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Fiscal Federalism

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FEDERALISM AND INTER-REGIONAL REDISTRIBUTION *

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ABSTRACT: Why do some federations implement highly progressive intergovernmental transfer schemes while others do not? First, this essay establishes some stylized facts, using provincial-level data from nine federations to measure the extent of inter-regional redistribution achieved through intergovernmental transfers in each country. Second, it explores sources of institutional variation that might help account for these persistent cross-country differences, focusing on theories of legislative bargaining, representation, and the distribution of income across regions. Third, it examines the historical conditions under which the basic institutions of federalism were selected.

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1. Introduction

Classic theories of federalism envision a community of sovereigns that come together and delegate limited powers to a central government in order to achieve collective goods like common defense, free trade, or a common currency (Riker 1964). In order to solve collective action problems, the federated units often find it necessary to delegate some powers of taxation to the center. For 19th century federations, the centralization of tariffs as part of a drive to create a common internal market was often a driving impetus for the formation of the union. Centralized taxation then opens the door to fiscal redistribution between federated units. Spurred on by World War I and the Great Depression, central governments during the 20th century gained access to forms of direct taxation and tools for inter-provincial redistribution that could not have been imagined by the founders of early confederations.

In fact, over the course of the 20th century, some federations have developed a political rhetoric, in some cases enshrined in the constitution, whereby residents of the poorest localities are entitled to the same public services at the same cost as residents of the wealthiest localities. Accordingly, they have developed progressive forms of taxation, direct central government expenditure programs, and intergovernmental grants that transfer resources from taxpayers in wealthy provinces to those in poor provinces.

On the one hand, this is not surprising. A workhorse model of political economy suggests that with full-franchise democracy and a right-skewed income distribution, the poor should be able to extract transfers from the rich (Romer 1975, Meltzer and Richard 1981, Boix 2003). Indeed, the expansion of suffrage in early 20th century Europe seems to have been a precursor to the development of the modern welfare state (Lindert 2004). To the extent that the rich and poor are geographically clustered, democracies should be characterized by redistribution from wealthy to poor jurisdictions. This might take the form of inter-personal transfers such as unemployment insurance or income support, but it might also take the form of subsidies for public goods like education or infrastructure in poor neighborhoods with limited tax base. To the extent that these goods are provided by local or provincial governments, this implies intergovernmental transfers that are negatively correlated with income.

But on the other hand, such inter-regional redistribution should be surprising in formal federations, which are thought to provide mechanisms to prevent both inter-personal and inter-regional redistribution. First, the rich can cluster in certain regions in order to avoid being taxed by the poor (Boix 2003), a clustering which may occur naturally from agglomeration economies in industrialized societies (Krugman 1991). However, this might merely encourage the poor to push for centralized taxation (Bolton and Roland 1997). While a low-income coalition might form easily in a unitary system where the autonomy of local governments was snuffed out in the 19th century, one of the defining features of federalism is that changes from the status quo rely on majorities (or super-majorities) of regional representatives rather than individuals or representatives of small districts. Thus in federations that started with zero direct central taxation in the 19th century, the institutions of federalism would seem to provide representatives of wealthy regions the opportunity to stave off the erection of a centralized tax-transfers system, or to limit the progressiveness of inter-regional transfers. Diaz-Cayeros (2006) argues that this logic explains why wealthy states in Mexico have been able to avoid the erection of progressive redistribution at moments of tax centralization. Moreover, a large literature portrays federalism as an impediment to the construction of the post-war welfare state in OECD countries (see Castles, Obinger and Leibfried 2005 for an overview).

Which of these intuitions is correct? This chapter argues that the answer lies in the architecture of federal institutions, and these institutions are in large part a product of the environments in which the most important federal bargains were struck. In all modern federations, taxes collected by the central government are distributed to provinces through intergovernmental grants, but in some countries these grants are highly progressive while in others they are not. This chapter first lays out the relevant empirical patterns in eight federations and the European Union, and then introduces some new arguments about the institutions and historical legacies that might explain the divergence.

While some attention has been given to the relationship between federalism and the generosity of inter-personal transfers, less is known about federalism and inter-regional redistribution. Above all, I demonstrate that in the latter part of the 20th century, some federations—namely the United States, Argentina, Brazil, India, and the European Union—pursued very little progressive inter-regional redistribution, while others—like Australia, Canada, Germany, and Spain—pursued a great deal. These stylized facts are in accordance with other studies.

Next, I seek explanations for this cross-country variation by building on positive theories of institutions. Recognizing the pitfalls of broad macro-historical comparisons with small numbers of observations, I point out two aspects of institutional design that hold promise. First, the separation of executive and legislative powers in presidential systems creates incentives to de-emphasize national programmatic appeals by political parties, and generates a style of coalition-building that is characterized by regional pork-barrel politics that makes progressive transfers an unlikely outcome. In contrast, the concentration of agenda power in the hands of the government under parliamentary democracy encourages programmatic national appeals that can empower a national low-income coalition.

Second, I examine the potential impact of regional representation in the legislature. In federations that trace their origins to constitutional compacts among sovereigns, units with greater bargaining power at the moment of confederation—those perceiving greater risks associated with unification—were able to extract over-representation in at least the upper chamber of the legislature, and sometimes the lower as well. These states were often in the agricultural periphery, and have in many cases only lost population over time. This institutional legacy can undermine the formation of a cohesive low-income coalition in the legislature by creating the opportunity for high-income provinces to coalesce with over-represented poor provinces, leaving the larger poor provinces out and keeping the overall size of transfers down relative to a legislature with one-person-one-vote apportionment.

I also discuss a simpler logic through which regional upper chambers might limit redistribution, regardless of apportionment. If redistribution is ultimately the response of democratic institutions to a right-skewed income distribution, by generating large winner-take-all districts, senates in some federations may muffle demands for redistribution by compressing the politically relevant income distribution—that of the provincial medians— so that its distribution is much more symmetric than that of individuals or district medians.

Finally, I argue that contemporary patterns of inter-regional redistribution are difficult to understand without examining the initial constitutional bargain. After all, if inter-regional transfers are simply ways for the poor to exploit the rich, one must ask why the union was Pareto-optimal for the rich in the first place. In federations with origins in the 18th or 19th centuries, a key conflict was between the industrializing core, which desired a unified high tariff in order to protect its nascent manufacturing efforts, and an agricultural periphery that desired free trade and low tariffs. Both had something to gain from confederation, but the risks were greater for the periphery. Thus representatives of agriculture demanded not only greater representation in the central legislature, but also compensatory transfers. In some federations, modern systems of inter-regional redistribution and the accompanying political rhetoric of equal service provision had roots in an earlier struggle to forge a national common market.

In sum, this chapter suggests that Argentina, Brazil, and the United States have avoided the highly progressive inter-regional redistribution schemes that characterize other federations, not to mention unitary systems, largely because they retain institutional features from an earlier era of bargains and battles over the basic federal contract. The same is true of the European Union, where the basic contract is still under negotiation. In other federations that lack these features, a low-income coalition has been able to lock in a system of redistributive transfers along with the growth of the modern welfare state.

The next section measures the progressiveness of intergovernmental transfers around the world. The third section offers institutional explanations for cross-country differences in the post-war period, the penultimate section examines the underlying federal bargains, and the final section concludes.

2. Empirical analysis of inter-regional redistribution

After publication of the MacDougall Report in 1977, interest in broad comparative empirical work on the subject of inter-regional fiscal flows died down until it was revived by the literature on optimal currency areas in the early 1990s. A key question in this literature concerned the extent to which the tax-transfers policies of the central government played a stabilizing function with respect to short-term asymmetric regional shocks (e.g. Sala-i-Martín and Sachs 1992, Bayoumi and Masson 1995). This literature was not explicitly concerned with long-term inter-regional redistribution. More recently, a series of papers builds on the approach of Bayoumi and Masson (1995) and attempts to build comparable cross-country data on net fiscal flows in a variety of countries in order to measure long-term patterns of inter-regional redistribution (Espasa 2001; Barberán, Bosch, Castells, and Espasa 2000; Bosh, Espasa, and Sorribas 2002).

Several papers in this volume address the challenges and controversies associated with measuring net fiscal flows. Some of these challenges—e.g. how to count expenditures for military bases or branches of federal banks— make cross-country comparisons especially difficult. Largely because of accounting challenges and data availability, this paper addresses a more specific form of inter-regional redistribution: that pursued through intergovernmental grants. This allows me to examine comparable data from several of the world's largest federations. While it is unfortunate to ignore inter-regional redistribution that takes place through direct federal expenditures and on the tax side, previous studies have revealed that across countries, the estimated redistributiveness of grants is highly correlated with that of overall fiscal flows, and in fact, cross-country differences in fiscal flows are driven primarily by differences in intergovernmental grants.

This chapter employs yearly inflation-adjusted data on total intergovernmental receipts that enter the budgets of state or provincial governments, along with inflation-adjusted data on provincial GDP per capita, in Argentina, Australia, Brazil, Canada, Germany, India, Spain, and the United States, as well as the European Union. Unlike most studies on fiscal flows, this chapter uses a relatively long time series for each country.[1]

Following the papers cited above, for each year in each country I calculate the income elasticity of grants as follows:

$$\ln\left(\frac{G_i}{G_m}\right) = a + \mu \ln\left(\frac{Y_i}{Y_m}\right) + e_i \tag{1}$$

where G is the real per capita grant, Y is provincial GDP per capita, and the subscript i refers to province i and m refer to the average of all provinces. The coefficient μ is analytically useful, but it might be very large and negative in a country where grants are progressive but substantively small (e.g. the European Union), so it is also useful to measure the redistributive "power" of grants as follows:

$$\ln\left(\frac{Y_i + G_i}{(Y+G)_m}\right) = a + \beta \ln\left(\frac{Y_i}{Y_m}\right) + e_i \tag{2}$$

where $1 - \beta$ captures the redistributive power of grants. Intuitively, if $\beta = 1$, a province's relative income before transfers is perfectly correlated with its relative income after transfers and, ignoring the regional impact of taxation, no redistribution has taken place through the system of intergovernmental grants. A β coefficient of .8

[1] Data sources and inflation adjustment procedures are detailed in the appendix.

would indicate that 80 percent of the initial differences in relative per capita incomes remain after grants have been distributed.

Bosh, Espasa, and Sorribas (2002) estimate these parameters with net fiscal flows. While their estimates of $1 - \beta$ are of course higher since they take full consideration of taxes and direct central government expenditures, for the same years in the five countries that overlap with my data set on grants, their estimates of μ and $1 - \beta$ are correlated with mine at .91 and .95 respectively. Thus while the cross-country comparisons below ignore taxation and direct central expenditures, they likely reflect broader cross-country differences in inter-provincial redistribution.

Since the focus of this chapter is on redistribution rather than risk-sharing,[2] I estimate the income elasticity and redistributive power of grants using single-year snapshots in each country, and display the parameters averaged over all years, along with average upper and lower confidence intervals, in Figure 1.

[2] Some of the controversy in the empirical literature is about the conflation of insurance and redistribution effects (e.g. Von Hagen 1992). The goal here is to focus exclusively on redistribution by avoiding time-series analysis.

Figure 1a: Income elasticity of grants in 9 federations, 1990-2005

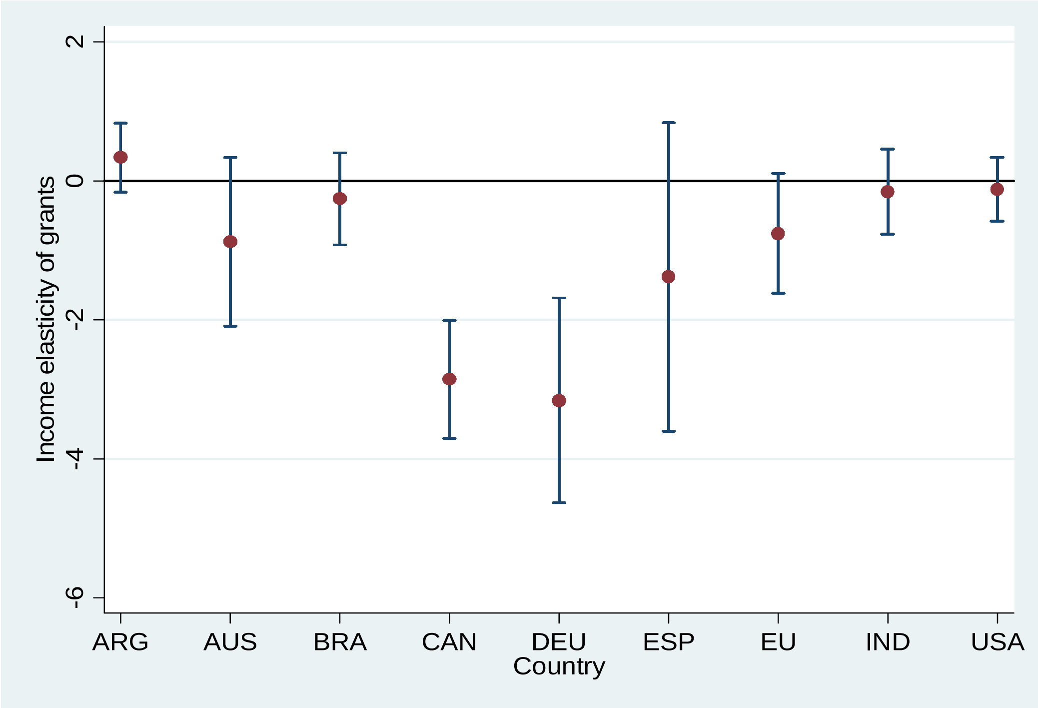


Figure 1b: The redistributive power of grants in 9 federations, 1990-2005

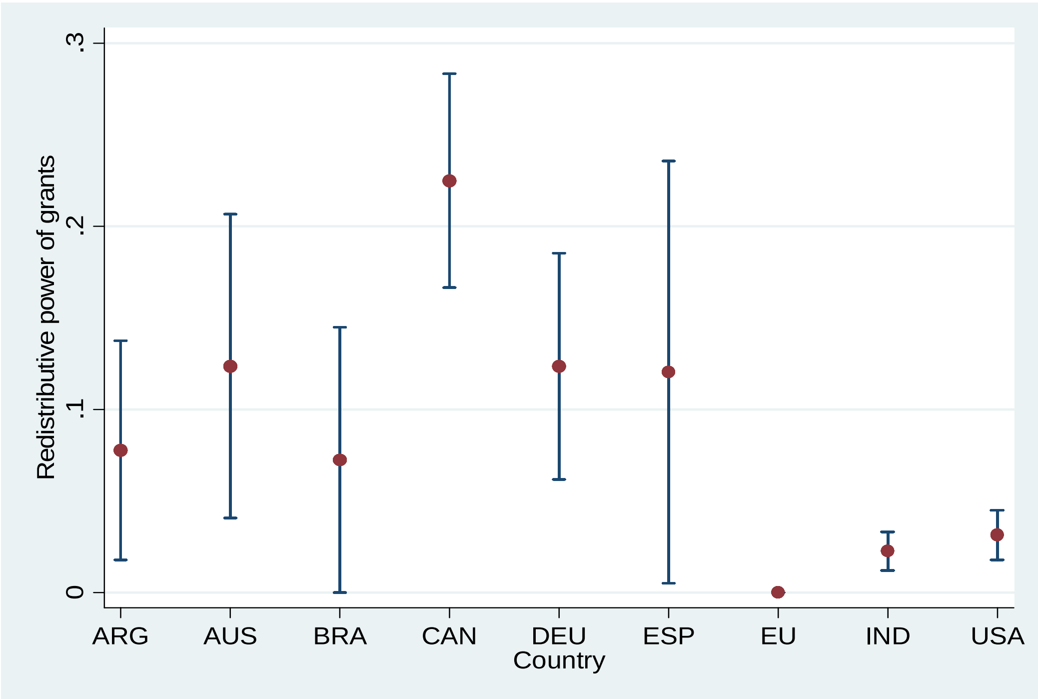
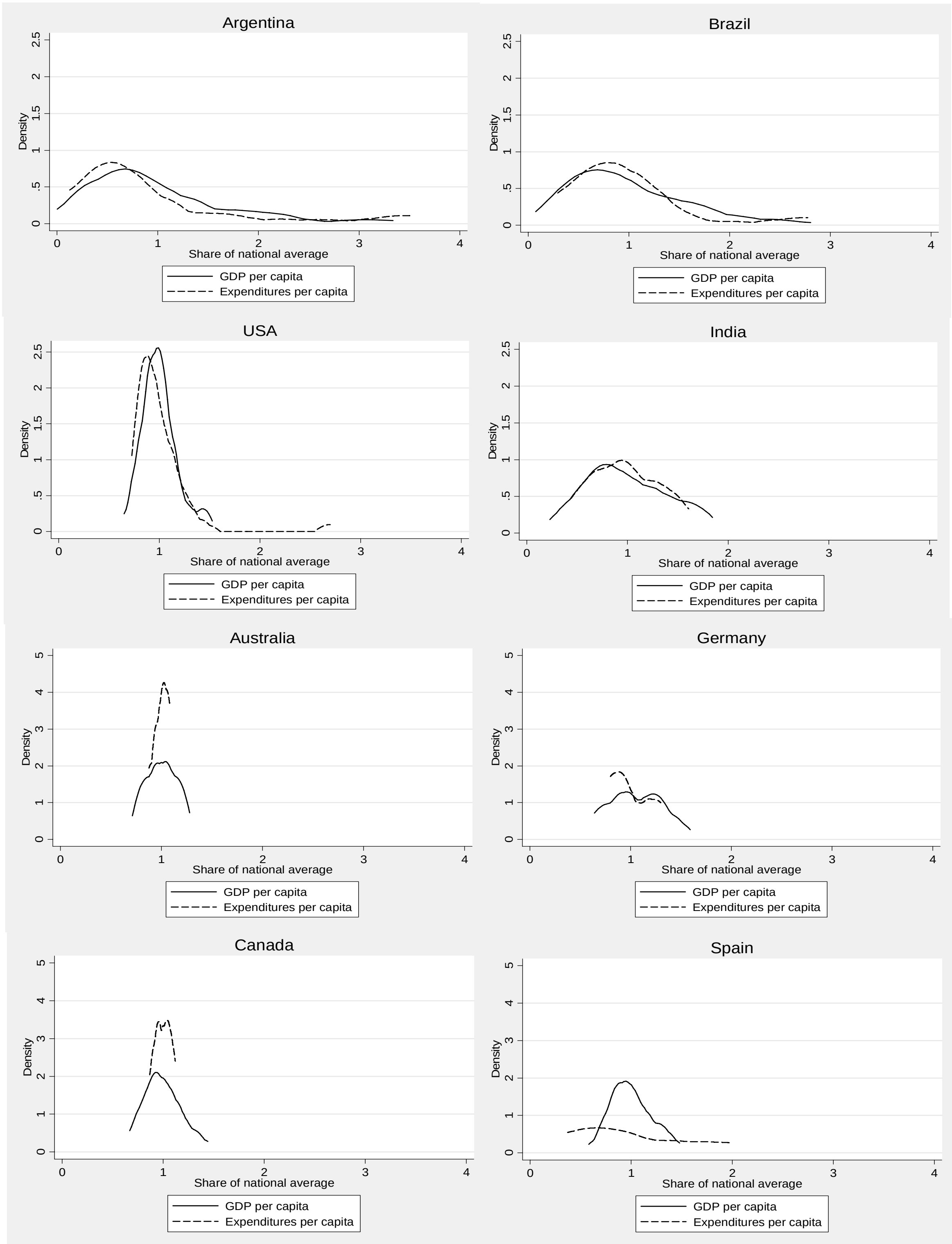


Figure 1a reveals that grants are highly progressive in Canada, Germany, Spain, and to a slightly lesser extent the European Union and Australia. Note that the imprecision of the Spanish estimate is driven by outliers and changes over time. No matter which autonomous communities are included, the negative coefficient is becoming larger over time, and has been statistically significant since the late 1990s. Moreover, the coefficient is always significant (and larger) if outliers—in particular Extremadura, the Basque Country, and Catalonia—are dropped. Without Catalonia and the Basque Country, the coefficient is consistently in the range of the Canadian or German estimates. The Australian estimates are imprecise partially because of the small number of states and territories (8), but also because the Australian Capital Territory, the Northern Territory, and Western Australia are outliers with high income and large grants (more on this below).

In contrast, no matter how one tortures the data, intergovernmental grants in Argentina, Brazil, India, and the United States are simply not progressive. In Argentina the coefficient is actually positive and bordering on statistically significant, while in Brazil and India the coefficient is zero. In the United States, the coefficient is generally positive if one includes all states, but as we shall see below, Alaska and Wyoming are prominent outliers, and without them the coefficient is indistinguishable from zero. In Argentina, Brazil, and India, there are specific grants with some progressivity built into the formulae, and indeed, these grants are negatively correlated with provincial income, but these effects are overwhelmed when other, more discretionary grants are considered as well.

It is also useful to get a sense for the size of intergovernmental transfers along with comparative estimates of progressivity. Figure 1b displays the redistributive power of grants in each federation. In four of the federations with highly progressive grants—Australia, Germany, Spain, and especially Canada—the substantive impact of redistribution is impressive. In the European Union, on the other hand, the impact is negligible since grants are so small relative to GDP. In the United States and India, where grants are not progressive in the first place, grants have little redistributive power. In Argentina and Brazil, redistributive power is somewhat larger, but as we shall see below, the redistribution favors small rather than poor provinces.

Figure 2: 1997 Distribution of real GDP and provincial expenditures per capita across provinces, expressed as share of average



It is also useful to examine whether intergovernmental transfers to provincial governments have an equalizing impact on their expenditures. I have also assembled data on real per capita expenditures of the provinces in each federation, and Figure 2 displays kernel densities of both real GDP per capita and real expenditures per capita, expressed as shares of provincial averages, for the year 1997 (other years look very similar). In the United States and the three middle-income federations, the distribution of expenditures is virtually identical to that of provincial income. Inter-regional inequalities in tax base are directly reflected in inequalities in service provision, and across provinces, real expenditures per capita are positively correlated with income.

The second group of federations shows a strikingly different relationship. In Australia and Canada, the distribution of expenditures is much tighter around the national average and more symmetric than the inter-provincial income distribution.[3] In these two federations, income and expenditures are uncorrelated. In Germany, the bipolar distribution of GDP across Länder corresponds to the "old" and "new" (Eastern) Länder. However, the equalization system brings the distribution together, and in fact, the cluster of states with above-average expenditures per capita are the relatively poor states, and unlike most other federations, if one ignores the two Hanseatic city-states, there is actually a strong negative correlation between income and expenditures per capita. Spain may appear quite different at first glance, because in contrast to other federations, the expenditure distribution is wider than the income distribution. This is because, as in Germany, a high level of inter-provincial redistribution assures that many of the relatively poor autonomous communities end up with above-average expenditures, and the communities on the far left of the expenditure distribution are actually the wealthiest, like Madrid and the Balearic Islands. Spain is like Germany in that expenditures are negatively correlated with income, and the equalization system brings about a reversal of fortunes.

In sum, this section draws a distinction between two rather different forms of federalism. In India, Latin America, and the United States, along with the European Union, grants from central governments do little to redistribute resources from wealthy to poor provinces. On the other hand, grants are progressive and redistributive in the European and Commonwealth federations.

[3] Note that the territories are not included in Figure 2. The inclusion of the Northern Territory and Australian Capital Territory would generate a more right-skewed distribution of both expenditures and income.

3. The political economy of inter-provincial redistribution

What explains these striking cross-country differences? The political economy literature has surprisingly little to say. The tendency in the public economics literature has been to view grants as efficient responses by benevolent governments to potential inefficiencies associated with externalities and inter-jurisdictional inequity (see e.g. Boadway and Flatters 1982). Yet all of the efficiency arguments made in favor of the Canadian equalization system should apply in the United States as well, where such a system has not emerged. More often, one encounters the rather informal argument that inter-provincial equality in service provision is a defining part of the Canadian (or Australian, or German) national identity, and citizens of wealthy provinces perceive that they have a moral responsibility to pay into a generous system of inter-regional transfers. This claim seems questionable at best, however, when one considers the disdain expressed toward inter-regional redistribution among wealthy taxpayers in Alberta, Catalonia, Baden-Württenberg, and New South Wales, and the efforts by representatives of such regions to alter the system. The rhetoric of national solidarity and equal service provision rings too hollow to provide a satisfying explanation, and in any case, this begs more interesting questions about the political origins of such rhetoric.

The tenor of complaints from provinces like Baden-Württenberg and Catalonia suggest that the fiscal system exploits the citizens of rich regions. Yet the dominant political economy literature largely rules out the possibility of exploitation in a federation. In Bolton and Roland (1997) and Alesina and Spolaore (2003), democratic federations are essentially voluntary, and provinces can unilaterally vote at any time for full independence, or at least a decentralized tax regime that minimizes inter-provincial redistribution (see also Buchanan and Faith 1987). For the democratic federations examined here, this "voluntary federation" approach captures the dynamics of 18th and 19th century federal bargains, when in Argentina, Brazil, Australia, Canada, the United States, and in the German Zollverein, the center possessed very limited capacity to tax in practice, secession threats were commonplace, and in some cases, constituent units presided over powerful militias. Yet over time, the central government gained access to new forms of direct taxation and gained a monopoly over military force, and the constitutions generally do not grant unilateral secession rights or vetoes over tax policy to individual provinces. Exploited regions in most modern federations are essentially stuck unless they are able to threaten a military insurgency or pursue other options not specified in the constitution.

Figure 2 above demonstrates that the inter-provincial income distribution is universally right-skewed in democratic federations, and if wealthy regions cannot credibly threaten to secede, the median voter logic would seem to imply that inter-regional redistribution is unavoidable. Yet Figure 2 also reveals that the federations with the most dramatically skewed inter-provincial income distributions are those that engage in the smallest amount of inter-provincial redistribution.

The political economy literature does not provide any obvious explanations for these patterns. The most relevant work is Bermandi (2007, 2008) and Beramendi and Diaz-Cayeros (2006). As in Bolton and Roland (1997), these papers derive preferences of actors from their place in the inter-regional and inter-personal income distribution, but rely on alternatives to simple majority rule for determining the level of centralization. For instance, they examine the possibility that poor, unequal regions like the U.S. South and Brazilian Northeast are captured by the wealthy, who are then over-represented in malapportioned upper chambers, and the possibility that incentives of regional politicians are shaped by party systems that can be viewed as exogenous.

These papers are primarily about the relative centralization of the tax-transfer system, however, and have less to say about the progressivity of inter-provincial transfers. If anything, these papers predict that intergovernmental transfers in the Latin American federations should be highly progressive, which is inconsistent with the data presented above. While highlighting some similar aspects of institutions and party systems, the remainder of this chapter lays out some related but distinct arguments, building on a different theoretical literature that highlights legislative bargaining. The most important departure is that this chapter views progressive intergovernmental transfers as a complement rather than a substitute for progressive inter-personal tax-transfer systems.

As the franchise expanded in the 20th century in industrialized democracies, political entrepreneurs on the left attempted to mobilize a low-income coalition with programmatic appeals in favor of redistribution. While the literature focuses primarily on inter-personal transfers, this redistribution also took the form of progressive subsidies for public services in low-income areas. Inter-governmental grants were especially important tools for the low-income coalition in federations where the central government lacked either the constitutional prerogative or administrative apparatus to implement redistributive programs directly. Grants that are indexed to a jurisdiction's average income or tax base can be a blunt tool for redistribution, since they might bolster the expenditures on the poor in poor jurisdictions (e.g. Nova Scotia) to a greater extent than those on the poor in wealthy but unequal jurisdictions (e.g. Ontario). However, subsidies to the poor in poor regions have a powerful benefit for the poor in wealthy regions if they reduce incentives for inter-regional mobility that would put pressure on wages and welfare benefits in the wealthy region. In a federation with decentralized expenditures and mobile capital and labor, it is self-defeating for a low-income coalition to push for new expenditure programs that will be enjoyed only in regions with a high tax base.

In short, I begin with the straightforward proposition that progressive inter-governmental transfers have been the favored policy of a national low-income coalition in federations in the 20th century. Some institutional features of democracies—namely presidentialism and a territory-based upper chamber—undermine the creation of such a coalition. Some of these institutions, in turn, are legacies of an earlier era when the basic federal bargain was being negotiated.

Presidential and parliamentary democracy

In a parliamentary system, the executive is formed directly from the legislature. All members of the majority party or coalition forming the government have valuable agenda powers over taxation and redistribution, and in the event of disagreement, they can be induced to act cohesively because of the threat of a no-confidence vote, which would threaten their agenda powers (Diermeier and Feddersen 1998). In a presidential democracy, the executive is elected separately from the legislature, and has no such tool with which to induce legislative cohesion.

In practice, legislative cohesion is greater in parliamentary than presidential systems. Moreover, since agenda control is so valuable, party discipline and a uniform party platform across districts arise endogenously in a parliamentary system, and the success of individual candidates is driven primarily by voters' assessments of the platform and performance of the candidate's party. In many industrialized parliamentary democracies, political parties form around a class or income cleavage, and voting behavior is correlated with income, both at the individual level and at the district level. Thus the party or parties of the left form a cohesive cross-district coalition representing poor voters. To the extent that income is right-skewed across individuals and electoral districts, parliamentary systems generate incentives for progressive taxation and redistribution. As the low-income coalition cohered over the course of the 20th century in parliamentary federations like Canada and Australia, the constitutional and administrative strength of the provinces and states created barriers to the erection of direct national programs. Instead, these programs were funded through transfers that were distributed according to income and other indicators of need. In parliamentary federations of more recent vintage—Germany and Spain—highly redistributive transfer systems have also been championed by a national low-income coalition represented by the parties of the left.

Presidentialism favors a rather different politics of redistribution. Representatives of various electoral districts do not face incentives to form cohesive coalitions in order to form and maintain a government with agenda control. Accordingly, incentives for party discipline are weak, and party platforms need not be coordinated across candidates, who face incentives to claim credit for providing private goods to their districts rather than national collective goods. Perhaps the most common way of modeling such a legislature is based on Baron and Ferejohn (1989), where the representative of one district is randomly selected as the agenda setter for a spending project, and she attempts to build the minimum winning coalition that preserves the greatest surplus for her district. A key feature of these models is that districts compete to get into the winning coalition, bidding down the price that must be paid by the agenda setting district. Districts with the lowest default payoffs, and those representing the smallest districts, are most likely to be part of the winning coalition.

Random assignment of agenda-setting powers may not be an appropriate assumption, especially in countries where the president is the agenda-setter in the budget process. Nevertheless, absent a no-confidence procedure, the president—even a leftist with a redistributive platform—must buy votes from individual legislators—perhaps even co-partisans—who do not internalize the political benefits of policies with dispersed beneficiaries. Trying to preserve enough surplus to fund favored national policies, the president assembles the cheapest possible winning coalition in the legislature, causing legislators to compete against one another for membership as in the Baron-Ferejohn model.

This type of legislative bargaining model seems to provide some insights into coalition-building in Argentina, Brazil, and the United States, where committee leaders and presidents clearly use discretionary spending projects and intergovernmental grants to achieve winning legislative coalitions. The dictates of legislative bargaining might help explain the weak correlation between provincial income and grants in these federations. Ignoring for a moment asymmetries in district size, even when the poorest districts are agenda-setters, they must offer a sufficiently attractive share of the pie to middle-income jurisdictions with higher default payoffs (and a higher share of the tax burden) to join the coalition. When middle-income jurisdictions have proposal power, the poor jurisdictions, with their lower default payoffs, will be attractive partners, but it will be possible to include them at very low cost.

Moreover, Baron and Ferejohn (1989) demonstrate how an open amendment rule can reduce the advantages of the agenda setter and bring about an equal division of the pie among the majority coalition, or under some conditions, generate a "universalistic" outcome in which every district receives an equal share. Baron (1991) points out that for bills that have high potential for pork-barrel inefficiencies, the legislature has an incentive to designate an open rule, and this is often the practice in the United States.

Regional representation and legislative bargaining

Even with a presidential system, no party discipline, and an open rule with the style of legislative bargaining outlined above, one might still expect to find a negative correlation between district income and grants per capita. When building coalitions, poor districts will seek out other poor districts due to their low default payoffs, and if the distribution of income across districts is very right skewed, a poor district will be the agenda setter most of the time. But this can easily be undone by another powerful determinate of a representative's default payoff: district size. Small districts are more likely to be recruited into winning legislative coalitions because their votes are cheaper.

A large body of empirical research in several federations demonstrates that other things equal, over-represented states receive disproportionate expenditures and intergovernmental grants per capita (for a literature review, see Rodden 2002). Over-representation of small jurisdictions is especially pronounced in the upper chambers of federations. Among the federations under analysis here, the most malapportioned are Argentina, Brazil, and the European Union. In Argentina and Brazil, small states are over-represented not only in the senates, but in the lower chambers as well, and both chambers are very powerful. In the United States and Australia, the upper chamber is powerful and highly malapportioned due to equal representation of states, while the lower chamber is much closer to population-based apportionment. The German Bundesrat over-represents small states as well, though less dramatically than the United States, and its assent is required somewhat less frequently than the other federations listed above. The Canadian, Indian, and Spanish systems do not feature powerful upper chambers, and malapportionment in the lower chamber is modest compared with the other federations.

In cross-section regressions that control for GDP per capita (not shown to save space), there is a strong, statistically significant negative relationship between population and intergovernmental grants per capita in the countries with legislatures that over-represent small states (Argentina, Brazil, the EU, Germany, Australia, and the United States). In fact, the negative coefficient is largest in the countries with the highest degree of malapportionment. There is no evidence of small-state bias in the three federations without strong territorial representation (Canada, India, and Spain). This suggests that the frequently observed relationship between size and intergovernmental grants is indeed a reflection of legislative bargaining rather than the higher per capita costs of providing public goods in small jurisdictions (Alesina and Spolaore 2003).

Figure 3: Real GDP per capita and real grants per capita, expressed as share of average

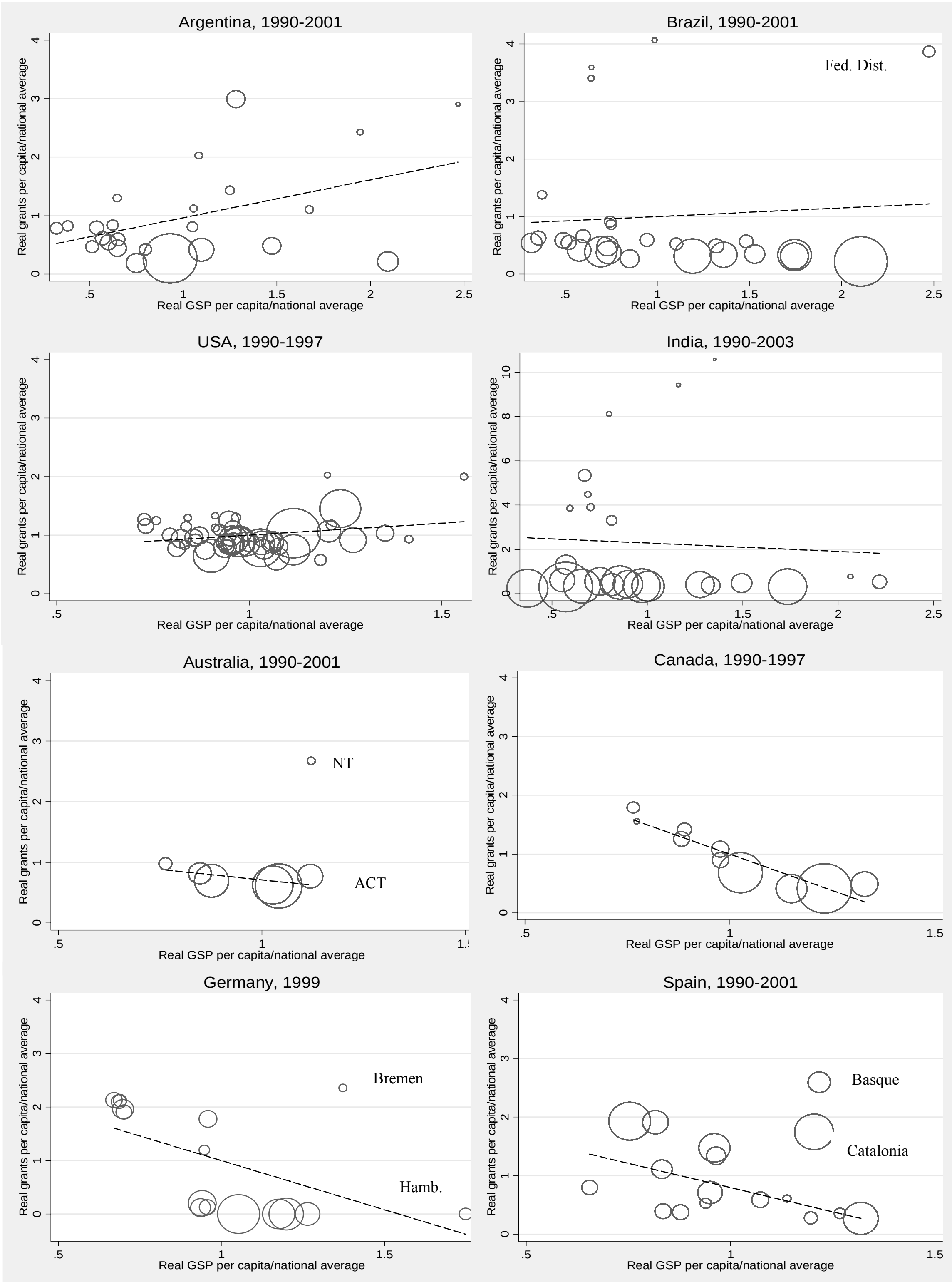
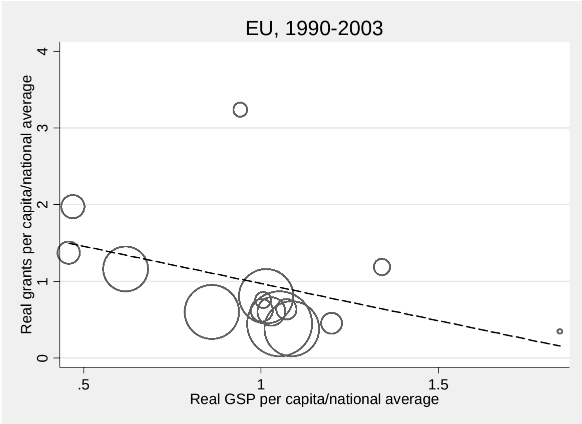


Figure 3 (cont): Real GDP per capita and real grants per capita, expressed as share of average



Using provincial averages from the 1990s, Figure Three displays income per capita on the horizontal axis and grants per capita on the vertical axis, each expressed as shares of the national average. The size of the bubble in each graph corresponds to the log of the province's population. Each graph also includes a fitted regression line. Note that in the federations with strong institutions of regional representation, the smallest bubbles are generally above the fitted line, and at most levels of income, the smaller provinces receive more grants than larger provinces at similar income levels.

But to what extend does the over-representation of small provinces undermine the correlation between income and grants? If size is perfectly correlated with income, malapportionment should only improve the bargaining position of the poor. However, if the correlation is weak, or even negative (as in Germany), there can be a class of small provinces that is more attractive than poor provinces as coalition members. In the extreme case, one can envision a coalition of wealthy provinces and small provinces that use their agenda control opportunities to exclude the large, poor provinces. Instead of forming a coalition with poor provinces to tax the wealthy and redistribute to themselves, middle- or low-income small provinces can offer the wealthy provinces a lower tax than what would have been offered by a purely low-income coalition, and keep for themselves the lion's share of the expenditures.

Indeed, something like this might be occurring in the presidential federations. Note that for Argentina in Figure 3, without the smallest provinces, one can envision a slight negative correlation between income and grants, but a group of small provinces—one that covers the entire income spectrum—has apparently been extremely attractive as coalition partners. With Argentina's extreme form of province-based representation, one can easily envision a winning coalition that is composed of provinces with above-average income and a handful of small, poor provinces. In Brazil, the smallest states in the Northeast have clearly been attractive coalition partners. These are poor states, but again, one can envision a winning Senate coalition combining wealthy and small states, and keeping more dramatic redistribution at bay.

In the United States, moderate small-state bias is the only discernable relationship. Ever since the formation of the New Deal coalition in the 1930s, it has appeared that small, sparsely populated states have been important targets of vote-buying efforts by political entrepreneurs attempting to introduce progressive reforms (Wright 1974, Anderson and Tollison 1991). Thus instead of targeting the poorest regions with relief expenditures, as with Canadian programs originating in the great depression, the distribution of grants in the United States reflect the logic of legislative coalition-building, especially in the Senate.

In the European Union, total transfers from Brussels are progressive. Over-represented states have traditionally been favored in the distribution of transfers, which does introduce some outliers that weaken the relationship between income and grants, but the effect has not been large enough to undermine the relationship altogether.

If one considers the wealthy Hanseatic city-states in Germany, as well as the two territories in Australia, it would appear that over-representation in the upper chamber does indeed favor small states in these federations, and this weakens the correlation between income and grants to some extent. In Germany this weakens the relationship only slightly because of a pair of outliers among 16 states. But in Australia, the inclusion of the two territories, both of which are over-represented in the Senate, causes the relationship to lose significance. Relatively wealthy and over-represented Western Australia is also an outlier among the states that pushes in the same direction.

Since they are parliamentary federations with strong, disciplined parties, one might not expect evidence of this type of legislative bargaining in Australia and Germany. Parties do play an important role in both the Bundesrat and the Australian Senate, yet the chief executive cannot threaten to impose a vote of no confidence, creating greater scope for bargaining over the distribution of funds between representatives of states, even within the governing party or coalition, than in the lower chamber (see Pitlik, Schneider, and Strotman 2005). In this environment, small states may be well-positioned to extract disproportionate benefits in spite of disciplined political parties.[4]

In Australia, "small" and "poor" were descriptors that could be used interchangeably for the recipient states in the intergovernmental system from the early era of confederation in the 19th century until recently (Tasmania, Western Australia, and South Australia). Thus for most of Australian history, if anything, malapportionment may have only enhanced progressive redistribution. More recently, however, natural resource booms have lifted the Northern Territory and Western Australia well above the national average, yet they have maintained a favorable position in the distribution of transfers, perhaps in part because of favorable political representation.

Canada and Spain are examples of parliamentary federations with strong party discipline, upper chambers that have little or no veto authority in the distribution of resources, and relatively little malapportionment in the lower chamber. Thus small states have no special bargaining power that would undermine the low-income coalition in favor of equalization. In Canada, Figure 3 shows that the negative correlation between GDP per capita and grants is very tight, and controlling for income, small provinces are not favored. In Spain, if anything there is a bias in favor of large states. The negative correlation between income and grants is weakened by Catalonia and the Basque Country. Moreover, the Spanish case may also reveal that legislative bargaining also plays a role even in parliamentary systems with strong parties, especially under minority government. Regional parties from these two autonomous communities have frequently been pivotal partners propping up minority governments, putting them in a position to extract extra resources (see Solé-Ollé, this volume). This weakens but does not destroy the negative relationship between income and grants.

While over-representation of small states may appear to be important in India in Figure 3, this reflects grants to the "special category" states on India's Northeast border. It is true that these states are slightly over-represented, and perhaps some part of their special status is a product of legislative bargaining, but it seems more likely that these transfers reflect other features of these states. If these states are dropped, there is no relationship between size and transfers in India, and with its parliamentary institutions,

[4] To a large extent, the distribution of grants in Australia is driven by the grants commission. Nevertheless, the recommendations of the commission must be approved by the legislature, and some grants are still subject to direct influence by the legislature (Worthington and Dollery 1998).

weak upper chamber, and relatively minor malapportionment, in this respect it resembles Canada and Spain.

In sum, it appears that when small jurisdictions are over-represented, particularly when the chief executive cannot use the threat of a no-confidence vote to promote legislative cohesion, they are attractive coalition partners for anyone hoping to achieve a change from the status quo, which allows them to extract larger shares of intergovernmental grants than other jurisdictions at similar income levels. Under some conditions, this can generate legislative coalitions that undermine the correlation between income and expenditures that one might otherwise expect when the distribution of income across districts is right-skewed.

Regional representation and the relevant income distribution

Legislative representation based on regions rather than individuals might also undermine progressive redistribution through another mechanism, even if the regional jurisdictions are similar in population. In Meltzer and Richard (1981) and more recent work in the same tradition, redistribution emerges in democracies because the decisive median voter is poor relative to the mean, and thus benefits from a progressive tax-transfers scheme. In the empirical literature (see Milanovic 2000), this is captured with gini coefficients or median/mean ratios of individuals.

Yet this approach assumes away the existence of winner-take-all districts. Implicitly, it assumes something like Dutch proportional representation, where there is perfect proportionality between national votes and seats for each party, and the parties have incentives to concern themselves only with the national distribution of voter preferences. If electoral competition takes place in winner-take-all districts, however, the parties must be concerned not with the national median voter, but rather, the median voter in the median district (Hinich and Ordeshook 1974). Accordingly, the relevant income distribution in such systems is not that of individuals, but rather, that of district medians.

This is a potentially important distinction. Even if the distribution of individual income demonstrates a severe right skew within each district (and hence nationally), the distribution of district medians will be considerably less skewed. Let us make the realistic assumption that individuals are clustered into neighborhoods with relatively homogeneous incomes. If electoral districts are sufficiently small—say the size of a U.S. census block—the distribution of district medians will resemble the distribution of individuals. As districts get larger, they become more heterogeneous, and the average wealthy neighborhood is increasingly likely to be swallowed up into a district with an internal right skew to the distribution of individual income. And as districts get larger, the right tail of the distribution of district medians is drawn dramatically toward the middle, and the shape becomes more symmetric. In the extreme case—a federation with a small number of very large regional districts—the distribution of district medians is not skewed at all.

For example, in U.S. census micro data the median/mean income ratio for all individuals is .74. But if the relevant income distribution is that of the medians of U.S. Congressional districts, one obtains a much more even distribution shorn of a long right tail, and the median/mean ratio is .95. However, if one considers the U.S. Senate, the relevant distribution is that of state medians, where the distribution is almost symmetric, and the median/mean ratio is .98. In both Australia and Canada, the median/mean ratio for individuals is around .85, while that for the medians of parliamentary electoral districts is around .96, and that for state/provincial medians is .97.

In a system with a single powerful legislative chamber and proportional representation, as in much of continental Europe, the right-skewed inter-personal income distribution is politically relevant, and the democratic process provides little hindrance to the formation of a low-income coalition that will implement redistribution. However, when the legislature is based on winner-take-all districts, legislative representatives have incentives to represent individuals with the median income in the legislative district, and collective choice in the legislatures is based on a less skewed distribution. The median legislator will prefer a lower level of redistribution than would the median voter under proportional representation. With an upper chamber based on equal representation of winner-take-all states or provinces, as in Argentina, Brazil, and the United States, the relevant income distribution is even less skewed, and the median representative prefers little redistribution. By condensing the relevant income distribution and relying on collective choice among regional representatives rather than individuals, strong regional upper chambers can muffle demands for both inter-personal and inter-regional redistribution.

4. Endogenous Federal Bargains

One might think of federalism as a continuum where at one extreme, unanimity of provincial representatives is required for changes from the status quo, as in the EU Council of Ministers or the 18th century American Articles of Confederation. At the other extreme, changes from the status quo require a simple majority of individuals rather than provincial representatives.

The previous section argued that when countries entered the 20th century with limited central government tax powers, the former type of federation was able to resist attempts to form a cohesive low-income coalition that endeavors to centralize taxation and equalize service provision throughout the territory. This argument has a similar flavor to Persson and Tabellini (1996), who establish conditions under which unemployment insurance would be greater if chosen through majority rule than if chosen through inter-regional bargaining, since the latter undermines the formation of a national coalition of "high-risk" individuals (see also Beramendi 2008).

In other words, by maintaining institutional features like strong regional upper chambers and super-majority requirements, some federations share characteristics of the voluntary federalism envisioned by Bolton and Roland (1997) or Alesina and Spolaore (2003), while others share features of unitary systems. But what accounts for these institutional differences? Perhaps institutions and inter-regional transfers are both reflections of some deeper set of bargains or trade-offs. It may be naïve to view inter-regional redistribution as exploitation of the rich provinces by the poor if the rich could, at some cost, secede from the union. Perhaps the transfers are in fact voluntary, and reflect the interests of rich, who are getting something important in return.

This perspective yields important insights, especially if we expand the scope of analysis back to the initial bargains that gave rise to modern federations (Wibbels 2005). The centralization of tax power has been one of the thorniest issues in these bargains (see Diaz-Cayeros 2006). Prior to World War I, the fights were primarily about tariffs, customs, and excise duties, and more recently, they have been about income taxation. In the federations of North and South America as well as Australia and the German Zollverein, one of the key reasons for confederation was to eliminate duties and other costly impediment to inter-state trade by centralizing the tariff and customs duties. But centralization of the tariff in an era of proto-industrialization meant that the potential costs and benefits of confederation varied across regions in predictable ways. Those with the most to gain were industrialists in the burgeoning economic core, who desired a high tariff to protect nascent domestic manufacturing against foreign competition. The agricultural interests of the periphery invariably favored free trade and low tariffs, and if it implied locking themselves into a union with an economic core that had incentives to exploit them, they had the most to fear from confederation. Thus contrary to contemporary autonomy movements in relatively wealthy and industrialized jurisdictions like Flanders, Lombardy, or Catalonia, prior to World War I the greatest skeptics of confederation were the farming and mining interests in the rural periphery.

The historical legacy of these battles has shaped contemporary patterns of inter-regional redistribution in two inter-related ways. First, in some federations the representatives of the sparsely populated pastoral regions bargained for institutions, described above, that assured they would have a veto over proposed changes from the status quo. Second, in some cases their fears were assuaged directly through fiscal transfers, and these transfers became the seed from which formal equalization payments grew several decades later.

In the debates about confederation in Australia, the peripheral states of South Australia, Tasmania, and Western Australia were resistant to the idea of confederation out of concerns that with population-based representation, the wealthy and populous states, especially New South Wales, would be able to drive tariff policies that forced them to buy expensive domestic manufactured goods, and deprive them of their most important sources of tax revenue. They refused to agree to confederation without equal representation of the states in a territorial upper chamber. A history of exploitation and domination by Sao Paulo/Minas Gerais and Buenos Aires eventually led political entrepreneurs to strike stable constitutional deals that over-represented the periphery in Brazil and Argentina as well. Realizing the potential usefulness of small rural states as coalition partners, Peron in the 1950s and the Brazilian military regime of the 1960s utilized a similar strategy of adding politically friendly, sparsely populated states (Diaz-Cayeros 2006). In the United States, while the conflict of slavery gets most of the attention, there was also an important conflict between Hamiltonian centralizers favoring a powerful central government and high tariffs designed to protect the emergent economic core, and those like Jefferson who preferred a weak, fragmented central government that provided agricultural interests with a veto over tariff and other tax policies.

These battles created a long historical legacy. In each of these countries, when demands for further centralization of taxation and redistribution grew in the era of global war and depression, changes from the status quo required something well beyond a national majority of low-income individuals. As revealed by the data presented earlier, coalition-building favored small jurisdictions, often at the expense of the poor. Only in Australia did the over-representation of the small coincide with that of the poor in a way that facilitated progressive inter-regional redistribution. It is an historical irony that the fragmented federal institutions grudgingly granted by the enthusiastic centralizers of the commercial elite in the core may have eventually protected their grandchildren from demands for redistribution.[5]

An interesting contrast to these federations is Canada, where one of the most pressing constitutional questions has always been whether confederation can be interpreted as a compact at all. The project was driven by British loyalists and representatives of London, and "without the coaching, prodding, and fixing of imperial officials, Confederation would probably not have occurred" (Russell 1993: 20). While some delegates from Canada West (Ontario) advocated for a stronger, elected upper chamber, most delegates favored an appointed upper chamber on the British model, although with some over-representation for the Maritimes, and given the recent experience with civil war, there were no advocates for any of the fragmenting institutional features of U.S. federalism.

Early battles over the centralization of taxation may have generated not only institutions, but in some cases the transfers themselves. In Canada and Australia, the first decades of Confederation were characterized by frequent secession threats from the skeptics of confederation in the periphery. The most credible of these threats were from natural resource exporting provinces with their own ports or trade routes that would allow them to "go it alone" or join with an alternative economic core. Western Australia, Nova Scotia, and eventually Western Canada are the clearest examples, and each flirted with secession throughout the early 20th century, using the resulting bargaining power to extract ad hoc transfers from the federal government. Anger and alienation in the provinces of the periphery was fueled by tax centralization that stripped them of their most productive taxes, and tariffs that forced them to buy expensive

[5] Wibbels (2005) makes a more general version of this argument, hypothesizing that fragmented federal institutions with limited scope for redistribution came about as a result of conflict between factors of production.

domestic products. In both countries, from the moment of confederation on, transfers were designed quite explicitly in Australia (Hancock and Smith 2001), and implicitly in Canada (Stevenson 2004), to compensate the periphery for the burdens of a union that aimed to create an industrialized society where agglomeration economies generate a "concentration of population and power, both political and economic, in the eastern centers" (Commonwealth Grants Commission 1935: 41). In Australia, the Grants Commission made its first report advocating equalization at a time when Western Australia was petitioning the UK Parliament for the right to secede.

In both countries, a system of ad hoc, negotiated compensation for burdens of industrialization morphed into a formal system of equalization in the 1930s and 1940s, when the cause was taken up by a low-income coalition. The "burdens of confederation" were quite difficult to measure, and this rhetoric was replaced with one emphasizing both the efficiency and justice of equal service provision. Thereafter, the call for equal service provision across the federation was a central part of the platform of the parties of the left. Even though parties of the right experimented with platforms that would have rolled back or eliminated equalization, the transfers were already a long-standing status quo, and the political risks of alienating voters in recipient jurisdictions was too high. With the exception of those states in the periphery that became wealthy from oil and other natural resources, these peripheral states developed long-term dependence upon the central government, and secession threats are now a thing of the distant past.

While the circumstances under which federal bargains were struck more than a century ago seem to provide useful insights in older federations, what about countries like Germany or Spain that experienced long interregnums of centralized authoritarianism, with a contemporary federal bargain that occurred after World War II in an era of tax centralization?

In the negotiations leading up to the German Basic Law and the system of fiscal equalization in the aftermath of World War II, the representatives of the relatively wealthy states desired a decentralized system of taxation and fought for a strictly origin-based system of transfers in areas where central taxation was viewed as necessary. By examining the bargaining among states in occupied Germany prior to the negotiation of the Basic Law, one gets a glimpse of what a voluntary bargain would have looked like. It could not possibly have been redistributive. Initially, the wealthy states even resisted efforts to arrange relatively small subsidies for states that were overwhelmed by war refugees (Renzsch 1991).

Yet ultimately the Basic Law was negotiated not by unanimity rule among Länder, but among national party leaders. The wealthy states were not in a position to threaten secession, and with the allies impatient for a deal, the CDU—with its preference for a more decentralized and less redistributive system—was not in a position to hold up the negotiations. Given its powerful position in the constitutional assembly, the SPD was able to bargain for a constitution that represented the interests of a low income coalition from the beginning, and it was able to enshrine a system of transfers meant to achieve "equivalent living conditions" directly in the constitution.

In Spain as well, it seems likely that a voluntary union among representatives of regional governments in the late 1970s would have generated a much less redistributive system than the one that emerged. Such governments had not yet been constituted, and even though the tax-transfers system was broadly unsatisfactory for representatives of Catalonia and the proposed institutions provided few protections, the default payoff was very unattractive given the risk of a return to authoritarianism (Colomer 1998).[6]

5. Conclusion

Exploitation of the rich by the poor is impossible in a voluntary pact among sovereigns where the rich can secede. But fiscal redistribution from rich to poor regions can happen even in a voluntary union. Market integration can generate "peripheralization," whereby agglomeration and urbanization economies push economic activity toward the core, and in order to achieve a common market, the burgeoning core must compensate the periphery for these risks. This helps explain early precursors to equalization transfers in Canada and Australia, and the European Structural Funds today.

Once a common market has been established, wars and depressions have paved the way for further tax centralization, and secession threats have lost their bite, intergovernmental transfers can become an important tool for political entrepreneurs

[6] Perhaps the most striking outlier in this chapter is India. The constitutional bargain did not include presidentialism or strong protections for states, and as in Germany, the constitution calls for efforts at inter-regional redistribution. Yet intergovernmental grants do little to combat inter-regional inequalities. One possible explanation is the fact that India was governed until recently by a hegemonic party that used discretionary transfers to allied state governments as a way to cement its dominance, and more recently, by fragile coalitions of regional parties. In this context, no political party has been able to build a national low-income coalition.

who wish to mobilize the poor. In this context, an institutional legacy of bargains and battles among sovereigns places limits on the possibility of inter-regional redistribution by shaping the requirements for changes from the status quo. Institutions of federal fragmentation that once protected the small and peripheral can now be of use for the rich as well.

Some decentralized countries that have many of the trappings of federalism do not retain any of the institutional baggage from a bygone era of federation-formation, or never had any in the first place. The prime examples in this paper are Canada and Spain, but one finds a comparable dynamic in Italy, Belgium, and the UK. In these countries, changes from the status quo require simple national majorities of individuals or small districts, and with a right-skewed income distribution, the wealthy are at the mercy of the poor just as in a unitary democracy. Bilateral and multilateral "negotiations" over taxes and transfers are conducted between the center and provinces with great sound and fury, but in the end, the center reserves the right to act unilaterally, and frequently does so.

In such countries, it is quite natural that wealthy taxpayers in wealthy regions wish to move in the direction of U.S. federalism, where taxes are highly decentralized and the central government's expenditures are not very progressive. Yet when the low-income coalition is entrenched and a high level of redistribution is already the status quo, their options are limited. Moderates support regional parties that attempt to disrupt the low-income coalition and bargain for concessions in the legislature, while extremists seek secession. This dynamic captures the fault lines of an important political conflict in Europe and beyond. It remains to be seen whether the genie of inter-regional redistribution, once set free, can be squeezed back into the bottle.

Data Appendix

Argentina: Fiscal data and gross provincial product are from the Ministry of Economy, Subsecretary of Regional Programming, adjusted for inflation using the CPI developed by Sanguinetti and Tommasi (1997). Provincial population data are from the National Institute of Statistics and Census.

Australia: Fiscal data are from Australian Bureau of Statistics, Government Finance Statistics State government series, adjusted for inflation using the CPI of the largest city in the state (produced by ABS). Gross state product and population data are from ABS state accounts. All data were obtained directly from the ABS.

Brazil: Fiscal data were obtained directly from the Ministry of Finance: Minestério da Fazenda, Secretaria do Tesouro Nactional, Coordinação-Geral das Relações e Análise Financeira de Estados e Municipios. Inflation adjustment was conducted using the INPC deflator prepared by IBGE, Diretoria de Pesquisas, Departamento de Indices de Preços. Population and gross state product are from IBGE, Diretoria de Pesquisas, Departamento de Contas Nacionais, Contas Regionais do Brasil, microdados.

Canada: All data are from Statistics Canada, CANSIM series, deflated using provincial-level CPI.

Germany: Fiscal data are from the *Statistisches Bundesamt,* accessed from http://www.statistik-bund.de (no longer in service, replaced by www.destatis.de). Land-level GDP, population, and Land-specific deflators were provided directly by the Baden-Württemberg Ministry of Finance.

India: Population and inflation-adjusted fiscal data were kindly provided by Shahrokh Fardoust at the World Bank. Inflation-adjusted gross state domestic product data were obtained from the Reserve Bank of India.

Spain: Data were provided by Pablo Beramendi and Erik Wibbels.

USA: Fiscal and population data were obtained directly from the Census Department. Fiscal data were adjusted for inflation with the national CPI produced by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). CPI and gross state product were obtained from the BEA web page: www.bea.gov.

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