

Federalism and Macroeconomic Management

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Recent research on federalism is extremely divided. While some tout the benefits of "market-preserving" federalism, others point to the fragmentation and incoherence of policy in federal states. This research bridges the divide by theorizing and analyzing the political and fiscal structures that are likely to account for the highly divergent economic experiences of federal systems around the world. To test our propositions, we conduct an analysis of macroeconomic performance in fifteen federations around the world from 1978 through 1996 using an original data set. Our empirical research suggests that the level of fiscal decentralization, the nature of intergovernmental finance, and intergovernmental partisan relations all influence macroeconomic outcomes. The findings have broad implications for the widespread move toward greater decentralization and the theoretical literatures on federalism and macroeconomics.

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Research on the relationship between federalism and economic outcomes currently is characterized by a split personality. On one hand, long standing traditions in research on fiscal federalism (Oates 1972), public choice (Tiebout 1956; Brennan and Buchanan 1981), and a more recent body of work on "market preserving federalism" (Weingast 1995; Montinola, Qian, and Weingast 1995) extol the virtues of decentralized fiscal and political decision making. Theoretically, where subnational politicians have incentives to respond to the diverse interests of multiple, decentralized constituencies the public sector will be smaller and more efficient, markets will expand, and economies will grow more rapidly. On the other hand, a series of empirically oriented papers (Rodden 2001a; Treisman 2000; Wibbels 2000) provide mounting evidence that federalism often complicates economic policymaking. When compared with unitary systems, federalism appears to empower regional politicians who act as veto players and exacerbate collective action problems vis-à-vis macroeconomic policy.

Neither body of research, however, sits well with the simple fact that the economic records of federations vary dramatically. While federalism may well be part of the story of secure property rights, rapid growth, and fiscal prudence in the United States, it is just as often viewed as a contributor to unstable property rights, sluggish growth, and macroeconomic volatility in countries like Brazil and Russia. This paper is designed to explain some of the tremendous diversity in the macroeconomic experiences of federations around the world. It does so by moving beyond earlier work to examine the diversity of political and fiscal structures that differentiate federal systems from one another. Federations have some important features in common—above all they possess institutions that protect the autonomy of the subnational governments while limiting the authority of the center. Indeed, these features figure heavily in both the “market preserving” and “marked distorting” sides to federalism’s apparent split personality. But this paper hypothesizes that the effect of federalism on macroeconomic management is contingent on a variety of fiscal and political factors, including geographic

characteristics, the level of fiscal decentralization, the revenue autonomy of regional governments, and the nature of party systems. For example, we expect differences between countries like Canada, where the provinces spend as much as the federal government and have wide-ranging authority to set the base and rates on their own taxes, and countries like Germany where the Laender receive virtually all of their resources from grants and revenue-sharing. Likewise, if existing arguments about federalism are correct, we should expect that strong national parties and other political variables have an effect both within and across countries. For instance, we expect to find differences between countries like Pakistan, where subnational executives are hand-picked by the governing party at the center, and countries like Canada and Spain, where a different range of political parties compete at the central and subnational levels.

In short, our premise is that federalism's good (or alternately bad) reputations should actually be attributed to underlying incentives built into each country's political and fiscal institutions. To identify the factors that influence the divergent macroeconomic performance of federal systems, this paper examines fiscal and inflationary performance in 15 federations around the world from 1978 through 1996. Our 15 cases include all countries that other studies widely identify as federations and for which the necessary data are available.

Because of its range of new political and fiscal variables and the extensive country and time coverage, our data set is a major improvement over those used in previous studies. Above all, we have collected reliable data on provincial tax autonomy and partisanship. Our approach allows us to make important contributions both to the burgeoning literature on the political economy of federalism and decentralization, and the broader literature on macroeconomic policy and reform. Our findings indicate that the structure of both fiscal and party systems influence macroeconomic performance in federations. Contrary to recent literature on the "dangers" of decentralization, in our sample of federations, fiscal decentralization is associated with smaller deficits and lower inflation rates, especially when the states have wide-ranging autonomy over taxation. Fiscal performance declines and inflation increases as state governments become more

dependent on intergovernmental transfers, especially when this is combined with high levels of fiscal decentralization. Additionally, we find that greater intergovernmental partisan continuity is associated with improved macroeconomic performance.

The first section of the paper overviews the contending perspectives on the relationship between federalism and economic outcomes. The second section lays out several arguments linking distinctive political and fiscal features of federalism to deficits and inflation. The third section introduces the data set and empirical approach, and the fourth section tests these arguments using an original time-series cross-section data set. The final section concludes and discusses broader implications of the findings.

I. Federalism and Macroeconomic Outcomes

For decades, most researchers have viewed the relationship between decentralized decision-making and economic performance quite positively. Both economists and political scientists have suggested that decentralized and shared governance in a context of multi-tiered governance ensures a more efficient delivery of public goods, limits unproductive government intervention in the economy, brings decision making closer to citizens, and encourages the emergence and maintenance of effective markets as a result of the competitive pressures that states and provinces place on national governments (Tiebout 1956; Oates 1972; Brennan and Buchanan 1981). First, decentralized decision-making overcomes aggregation and information problems by bringing policy decisions more closely in line with citizen preferences, which vary across provinces or localities. Second, decentralized government helps electorates discipline local officials, thereby solving agency problems. Finally, provincial and local decision-makers should be constrained by the ability of individuals and firms to “vote with their feet”—a euphemism for their capacity to move to jurisdictions that offer the most attractive package of taxes and services (Tiebout 1956). Although researchers have questioned the empirical validity of some of these

assumptions and propositions (e.g. Inman and Rubinfeld 1997; Lyons, Lowery, and Dehoog 1992), they have provided the foundation for decades of theorizing and justifications for advocates of decentralization in countries as diverse as Spain and South Africa.

While economists generally gloss over the distinction between federal and unitary systems, recent literature stresses that these gains are most plausible when the autonomy of subnational governments is protected and the central government's authority is credibly limited—in other words, among federations (Weingast 1995; Montinola, Qian, and Weingast 1995). Barry Weingast and his collaborators combine the public choice and welfare economics traditions with some insights from William Riker to identify a subset of federal systems that are uniquely “market preserving.” More recently, the notion that federations foster markets has led some to claim that systems of multi-level governance are uniquely responsive to the dual pressures for both internationalization and localization associated with an increasingly global economy (Watts 1999; Newhouse 1997; Doner and Hershberg 1999). The shared governance characteristic of federalism supposedly empowers citizens, who at the same time that they are participants in the global marketplace, demand a flexible, responsive public sector.

In addition to the well-known informational advantages of decentralization, these research traditions emphasize two rather overtly political advantages of federalism. First, autonomous subnational units serve as a powerful constraint on what are viewed as leviathan-like, market obstructing impulses of central governments. While self-interested central officials often have incentives to manipulate economic policy, confiscate wealth, or expand the scope of the national government, strong subnational government serve to check the federal government and ensure property rights (Weingast 1995). Second, the competition among subnational units for tax bases and investment constrains the size of the public sector and ensures the efficient delivery of public services consistent with the diverse demands of disparate decentralized constituencies (Qian and Roland 1998).

More directly to the research at hand, there are several reasons to think these arguments will also have positive implications specifically for macroeconomic performance. According to the literature on political business cycles, politicians might benefit from expanding national economies unexpectedly. As a result, they face incentives to overspend and increase the money supply in the short-term even if the long-term results are sub-optimal. Under these conditions, it is crucial to design institutions that credibly commit policymakers to stable prices and spending restraint. According to Lohmann (1998), Qian and Roland (1998), and others federalism often serves exactly this purpose by providing checks and balances on central policymakers, thus preventing them from renegeing on their macroeconomic commitments. State governments, in essence, police the inflationary and deficit bias of central officials. In a related matter, Lohmann (1998) also hypothesizes that federations are more likely than unitary countries to develop politically independent, inflation-averse central banks that refuse to provide accommodating monetary policy. Moreover, competition among regional governments in attracting mobile capital might increase the opportunity cost of public spending and underscore the utility of fiscal restraint (Brennan and Buchanan 1981). If a state's public sector is wasteful, investors and voters can move elsewhere where their taxes are used more efficiently. This situation contrasts with a single unitary government whose expansionary tendencies are relatively unchecked since capital tends to be much less mobile across national boundaries than it is across states within nations. The result should be a smaller overall public sector, an emphasis on fiscal balance, and inflationary restraint in federations.

These arguments seem to square well with some facts in OECD federations. For instance, federalism and central bank independence seem at first glance to be important complementary factors in any explanation for low and stable inflation rates and long-term prudent fiscal management in the United States, Switzerland, and Germany. Yet federalism has been coupled with loose fiscal management, politically captured central banks, and high and volatile inflation rates in Brazil, Argentina, and Russia. In fact, despite the theoretical attractiveness of

decentralized government, federalism is gaining a bad reputation in some quarters. The central argument running through these critiques is that federalism often exacerbates collective action problems in the formulation and implementation of economic policy. Under a set of common conditions, federalism empowers regional politicians who face incentives to undermine macroeconomic management, market reforms, and other policies that have characteristics of national public goods (Prud'homme 1995; Triesman 1999; Wibbels 2000). Self-interested regional elites do this either through autonomous policies made at the local level, or through their influence as veto players in the policymaking process at the center. Thus the very restraints on the central government that supposedly underlie commitment and prudence might just as well prevent the center from effectively resolving coordination and cooperation problems and internalizing externalities.

Even some students of Canadian and American federalism have long suspected that fiscal decisions of the provinces and states might undermine the central government's attempts at macroeconomic management. More recently, in the wake of debt crises induced by the excessive borrowing of subnational governments, observers of federalism in Brazil and several other developing countries have moved beyond suspicion (Dillinger and Webb 1999). These events have spurred an empirical literature suggesting that federations are more prone to fiscal and monetary mismanagement and crises than unitary systems—especially in developing countries.¹

There are good theoretical reasons supporting the empirical findings that federal political structures can have a negative impact on macroeconomic management. First of all, in several federations, subnational governments account for nearly half of all government spending. In such systems, any attempt to balance public budgets and ensure price stability must include simultaneous and concerted efforts by multiple levels of government. Second, provincial

¹ Wibbels (2000) finds higher and more volatile deficits and inflation rates among federations than unitary systems in a sample of developing countries. Using a larger sample, Treisman (2000) finds that federations do not demonstrate higher inflation rates than unitary systems, but if inflation problems develop, federations are less likely to resolve them.

politicians face weak incentives to make fiscal decisions that create positive externalities for the rest of the federation to the extent that they are concerned primarily with their own political success. More to the point, they might consistently make fiscal decisions that create negative macroeconomic externalities and undermine the provision of federation-wide collective goods like price stability and fiscal balance.

In an unfortunate but common scenario, subnational governments might spend beyond their means, all the while hoping that the central government will ultimately be compelled to bail them out through loans or special transfers when their burdens become unsustainable. For instance, in response to an unexpected negative revenue shock, subnational officials might be unwilling to raise taxes out of fear of displeasing mobile voters and capital. Alternatively, they may not be willing to endure the political pain of expenditure cuts. In a variety of scenarios, subnational officials can try to externalize the political costs of adjustment to central government officials. Such behavior could lead to upward pressure on overall public sector deficits and inflation, even if the central government does not come through with the expected bailout (Rodden 2001a). Recent empirical studies have demonstrated some ways in which the burdens of subnational governments affect the central government's fiscal policies. Fornasari, Webb, and Zou (1998) find a significant relationship between subnational deficits and higher central government expenditures and deficits. Triesman (2000) shows that when central banks are not autonomous, subnational deficits lead to higher levels of inflation.

Even when regional governments play a relatively small spending role, they may nevertheless have the ability to undermine macroeconomic management by blocking the central government's attempts at fiscal management or reform, particularly if these would prove painful for regional constituents. A key feature of political federalism is the formal or informal inclusion of representatives of regional governments as veto players in the central government. In the vast majority of federations, a relatively strong upper legislative chamber represents the regions by

territory rather than population, which provides small states with important bargaining advantages (Samuels and Snyder 2000; Stepan 1998). In some federal systems (e.g. Germany), the regional governments are directly represented in the upper house; in most others (e.g. the United States), the representatives of the federated units are directly elected.² Even where upper chambers are relatively weak, moreover, powerful but regionally oriented parties can serve to obstruct the development of coherent central policies in favor of the particularistic needs of decentralized elites. Such is quite clearly the case in Argentina and India.

This “territorial representation” aspect of federalism might create a dynamic that is similar to the well-known “war of attrition.” Alesina and Drazen (1998) argue that multi-party coalitions might be slow to adjust to negative shocks because members of the coalition cannot find easy political targets upon whom they can externalize the costs. Decision-making in federations is often a process of regional coalition-building, and it may be difficult to come to an agreement about how to distribute the regional costs of adjustment among provinces with veto authority over federal policy. For these reasons, the provision of nation-wide collective goods, especially with respect to macroeconomic policy, might be more difficult in federations than their unitary counterparts.

Yet, while recent studies comparing federal and unitary systems begin to fill a large gap in a macroeconomic policy literature that has traditionally ignored the role of multi-tiered systems of government, the design of these works smoothes over the wide range of variation within the universe of “federal” countries. The distinction between federal and unitary systems is generally conceptualized and operationalized dichotomously (Fornasari, Webb, and Zou 1998; Treisman 2000). Such an antipodean distinction might be useful for broad albeit blunt comparisons across the two types of systems, but it does violence to the tremendous variation across federal systems.

² An exception is Canada, where the Senate is weak and appointed, and regional bargaining takes place primarily in other forums: within the Cabinet, directly between Ottawa and provincial governments, and in the Premiers’ Conferences.

The next section begins to fill in the missing institutional details, establishing hypotheses about the conditions under which federations might fail or succeed in macroeconomic management.

II. Hypotheses

If there are good reasons to expect the varieties of federalism to influence economic policy, the research on macroeconomic policy has been slow on the uptake. A wealth of recent literature does explore the relationship between political institutions and macroeconomic management.³ A key theme in this literature is the argument that political fragmentation—whether in the form of multi-party coalitions or partisan divisions between the executive and legislative branches—leads to slower fiscal adjustment to unexpected shocks and ultimately, persistently higher budget deficits and public debts. With the exceptions noted above, however, this literature has not yet examined the role of fiscal decentralization and political federalism in generating political fragmentation of a different breed. The remainder of this section lays out several hypotheses about the effect of federal fiscal and political characteristics on macroeconomic outcomes.

Fiscal Federalism

H1: A federation's capacity to control deficits and inflation declines as levels of expenditure decentralization increase.

If subnational officials face incentives to use their expenditure authority to undermine the central government's attempts at macroeconomic management, it is logical that this problem will increase with the level of expenditure decentralization. Table 1 presents data on provincial

³ This literature is too large to review here, but key contributions include Roubini and Sachs (1989), Poterba and Von Hagen (1999), Persson and Tabellini (2001), Franzese (2001).

spending as a share of total central and provincial spending.⁴ The federal cases range from Canada, where the provinces spend around half of the combined total, to Venezuela, where the figure is only around 12 percent. Indeed, case studies of some of the more decentralized countries listed in Table 1 have argued that provincial expenditures have undermined the central government's attempts at macroeconomic stabilization. For instance, among several other examples of battles between Ottawa and the provinces, Courchene (1996) explains that in the late 1980s, a spending spree in Ontario frustrated the Bank of Canada's price stability strategy. Likewise, Argentine monetary policy was compromised in the 1980s when the Central Bank discounted large provincial debts, thus increasing the money supply (Dillinger and Webb 1999). Recently, high expenditures and debt in the poor, "old" and new eastern Laender have created the danger that the German government will run afoul of the Maastricht deficit criteria. Expenditures by state governments on subsidies to farmers, tax breaks for investors, and bailouts of state electricity boards have led to declining fiscal health among the Indian states, and placed fiscal pressure on their primary lender—the Indian central government (McCarten 2001). Similar arguments have been made about Brazil (Bomfim and Shah 1994).

Hypothesis 1 merely surmises that other things equal, such scenarios are less likely in federations where the central government is more firmly in control of the public sector's expenditures. The federations under analysis have also demonstrated important changes over time. The second column in Table 1 displays changes in expenditure decentralization from the first half to the second half of the period under analysis. All but four of the countries have experienced some fiscal decentralization. Given the strength of the trend towards fiscal decentralization around the world—H1, if true over time within countries—might be a dangerous prospect under some circumstances.

⁴ Relatively low values for the United States and Switzerland may be surprising—this is because local and municipal governments are included in neither the numerator nor the denominator. Local data were unavailable for several countries, and furthermore, our arguments are focused on constituent units in federations.

H2: A federation's capacity to control deficits and inflation declines as levels of vertical fiscal imbalance increase

There are, however, strong reasons to be suspicious of the proposition that fiscal decentralization alone places spending or inflationary pressure on subnational governments. H2 asserts that the problem lies with the structure rather than the overall level of fiscal decentralization. Theoretical and empirical studies in public economics suggest that individuals view grants and “own-source” local revenues through different lenses. A key proposition of the “fiscal illusion” literature is that when the link between taxes and benefits is distorted or broken, voters are less likely to sanction overspending by politicians. Intergovernmental grants create the appearance that local public expenditures are funded by non-residents.⁵ Grant programs often supply concentrated local benefits that are funded by a common (national) pool of resources (See Weingast et al. 1988). Local voters, local politicians, and regional representatives within the central legislature all receive fiscal or political benefits from grant programs without internalizing their full cost, causing them to demand more expenditures funded by grants than own-source taxation.

The common theme in this literature is the notion that intergovernmental grants alter perceptions and beliefs about the levels of local expenditure that can be sustained. An empirical literature has established a link between transfer-dependence and the growth of government (e.g. Winer 1980, Stein 1998). Rodden (2001a) argues that dependence on intergovernmental transfers might lead to unsustainable *borrowing* as well, since high levels of transfer-dependence undermine the credibility of the central government's commitment not to bail out troubled states. By a similar logic, when provincial governments are primarily funded by taxes that they raise and collect themselves, the center can commit more easily to a policy that it will never assume

provincial obligations, thus giving creditors and voters stronger incentives to punish subnational officials for excessive spending and borrowing.

However, Dillenger and Webb (1999) make a plausible argument to the contrary: they suggest that transfer-dependence sometimes provides the central government with valuable leverage that can be used to impose reforms and tighter fiscal discipline on the subnational units. This argument springs from the observation that since the early 1990s, Argentina's central government has been able to force debt repayments of provincial governments by withholding them from transfers. However, such strong conditionality is the exception rather than the rule in most intergovernmental transfer schemes in federations, and even if central governments make such proclamations, they may not be credible in the long run.

Table 1 provides average data on vertical fiscal imbalance (grants and revenue-sharing as a share of total provincial revenue) for the sample of federations. Note that unlike previous studies (e.g. Fukasaku and de Mello 1998), we do not rely exclusively on the "grants" variable provided in the IMF's *Government Finance Statistics*, which includes revenue-sharing (taxes raised by the center and distributed automatically to the states according to a formula) as "own-source" subnational revenue. Given the theoretical arguments above, it is more appropriate to count these funds as "grants," since they are generally neither legislated nor collected by provincial governments. Thus, we check the GFS data against country sources and substitute these when revenue-sharing programs are important (See data appendix).⁶ The correlation between our "vertical fiscal imbalance" variable and one calculated from the GFS is only .46. This variable ranges from Canada, where only 20% of provincial revenue is provided by grants, to a high of 94% in Venezuela.

⁵ This literature is too large to review here. For an overview of concepts and measurements of fiscal illusion and a literature review, see Oates (1991). For a theoretical application to intergovernmental grants in particular, see Oates (1979).

⁶ For cases without certain kinds of revenue-sharing programs, the GFS data and government data are identical since the GFS is based on country sources.

H3: A federation's capacity to control deficits and inflation declines (increases) as grants (own-source revenue) make up a larger portion of the total public sector.

H3 implies that H2 is conditional on H1 and vice-versa. If transfer-dependence has a negative effect on subnational fiscal discipline and/or increases demand for loose monetary policy as a solution to subnational indebtedness, this phenomenon might be most pronounced in systems with large subnational public sectors. By the same token, it is plausible that if greater dependence on own-source provincial revenue has salutary effects on provincial fiscal discipline, this will have salutary effects for the fiscal balance of the public sector as a whole if the provincial sector makes up a larger share of the total. Likewise, the effect of fiscal decentralization might be contingent on the structure of the intergovernmental fiscal system. Fiscal decentralization might lead to upward pressure on deficits and inflation when provinces are dependent primarily on grants, and downward pressure when they are dependent on own-source taxes, user fees, and borrowing. In fact, the arguments cited above linking decentralization with fiscal restraint (e.g. Brennan and Buchanan 1981) are driven by tax competition; thus decentralization should only lead to fiscal restraint when funded by increased state-level taxation.

Political Federalism

H4: A federation's capacity to control deficits and inflation increases when political parties create incentives for cooperation between the center and provinces.

More than 40 years ago, William Riker and Ronald Schaps (1957) suggested that the crucial determinant of intergovernmental policy inconsistency in federal systems is the centralization of the party system. More recently, Dillinger and Webb (1999), Garman, Haggard, and Willis (2001), and Ordeshook (1996) argue that if national party leaders have substantial capacity to discipline co-partisans at other levels of government, it can be much easier for the central government to implement a coherent, unified policy agenda that transcends jurisdictional

divisions. Thus strong, disciplined political parties that compete in all of the states can be a solution to the underlying collective goods problem. National party leaders with incentives to respond to a nation-wide constituency have “encompassing” interests in national collective goods like price stability and fiscal restraint. To the extent that self-seeking fiscal policies by their provincial partisan colleagues might undermine their ability to provide them, national leaders might try to use their leverage over appointments or nominations to create incentives for subnational officials to internalize externalities when making fiscal decisions (See Jones et al. 2000).

Even without explicit offers and threats from federal officials, subnational officials might face incentives to cooperate simply because their electoral fates are determined in good part by the fates of their co-partisans at the federal level. In other words, in some countries subnational officials might face incentives to internalize fiscal externalities if they face corresponding “electoral externalities” (Rodden 2001b). Thus under some partisan conditions, it might be counterproductive for self-interested provincial officials to sabotage the center’s attempts to balance budgets or combat inflation.

An interesting contrary hypothesis in the Indian context is presented by Khemani (2001), who argues that since the deficits of the Indian states are funded primarily by loans over which the central government has discretion, state deficits are essentially “pork” manipulated by the central government. As a result, deficits are higher in the states controlled by the center, though it is unclear whether this would have any effect on overall public sector deficits.

Ideally, we would measure the existence of electoral externalities for each federation by examining the relationship over time between the electoral fates of federal and provincial co-partisans. Likewise, we would like to have information about appointment powers, the drawing of party lists, and other intra-party organization facts in order to gauge the leverage central officials have on their decentralized co-partisans. However, collecting such variables in a comparable way poses a daunting data collection challenge for a large data set. Instead, we have

collected data on the percentage of state governments controlled by the party of the federal chief executive. In the long run across countries, this variable is a reasonable proxy for the presence of electoral externalities—high levels of partisan similarity between the center and provinces likely reflect mutual interdependence of co-partisans across levels. In any event, co-partisanship across levels is only likely to affect overall macroeconomic outcomes at times and in places when a large share of the provinces is controlled by the party of the federal executive.

Mobilizing a wide variety of sources, we have calculated the share of states controlled by the party of the federal executive for each country-year in our data set.⁷ Figure 1 displays time-series and cross-section variation in federal-provincial co-partisanship.⁸

Jurisdiction Structure

H5: A federation's capacity to control deficits and inflation decreases with the share of total provincial expenditure carried out by the largest province

H6: A federation's capacity to control deficits and inflation decreases as the number of states increases

Consistent with the propositions outlined above, macroeconomic policy is often subject to collective action problems in federal contexts. State politicians have few incentives to suffer the political consequences of austerity if the fiscal and monetary benefits of those policies will

⁷ Coalition governments at the center complicate the collection of this data for Switzerland, Brazil and Austria. In fact, we are unable to calculate a sensible measure for Switzerland, where the federal executive is a collegial body that represents (by convention) all of the major parties. In Brazil, where the party system is highly fractionalized, national executives must rely on unstable legislative coalitions. It is plausible that members of such coalitions would be able to discipline their co-partisans at the state level in a manner consistent with the theoretical propositions outlined above. Nevertheless, the variable presented in Figure 1 (and used in subsequent regressions) counts only those states run by the same *party* as the chief executive for the simple reason that where coalition governments are prevalent, chief executives have had little success at disciplining states governed by other coalition members. To deal with the concern, we have also constructed a variable that codes states controlled by “junior” members of the federal coalition as controlled by the center. This variable is only different for a small number of years in Brazil and Austria, and does not affect the results reported below.

In the case of *subnational* coalition governments (prevalent in Austria, Germany, and India), we code based on the “senior” member of the coalition that occupies the office of chief minister, prime minister, president, etc.

flow in part to other provinces and the national government. The number and symmetry of states is likely to influence the severity of this collective action problem H5 is consistent with Wildasin (1997) who argues that in an asymmetric federation, a single large state can become "too big to fail." Such a state is likely to elicit bailouts from central officials fearful that failure in the dominant state will consume the rest of the nation. Knowing this, large states may face incentives to over-spend and over-borrow.

It is important to note an alternative and opposing hypothesis suggesting that a hegemonic state will have incentives to internalize the externalities associated the subnational spending (May 1969). According to this formulation, exactly because the province contains a sufficiently large portion of the nation's productive capacity, a majority of the benefits of stable macroeconomic performance will accrue to that province's leaders. Given the close relationship between national macroeconomic performance and the large province's policies, the costs of fiscal restraint are likely to be internalized with positive implications for the nation as a whole. In order to test these competing hypotheses, we construct from various sources a measure of the expenditures of the largest province as a share of total provincial expenditure.⁹

H6 considers the related issue of jurisdiction size. Wildasin's (1997) analysis suggests not only that symmetrically sized jurisdictions are preferable, but also that the jurisdictions should be small and plentiful. Likewise, one might surmise that it is more difficult for the center to credibly commit to a "no bailout" policy when the federation consists of a small number of large states rather than a large number of small states. When each state accounts for a large share of the total, it might expect that the center will not be able to withstand the political pain associated with allowing it to fail, undermining its incentives for fiscal discipline.

⁸ Note that for country-years characterized by authoritarianism we have coded this variable as "1" indicating that the central government controlled all state governments.

⁹ GDP share would perhaps be preferable to expenditure share as a measure of a jurisdiction's ability to impose negative fiscal externalities on others, but we are unable to obtain provincial-level GDP data for the full sample. Given our interest in fiscal policy, expenditure concentration is preferable to a measure of population concentration.

However, the opposite relationship is also plausible. If the central government's ability to control deficits and inflation depends on its ability to coordinate and strike bargains with the provinces, it is possible that such coordination and bargaining is less complex when the number of provinces is low. To examine these possibilities, we include the number of states in the federation, with the expectation that this will have a positive effect on fiscal balance and a negative effect on inflation. Cross-section averages for both variables are displayed in Table 2.

III. Data and Econometric Approach

To test the propositions outlined above, we conduct a cross-sectional time-series analysis of budget balance and inflation in 15 federations between 1978 and 1996. Our sample includes all countries that have been identified as federal in previous research (Elazar 1995; Watts 1999) and for which data are available. The only potentially federal cases we exclude are Belgium, Columbia, Russia, South Africa, Papua New Guinea, and some federations that link islands (e.g. the Federated States of Micronesia). Outside of broad definitional debates as to what constitutes a federation, we exclude these nations for one of two reasons. First, in some cases, such as Papua New Guinea and Pacific Islands, it is not possible to collect the necessary political data for regional governments. Second, in the remaining cases, the experience with federalism is so recent that it would only be possible to include one or two years in the late 1990s. We do include formally federal countries such as Nigeria and Brazil that have experienced periods of authoritarian governance. Despite the fact that the OECD-oriented federalism literature has generally assumed democratically elected state governments, we recognize that state-level politics continue to play a role in national politics during periods when democracy is suspended. Moreover, we consider the variation through time in regime type as interesting in its own right as it allows us to assess the functioning of federal institutions during periods of authoritarianism.

Generally speaking, in selecting our sample we have chosen to err on the side of inclusiveness so as to maximize comparisons and approximate the universe of federal cases.

We limit ourselves to federations for two reasons. The hypotheses we wish to test assume the presence of federal institutions. While comparisons with unitary systems would be interesting, previous studies have taken the blunt federal-unitary distinction as far as it can go. On a more practical note, it would be impossible to gather partisan data for a large sample of unitary systems. For example, France has thousands of municipalities.

Dependent Variables

We are particularly interested in how variations in federal structure affect budget balance and inflation. Not only are these important indicators of macroeconomic performance, but given the arguments presented above, these are clearly subject to provincial-level influence. We estimate budget balance since we expect that subnational over-spending and over-borrowing will have its most direct impact on public sector fiscal performance. Faced with overspending and intransigent states, national governments have three choices: they can increase their own spending on subnational governments to help cover imbalances, design the tax system such that ever larger portions of the tax pie are transferred to subnational governments, or ignore provincial imbalances. In all three cases, total public sector deficits are likely to increase, though in the first two scenarios, central government deficits will expand while in the third, provincial-level budget balances will deteriorate. As opposed to previous empirical research, which has analyzed only central government deficits, we measure budget balance as the sum of total central- and state-level budget balance as a percentage of expenditures. Given the subnational incentives to overspend we have outlined above, this inclusion represents a significant improvement on existing data sets. This data are taken from the IMF's *Government Finance Statistics* and national sources when IMF data are not available (see data appendix). The indicator takes on negative values when a budget is in deficit and a positive value when a budget is in surplus.

We analyze inflation for two reasons. First, once total public sector fiscal imbalances become prevalent as outlined above, national governments face pressure to monetize deficits. Monetization of provincially-inspired deficits can happen in one of two ways. In the first, state debt is directly discounted by the Central Bank, thereby increasing the money supply. In the second scenario, the central government bails out state debtors, which stimulates central spending, deficits, and ultimately inflation. In both cases, the net result is money growth. Second, under certain conditions, the proliferation of actors with influence over monetary policy common to many federations is likely to exacerbate collective action problems and increase inflation. This outcome results from the weakening of the central government, which is the only actor with an encompassing concern for stable prices. State governments, on the other hand, are likely to have more inflationary preferences as they are not held responsible for macroeconomic performance. As a result, federalism has been associated in some cases with politically compromised central banks and high inflation, particularly in developing nations (Treisman 2000; Wibbels 2000). Inflation is measured as the logged rate of change in the consumer price index using IMF data.¹⁰

Control Variables

In addition to the characteristics of federations outlined above, we also include a number of control variables consistent with extant research in economics and political science. Politically, we include controls for the strength of trading interests, election years, and the degree of party system fractionalization at the national level. We introduce a variable to measure trade as a percentage of GDP to account for the possibility that greater integration in the global economy creates stronger incentives for market-conforming macroeconomic policies. Trade is thus expected to have a positive coefficient for budget balance (in the direction of surpluses), and a negative coefficient for inflation.¹¹ We include a dummy variable for election years to control for

¹⁰ We use the log as the inflation data is highly skewed.

¹¹ These data are from the World Bank's *World Development Indicators* (henceforth WDI).

the finding of Alesina and Roubini (1997) that the political business cycle has a significant negative impact on macroeconomic policies.¹² In order to control for the argument of Haggard and Kaufman (1995) that a fractionalized party system will increase the number of veto players in national congresses vis-à-vis economic policies, we also include a indicator of the effective number of parties.¹³ We also include the 20-point version of Gurr’s index of democracy.¹⁴

Economic controls include logged GDP per capita, GDP growth rates, and a nation’s status as an oil exporter.¹⁵ We include GDP per capita (constant international dollars, PPP) to control for cross-national differences and long-term trends in wealth that might affect budget deficits and inflationary pressure.¹⁶ It is important to control for yearly growth rates in order to take account of government attempts to conduct “tax smoothing” or counter-cyclical demand management.¹⁷ Lastly, our dichotomous indicator for oil exporters controls for the close relationship between the international price of oil and both budget balance and inflation in nations heavily reliant on oil revenues.¹⁸

Estimation Techniques:

To summarize, the model can be stated formally as:

$$\text{MACRO}_{it} = \sum_j \beta_j \text{FEDERAL}_{jit} + \sum_k \beta_k \text{POLCONTROL}_{kit} + \sum_l \beta_l \text{ECONCONTROL}_{lit}$$

where MACRO refers to the two indicators of macroeconomic performance, the vector of j FEDERAL variables represents the six measures of various federal characteristics, the vector of k POLCONTROL variables represent the trade, election year, and party system variables, and l

¹² This variable is coded 1 only for elections for the national-level Parliament or Chief Executive. Data are taken from the World Bank’s *Database of Political Institutions* (henceforth DPI).

¹³ Data taken from DPI.

¹⁴ Data taken from the *Polity 98* data set.

¹⁵ We have also experimented with a range of additional demographic control variables: area, population, population/number of states, urbanization, population density, ethnic fractionalization, and percent of the population above and below the working age. None of these attained statistical significance, and none affected the substance or significance of the results reported below.

¹⁶ Data taken from WDI.

¹⁷ Data taken from WDI. We have also estimated models that address these possibilities by differentiating between “expected” GDP and “shocks,” but this estimation technique does not affect the results presented below.

¹⁸ Data taken from WDI.

ECONCONTROL variables are the indicators of GDP per capita, growth, and the oil exporter dummy. The β s are parameter estimates and the subscripts i and t denote the country and year of the observations, respectively. We estimate these models using panel-corrected standard errors with a lagged dependent variable and fixed effects. This technique addresses issues of non-constant error variance, corrects for first order autocorrelation, and takes account of over-time and cross-national variation that should not be attributed to any of our independent variables.¹⁹

Most of the variables of interest vary each year, and we have theoretical reasons to be interested in both cross-section and time-series variation. However, the variables addressing aspects of jurisdiction structure (H5 and H6) do not vary over time, and a model that includes fixed effects might not capture the hypothesized cross-section relationship. Thus the most important results presented below include fixed effects—we analyze both levels and changes—but we also estimate deficit and inflation models without fixed effects in order to shed light on effects (especially concerning jurisdiction structure) that might be driven purely by cross-country differences.

IV. Results

Table 3 presents the results of both deficit and inflation models with fixed effects, including specifications with and without the interaction term called for by H3. Since these models include fixed effects that control for cross-country differences, we do not include the time-invariant “jurisdiction structure” variables. In order to assess these variables, the results of models *without* fixed effects that include these variables are displayed in Table 4. A benefit of comparing the results of Table 3 and Table 4 is that one can gain a sense of the extent to which

¹⁹ The presence of a lagged dependent variable can bias the fixed-effects estimator even if the error term is not correlated over time. But in panels where the time series dimension is long (as is the case here), the bias is rather small. As we discuss below, we have also employed a number of other estimation techniques and obtained similar results.

the results in Table 3 are driven purely by time-series variation within units, and the extent to which cross-country variation drives the results.

Fiscal Federalism

We find little support for H1. On the contrary, Column 1 shows that higher shares of total expenditures at the provincial level are associated with a higher overall fiscal surplus. This result is statistically significant and substantively quite striking—a one percent increase in expenditure decentralization is associated with a .8% increase in surplus (or drop in deficit) as a share of expenditures. Column 3 shows that higher provincial expenditure shares are associated with lower inflation rates, though the relationship does not achieve statistical significance. The coefficients for the same variable in the estimation without fixed effects (Table 4) demonstrate a similar relationship, though here the variable does achieve significance in the inflation regression.

This finding—especially the strong fiscal balance result—runs counter to a great deal of conventional wisdom. Fiscal decentralization in federations is manifestly not a recipe for disaster. On the contrary, when other aspects of the political and fiscal federal structure are held constant, fiscal decentralization actually has salutary effects on overall fiscal balance and inflation.

Table 3 does, however, demonstrate strong support for H2. Higher levels of vertical fiscal imbalance are associated with larger deficits and higher levels of inflation. A one percent increase in grants as a share of total state revenue is associated with roughly a quarter percent decline in overall fiscal balance. Note that these results appear to be driven primarily by changes over time within countries—they do not hold up in the estimation that does not control for country effects. Thus we cannot conclude that countries with higher levels of vertical fiscal imbalance are prone to higher deficits and inflation, but rather, deficits and inflation appear to climb as provinces become more dependent on transfers over time. This is quite consistent with the fiscal illusion and moral hazard accounts of subnational fiscal profligacy presented above.

Models 2 and 4 examine the possibility that the fiscal decentralization and transfer-dependence variables have the more complex interactive effect on fiscal balance and inflation suggested by H3. In model 2, the interaction term and its components are jointly significant at the 1 percent level (joint F-test) and in model 4 they are significant at the 5 percent level. The best way to interpret these results is by plotting conditional coefficients for each component of the interaction term at various realistic values of the other (see Franzese, Kam and Jamal 1999). Figures 2a and 2b do this for the surplus regression, and 3a and 3b for inflation. The dark lines plot out conditional effects, and the gray lines represent upper and lower 95 percent confidence intervals. Figure 2a shows that the coefficient for vertical fiscal imbalance is negative over most of the sample range, and the negative effect strengthens at higher levels of decentralization. Note that the estimated effect is actually positive (though not significantly different from zero) at very low levels of decentralization. This provides support for H3—the negative effect of vertical fiscal imbalance on fiscal balance is strongest when the states' expenditure accounts for a large share of the total. Figure 2b demonstrates the conditional effects of expenditure decentralization on the aggregate surplus at various levels of vertical fiscal imbalance. Here we see that the coefficient for decentralization is always positive, but much more so when local governments rely primarily on own-source revenues rather than grants. This finding is quite consistent with the argument that interstate fiscal competition—which most plausibly is strengthened as countries move towards the northwest in Figure 2b—leads to fiscal restraint.

Figures 3a and 3b tell a similar story, though the wide confidence intervals cast doubt on the significance of the relationship at the highest levels of decentralization and the lowest levels of vertical fiscal imbalance. Note, however, that the conditional coefficients are significant (visually, the confidence interval is relatively narrow) in the ranges where most of the cases actually fall (See Table 1). The results suggest that the positive effect of vertical fiscal imbalance on inflation is strongest at higher levels of decentralization, and the negative effect of decentralization on inflation disappears when states are highly transfer-dependent.

Political Federalism

Perhaps the most striking findings are the coefficients for the federal-provincial co-partisanship variable. As expected, when a larger share of the provinces is controlled by the party of the federal chief executive, deficits and inflation are lower. For fiscal performance, the coefficient and standard errors are quite similar in the models with and without fixed effects. Substantively, a 10 percent increase in co-partisanship (e.g. moving from 5 to 6 out of 10 provinces controlled by the center) is associated with between .6 and .7 percent increase in the consolidated surplus as a share of revenue. Co-partisanship also has a strong and highly significant negative effect on inflation in the fixed effects model. The sign is also negative in the model without fixed effects, but the coefficient does not quite obtain traditional levels of significance.

Jurisdiction Structure

With such a small number of country observations, we are in a poor position to evaluate the role of jurisdiction structure. As Table 4 shows, neither variable attains statistical significance. These variables never approach significance in the inflation models, but in some more simple models without some of the controls, the positive coefficients for the asymmetry variable—largest state’s share of total expenditure—and the “number of states variable” are significant. A positive coefficient for the former is consistent with the argument that the largest state might be sufficiently large that it cannot expect to externalize costs to other states through over-spending. The coefficient on the “number of states” variable suggests that deficits are lower in countries with larger numbers of provinces. In order to obtain more conclusive and believable results, however, it is necessary to (1) use disaggregated province-level data to examine the fiscal behavior of different types of jurisdictions or (2) move beyond the universe of federations and study a larger sample that includes decentralized unitary countries.

Control Variables

Though several of the control variables behave as expected, some produce counter-intuitive results. Trade dependence is associated with improved fiscal performance. Democracy is associated with slightly larger deficits, but has no significant affect on inflation rates. Election years also have interesting effects on performance; they increase inflation and deteriorate budgetary performance, though insignificantly in the latter case. This evidence of an electoral inflation cycle in federations is potentially quite interesting, but requires more careful analysis involving additional variables—particularly various measures of central bank independence.

Short-term increases in GDP are associated with declining inflation, but it is difficult to interpret the effects of GDP growth rates on the combined measure of central and provincial deficits. It is possible, for instance, that the central government attempts to conduct counter-cyclical fiscal policy while provincial spending is pro-cyclical. It is also possible that central governments respond to unexpected negative shocks by strategically cutting transfers and thus “offloading” their deficits onto subnational governments (Garrett and Rodden 2000). These possibilities deserve further analysis, but the aggregate data used here are insufficient. In fact, given the hypotheses and empirical results in this paper, an important goal for future research might be to examine the fiscal reactions of central and provincial governments to anticipated fluctuations and unanticipated shocks to GDP, and how these are conditioned by the structure of transfers and the nature of political accountability.

The coefficients on logged GDP per capita reflect long-term effects of increasing wealth. Here the results of the estimations with and without fixed effects are divergent. In the models that control for fixed country effects (Table 3, models 1 and 2), growth is associated with declining fiscal balance, which is rather puzzling. However, in the model without fixed effects (Table 4), the large differences between developed and developing countries in the sample lead to a positive relationship between wealth and fiscal balance. While the fixed-effects models reveal

no relationship between wealth and inflation, cross-country variations drive the expected negative relationship between wealth and inflation in Table 4.

Most unexpected, however, is the finding that increased party system fractionalization yields improvements in fiscal performance. A one standard deviation increase in legislative fragmentation, roughly equivalent to the move from the Canada of 1996 to the Brazil of the late 1990s, yields an improvement in budgetary performance of .03 percent of expenditures. One possible explanation for this finding is that fragmentation prevents governments from initiating risky heterodox policies that have a tendency to result in macroeconomic crises, instead inducing policy moderation and stability by virtue of multiple veto players.²⁰

Alternative Specifications

The results we lay out above are quite robust. We have explored several alternatives to the models above. First, to explore further the relative weight of cross-section versus time-series variation in driving the findings, we ran a series of models using first differences and a combination of first-differences and lagged levels (an error correction set-up). Second, we examined the time-series nature of the data by estimating models with year dummies and searching for bad leverage points. Third, we estimated separate models for developing and developed nations suspecting that federalism might function differently at divergent levels of development. Fourth, to address potential bias associated with the inclusion of both country dummies and a lagged dependent variable, we estimated a GMM model using the technique advised by Arellano and Bond (1991). In addition, we addressed concerns about the truncation of the “fiscal balance” dependent variable (it cannot exceed 1) by estimating a tobit model. Finally, we addressed concerns about the influence of individual cases by case-wise deletion of

²⁰ We have also estimated models using other measures of political fractionalization suggested by Roubini and Sachs (1989) and Tsebelis (1995), including models that interact these measures with the lagged dependent variable (as suggested by Franzese 2001), but none of these variables attains significance or affects the main results.

countries.²¹ In all cases, the substance and significance of the results reported above stand up under these alternative specifications.²²

V. Conclusions

We have developed and tested six hypotheses on the relationship between federalism and macroeconomic performance using an original data set. Our results have important implications for the federalism and macroeconomic policy literatures, the design of federal institutions, and future research.

Though the macroeconomic literature has traditionally ignored the role of federalism, it has become increasingly clear in recent years that federalism often has deleterious consequences for macroeconomic policy and performance. On the other hand, some of the world's most stable and successful democracies have had highly decentralized federal political and fiscal structures for over two centuries. To date, however, we have had little basis on which to evaluate the conditions under which federalism warrants its increasingly bad reputation. Our most surprising finding in this respect is that other things equal, increased expenditure decentralization is, generally speaking, beneficial for macroeconomic performance in federations. Despite growing concern for the impact of decentralization on everything from government size to inflationary crises, expenditure deconcentration seems to be advantageous in a manner broadly consistent with an older economics literature on fiscal federalism. However, it should be stressed that our sample only includes federations and the results are likely driven primarily by changes over time within countries.

²¹ Note that the results reported above do not include Switzerland because of our inability to calculate the co-partisanship variable. When Switzerland is included and the co-partisanship variable is dropped, the substance and significance of all other variables are unchanged.

²² All of the results are available from the authors upon request.

It is important to note, however, that these apparently salutary effects of fiscal decentralization are constrained by two factors: the degree to which state governments generate their own revenues and the political clout of the national government at the state level. In both the budget balance and inflation models, increasing reliance on intergovernmental transfers rather than own-source revenue has a negative impact on macroeconomic performance. Moreover, we find considerable evidence that the benefits of additional expenditure decentralization are conditional on state governments having considerable tax capacity. This is entirely consistent with the theoretical literature that links tax competition to fiscal restraint.

Even more interesting, however, is the finding that intergovernmental political relationships are important. Where the party of the national government controls larger proportions of state governments, aggregate deficits are smaller and inflation rates are lower. We know of no comparative research in the macroeconomic literature that has taken this issue seriously and believe that this finding represents an important contribution to both the comparative federalism and macroeconomic policy literatures. It is possible that interstate partisanship plays a very different role in different countries depending on the rules of the intergovernmental game. Indeed, Jones et al. (2000) and Khemani (2001) derive different arguments and different findings about the effects of partisanship on state-level deficits in Argentina and India respectively based on very different incentive structures. However, in our cross-national analysis of total deficits the evidence weighs in favor of the view—first expressed by Riker and Schaps (1957)—that the potential costs of interstate opportunism can be assuaged by an integrated party system.

Our measure of federal-provincial co-partisanship may be a very useful first step in systematically addressing an important but heretofore unmeasured aspect of *political* decentralization. Figure 1 displays a wealth of important information about fluctuations in political (de)centralization over time and facilitates useful cross-national comparisons. For instance, it tracks the decline of Congress party dominance in India, displays the gradual erosion

of PRI dominance in Mexico, and the fragmentation of the Brazilian federal system. Though related, political and fiscal decentralization are not the same thing. The (negative) correlation between our co-partisanship and expenditure decentralization variables is .44, and we have shown that these variables have different effects on macroeconomic outcomes.

Our research suggests that neither the supposed virtues nor pathologies of federalism are clear-cut. Our findings have implications for the design of federations and the conditions under which they are likely to provide one of the most important of public goods in a global economy—solid macroeconomic performance. Generally speaking, our results suggest that fiscal decentralization should be accompanied by the development of taxing capacity at the state level. Indeed, federalism has had its most perverse effects on macroeconomic performance (Brazil and Argentina, for instance) exactly where significant fiscal decentralization has proceeded in spite of feeble and very uneven revenue raising competence at the state level. The challenge of developing local taxation and user fees under conditions of poverty, capital mobility, and weak provincial institutions is daunting, but potentially worth the effort.

Finally, we believe this research indicates an important new direction for research in comparative politics. The next step is improved cross-national examination of variations in state-level politics and performance across federations. To the degree that state politics are important, state governments are responsible for significant portions of total public sector spending, and since decentralization is the policy du jour, research in comparative federalism clearly must turn to the subnational level of analysis. The number of questions is daunting: What political factors influence fiscal performance at the state level across federations? Under what conditions do individual states respond to the economic concerns of central governments? How do executive-legislative relations influence state policymaking across federal systems? And what is the relative importance of variations in state level party systems and budgetary institutions? To date the only leverage we have on these definitively comparative questions come from isolated research on a handful of countries. As made clear in the discussion above, country specialists often come up

with contrasting context-dependent hypotheses and findings. Our hope is that this cross-national analysis is a useful starting point for a more refined but truly comparative theoretical and empirical enterprise.

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Data Appendix

Data on fiscal balance, fiscal decentralization, and grants are taken from the IMF, *Government Finance Statistics Yearbook*, various years with the following exceptions:

Argentina:	Unpublished Ministry of Finance Data.
Germany:	German Federal Statistics Agency, http://www.statistik-bund.de , and unpublished data provided by the Finance Ministry of the state of Baden-Wuerttemberg
Mexico:	Combination of <i>GFS</i> and Instituto Nacional de Estadística, Geografía e Informática. Various years. "Finanzas Públicas Estatales y Municipales de México".
Nigeria:	Central Bank of Nigeria. Various years. <i>Annual Report and Statement of Accounts</i> . Lagos: Central Bank of Nigeria.
Pakistan:	Government of Pakistan, Finance Division. Various years. <i>Economic Survey</i> . Manager of Publications: Karachi.
Venezuela:	República de Venezuela, Oficina Central de Estadística e Informática. Various years. <i>Anuario Estadístico de Venezuela</i> . Caracas: La Dirección.

Data on Jurisdiction Structure taken from the following:

Argentina:	Unpublished Ministry of Finance Data
Australia:	<i>Europa World Yearbook</i> , various years
Austria:	Wirtschaftskammer Oesterreich, 2000. "Bundeslaender in Zahlen: Ein statistischer Wirtschaftsvergleich"
Brazil:	<i>Europa World Yearbook</i> , various years
Canada:	Statistics Canada, http://www.statcan.org
Germany:	German Federal Statistics Agency, http://www.statistik-bund.de
India:	Department of Statistics, Ministry of Planning and Programme Implementation. Various Years. <i>Statistical Abstract India</i> . New Delhi: Government of India.
Malaysia:	<i>Europa World Yearbook</i> , various years
Mexico:	Instituto Nacional de Estadística, Geografía e Informática. Various years. "Finanzas Públicas Estatales y Municipales de México".
Nigeria:	Central Bank of Nigeria. Various years. <i>Annual Report and Statement of Accounts</i> . Lagos: Central Bank of Nigeria.
Pakistan:	Government of Pakistan, Finance Division. Various years. <i>Economic Survey</i> . Manager of Publications: Karachi.
Spain:	Instituto Nacional de Estadística, http://www.ine.es
Switzerland:	Unpublished data provided by Swiss Federal Statistics Office
United States:	U.S. Census Department, ftp://ftp.census.gov/pub/outgoing/govs/
Venezuela:	República de Venezuela, Oficina Central de Estadística e Informática. Various years. <i>Anuario Estadístico de Venezuela</i> . Caracas: La Dirección.

Data on Co-partisanship are taken from the *Europa World Yearbook*, various years with the following exceptions:

Argentina:	Ministry of the Interior data.
Australia:	<i>Europa World Yearbook</i> and Sharman (1994).
Canada:	Prior to 1988: Feigert, Frank, <i>Canada Votes</i> (Durham: Duke Univ.). After 1988, unpublished data provided by John Wilson at the University of Waterloo.
Germany:	American Institute for Contemporary German Studies, http://aicgs.org
United States:	<i>America Votes</i> (Washington, D.C.: Congressional Quarterly), various years

Table 1: Basic Fiscal Variables, 1978-1996

	Expenditure Decentralization:	Change in Expenditure Decentralization:	Vertical Fiscal Imbalance:	Change in Vertical Fiscal Imbalance:
	Provincial Expenditure as Share of Provincial + Central Expenditure (Average 1978-1996)	Average from 1988 to 1996 - average from 1978 to 1987	Provincial Grants and Revenue-Sharing Receipts as Share of Total Provincial Revenue (Average 1978-1996)	Average from 1988 to 1996 - average from 1978 to 1987
Argentina	0.38	0.11	0.65	-0.07
Australia	0.38	0.01	0.51	-0.12
Austria	0.17	0.001	0.41	0.02
Brazil	0.24	0.05	0.31	0.05
Canada	0.49	0.01	0.20	-0.01
Germany	0.30	-0.01	0.83	-0.01
India	0.41	0.01	0.52	-0.08
Malaysia	0.19	-0.02	0.20	-0.001
Mexico	0.16	0.08	0.75	0.01
Nigeria	0.31	-0.08	0.84	0.01
Pakistan	0.24	0.002	0.86	0.06
Spain	0.14	0.12	0.72	0.09
Switzerland	0.37	-0.03	0.28	0.04
United States	0.29	0.04	0.22	-0.0002
Venezuela	0.12	0.03	0.94	-0.06

Sources: See Data appendix

**Figure 1: Federal-Provincial Co-Partisanship
(Portion of provinces controlled by party of the chief executive)**

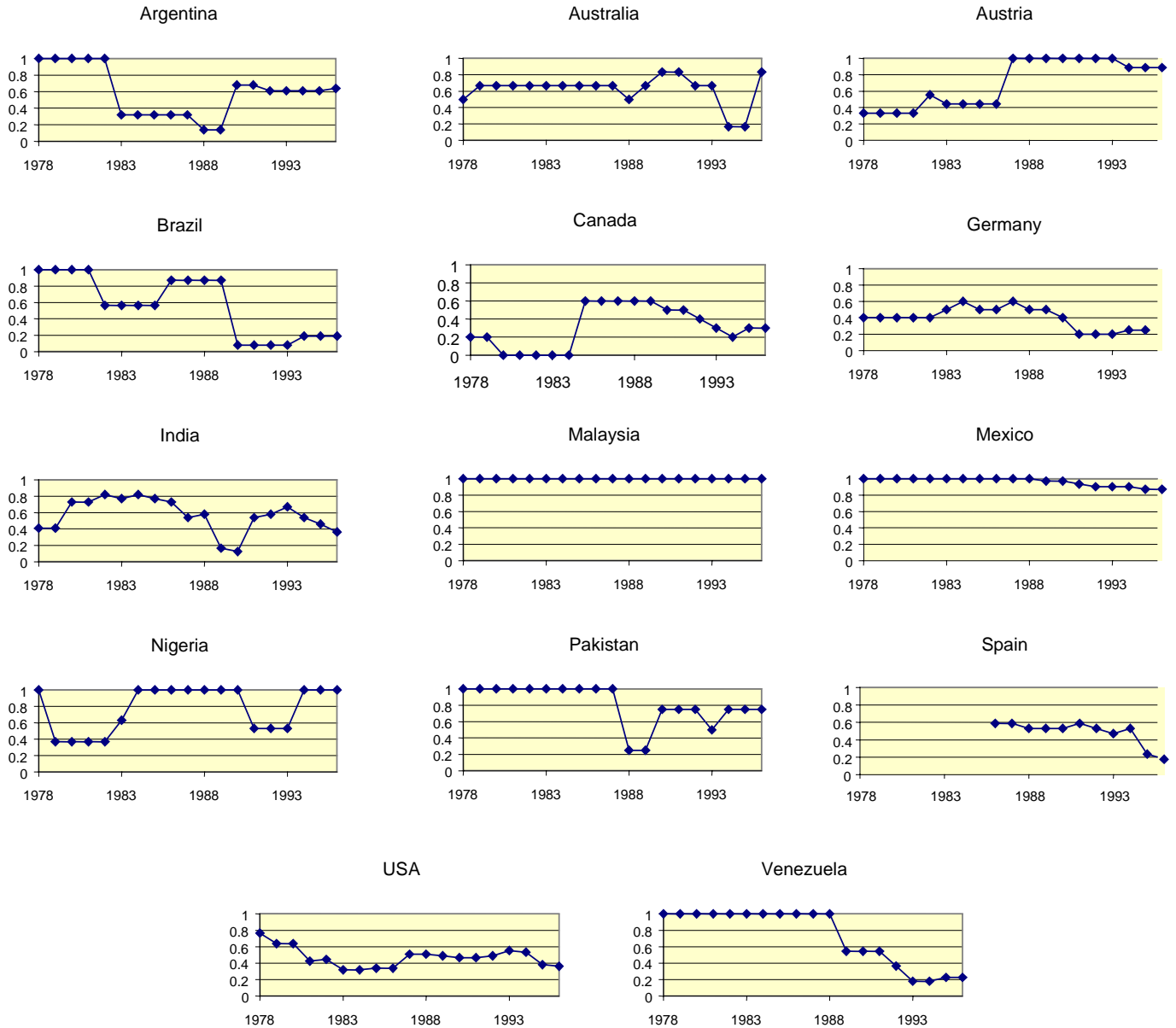


Table 2: Jurisdiction Structure

	Largest State Expenditure as share of Total	Number of States
Argentina	0.24	24
Australia	0.33	8
Austria	0.20	9
Brazil	0.37	28
Canada	0.32	12
Germany	0.25	16
India	0.13	32
Malaysia	0.13	13
Mexico	0.15	32
Nigeria	0.10	31
Pakistan	0.51	4
Spain	0.18	17
Switzerland	0.15	26
United States	0.14	51
Venezuela	0.20	22

Sources: See Data Appendix

Table 3: Determinates of Fiscal Balance and Inflation (Levels, Fixed Effects)

	Dependent Variable:			
	Combined State-Central Surplus/Expenditure		Inflation (log)	
	Model 1	Model 2	Model 3	Model 4
<i>Fiscal Decentralization: (State Exp./Total State-Central Exp.)</i>	0.809 *** (0.180)	1.831 *** (0.366)	-1.220 (1.429)	-5.959 (3.792)
<i>Vertical Fiscal Imbalance (Grants/State Revenue)</i>	-0.272 *** (0.094)	0.139 (0.198)	2.077 ** (0.840)	0.182 (1.458)
<i>Decentralization*VFI</i>		-1.478 ** (0.575)		6.858 (4.834)
<i>Federal-Provincial Co-Partisanship</i>	0.064 *** (0.024)	0.071 *** (0.024)	-0.447 ** (0.199)	-0.457 ** (0.200)
<i>Trade/GDP</i>	0.003 *** (0.001)	0.003 *** (0.001)	0.006 (0.006)	0.005 (0.006)
<i>Election Year</i>	-0.031 (0.021)	-0.030 (0.021)	0.331 * (0.173)	0.310 * (0.171)
<i>Legislative Fractionalization</i>	0.097 ** (0.047)	0.122 *** (0.047)	-0.225 (0.378)	-0.355 (0.384)
<i>Democracy</i>	-0.005 ** (0.002)	-0.006 *** (0.002)	-0.015 (0.023)	-0.012 (0.022)
<i>GDP per Capita (log)</i>	-0.072 (0.047)	-0.116 ** (0.052)	0.022 (0.392)	0.226 (0.440)
<i>GDP Growth Rate</i>	0.002 (0.002)	0.002 (0.002)	-0.050 *** (0.015)	-0.050 *** (0.015)
<i>Oil Exporter</i>	-0.035 (0.056)	-0.007 (0.056)	-0.934 (0.925)	-0.587 (0.902)
<i>Lagged Dependent Variable</i>	0.328 *** (0.091)	0.327 *** (0.089)	0.801 *** (0.076)	0.805 *** (0.075)
<i>Constant</i>	0.016 (0.322)	-0.015 (0.343)	-0.002 (3.341)	-0.543 (3.385)
Observations	215	215	224	224
Number of Countries	14	14	14	14
R ²	0.76	0.77	0.87	0.88

Panel-corrected standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Results for country dummies not shown

**Table 4: Determinates of Fiscal Balance and Inflation
(Levels, No Fixed Effects)**

	Dependent Variable	
	Combined State-Central Deficit/Expenditure	Inflation (log)
<i>Largest State/Total</i>	0.100 (0.071)	0.615 (0.567)
<i>Number of States</i>	0.001 (0.001)	0.003 (0.007)
<i>Fiscal Decentralization: (State Exp./Total State-Central Exp.)</i>	0.123 ** (0.061)	-1.105 ** (0.557)
<i>Vertical Fiscal Imbalance (Grants/State Revenue)</i>	0.030 (0.040)	-0.192 (0.315)
<i>Federal-Provincial Co-Partisanship</i>	0.058 ** (0.025)	-0.272 (0.184)
<i>Trade/GDP</i>	0.001 (0.000)	0.001 (0.003)
<i>Election Year</i>	-0.038 (0.024)	0.347 * (0.186)
<i>Legislative Fractionalization</i>	0.104 ** (0.041)	0.345 (0.333)
<i>Democracy</i>	-0.001 (0.002)	-0.022 (0.017)
<i>GDP per Capita (log)</i>	0.041 *** (0.008)	-0.122 ** (0.060)
<i>GDP Growth Rate</i>	0.002 (0.002)	-0.052 *** (0.014)
<i>Oil Exporter</i>	0.037 (0.033)	0.001 (0.166)
<i>Lagged Dependent Variable</i>	0.547 *** (0.083)	0.902 *** (0.046)
<i>Constant</i>	-0.659 *** (0.137)	1.739 * (1.041)
Observations	215	224
Number of Countries	14	14
R ²	0.70	0.86

Panel-corrected standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 2a: Conditional Effects of Transfer-Dependence on Fiscal Balance

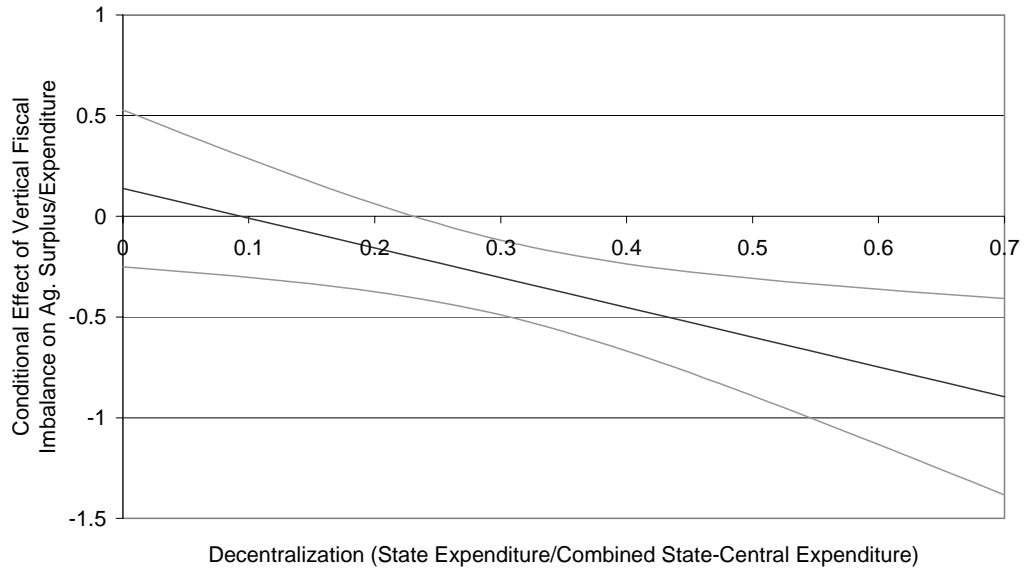


Figure 2b: Conditional Effects of Expenditure Decentralization on Fiscal Balance

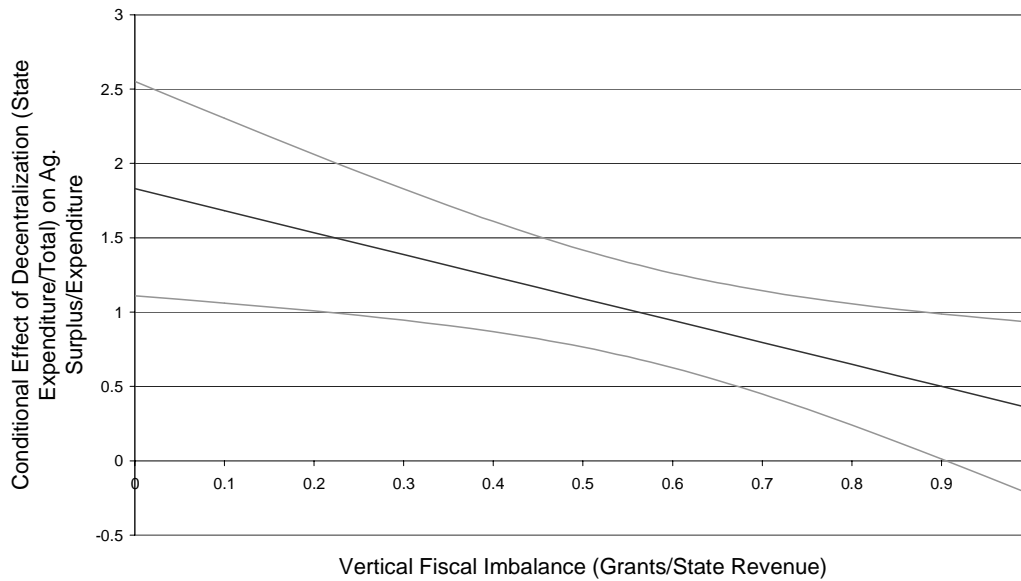


Figure 3a: Conditional Effects of Transfer-Dependence on Inflation

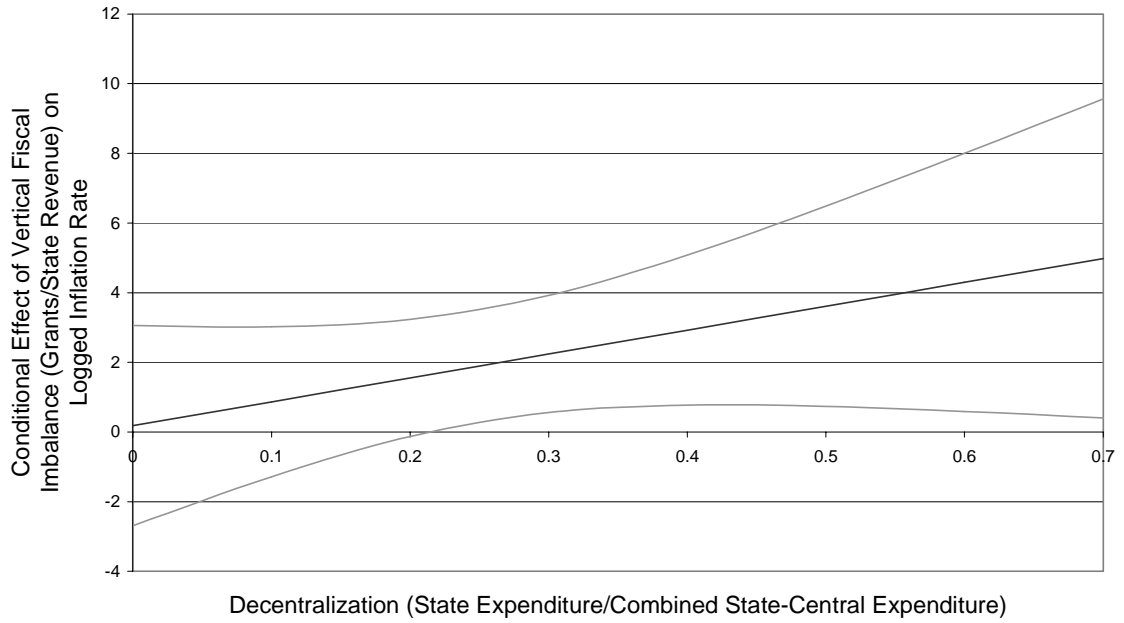


Figure 3b: Conditional Effects of Decentralization on Inflation

