phi'_1(X_1) \frac{dX_1}{dC_1}$



Group 2: Votes lost $\frac{(1 - \delta_2)^{-1}}{N_2} N_2 \Phi'_2(X_2) \frac{dX_2}{dC_2}$

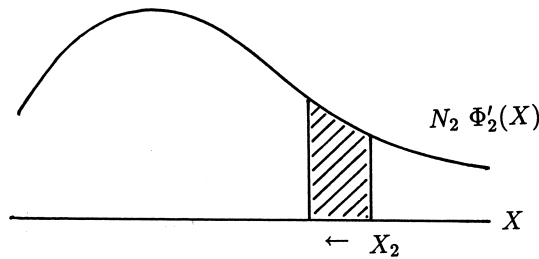


Fig. 1. Party *L* transfers \$1 of budget from Group 2 to Group 1.

- of their members have a strong ideological attachment to one party, do not fare well. They are taken for granted by one party and written off by the other.
3. Groups that are more responsive to promises of private consumption do well. This responsiveness can be the result of a weak ideological commitment to the position issue.
 4. The dead-weight loss is a double-edged sword. If little is lost in making transfers to your group (low δ_1 in the above example), you do well; if little is lost in taxing your group (low δ_2), you do badly.

The δ parameters can be specific to a party-group pair, as in the analysis of Cox and McCubbins (1986). This could occur because parties have informational advantages in dealing with particular groups. But in the absence of such comparative advantage for particular parties in dealing with particular groups, both

parties will find it advantageous to chase the same groups, as in Lindbeck and Weibull (1987). In equilibrium each group will be promised the same net transfer by both parties. But the transfers for different groups will be different, depending on their characteristics as explained in points (2) and (3) above. This distinguishes the model from Myerson (1993), for whom groups do not have different characteristics and only the total numbers matter.

Now we develop the equilibrium in more detail for a special case which we will use in the analysis of federalism. First, we use a particular but familiar model of the trade-off between ideology and consumption. An individual who belongs to group g and whose ideal point is X , if subjected to an ideological position X_K (as would occur if party K (where $K=L$ or R) implemented policy) and enjoying private consumption C_K , has utility

$$U(X_K, C_K | \kappa_g, X) = \kappa_g \frac{1}{1 - \epsilon} C_K^{1 - \epsilon} - \frac{1}{2} (X - X_K)^2. \tag{1}$$

The parameter κ measures the strength of the desire for private consumption relative to ideological conviction; we allow this to differ across groups. The parameter ϵ is the usual elasticity of marginal utility; we assume this to be the same for all groups.

If party K offers consumption C_g^K to each person in group g , this group's cutpoint X_g is found from the indifference condition

$$U(X_L, C_g^L | \kappa_g, X_g) = U(X_R, C_g^R | \kappa_g, X_g).$$

Simple algebra yields

$$X_g = \frac{1}{2}(X_L + X_R) + \frac{\kappa_g}{X_R - X_L} \frac{[(C_g^L)^{1 - \epsilon} - (C_g^R)^{1 - \epsilon}]}{1 - \epsilon}. \tag{2}$$

Then the marginal response of the cutpoint for party L is given by

$$\frac{dX_g}{dC_g^L} = \frac{\kappa_g (C_g^L)^{-\epsilon}}{X_R - X_L}. \tag{3}$$

Similarly for party R .

We want to study the interaction between multiple layers of jurisdictions in its simplest form. Therefore we are going to ignore dead-weight losses, and any special ties between parties and groups. Suppose each member of group g has income Y_g before any taxes or transfers. Taking this to be the same for all members of group g entails no loss of generality provided the government is able to observe income, as for example it might do using tax returns. With nondistorting group-specific transfers, each party's policy can be thought of as choosing the C_g directly, subject to a budget constraint

$$\sum_{g=1}^G N_g C_g = \sum_{g=1}^G N_g Y_g \equiv Y, \quad (4)$$

where Y denotes the total output of the whole economy.

Each party will distribute its consumption across groups so as to equate the marginal vote gain per dollar. This gives the first order condition for party L

$$\Phi'_g(X_g) dX_g / dC_g^L = \lambda_L \quad \text{for all } g,$$

where λ_L is the Lagrange multiplier for L 's budget constraint. Then it is easy to see that the two parties will offer the same consumption promises to each group: $C_g^L = C_g^R = C_g$ say, the cutpoints for all groups will be at the midpoint $\frac{1}{2}(X_L + X_R)$, and

$$C_g = \frac{\pi_g}{\sum_j N_j \pi_j} Y \quad (5)$$

where

$$\pi_g \equiv [\kappa_g \Phi'_g(\frac{1}{2}(X_L + X_R))]^{1/\epsilon}. \quad (6)$$

The parameter π_g measures group g 's political power or "clout", and reflects the intuition explained earlier; greater willingness to compromise ideology for the sake of private consumption, as measured by κ_g , and larger *density* at the cutpoint, $\Phi'_g(\frac{1}{2}(X_L + X_R))$, are conducive to the group receiving greater consumption.

4. The structure of the federalism model

Now we use the above model in the context of a federal system. This consists of a jurisdiction called the "center" which exerts some power over the whole population, and lower-level jurisdictions called "states" each of which has designated powers over a subset of the population.⁵ The states do not overlap, and together include all citizens. This can be interpreted in various ways, provided both the state and central governments have the power to tax. The "states" could actually be countries in a transnational federation. Likewise we could interpret the central level as the government of the City of New York, while the "states" correspond to the Boroughs. We index states by $s \subset \{1, \dots, S\}$. Voters in each state are differentiated into groups according to identifiable characteristics, and indexed by $g \subset \{1, \dots, G\}$. These serve the same role as the groups in the previous section,

⁵In the U.S. context, the central level is often called "the Federal level". To avoid confusion, in our general theory we will speak of the *federal system* consisting of a *center* and the *states*; when dealing with a specific U.S. example we will refer to the center level as the U.S. government.

but in principle the same g for different s becomes a different group and can be treated differently. Thus groups now are distinguished in two dimensions and should be labelled (s, g) ; we will refer to such a group as “group g in state s ”.

The population of group g in state s is N_{sg} . This is known by all, including the political parties and the voters. The population of state s is thus: $N_s = \sum_{g=1}^G N_{sg}$ while the total size of group g is: $N_g = \sum_{s=1}^S N_{sg}$. The population of the entire federation is $N = \sum_{s=1}^S \sum_{g=1}^G N_{sg}$. Recall that we do not allow people to move across states, except in Section 8 where we consider the incentives for a small move away from an initially immobile equilibrium. Therefore the N_{sg} are fixed and exogenous. The endowment – income or output before any taxes or transfers are levied – of a member of group g in state s is Y_{sg} . Summing these individual endowments gives the total resource base for the federation:

$$Y = \sum_{s=1}^S \sum_{g=1}^G N_{sg} Y_{sg}.$$

The driving force is still the trade-off between an ideological position issue and private consumption benefits, but in a federal system this trade-off is further complicated. The ideological component of public policy can differ between the state and central governments, and policy set at one level interacts with policy undertaken at the other. The degree of interaction varies across policy areas: foreign policy is almost by definition a matter for the central government, while state and central level governments are usually both involved in law enforcement and environmental maintenance. Our model allows us to explore the consequences of changing the degree of policy interaction with a parameter that measures the relative contributions of state and central level governments.

Thus we use the following utility function for a voter, replacing the form (1) above:

$$U(X^C, X^S, C | \kappa_{sg}, \alpha_{sg}, X) = \kappa_{sg} \frac{1}{1 - \epsilon} C^{1-\epsilon} - \frac{1}{2} [X - \alpha_{sg} X^C - (1 - \alpha_{sg}) X^S]^2, \tag{7}$$

where $0 \leq \alpha_{sg} \leq 1$. Most of the terms are the same as before, save that the double subscript sg replaces g . The new things are the potentially distinct ideological positions X^C and X^S in central and state politics, and the weights α_{sg} and $(1 - \alpha_{sg})$ with which they combine in forming the overall policy position to which an individual compares his or her ideal X . Higher values of α_{sg} imply a more decisive policymaking role for the central government relative to the states, as perceived by members of group g in state s .

There are two parties at each level of politics; they may or may not be linked

across levels.⁶ The parties' stances on the position issue are again fixed. We choose the origin and scale so that the positions at the central level are $X^{CL} = -\frac{1}{2}$ for party L and $X^{CR} = \frac{1}{2}$ for party R . We allow the state parties' policy positions to differ from those at the central level. In state s the policy positions are: $X_s^{SL} = m_s - \frac{1}{2}p_s$, for the state party L , and $X_s^{SR} = m_s + \frac{1}{2}p_s$ for the state party R . The p_s term captures the degree of polarization between the two parties in state s :

$$p_s = X^{SR} - X^{SL} \quad (8)$$

relative to that between the national parties which is normalized at 1. The term m_s indicates the midpoint between the policy positions of the parties in state s , again relative to the midpoint between the parties in national politics which is chosen to be 0. Thus the parties in a state with $m_s > 0$ are on the average more conservative than their national counterparts, and those in a state with $m_s < 0$ more liberal. This captures an oft-noted feature of reality.

5. Unitary benchmark

The redistributive politics of unitary systems serve as a benchmark against which we can compare the outcome under federalism. Here we ask how competition between the central political parties would channel redistributive benefits if there were no local governments to intermediate. This corresponds to a unitary system in which all policy is set by the central government, closely approximating the situation in countries such as Chile, in which there are no provincial governments and public policy from trade treaties to microbus inspections is the purview of the national government. In a unitary system, if party L is elected the policy outcome for all voters becomes $X^{CL} = -\frac{1}{2}$, while if party R prevails the policy outcome is $X^{CR} = \frac{1}{2}$. Parametrically we model this by setting $\alpha_{sg} = 1$ for all s and g .

We allow the unitary central government to distinguish among different groups in different states. Therefore competing political parties are free to offer different treatment for the members of group g in state s than they do for members of the same group in state s' . The case of restricted redistributive policy, where group (s, g) must be treated identically with group (s', g) , is of some interest in its own right, but for later comparisons with federalism where a group may get different treatment from different states, we need the more general case. The analysis of unrestricted transfers is also relevant, because even though the central government

⁶By allowing parties at different levels to be independent of each other, our analysis differs from that of Snyder (1994), who requires each of his parties to have the same ideological position across jurisdictions, and to be concerned about electoral success at all levels. The former aspect is less general than our model, and the latter more general.

may be theoretically constrained to treat a given group identically irrespective of location, in practice such restrictions are circumvented. For example, Europe’s Common Agricultural Policy can treat farmers from different countries differently by suitable choices of support prices for different crops and by manipulation of the “green exchange rates”. In the United States even more ingenious devices are used. Consider some special “transition rules” to the Tax Reform Act of 1986, described by Birnbaum and Murray, 1988 (p. 241): a tax exemption for “a convention center with respect to which a convention tax was upheld by a state supreme court on February 8, 1985” (the Miami Convention Center), and one for “a binding contract entered into on October 20, 1984, for the purchase of six semisubmersible drilling units” (a drilling project for Alabama’s Sonat Company). With this degree of refinement, achieving differential treatment for similar groups located in different states is easy.

Now the analysis proceeds exactly as in the model of Section 3, so we can cut out all the details and simply state the results. We identify the magnitudes for the unitary case by the superscript U . If party $K=L, R$ promises consumption C_{sg}^K to group g in state s , the cutpoint is

$$X_{sg}^U = \frac{\kappa_{sg}}{1 - \epsilon} [(C_{sg}^L)^{1-\epsilon} - (C_{sg}^R)^{1-\epsilon}] \tag{9}$$

In equilibrium, the two parties copy each other’s redistributive policies, the cutpoints of all groups in all states are at 0, and the consumption quantities are

$$C_{sg}^U = \frac{\pi_{sg}}{\pi_{..}} \frac{Y}{N} \tag{10}$$

where

$$\pi_{sg} = [\kappa_{sg} \Phi'_{sg}(0)]^{1/\epsilon} \tag{11}$$

measures the political power or clout of group (s, g) , and

$$\pi_{..} = \frac{1}{N} \sum_{s'=1}^S \sum_{g'=1}^G N_{s'g'} \pi_{s'g'}$$

is the average value of π_{sg} .

Eq. (10) implies that the consumption level of a member of group g in state s relative to a member of some other cohort of voters, say group g' in state s' , equals the ratio of the two groups clout parameters:

$$C_{sg}^U / C_{s'g'}^U = \pi_{sg} / \pi_{s'g'}$$

The interpretation of the clout parameters was discussed earlier in Section 3. The total size of the two cohorts does not enter the expression; the reason is the same as that for the irrelevance of group size explained in Section 3.

6. Redistributive politics in a federal system

Now we examine the workings of redistributive politics in a federal system. The first point to note is that the eventual ideological position as it affects each voter is a combination of those taken by the prevailing parties in that voter's state and at the central level; environmental policy may be more user-oriented in Arizona, while it is more conservationist in California even though the same central government environmental regulations apply in both states. Different groups may evaluate the central and the state positions with different weights. The weight attached to the position of the center, $\alpha_{s,g}$, can vary by s and g .

In addition to affecting the content of public policy, both the states and the central government can redistribute income among the individuals in their jurisdictions. This overlap in the ability to redistribute income creates a modeling issue. Do the state governments redistribute income first, with the central government moving second, beginning with the endowments that arise after the states have redistributed income, and then engaging in a second round of redistribution? Or should the order be reversed, with the central government moving first, and the states moving second?

The timing issue turns out to be an important one. If the states move first and the central government second, and the center can discriminate groups by their state also, then the revenues distributed by the state governments can be thought of as recollected by the central government before they are distributed again and consumed. This means that the budget constraint for the national government is not changed by having the states move first. Then the center can undo anything the states do, making the state governments irrelevant.

Of course, the states in federal systems are not irrelevant. This is what it means to be federal. We capture the importance of the states by modeling them as second movers. The central government's tax policy is taken to apply first. With no deadweight losses from the tax system we can think of the central government as collecting all output, and then distributing it on the basis of its campaign promises. However, this first move affects the resources within the jurisdictions of the state governments. While they can tax individuals within their borders, resources collected by the central government and redistributed to other states are no longer available for a second round of within-state redistribution. By making states move second we capture this important asymmetry between the central and state governments of federal systems.

There is still an ambiguity to be resolved. Elections take place at the central and state levels, and policies are implemented at both levels. The election at each level must take place before the policy at that level, and we argued above that central policy must be in place before the state policies. This leaves the following possible orders: (1) Center election, center policy, state elections, state policies; (2) Simultaneous elections, center policy, state policies; (3) Center election, state elections, center policy, state policies, (4) State elections, then the central election,

center policy, and state policies. We focus on (1), using the usual equilibrium notion of subgame perfectness – voting in the state elections must be optimal given what has happened at the center, and voting in the central election must be optimal given expectations of the consequences in the state elections. Identical results can be obtained with (2), if voting in the election at each level is optimal given the expectations about the outcome of the other; this restriction on strategies is introduced and called *conditional sincerity* by Alesina and Rosenthal, 1995 (pp. 75–76). We omit the details of this case. If the order of events is that of case (3), then in the election at the central level the parties could make their plans for transfers to the states contingent on the outcome of the state elections. For example, a party might promise that “state s will get transfers totaling $Y_s(L)$ if the Left party wins the election in that state, but $Y_s(R)$ if the Right party wins there”. But such conditioning may violate norms of political behavior, or even be unconstitutional; then case (3) is equivalent to (1). Case (4), which requires among other things that the policy implementation lags at the central and state levels differ, is the least plausible case, and it resembles case (3) in that the campaign promises in the first round of elections, in this case at the state level, could be made contingent on the outcome of the election at the other central level. However, the same political norms and constitutional provisions we would expect to work against such promises in case (3) would be just as effective in constraining such behavior in case (4). Thus our analysis is quite flexible and covers several possibilities.

6.1. *State politics in a federal setting*

Let us begin by analyzing the political competition in state s after the central government has redistributed income. The state government has access to the same efficient tax collection technology used by the central government. Therefore all that matters for the state budget constraint is the total amount of resources $Y^{s\gamma}$ that have been allocated to all the residents of this state by the party γ that won the election at the central level.⁷ Incidentally, this means that the center need not possess the ability to distinguish transfers to otherwise similar groups located in different states as we assumed when discussing the unitary system; that analysis can serve purely as a benchmark. Of course income redistribution at either the local or the central level may alter incentives, so that policies creating dead weight losses at either level reduce the entire tax base, restoring some symmetry to the relationship. As noted earlier, our focus is on redistributive effects that persist even when efficient tax instruments are available.

Electoral competition in state s differs from competition in a unitary system, because when the center moves first, voters in state elections know the policy

⁷We might call $Y^{s\gamma}$ a “sufficient statistic” that summarizes redistributive policy at the central level as far as state level politics are concerned.

stance $X^{C\gamma}$ that has been taken by the winning party γ at the central level, and factor this into their calculation of the consequences of a given policy at the state level.⁸ For example, a more *laissez faire* environmental policy at the central level means that water flowing down rivers into the state will be less pristine, and so to achieve a given level of water quality more stringent state level standards must be adopted. This means that voters' willingness to support policies at the state level depends on how central level policy is set.

The equilibrium of the state election game can now be found as before. Again we omit the details of derivations. We identify the outcomes of state level elections by the superscript S ; additionally a subscript s indicates which particular state we are discussing.

The cutpoint for group g in the state election in state s is

$$X_{sg}^S = \alpha_{sg} X^{C\gamma} + (1 - \alpha_{sg}) m_s + \frac{\kappa_{sg}}{p_s(1 - \alpha_{sg})} \frac{1}{1 - \epsilon} [(c_{sg}^{SL})^{1-\epsilon} - (c_{sg}^{SR})^{1-\epsilon}] \quad (12)$$

This has some new features.

If both parties offer the same transfers the cutpoint for group (s, g) will be:

$$\alpha_{sg} X^{C\gamma} + (1 - \alpha_{sg}) m_s$$

For values of α_{sg} near zero, indicating little central government influence over positional issues, this cutpoint corresponds very nearly to m_s , the midpoint of the parties in s . If α_{sg} is close to 1, the cutpoint is close to $X^{C\gamma}$. This is not the same as the cutpoint of 0, midway between the policy platforms of the two national parties, which we encountered in our analysis of the unitary system. The difference is that the state level election is held after the central one has taken place and the identity γ of the central winner is known. The farther to right is the policy $X^{C\gamma}$ of the central level government, the farther to the right will be the cutpoint in each state s : voters who would have otherwise leaned slightly to the right switch sides to compensate for central level policy. It is this balancing of ideology at the two levels that can give rise to multiple equilibria of the whole game. We investigate these in the next section. Here we characterize one equilibrium. Note that the higher the value of α_{sg} , the more responsive are the state level cutpoints to central level policy.

We can contrast the effect of private consumption on the cutpoint in the state election and in the hypothetical unitary case by contrasting Eqs. (12) and (9). The role of κ_{sg} is the same in the two. But the state case has new effects from p_s and α_{sg} . The former is the polarization of state politics as defined in Eq. (8). The higher is p_s the less sensitive are voters to offers of private consumption benefits.

⁸If elections at the two levels are simultaneous, then this *knowledge* of the central level outcome must be replaced by *rational expectations* about it. That is what the *conditional sincerity* concept of Alesina and Rosenthal, 1995 (pp. 75–76) does.

The α_{sg} term measures the importance of federal and state politics. The higher is α_{sg} , the greater is the central government’s influence on the positional issue, therefore the more tolerant will individuals be of ideological divergence at the state level, and the more responsive will the state level cutpoint be to redistributive offers.

The consumption levels (as offered by both state parties) of the various groups in state s in the state election equilibrium are given by

$$c_{sg}^S = \frac{\theta_{sg}^\gamma Y^{s\gamma}}{\theta_s^\gamma N_s} \tag{13}$$

where:

$$\theta_{sg}^\gamma = \left[\frac{\kappa_{sg} \Phi'(\alpha_{sg} X^{C\gamma} + (1 - \alpha_{sg}) m_s)}{1 - \alpha_{sg}} \right]^{1/\epsilon} \tag{14}$$

is a measure of the clout of group g in the politics of state s when party γ has prevailed at the central level, and

$$\theta_s^\gamma = \frac{1}{N_s} \sum_{g=1}^G N_{sg} \theta_{sg}^\gamma$$

is the average of the θ_{sg}^γ across all groups g in state s .

Put more simply, the individual receives a share ψ_{sg}^γ of the resources $Y^{s\gamma}$ in state s , where:

$$\psi_{sg}^\gamma = \frac{1}{N_s} \frac{\theta_{sg}^\gamma}{\theta_s^\gamma} \tag{15}$$

The state clout parameters θ_{sg}^γ can be interpreted along the same lines as the parameters π_{sg} of Eq. (11) for a unitary system. Just as in a unitary system, unequal distribution of the clout parameters at the state level of a federal system lead to politically induced inequality within each state. The state level redistributive politics of a federal system reward groups whose state level cutpoints are responsive to redistributive offers. The roles of κ_{sg} and α_{sg} are as discussed above. Remarkably, the degree of ideological polarization of state politics p_s does not matter. This is because it affects the responsiveness of the cutpoints of all groups equiproportionately; therefore it does not affect the relative clouts of the various groups.

6.2. Central politics in a federal setting

The parties competing for office at the central level of a federal system, and the voters in the central elections, all recognize that the states will act to change any redistribution that takes place at the central level. Therefore the voters will respond

to promises of redistributive transfers or taxes at the central level by looking ahead to the state political competition and anticipating the eventual actual effect of the proposal.⁹

Even the identity of the winning party in various states may depend on what happens at the central level. We assume that voters have rational foresight about this. In Section 7 we will see that such bootstraps of expectations can sustain multiple equilibria. Here we show how to characterize any one such equilibrium.

Consider each infinitesimal voter’s decision in the central level election. His vote has a negligible effect on the outcomes, and he is almost never pivotal. As is standard in this literature, we are assuming that everyone votes, invoking social norms or some such consideration in the background to justify this. Once in the voting booth, each person votes for that party whose victory would bring him a higher utility level. In the central election, this means correctly forecasting the consequences in future state elections of each party’s victory at the central level.

Let $\beta(s, \gamma)$ denote the party (L or R) that is forecast to win the election in state s given that party γ wins the central election. Let $X^{S\beta(s,\gamma)}$ denote its ideological position.

If party γ wins at the center, then state s income after central transfers have been paid or received is $Y^{s\gamma}$. The share ψ_{sg}^γ of this that goes to members of group g in this state does not depend on which party wins in the state, because both state parties have identical redistributive policies. But, as noted in the preceding section it does depend on which party wins at the center; see Eq. (15).

Now we are ready to describe voting in the central election. Consider a voter defined by his state s , group g , and ideological position X . If party L wins at the center, his utility will be

$$\frac{\kappa_{sg}}{1 - \epsilon} (\psi_{sg}^L Y^{sL})^{1-\epsilon} - \frac{1}{2} \left(X - \alpha_{sg} \left(-\frac{1}{2} \right) - (1 - \alpha_{sg}) X^{S\beta(s,L)} \right)^2.$$

A similar expression can be obtained for this voter’s utility in the event of a victory for party R at the center. Equating the two expressions and solving for X gives the cutpoint for group g in state s voting in the central election. Writing this as X_{sg}^C , we have

$$X_{sg}^C = (1 - \alpha_{sg}) \frac{X^{S\beta(s,L)} + X^{S\beta(s,R)}}{2} + \frac{\kappa_{sg}}{\alpha_{sg} + (1 - \alpha_{sg})(X^{S\beta(s,R)} - X^{S\beta(s,L)})} \frac{(\psi_{sg}^L Y^{sL})^{1-\epsilon} - (\psi_{sg}^R Y^{sR})^{1-\epsilon}}{1 - \epsilon}. \tag{16}$$

⁹Public Finance economists would label this the “state political equilibrium incidence” of the policy made at the center level.

We see a new kind of interaction between central and state politics in a federal system. The two parties at the central level can get different responses to their promised transfers, because victory for one party versus the other will alter the balance of political power in the states and that will affect the state level redistribution and therefore the ultimate consumption of various groups in the states.¹⁰

While this possibility is intriguing, it greatly complicates the analysis. The two center level parties may pursue different redistributive policies in the equilibrium. This precludes a closed-form solution. Therefore we now consider a special case where the difference of the parties' ψ coefficients does not matter. If the utility of consumption is logarithmic ($\epsilon = 1$), the ψ factors become additively separable and do not affect the response of the cutpoints to the changes in the centrally promised levels of state resources. Then the two parties at the central level pursue matching policies in the equilibrium of the electoral competition at that level.

Then steps identical to those followed in all the above instances yield the share of total national output which state s gets. We have

$$Y^s = \Psi_s Y, \tag{17}$$

where

$$\Psi_s = \frac{\zeta_s \cdot N_s}{\zeta_{..} N} \tag{18}$$

and

$$\zeta_{sg} = \frac{\kappa_{sg}}{\alpha_{sg} + (1 - \alpha_{sg})(X^{S\beta(s,R)} - X^{S\beta(s,L)} + X^{S\beta(s,R)})} \Phi' \left(\frac{1}{2} (1 - \alpha_{sg})(X^{S\beta(s,L)} + X^{S\beta(s,R)}) \right), \tag{19}$$

and as usual the $\zeta_s \cdot$ and $\zeta_{..}$ are averages,

$$\zeta_s \cdot = \frac{1}{N_s} \sum_{g=1}^G N_{sg} \zeta_{sg}, \quad \zeta_{..} = \frac{1}{N} \sum_{s=1}^S N_s \zeta_s \cdot$$

Finally, combining the analysis of this subsection and the previous one, we can find the actual consumption quantities of the individuals in all groups in all states under the federal system:

$$C_{sg}^F = \frac{\theta_{sg}^\gamma \zeta_s \cdot Y}{\theta_s^\gamma \zeta_{..} N}. \tag{20}$$

¹⁰It can even give rise to multiple equilibria, a possibility we examine in Section 7. Here we merely characterize one equilibrium using its local conditions.

The various parameters affect the consumption outcomes in quite complex ways, because most of them appear in the numerators and also in the averages in the denominators of the above expressions. For example, if the responsiveness κ_{sg} of all groups g in a particular state s is magnified by the same factor, then the first fraction on the right hand side of Eq. (20) does not change, and all groups in state s get the same share of that state's total resources. But the fact that this state's groups are more responsive brings it a larger share of the national total in the center level redistribution.

6.3. Unitary vs. federal politics

The preceding analysis indicates that the unitary and federal systems create different groups of winners and losers in the scramble for redistributive benefits. This can influence the politics of choosing between systems when this decision is not made behind a Rawlesian veil of ignorance.

We can compare the benefits of different groups in different states under the two systems by an inspection of the defining Eq. (10) and (20). We examine the ratio

$$\frac{c_{sg}^F}{c_{sg}^U} = \frac{\theta_{sg}^\gamma \zeta_s}{\theta_s^\gamma \zeta_{..}} \left(\frac{\pi_{sg}}{\pi_{..}} \right)^{-1}. \quad (21)$$

As a reminder, and recalling that we are now in the special case where $\epsilon = 1$, the symbols on the right hand side are

$$\pi_{sg} = \kappa_{sg} \Phi'(0), \quad \theta_{sg}^\gamma = \frac{\kappa_{sg}}{1 - \alpha_{sg}} \Phi'(\alpha_{sg} X^{C\gamma} + (1 - \alpha_{sg}) m_s)$$

and

$$\zeta_{sg} = \frac{\kappa_{sg}}{\alpha_{sg} + (1 - \alpha_{sg})(X^{S\beta(s,R)} - X^{S\beta(s,L)} + X^{S\beta(s,R)})} \Phi' \left(\frac{1}{2} (1 - \alpha_{sg})(X^{S\beta(s,L)} + X^{S\beta(s,R)}) \right),$$

and we have abbreviated the cutpoints in the state and central elections of the federal system by X^S and X^C respectively.

We see that groups who are near the cutpoint in the state election tend to do well in the federal system, and groups who are close to 0, the midpoint between the parties at the central level, do well in the unitary system. As a general proposition this is obvious, but in practice it is not easy to determine where the cutpoints in elections at different levels will lie, and therefore the attitudes of groups toward centralism versus federalism may appear puzzling. The theory tells us where one can look for an explanation for such puzzles.

Some interesting links emerge. Consider a group (s, g) that attaches greater

weight to central politics (large α_{sg}). This group may be expected to have a high θ_{sg} and would appear to do well in a federal system – they are more easily swayed by transfers at the state level and therefore get a greater proportion of the resources in the state election. But what the state itself gets in the central level redistribution depends on the α_{sg} parameters of all groups in their state. If these are also high, and either (i) if the same party wins in the state no matter who wins at the center, so $X^{S\beta(s,R)} = X^{S\beta(s,L)}$, or (ii) the state politics is less polarized than the central, so $X^{SR} - X^{SL} < 1$, then $X^{S\beta(s,R)} - X^{S\beta(s,L)} < 1$ and we see from (19) that the ζ_s for their state is low and the state itself does poorly in central redistribution. In such a case, the best of both worlds is to be a group more concerned with federal politics in a state where everyone else has a stronger ideological attachment to state politics.

7. Multiple equilibria and divided government

Policies implemented at different levels of the federal structure can offset each other, producing a more “moderate” outcome than that favored by either of the parties competing at either the state or federal level. Of course, with a richer institutional structure this mediation could be achieved in other ways, as happens in presidential systems which allow voters to place the legislature and the presidency in the hands of different parties. Yet even without multiple centers of power at the central level, a federal system increases the opportunities for moderating policy outcomes through divided control. However, not all of the possible increases in “moderation” afforded by a federal system will affect policy in the same way. Multiple equilibria emerge, and some equilibria appeal to more voters than others. This multiplicity of equilibria emerges because the cutpoint at each level responds to the identity of the winner at the other, and the coordination problem of choosing among these equilibria is not a trivial one. The set of possible equilibria includes some that would be defeated by a majority vote if it were possible to have an *ex ante* referendum on which equilibrium should prevail.

We do not have a general theory of this, but an example suffices to illustrate and clarify the issues. Suppose that there are N states, each of which is a “clone” of the national polity, in the sense that the distribution of preferences among the voters is the same for every group, in every state, so that $\Phi_{sg}(x) = \Phi(x)$ for all x , s , and g . Suppose further that policy positions of the state level parties are identical with the positions of their central level counterparts, so that $m_s = 0$ and $p_s = 1$.¹¹ Suppose that the median voter somewhat prefers the party on the left, with the median voter’s most preferred outcome contained on the interval from $-1/5$ to 0:

$$-1/5 < \Phi^{-1}(\frac{1}{2}) < 0$$

¹¹Relaxing these assumptions actually makes it even easier to obtain multiple equilibria.

Let the influence of the central level government on public policy outcomes be a bit greater than that of the state level governments, with $\alpha_{sg} = 3/5$ as perceived by every group g in each state s .

There are two political equilibria in this setting. In the first the voters choose party L at the central level, so that $X^C = -\frac{1}{2}$, and party R in each of the states. In the second equilibrium the identities of the winning parties are reversed, with party L prevailing in the states, while party R carries the central level election.

Consider first a situation where party L prevails at the central level. Knowing that this has occurred, moderate voters at the state level turn to party R to counterbalance policy at the central level: the state-level cutpoints all shift to $X_{sg}^S = \alpha_{sg} X^C = -3/10$, to the left of the state-level medians, leading to state-level victories for party R 's candidates. A symmetrical process is at work in central-level elections. Anticipating the victory of party R candidates in the state-level elections, the central-level moderates use party L to counterbalance the policies they correctly anticipate will be followed at the state level in the wake of party R 's victories. The central-level cutpoints are thus $X_{sg}^C = (1 - \alpha_{sg}) X^S = 1/5$, well to the right of the central-level median, making party L the winner among every group g and in every state s at the central level. In this equilibrium the policy outcome is:

$$X = -\alpha \frac{1}{2} + (1 - \alpha) \frac{1}{2} = -1/10.$$

But this is only one of the equilibria that can arise. In a second equilibrium party R prevails at the central level, while party L gains the state level elections. To check that this is an equilibrium, first note that given that party R has won at the central level, the state level cutpoints become $X_{sg}^S = \alpha_{sg} X^C = 3/10$, well to the right of every state median, so that party L wins each state level election. And if party L is expected to prevail at the state level then for voters in every state the central level cutpoint becomes $X_{sg}^C = (1 - \alpha_{sg}) X^S = -1/5$, which is to the left of the median, giving a majority to party R at the central level. This leads to a policy outcome of:

$$X = \alpha \frac{1}{2} - (1 - \alpha) \frac{1}{2} = 1/10.$$

What is most noteworthy about the two equilibria is that a majority of every group in every state prefers the first. Nevertheless, without some means of coordinating their choices either equilibrium can obtain.¹² Moreover, we have “stacked the deck” in favor of the central-level median: the median in each state shares the central-level median’s objectives. By allowing for different party platforms at the state levels than one encounters at the central level, by allowing for differences among state-level polities, we only add scope for the emergence of

¹²A hypothetical referendum on which equilibrium to play would defeat the second, but this is very unusual in the political process.

equilibria that would be “Condorcet losers” in a hypothetical referendum over which equilibrium to use.

The potential for federal systems to produce multiple equilibria is not necessarily a drawback as compared with a unitary system. In our example the median voter in a unitary system will prefer a policy somewhere between $-1/5$ and 0 , and so when forced to choose between giving control of the unitary government to party L , which will proceed to implement a policy of $-1/2$, or electing party R , and living with the resulting policy of $1/2$, the voter will cast a reluctant vote for $-1/2$. Thus, party L is the sure winner in the unitary system, but the uniqueness of this equilibrium is of little comfort to the median voter, who would have been unambiguously better off with either of the federal equilibria, even the less desirable one yields a policy outcome that is closer to the preferred outcome of the median voter than the policy outcome in the unitary system.

8. Mobility

In the preceding analysis taxes and transfers were frictionless, and so income redistribution involved no loss of economic efficiency. In this section we allow for mobility between jurisdictions. Because political parties at both the central and local levels care about economic efficiency only insofar as it affects votes, the central level government will not automatically seek to offset the inefficiencies stemming from local governments' policies. Even in a unitary system competition for votes will goad parties to offer policies that vitiate the incentives to migrate.¹³ In a federal system political competition introduces incentives to migrate, but these are a byproduct of local politics. By chance, these political incentives may coincide with the economic incentives vitiated in a unitary system, however, they may just as well be negatively correlated with the economic gains from mobility and so make matters even worse.

The analysis in the preceding sections exogenously assigned every individual to a state and group, and ruled out any migration or mobility. In practice individuals are free to move although relocation has substantial costs, both economic (transport of people and household goods, search for a new job) and noneconomic (separation from family and friends, finding new schools, doctors etc). In some models of fiscal federalism, most notably those following Tiebout (1956), mobility is the key feature. Incorporating it fully in our model to determine a general equilibrium is a difficult and lengthy task that must be left for further research, but we offer below some discussion of the issue. Specifically, we consider an initial equilibrium of redistributive politics, and examine one individual's decision to move.

Suppose that in the equilibrium a member of the cohort (s, g) gets consumption

¹³See Dixit and Londregan (1995).

c_{sg} . The public policy positions are X_c at the center and X_s , in state s . An individual can move from one cohort to another (thus allowing geographic or occupational mobility, or both together). We make two assumptions: (1) An individual who moves from (s, g) to (s', g') becomes an indistinguishable member of the latter cohort, thus getting consumption $c_{s'g'}$ instead of c_{sg} . Thus the governments cannot keep track of movers as such and treat them differently.¹⁴ (2) Each individual, being an infinitesimally small part of the population, assumes that c_{sg} and $c_{s'g'}$ are not measurably affected by his move. This is a political equivalent of the standard “price-taking” assumption in economics.

We assume that the move requires a cost equal to a fraction τ of the consumption in the new location. Making the cost proportional to total consumption seems reasonable, since a large part of the cost is for the transport of goods and people.

Suppose the individual has the ideal position x on public policy, weight α on state versus federal politics, and weight κ on private consumption. He will move from (s, g) to (s', g') if

$$\begin{aligned} & \kappa \frac{(c_{sg}^{\beta(s,\gamma)})^{1-\epsilon}}{1-\epsilon} - \frac{1}{2} (x - \alpha_{sg} X^\gamma - (1 - \alpha_{sg}) X^{\beta(s,\gamma)})^2 \\ & < \kappa \frac{(c_{s'g'}^{\beta(s',\gamma)})^{1-\epsilon} (1-\tau)^{1-\epsilon}}{1-\epsilon} - \frac{1}{2} (x - \alpha_{s'g'} X^\gamma - (1 - \alpha_{s'g'}) X^{\beta(s',\gamma)})^2, \end{aligned}$$

or

$$\begin{aligned} & \frac{\kappa}{1-\epsilon} [((1-\tau)c_{s'g'}^{\beta(s',\gamma)})^{1-\epsilon} - (c_{sg}^{\beta(s,\gamma)})^{1-\epsilon}] + \Gamma(s, g, s', g') [x - \Theta(s', g', s, g)] \\ & > 0. \end{aligned}$$

where:

$$\Gamma(s, g, s', g') = (1 - \alpha_{sg})(X^{\beta(s',\gamma)} - X^{\beta(s,\gamma)}) + (\alpha_{s'g'} - \alpha_{sg})(X^\gamma - X^{\beta(s',\gamma)})$$

and:

$$\begin{aligned} \Theta(s, g, s', g') &= \alpha_{sg} X^\gamma + (1 - \alpha_{sg}) \frac{1}{2} (X^{\beta(s,\gamma)} + X^{\beta(s',\gamma)}) \\ &+ \frac{1}{2} (\alpha_{s'g'} - \alpha_{sg}) (X^\gamma - X^{\beta(s',\gamma)}) \end{aligned}$$

The first term captures the economic incentive to move (larger private consumption) and the second the political incentive (public policy closer to one’s ideal). The political motive can be broken into the change in the content of state

¹⁴In practice, such distinction may be maintained for a time, but will blur eventually. In Dixit and Londregan (1995) the dynamics was of the essence, so we preserved the distinction. Here the focus is on a stationary equilibrium, so the other formulation seems more appropriate.

policy, $X_{s'} - X_s$, and the change in the importance of state level policy: $\alpha_{s'g'} - \alpha_{sg}$. If the policy outcome in state s' is to the right of the state s outcome, so that:

$$(\alpha_{s'g'} - \alpha_{sg})(X^\gamma + X^{\beta(s',\gamma)}) + (1 - \alpha_{sg})(X^{\beta(s',\gamma)} - X^{\beta(s,\gamma)}) > 0$$

then for x large enough the political motive is sure to dominate, and if the inequality is reversed, so that:

$$\alpha_{s'g'}X^\gamma + (1 - \alpha_{s'g'})X^{\beta(s',\gamma)} < \alpha_{sg}X^\gamma + (1 - \alpha_{sg})X^{\beta(s,\gamma)}$$

the same will be true for x far enough to the left. Thus we should expect a tendency for politically like-minded individuals to get together in a state or group.¹⁵ We do see some such tendencies, but every state and every occupational group still retains quite a wide spectrum of views on public policy or position issues, which suggests that transport costs are quite a substantial barrier against mobility.

In contrast, in a unitary system, there is no political incentive to move, the same public policy prevails at all levels of government, and in every location, and so moving will have no effect on the policies one lives under. In a unitary system no one moves to affect the policy they live with.

While moving to affect the public policy one lives under is only an issue in a federal system, migration is affected by politically motivated transfers in both federal and unitary systems, though the details differ. To focus on the economic incentive to move, it is simplest to examine this for someone who is politically indifferent between the two locations, being at the midpoint of the public policy position issues in the two:

$$x = \alpha_{sg}X^\gamma + (1 - \alpha_{sg})\frac{1}{2}(X^{\beta(s,\gamma)} + X^{\beta(s',\gamma)}) + \frac{1}{2}(\alpha_{s'g'} - \alpha_{sg})(X^\gamma - X_{s'}) \quad (22)$$

Then the criterion for moving becomes simply:

$$\frac{c_{s'g'}}{c_{sg}} > \frac{1}{1 - \tau}$$

In other words, the test is whether the ratio of the consumption of the destination cohort to that of the origin cohort is large enough to compensate for the fraction lost in moving.

In equilibrium, this condition becomes:

$$\frac{\theta_{s'g'}^\gamma}{\theta_{sg}^\gamma} \frac{\theta_{s'}^\gamma}{\theta_s^\gamma} \frac{\zeta_{s'}}{\zeta_s} > \frac{1}{1 - \tau}$$

Contrast this with a unitary system, where the individual whose most preferred policy is given by Eq. (22), along with everyone else, is indifferent among states and groups on policy grounds, as they will encounter the same position on the

¹⁵In technical terms, this will truncate the tails of the distribution functions $\Phi_{sg}(x)$.

ideological issue in every location. So, in a unitary system, the condition for migration from state s and group g to join group g' in state s' is:

$$\frac{\pi_{s'g'}}{\pi_{sg}} > \frac{1}{1-\tau}$$

Two conclusions emerge from this. First, under either system, the *economic* incentive to move is still governed by *political* considerations. The move may be to a more productive occupation or to a less productive one, but what matters is the amount of consumption one will get after the taxes and transfers have worked themselves out, and these are primarily determined by the political characteristics of the populations in various states and occupations. Therefore one should not expect freedom of job choice or location to be conducive to greater economic efficiency or productivity. Second, the economic incentives to move are different in the two systems, because the relevant “clout” parameters differ. There is the difference between the π_{sg} and the θ_{sg}^γ parameters because the former depends on the density at the midpoint between the parties in center-level politics while the latter depends on the corresponding density in state politics. Under the federal system, the clout of a state in collecting resources from the center, as reflected in the ζ_s parameter, is also relevant. Therefore, when changes in the system of government are being contemplated, the implications for changes in relocation incentives should be recognized.

9. Block grants versus matching grants

Thus far our analysis has focused on “block” transfers, with the central government transferring money among individuals while the state governments are free to again reshuffle any resources they find within their borders after the federal round of redistribution has taken place. This system captures something of the essence of block grants made by the central government to the states with few or no restrictions on their use. Now we turn our attention to “matching grants” which are made by the central government to the states contingent on some sort of performance at the state level. We also allow for “offsets” with the central government effectively taxing transfers made by the state government.

This calls for a change in the set of policy instruments available to the central government. We now permit party $\gamma \in \{L, R\}$ at the central level to not only set an initial income transfer e_{sg}^γ to each member of group g in state s , but also to set a “matching rate” r_{sg}^γ for the transfer $t_{sg}^{s\beta}$ offered to this group by the state’s government of party $\beta \in \{L, R\}$. Thus the consumption for a member of group g in state s will be:

$$c_{sg}^{s\beta} = e_{sg}^\gamma + t_{sg}^{s\beta} r_{sg}^\gamma \quad (23)$$

The central government can be thought of as first taxing everyone at 100% and then remitting a transfer of e_{sg}^γ to members of group g in state s . What is different about this matching grant setup is that the central government is then able to set a tax or subsidy rate on state-level transfers. This is a proxy for a variety of compliance programs as well as matching grants. For example, highway funds from the US government were automatically withheld from states that did not conform to the Federal speed limit.

The algebra is similar to that for the block grant model above, and yields the following expression for consumption shares in state S if party γ prevails at the center:

$$c_{sg}^S = \frac{\theta_{sg}^\gamma (r_{sg}^\gamma)^{(1/\epsilon)}}{\sum_{g'=1}^G N_{sg'} \theta_{sg'}^\gamma (r_{sg'}^\gamma)^{(1/\epsilon)}} Y^{S\gamma}$$

By carefully manipulating its choice of r_{sg}^γ the central government can induce its preferred choice on the part of the state governments. In particular, if party γ at the central level sets its matching rule as follows:

$$r_{sg}^\gamma = \left(\frac{\pi_{sg} / \mu_{sg}^\gamma}{\theta_{sg}^\gamma} \right)^\epsilon$$

where:

$$\mu_{sg}^\gamma = \left(\frac{\Phi'((1 - \alpha_{sg})X^{S\gamma})}{\alpha \Phi'(0)} \right)^{1/\epsilon}$$

while at the same time setting the total allocation of resources to state s equal to:

$$Y^s = \frac{\sum_{g=1}^G N_{sg} \pi_{sg} \mu_{sg}^\gamma}{\sum_{s'=1}^S \sum_{g=1}^G N_{s'g} \pi_{s'g} \mu_{s'g}^\gamma}$$

it can induce the state parties to replicate its most preferred allocation. This allocation will closely resemble the allocation under a unitary system, save that the “clout” parameters are adjusted to account for groups’ relative concern with center-level policies, so that the “clout” of group g from state s is given by $\pi_{sg} \mu_{sg}^\gamma$.

Just as a switch between a unitary system and a federal one will have redistributive consequences, so too will a switch from permitting the central government to use matching transfers to one that restricts it to block transfers. Groups that gain relative to others in their state will be those with high ratios of θ_{sg}^γ to $\pi_{sg} \mu_{sg}^\gamma$. This ratio satisfies:

$$\frac{\theta_{sg}^\gamma}{\pi_{sg} \mu_{sg}^\gamma} = \left[\frac{\Phi'(\alpha_{sg} X^\gamma + (1 - \alpha_{sg}) m_s) \alpha_{sg}}{\Phi'((1 - \alpha_{sg}) X^{\beta(s,\gamma)}) (1 - \alpha_{sg})} \right]^{1/\epsilon}$$

As in our comparison of federal and unitary systems, we see the groups that fare better with a system of block transfers are those with relatively more members indifferent between the state level parties than are indifferent between the national parties. Groups for which state politics have low salience relative to politics at the central level, so that α_{sg} is small, gain doubly from a shift from a system of matching transfers to a block transfers system. These are groups that the center level parties tend to take for granted and the state level parties do not. Conversely, groups with relatively more “moderate” members in center level politics than in state politics will be relative losers from the shift to block transfers, as will those relatively interested in politics at the state level.

Here we have allowed the central government great latitude in its choice of policy instruments. If there are numerous central programs parties at the center level may be able to reshape them to deliver benefits where desired. When the number of instruments is smaller some of this latitude may disappear, in the model this would correspond to constraints on the values of r_{sg}^{γ} , and would somewhat limit the central government’s ability to manipulate the redistributive choices made at the state level. Block grants, which allow only one policy instrument per state are an extreme case of this. Opposition to the proliferation of the number of center-level programs and of their stated goals, as opposed to the total amount allocated to such programs, may stem in part from a recognition of the added control over the state level redistributive game that is afforded to the central government by multiple instruments.

A key feature of the matching grant system is that it rewards groups that are relatively indifferent about the center-level political agenda, much as the system of block grants favored individuals relatively indifferent about state-level politics. Both represent important departures from the outcome in a unitary system, but they are departures in different directions.

10. Conclusion

The most important general idea that emerges from our analysis is that politics in a federal system has redistributive consequences, which operate through the *interaction* of politics at the central and the state levels. Politics at the central level must take into account the fact that states will further reallocate the resources at their command after the center has done its redistribution. The outcome can be very different from that in a unitary system, where this second round is absent.

We also found some more directly political consequences of the center state interaction. The federal system makes it possible to have divided government resulting in a better balance on the ideological position issue. Unitary systems, with their unified control of policy, produce starker policy consequences. But under federalism there can be multiple equilibria, and the system can get locked into an outcome that is inferior for a large majority.

The interactions, while they are of the essence and affect political equilibria in major ways, make the modeling very difficult. We had to make several successive simplifying assumptions – no distortions, no mobility except a small shift starting at an initially given location pattern, and some special functional forms. We hope to relax these in future research, guided by the experience from the simpler analysis.

It is customary in models of tax policy to make policy recommendations that should be followed by a benevolent social planner, but we have modeled policymaking as an endogenous part of the process. Thus, the policy implications of our model are to be found at a deeper constitutional level, where the rules of the game are made. Here the model provides some guidance about the redistributive implications of competing federal and unitary designs, and about block versus matching grants. In fact the analysis provides guidance of two kinds. On a somewhat cynical level, it shows interest groups how to peer behind the Rawlsian veil of ignorance as constitutions are being written, to see who will gain and who will lose from various constitutional arrangements such as federal versus unitary government.

However, we suspect that in such circumstances the interested parties and their political representatives will have already foreseen the different redistributive consequences. In contrast, it is all too common for economists and other technical experts to make their policy recommendations and then watch in exasperation as they are ignored by policymakers. To the extent that these agents for benevolent reform better understand the political process of redistributive policy, they will better be able to design more effective policies, and also the political institutions to sustain these policies.

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