

“Business Cycles and the Political Economy of Decentralised Finance:
Lessons for Fiscal Federalism in the EU”

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Empirical studies have determined that tax-transfer programs pursued by central governments in decentralized federations provide modest insurance against asymmetric regional income shocks, but this paper hypothesizes that pro-cyclical fiscal policy among provincial governments can easily overwhelm any such stabilizing effect. I examine the cyclicity of revenues, grants, expenditures, and deficits among provincial governments in seven federations since the 1970s, showing that in most cases, fiscal policy among the constituent units appears to be pro-cyclical by design. Own-source taxes are highly pro-cyclical in all federations, and contrary to common wisdom, revenue-sharing and discretionary transfers are either acyclical or even pro-cyclical. Constituent governments are thus left alone to smooth their own shocks, even though various restraints on borrowing and saving often undermine their ability to do so. These results have important implications for debates about fiscal arrangements being considered by member states in the European Union.

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Subnational finance has the capacity to complicate the EU's current system of fiscal federalism for two reasons. First, the EU's fiscal rules establish a difficult set of incentives for national governments. While the Treaty and Stability and Growth Pacts define requirements in terms of the general government's budget balance, specific budget targets are set by central governments alone. Thus, central authorities are responsible for outcomes that are produced, in part, by subnational decisions. Second, subnational fiscal policy has the potential to conflict with national policies of fiscal stabilization. While national automatic stabilizers help smooth taxes, consumption, and output over the business cycle, there are strong reasons to expect subnational fiscal policy to pull in the opposite direction. In conjunction with these concerns for the impact of decentralized fiscal policy on the capacity of member states to pursue stabilization and achieve sound public finances, ongoing processes of fiscal decentralization underscore how crucial it is to understand the dynamics underlying subnational fiscal performance. Unfortunately, while research has focused a great deal of attention on national finances and the role of national-tax transfer systems in cushioning asymmetric regional shocks, we know very little comparatively about the cyclicity of subnational fiscal policy.

Recent events raise concerns about the capacity of subnational governments to conduct fiscal policy in a manner consistent with widespread prescriptions and expectations. In the EU, for instance, Germany, Spain, and others have experimented with intergovernmental rules aimed at limited the capacity of regional governments to engage in over-spending that threatens general government fiscal positions. Similarly, in the U.S. the recent recession led directly to state and local governments firing uncounted social workers, teachers, and police officers, along with dramatic cutbacks in social services. While the federal government continues to justify large national deficits with the logic of counter-cyclical Keynesian demand management, state governments have undermined the potential stimulus with tax increases and pro-cyclical expenditure cuts. Only a few years ago those same states were rapidly expanding their

expenditures in conjunction with an unprecedented boom. These facts motivate the central questions of this paper. Are pro-cyclical subnational expenditures simply unavoidable in decentralized federations? What explains the degree of subnational cyclicity across federations? To what degree do national fiscal transfers serve as a stabilizing mechanism for subnational finances? Given pronounced processes of fiscal decentralization across EU member states, public economics' prescription in favor of counter-cyclical spending, the potential for subnational deficits to complicate overall public finances, and normative attachments on the part of some to Keynesian demand management, these questions have important implications for fiscal policy in the EU—and beyond.

To answer the questions, we analyze the sensitivity of provincial government finances to regional business cycles in seven federations: Australia, Argentina, Brazil, Canada, Germany, India, and the United States. Though a handful of case studies examine the cyclicity of various components of provincial budgets in a few OECD countries, this is the first comparative study. We have chosen these cases primarily because of the availability of high quality provincial-level data with sufficiently long time series, but they are useful cases for comparative analysis because they are among the world's most decentralized multi-tiered systems, and because they exhibit analytically useful institutional and business cycle variation. Above all, we confirm that the finances of constituent units in federations are highly pro-cyclical, yet we also demonstrate interesting cross-national variation and offer a conceptual framework that helps to explain it.

In order to explain the cross-national variance in the extent of pro-cyclical regional fiscal policy, we develop a theoretical framework that relies on three features of subnational finance: the income elasticity of regional revenue sources, the role of the central government in stabilizing regional finances, and access to credit markets. The normative fiscal federalism literature has long recognized that subnational governments often have access to rather narrow revenue streams. Indeed, this long has provided the justification for assigning the role of fiscal stabilizer to national governments, which have broader tax bases, economies of scale in tax collection, the

ability to emit money, and easier access to credit markets. Not surprisingly, we find that strongly pro-cyclical revenues—especially from “own-source” taxes and fees—are the norm among constituent units in federations. Indeed, regional revenues are about twice as income elastic as at the central level.

The remaining two hypotheses address the tools available to regional governments to smooth expenditures with outside revenue sources from either the central government or credit markets. Given its deeper pockets, greater freedom from institutional constraints, and wide array of policy tools, the traditional “benevolent government” view of fiscal federalism leads to the expectation that central governments will use intergovernmental grants to dampen the inherent pro-cyclicality of subnational finance, especially when decentralized governments are responsible for the provision of welfare services. Such arguments receive indirect support from a vast empirical literature on the United States and several other countries that focuses on asymmetric shocks to regional income, showing that the national tax-transfer systems shift income towards adversely affected regions. This literature, however, focuses largely on unintended regional consequences of inter-personal tax-transfer policies, and has nothing to say about the budgets of subnational governments and their ability to smooth expenditures over the business cycle. Though the average individual in Niedersachsen may pay less in taxes and receive slightly more in inter-personal transfers when the region suffers relative to other regions, this does not help the government of Niedersachsen pay its social workers and teachers.¹

In contrast, we present a political economy perspective that leads to the hypothesis that if anything, national grants will be positively correlated with the national business cycle, leaving regional governments to smooth shocks themselves. Particularly when politically motivated central government officials control discretionary transfers, they will attempt to externalize the costs of adjusting to revenue shortfalls onto lower-level politicians by cutting grants or

¹ Though note that von Hagen and Hepp (1999) find little evidence for an inter-regional stabilizing effect of transfers in Germany when regions experience asymmetric shocks.

introducing unfunded mandates. Central governments will only produce counter-cyclical grants if they can commit to an apolitical allocation process that is explicitly designed to smooth the revenues of constituent units. The evidence presented below supports these propositions, demonstrating that intergovernmental grants are either acyclical or pro-cyclical in most federations. This finding provides a new perspective on the common wisdom that a key function of central government fiscal policy in federations is inter-regional insurance.

In the absence of stabilizing central transfers, regional governments could smooth expenditures by borrowing on credit markets. Indeed, debt has a widely recognized role in allowing government to address business cycles. Thus, we hypothesize that where regional governments have the unfettered capacity to borrow, expenditures will be less income elastic than otherwise. Yet in many federations subnational governments face disincentives or prohibitions—whether imposed by the central government, markets, their voters, or their own constitutions—that mitigate against borrowing. In these cases, subnational expenditures seem to be pro-cyclical by design. The United States is not alone in this regard—the German Länder, Brazilian states, Argentine provinces as well as subnational governments in Belgium and Spain all have limitations (either self- or externally-imposed) on access to credit markets. In our sample, only Canada is unencumbered by formal restrictions on borrowing. It is not surprising then that in spite of pro-cyclical revenues, expenditures are uncorrelated with the business cycle among the Canadian provinces. Expenditures are uncorrelated with the business cycle in Australia as well, where central governments have delegated discretion over grants and subnational borrowing to independent commissions.

Together, the findings in this paper are striking. In most federations—even those with elaborate fiscal equalization programs—subnational governments, at best, are left completely alone to deal with fluctuations in the regional economy. In order to smooth expenditures over the business cycle, constituent governments must rely on their own borrowing and/or saving. The result, more often than not, is profoundly pro-cyclical fiscal policy. As such, the findings have

implications for fiscal federalism in the EU, whose members are currently discussing the optimal rules to govern the game of fiscal federalism in the future, and where voters have become accustomed to decades of pronounced counter-cyclical public expenditures. First, not one of the world's largest federations exhibits counter-cyclical expenditures among its member states. Second, the current trend toward increasing fiscal decentralization among member states is likely to exacerbate the conflict between counter-cyclical national policies and pro-cyclical subnational ones. Third, opponents of the Maastricht Treaty's "Excessive Deficit Procedure" will note that restraints on access to credit markets appear to encourage subnational pro-cyclicality. Indeed, the findings raise doubts about the usefulness of intergovernmental rules-based approaches to subnational fiscal policy among member states, particularly as they bear on the cyclicity of subnational expenditures. Finally, if limitations on member state borrowing eventually become binding, the experiences of other federations suggest that even in the politically impossible event of a vastly enhanced role for Brussels in taxing and providing transfers to member states is unlikely to promote counter-cyclical decentralized expenditures.

The paper proceeds as follows: The following section of the paper discusses expectations about the cyclicity of subnational finance drawn from the normative public economics literature and reviews the empirical literature. The next section establishes alternative comparative hypotheses drawn from a political economy framework, and maps the institutional structures of seven federations onto this framework. The next three sections each pursue a different econometric approach to subnational cyclicity across countries, and the final section discusses the results and extracts policy implications for institutional designers in the EU.

I. Federalism, Subnational Budgets, and the Business Cycle

Since most revenue sources available to governments are highly income elastic, political economists have long been concerned with the prospect that fiscal policy will magnify business cycles. In particular, pro-cyclical taxing and spending threaten to exacerbate downturns by

disrupting employment and the provision of public services. The impact of such swings in fiscal policy might be particularly severe for a society's poorest and most vulnerable citizens if welfare and social services are reduced at times when they are most needed. Musgrave summarizes the prevailing view that government has an obligation to fiscal stabilization:

A free economy, if uncontrolled, tends toward more or less drastic fluctuations in prices and employment; and apart from relatively short-term swings, maladjustments of a secular sort may arise towards unemployment or inflation. Public policy must assume a stabilizing function in order to hold within tolerable limits departures from high employment and price stability (1959: 22).

Even if one rejects the Keynesian notion of demand management in a world of policy inertia and rational expectations among market actors, a far-sighted welfare-maximizing government might nevertheless conduct counter-cyclical policy if it acts according to the "permanent income hypothesis," setting government consumption levels according to long-term expectations about income growth rather than yearly fluctuations, thereby minimizing distortions associated with frequent changes in tax income and expenditures. A large empirical literature has determined that whatever their motivations, central governments in wealthy countries have behaved in this fashion, borrowing and saving so as to smooth the short-term shocks of the business cycle (Arreaza, Sorensen, and Yosha 1999; Tornell and Lane 1999), particularly in Europe (Hallerberg and Strauch 2002). In developing countries, on the other hand, fiscal policy has been either acyclical or pro-cyclical (Talvi and Végh 2000; Wibbels 2004).²

By contrast, there is considerably less research on budget cyclicity at the subnational level in multi-tiered systems.³ This is unfortunate for several reasons. First, the general trend both within the EU and around the world has been toward greater fiscal decentralization (Garret and Rodden 2003). Especially in the world's largest federations, a very large portion of spending, and

² See Tornell and Lane (1999) for one promising explanation for these findings, namely that positive fiscal shocks induce a more than proportional increase in rent seeking by powerful social groups in developing nations. A somewhat similar argument is made by Talvi and Végh (2000) who suggest that volatile tax bases in developing nations require implausibly large fiscal surpluses during good times if fiscal policy is to counteract the business cycle.

³ For exceptions, see Sorsen, Wu, and Yosha (2001) and Asdrubali, Sorensen, and Yosha (1996).

to a lesser extent taxation, takes place at the subnational level. Second, while fiscal decentralization may be attractive if it improves service delivery and accountability, a growing literature points out that under certain conditions, it may have high costs in terms of fiscal coordination across levels of government (Velasco 2000; Berkowitz and Li 2000; Treisman 2000). It is this concern for dissonance between national and regional fiscal policies that, in part, inspires concern for the capacity of EU member states to meet general government budget targets. Nevertheless, no comparative research has examined the role of subnational budget cyclicality as a potential contributor to those coordination problems. Third, despite automatic fiscal stabilizers commonly built into national fiscal policy among EU member states (van den Noord 2000), subnational budgets across the world's federations have few such mechanisms. While such stabilizers have worked to dampen the cyclical fluctuations in economic activity by about 40 percent among EU member states, subnational governments around the world have few such policy tools.⁴ Indeed, as outlined below, there are good reasons to believe that subnational fiscal policy is likely to be markedly pro-cyclical, including sensitive revenue streams, central government manipulation of intergovernmental grants, limited access to credit markets, and in some cases, balanced budget laws that require tax increases and spending cuts during tough economic times.

II. Theoretical Framework

The pro-cyclicality of provincial revenues

At any level of government, revenue will be positively correlated with the business cycle unless income inelastic taxes can be used, such as property taxes and sales taxes on food. Even at the national level in the EU, where governments have broad tax bases, the evidence suggests that revenues are moderately procyclical. Like central governments, regional governments in federations generally rely on tax flows that are highly correlated with income: taxes on personal and corporate income, sales and turnover, and payroll.

⁴ See van den Noord (2000): p.9.

In most federations, moreover, there are reasons to suspect that the tax bases of provincial governments are even more sensitive to the business cycle than those of the central government. For starters, provincial governments may be subject to tax competition among provinces that constrains the capacity of subnational governments to raise sufficient funds to generate enough savings to combat economic downturns (Norregaard 1997). They also lack the power of seignorage, which can ease short-term fiscal disequilibria. Moreover, as the normative public economics literature (e.g. Oates 1972) points out, subnational governments often have much less flexibility in responding to downturns than the central government. Economies of scale in tax collection and redistributive considerations often require that central governments collect the most important taxes. As a result, provinces frequently have few revenue streams at their disposal. The taxes they do control, moreover, tend to be highly responsive to the business cycle. While local authorities often have access to property taxes (which are business cycle resistant), regional officials are left with income, sales, and in some cases, rollover taxes. Thus, we hypothesize that the more dependent a nation's regions are on narrow and income-elastic tax bases, the greater the pro-cyclicality in subnational finance.

There is considerable variance in the elasticity of subnational tax bases across our cases. In both the United States and Canada, for instance, state governments depend on income and sales taxes—both quite sensitive to the business cycle—for own-source revenue. In Spain, recent reforms decentralized the collection of portions of the value-added tax in order to diminish historically heavy reliance on intergovernmental transfers. Australia's states are dependent largely on a payroll tax and a series of small, indirect taxes. Even more problematic, Argentina's provinces historically have relied on a highly sensitive rollover tax, and Brazil's states depend on a single value-added tax. Only in Germany, with its extensive system of shared taxes between national and provincial governments, do subnational governments have access to tax bases broad enough to avoid quite high levels of pro-cyclicality.

Can the center help the provinces smooth their expenditures?

The solution to pro-cyclical provincial revenues in the traditional fiscal federalism literature is to “assign” the task of stabilization to the central government, which has a broader, more stable tax base, the power to print money, and the ability to borrow at lower interest rates. A more recent literature suggests that an important task of a benevolent central government in a large country that experiences stochastic, asymmetric regional shocks is to use fiscal policy to pool risk across regions. The central government in a federation might pursue stabilization either through interpersonal or intergovernmental transfers. First, in the event of an asymmetric shock, say a sudden drop in farm prices, a centralized system of progressive taxation combined with an automatic interpersonal social insurance program would disproportionately favor the affected region because of the geographic concentration of poor or unemployed individuals. A large empirical literature has demonstrated that central government tax-transfer policies in the United States, Canada, the UK, France, and Italy indeed act to smooth out asymmetric regional shocks. These studies focus on the difference between market (prior to federal tax-transfer) and disposable income, discovering that federal policy provides a modest boost to personal incomes in regions suffering from asymmetric shocks.⁵

These studies say nothing, however, about the second type of central government stabilization. In fact, it is possible that the modest relative income boost associated with *national* interpersonal tax-transfer policy during an asymmetric regional downturn is completely undone by the need for *provincial* governments to raise taxes or cut expenditures because of flagging revenues. If subnational governments provide the lion’s share of public goods like health care, education, unemployment relief, and welfare, the relative inter-regional stabilization provided by the federal government might be swamped by the pro-cyclicality of regional fiscal policy. If the

⁵ The most influential paper was Sachs and Sala-i-Martin’s (1992) study of the United States. Subsequent studies include von Hagen (1992), Melitz and Zumer (1998), Bayoumi and Masson (1995), Obstfeld and Peri (1998), Sorensen and Yosha (1997), and van Wincoop (1995). Kletzer and von Hagen (2000) provide a literature review.

typical characterization of subnational governments as fiscally inflexible and credit-constrained compared with the center is correct, the assignment of “stabilization” to the central government in the fiscal federalism literature seems to imply not just interpersonal transfers, but a revenue-sharing scheme or system of inter-governmental transfers that is markedly counter-cyclical to prevent provincially-provided expenditures from vacillating with the business cycle. In the context of the EU, some have proposed just such a Union-wide system of horizontally equalizing fiscal transfers to accommodate asymmetric shocks given the political infeasibility of increasing the Commission’s budget sufficient to play a significant tax-transfer role (Kletzer and von Hagen 2000).

In fact, revenue equalization schemes in federations like Germany, Australia, Canada, Brazil, and to a lesser extent Spain explicitly aim to redistribute revenue from relatively wealthy to relatively poor regions in order to reduce disparities in service provision and/or revenue-raising capacity. Specific-purpose transfers (e.g. Medicaid) in the United States and elsewhere are often progressive in that they are directly tied to poverty levels. But horizontal redistribution should not be confused with insurance against asymmetric regional shocks (von Hagen 1992). In fact, there is some evidence that national transfers in federations may exacerbate the pro-cyclicality of provincial own-source taxes. Sorensen, Wu, and Yosha (2001), for instance, show results indicating that grants from the U.S. federal government to the states are positively correlated with the business cycle. Likewise, revenues flowing to the German states through its tax-sharing scheme are decisively pro-cyclical (Seitz 2000; von Hagen and Hepp 2002). Thus, in addition to concerns that automatic transfers from the center reduce incentives for regional govts to undertake the kinds of reforms that would increase their fiscal capacity to deal with economic shocks (Persson and Tabellini 1996; von Hagen and Hepp 1999), they also seem to do little to smooth regional fiscal cycles. Inter-personal flows usually smooth out asymmetric shocks in a *relative* sense—i.e. extra resources shift from Bavaria to Bremen after a shock to the shipbuilding

industry—but this does not mean that Bremen’s government expenditures on unemployment and welfare can increase or even stay flat in the face of rising unemployment.

Moreover, the literature has thus far has paid very little attention to symmetric shocks. Though it is not entirely clear, the normative fiscal federalism view seems to suggest that flows from the center to the states should counteract symmetric shocks as well. If the own-source revenues of provincial governments are pro-cyclical and they are major public sector employers and the primary providers of education, unemployment, health, and welfare benefits, presumably the assignment of stabilization responsibilities to the central government requires that the center use its deeper pockets to borrow on behalf of states and bolster their revenues through increased revenue shares, discretionary grants, or subsidized loans in the face of a country-wide recession.

Yet there are good reasons to believe that counter-cyclical flows from the center to the constituent units are simply not compatible with the central government’s incentives. Since tax increases and expenditure cuts are politically painful, central governments will face incentives to externalize the costs of adjustment onto subnational officials. To the extent that central governments borrow to smooth expenditures, election-motivated governments will be more inclined to smooth their own expenditures, for which they can more directly claim electoral credit, than those of subnational governments. If resources are severely constrained and further borrowing is costly, the center might even be tempted to shift some of its responsibilities to the constituent governments without providing additional funding—perhaps even cutting existing funding. Such so-called “unfunded mandates” are the common complaint of constituent governments in virtually every federation around the world, and the complaints seem to grow loudest during recessions.⁶ It is difficult to identify the effect of unfunded mandates with data analysis. Yet one simple hypothesis is that intergovernmental grants, to the extent that the center has discretion, will be pro-cyclical, especially in response to negative shocks because of the

⁶ The “no child left behind,” Head Start, and homeland security initiatives of the U.S. federal government are only the most recent recurrences of a time-honored tradition.

center's incentives for opportunistic burden-shifting. Furthermore, we hypothesize that the only situation in which grants might be counter-cyclical is one in which the center has delegated authority over grants to an independent agency with an explicitly counter-cyclical mandate.⁷

Can provinces smooth expenditures through borrowing?

If own-source and transferred revenues are pro-cyclical as we suspect, provincial governments will only be able to smooth expenditures by borrowing. Yet in many federations, self-imposed or centrally-imposed rules place limitations on borrowing. The constitutions of the German states impose a “golden rule” that requires them to borrow only for capital expenditures, though the line between capital and current is extremely porous, and some states have simply ignored their constitutions. All the U.S. states save Vermont have some sort of balanced budget rule or limitation on borrowing. Some of the rules date back to the 1840s when most were imposed by angry voters following tax revolts or state debt crises. Though the system is in transition, for most of the postwar period the Australian central government has undertaken borrowing on behalf of the states, and the distribution of loans among the states has been determined by an autonomous commission. In India, the federal government must approve borrowing by the states and imposes limits on states that are debtors to the center. Since this is true of all states, the center is highly involved in allocating deficit finance among the states. In Argentina, the privatization of provincially-owned banks and a number of intergovernmental agreements in the 1990s served to somewhat constrict provincial access to credit markets. In Brazil, the federal government has made various attempts to restrict the borrowing of states, though enforcement was quite poor throughout the late 80s and the 90s. In practice, the availability of credit has varied a great deal from one state to another; the states that owned large

⁷ There is yet another reason to expect pro-cyclical grants. Some countries—particularly the United States—matching grants are used. In an effort to encourage spending by subnational governments in areas characterized by positive externalities, central governments sometimes offer to match provincial spending up to some limit. Though provinces are likely to make cuts during recessions in areas that are not subject to matching, it is possible that some matching funds will be lost if provinces are forced to make cuts in these areas.

banks were able to borrow most extensively. The only country in this study with essentially unlimited access to credit markets among the constituent units is Canada, where all of the provinces borrow substantially in international credit markets.⁸

There is considerable evidence supporting the claim that formal budget rules matter. Analysts point to the importance of balanced budget laws (Alt and Lowry 1994), constitutional limitations on borrowing and indebtedness (Poterba 1996), and caps on expenditure growth (Alesina and Bayoumi 1996) as useful formal checks on the capacity of regional politicians to generate the imbalances. Indeed, researchers have exploited the cross-sectional variation in the rules of the U.S. states, and most have concluded that the states with stronger rules run smaller deficits, receive higher bond ratings, pay lower premiums, and adjust to shocks more quickly (Alesina and Bayoumi 1996; Poterba and von Hagen 1999; Poterba 1994).

In the context of the EU, such evidence has contributed to a clear trend in favor of rules-based approaches to fiscal policy. At the Union level, of course, fiscal and debt limits are institutionalized in the Maastricht Treaty. This emphasis is mirrored in new developments at the subnational level. Germany has recently complemented its “golden rule” with an intergovernmental agreement aimed at fiscal restraint at all levels of government with an eye toward compliance with EMU budgetary rules. Both Austria and Italy have developed domestic stability pacts that include sanctions for subnational governments that fail to reduce deficits sufficiently. Finally, Spain and Belgium have developed intergovernmental agreements that provide for limitations on the borrowing capacity of regional governments that over-spend.

Nevertheless, whether borrowing limitations and other rules-based approaches actually affect subnational fiscal decisions is a matter of some debate. Subnational governments have many ways of getting around borrowing restrictions, including off-budget accounts, generous interpretations of capital expenditures, abuse of state-owned enterprises and banks, and in the

⁸ Very recently, after the end of our data coverage, some Canadian provinces have introduced new fiscal restrictions, though most experts are skeptical about the likelihood of enforcement.

Argentine case even the issuance of scrip. Moreover, in many cases the enforcement mechanisms are weak or non-credible.⁹ Indeed, most domestic stability pacts among EU member states have very weak procedures for sanctioning over-spending regions. More importantly, there is a vexing endogeneity problem: states with stronger rules and limitations likely have more fiscally conservative voters. As Alt et al. (2001) have noted of both national and subnational budgetary politics, it is quite possible that formal rules and agreements are reflections of underlying political dynamics.

This paper will not resolve the debate, but if these rules have some effect, they will prevent provincial governments from smoothing negative shocks. That is, we expect cyclicity to show up on the expenditure side as well as revenue side in the presence of fiscal restrictions. We have no basis on which to compare the likely restrictiveness of U.S. balanced budget rules with German “golden” rules, the allocations of the Australian and Indian loan commissions, or the Latin American attempts at regulation. The only straightforward hypothesis, then, is that among our cases, the more restricted the access to credit markets, the more procyclical fiscal policy will be. Counter-cyclical public expenditures are most plausible where provincial authorities have unimpeded access to credit markets (Canada), somewhat possible where access to credit is constrained by either budget rules (the U.S. and Germany) or central authorities (Australia and India), and least likely where credit markets are either unavailable or irregularly so (Brazil and Argentina).

⁹ The recent literature on subnational “soft budget constraints” points out that in some contexts, subnational officials expect that the central government will be unwilling or unable to resist demands for bailouts when their debt burdens become unsustainable. If subnational officials hold such beliefs, set expenditures according to long-term revenue expectations, and have access to deficit finance, they may be more willing to take on debt than subnational governments that do not have bailout expectations. It is also the case, however, that such soft budget constraints are endemic in cases where national and subnational governments have limited access to credit markets during recessions (i.e. developing nations). That the case, there might be some overall public sector budget constraint that reinforces subnational pro-cyclicity.

Expectations

Table 1 summarizes our assessment of the federations on each of the hypothesized determinants of subnational fiscal cyclicity. Because the depth of subnational business cycles themselves determine the severity of the problem provinces deal with, we have also included a column describing the extent of income shocks across the cases. To recap, I expect to find that own-source provincial revenues are pro-cyclical in all federations, especially in countries that rely most heavily on income-elastic taxes. Similarly, though formulaic revenue-sharing programs are likely to provide some horizontal insurance against asymmetric income shocks, the underlying pro-cyclicity of the shared tax base will make for pro-cyclical or at best acyclical flows of shared revenue. For discretionary grants that can be altered by the central government in the yearly budget process, we expect that opportunistic burden-shifting will be manifested in pro-cyclicity, particularly when shocks are negative. This adds up to highly pro-cyclical revenue streams. Because of borrowing limitations, we expect that provinces in most countries will find it difficult to fully offset this pro-cyclicity through borrowing, though I expect that the Canadian provinces are an exception.

Table 1 About Here

III. A Simple Static Approach

We have collected yearly data on revenues, expenditures, deficits, and gross state product for each state or provincial government in seven federations around the world. Moreover, we have broken the revenue data down into grants and own-source provincial revenues (primarily taxes, but this category also includes user fees, income from state-owned enterprises, etc.) and grants. Because the hypotheses above distinguish between formulaic and discretionary transfers, we would also like to disaggregate grants into two components. Thus far we have only been able to do this for the Latin American cases, where the distinction between “coparticipation” and other more discretionary transfers is easy to make in the data. Through further consultation with

country experts, we are sanguine about our potential to make a similar distinction in Australia, Canada, and perhaps other countries in the next draft.¹⁰ With the exception of the Spanish case, the expenditure data include both capital and current expenditures. The surplus/deficit variable captures the entire budget (not only the current account). We have consulted with country experts in each case and used the most appropriate deflator (either CPI or GDP implicit price deflator), along with yearly population estimates to obtain real per capita income and fiscal data.¹¹ All variables have been logged to facilitate interpretation of coefficients. We have collected the longest possible consistent time series for each country. The best coverage is for Canada, which begins in 1968. The worst is for Australia, which because of a change in accounting regimes only covers 12 years beginning in 1990.

Thus for each country, we have panels of yearly inflation-adjusted per-capita fiscal and income observations for each province. Indian data are only available for the so-called “major states,” and we only include the “old” western states of Germany. We have conducted extensive tests for the influence of outliers, guided both by post-estimation residual plots, knowledge of the cases, and reviews of each country’s empirical literature. The most important considerations appear to be dependence on natural resources and the special status of capital cities. We exclude Alaska and the District of Columbia from the U.S. regressions, the Northern Territory from the Australian regressions, Berlin from the German regressions, the Federal District from the Brazilian regressions, and the city of Buenos Aires from the Argentina regressions. Only in the cases of Alaska and the Northern Territory (Australia) does the exclusion affect the results substantially.¹² The results below are not affected by the exclusion of other Western U.S. states

¹⁰ The German yearly data do not allow us to distinguish between tax revenues obtained through shared taxes and the miniscule taxes actually controlled by the individual Länder. The variable called “grants” in the analysis below refers to a combination of the grants distributed by the Bund in the third stage of the equalization process and various other shared-cost and federally-funded programs.

¹¹ In Germany Canada, and India it was possible to use province-specific deflators, while for the other cases we were forced to use national-level price data. This might introduce bias into some of the “asymmetric” results presented below, especially in countries like the United States where inter-regional price variations are large.

¹² When Alaska is included, the pro-cyclicality of both revenues and expenditures is more pronounced.

that depend heavily on natural resources, nor are they affected by the exclusion of Alberta from the Canadian regressions, or the city-states of Bremen and Hamburg from the German regressions. For full details on the data set, see the appendix.

We conduct separate regressions for each fiscal item in each country. The most straightforward way to examine cyclicity is to simply regress fiscal variables on provincial income. Because of unit roots in both income and fiscal data, we use first differences of the logged real per capita data. We report the results of Prais-Winsten regressions with panel-corrected standard errors, assuming the disturbances to be heteroskedastic and contemporaneously correlated across panels. We also include fixed provincial effects in each model.

For each regression, we report results both with and without a panel of year dummies, each with a different interpretation. Models that include year dummies control for common shocks experienced by all states in a particular year—for example a symmetric downturn in the national economy or a change in federal macroeconomic policy that has symmetric effects on all states. As a result, such models zero in on the effects of asymmetric provincial income shocks. However, some of the arguments explored above, particularly those relating to unfunded mandates and strategic burden-shifting, require that the year dummies be left out so that symmetric national shocks—say a common negative shock accompanied by unfunded mandates—are allowed to affect the results.

[TABLE 1 HERE]

The results are presented in Table 1. Each cell in the table is the coefficient from a separate regression, and represents the income elasticity for each budget item. In order to help the reader wade through the results, rather than presenting standard errors, we simply leave the cells blank where the coefficient is clearly indistinguishable from zero (our cut-off is $p > .25$) and indicate statistical significance with asterisks. For each revenue item and expenditures, a positive

coefficient represents a positive, or pro-cyclical, correlation with gross state product. However for the surplus, a positive coefficient reveals that governments increase the surplus during good times and decrease it (enlarge the deficit) during bad times, which is consistent with counter-cyclical borrowing and saving.

As expected, the first column reveals that overall provincial revenues are highly pro-cyclical in all federations. Strauch and Hallerberg (2002) estimate the income elasticity of revenues in EU member states to be .44. This is close to the estimates for the U.S. states and Canadian provinces, but revenues are even more pro-cyclical among the German Länder, Australian states, and Brazilian states. The next column reveals that this is driven primarily by severely pro-cyclical own-source revenues, which—India aside—are typically about half again as income elastic as overall revenues.

Perhaps the most intriguing coefficients are for grants. These results should put to rest any perception that intergovernmental grants are broadly countercyclical. For the U.S., the coefficient does not quite reach traditional levels of statistical significance with or without the year dummies. However, it is interesting to note that it is positive in the model without year dummies, and negative when the dummies are included. Using a shorter time series, Sorensen, Wu, and Yosha (2001) find a similar relationship, though their coefficients obtain statistical significance. Indeed, when we restrict the analysis to their data period (stopping in 1994), we obtain slightly larger, significant coefficients in line with theirs. Thus grants apparently are counter-cyclical only if common shocks are suppressed through year dummies. A reasonable interpretation is that progressive intergovernmental transfer programs provide a relative shift of resources towards states suffering from asymmetric negative shocks. However, this does not help combat the overall pro-cyclicity of state revenues. When common shocks are allowed to affect the results, grants are positively correlated with the business cycle. Similar results are obtained in the Canadian and German regressions (pro-cyclical grants when common shocks are considered, but counter-cyclical when they are removed), but the coefficients are not statistically significant.

The coefficients for grants are positive though not estimated with much precision in Australia and Brazil. Finally, Argentine grants are clearly pro-cyclical in the model that allows symmetric shocks.

For Argentina and Brazil, it was possible to conduct separate analyses of revenue-sharing receipts and discretionary grants. The Brazilian result is quite interesting. The progressivity of coparticipation payments creates what looks like an inter-regional insurance effect—asymmetric income movements are negatively correlated with revenue-sharing receipts. However, discretionary transfers are positively correlated with the business cycle whether symmetric shocks are suppressed or not, and the coefficients are quite large. This is consistent with our opportunistic characterization of the central government. When the center has discretion over yearly grant allocations, it faces incentives to cut them during bad times.

Next, we examine whether these largely pro-cyclical revenues translate into pro-cyclical expenditures. Here the cross-country variation is interesting. The answer is yes in the United States, Germany, India, Brazil, and Argentina. Expenditures in Brazil are severely pro-cyclical—a one percent increase in GDP per capita is associated with almost a full percent increase in real expenditures per capita. The coefficients for India are also impressive—about two-thirds as large as in Brazil. As expected, expenditures are acyclical in Canada, and quite surprisingly, vaguely counter-cyclical in Australia, though the significance of the coefficient is quite sensitive given the short time series. On the whole, the positive coefficients in the expenditure column are quite striking when compared with the results of EU studies of central governments, where expenditures are decisively counter-cyclical (see Box 1).

The positive coefficients in the surplus column suggest that the U.S. states, Canadian provinces, German Länder, and Australian states all attempt to smooth income shocks by borrowing during bad times and possibly saving during good times. However, the coefficient for the United States is very small. Though a one percent decrease in real GSP per capita is associated with a .44 percent decrease in revenue, it is only associated with a .04 percent increase

in the deficit. By contrast, the income elasticity of the surplus in European countries is somewhere around .36 (see Box 1). Whether constrained by their balanced budget rules or conservative voters, the U.S. states are loath to use borrowing or “rainy day funds” to smooth income shocks, and their expenditures are pro-cyclical as a result.

The story among the Canadian provinces is different. The “surplus” coefficient is .13 in the model without year dummies, and .22 in the model with year dummies. Though falling somewhat short of the efforts of OECD central governments, the Canadian provinces make a much larger effort to smooth shocks than their American counterparts. As a result, their expenditures are not correlated with the business cycle.

The German results are weak, but they do suggest that in spite of their “golden rules,” the balances of the Länder respond to common shocks, though the result disappears when the year dummies are included. But on the whole, pro-cyclical expenditures have not been avoided. These coefficients are rather sensitive; in fact Rodden (2003) argues that the story varies a great deal across states depending on bailout expectations.

As with the German case, there may be problems with pooling the constituent units in Brazil, Argentina, and India when incentives and access to deficit finance vary dramatically across units (i.e. Sao Paulo versus Piaui, Buenos Aires vs. Tierra del Fuego). That said, the deficits of the Brazilian and Indian states and Argentine provinces are acyclical while expenditures are pro-cyclical. Though much has been written about the role of intergovernmental bailouts in these cases, we believe the findings are a function of two factors: the profound depth of business cycles and the limited capacity of governments at all levels of government to borrow during recessions.¹³

Perhaps the most surprising result is for Australia. It appears that the Australian states do conduct pronounced expenditure smoothing by borrowing their way out of downturns, whether

symmetric or asymmetric. As a result, Australia is the only country under analysis with a negative coefficient on the expenditures side. It is difficult to know what to make of this result given the short time series and the fact that the system governing borrowing among the Australian states has been in flux during the period under analysis. However, it would appear that the allocations of the Australian Loan Council have explicitly encouraged borrowing to smooth shocks.

IV. Differentiating between positive and negative shocks

Another way to examine budget cyclicality is to be more explicit in defining shocks as departures from what is “normal” or expected. This allows for the differentiation between positive and negative shocks. It would be useful to examine whether some of the results above are driven disproportionately by positive or negative shocks, or whether perhaps some interesting relationships have been masked by suppressing different responses. We use predicted values from simple autoregressive models using two lags of logged GSP per capita to generate yearly “expected” income for each province. The difference between actual and expected income each year is defined as a “shock.” We then create a “positive shock” variable that takes on the value of the “shock” variable for positive values and zero for negative values. Likewise, we create a “negative shock” variable that takes on the value of the “shock” variable for negative values and a zero for positive values. This allows for the separate estimation of responses to positive and negative shocks. We use the same estimation technique as above. Table 2 reports the results, again leaving the cells blank where $p > .25$.

[TABLE 2 HERE]

¹³ Rarely have these nations actually been cut off from credit markets, but their interest rate spreads are larger and much more responsive to the business cycle than in our other cases. Thus, credit becomes much more expensive during recessions.

For the most part, governments demonstrate similar responses to both positive and negative shocks to own-source revenues and total revenues. However, the coefficients for grants reveal some interesting relationships. First of all, recall the positive but statistically insignificant coefficient for grants in the U.S. regression without country dummies above. Table 2 reveals that while there is no significant response to positive shocks, negative shocks are correlated with cuts in federal grants. The interpretation of a positive coefficient for the “negative shock” variable is no different than in Table 1—income and grants move together. The more negative the shock, the smaller the per capita grant. The same holds for symmetric shocks in India, though in that case, grants are also pro-cyclical in response to positive shocks. Both of these cases are consistent with our story about opportunistic burden-shifting.

In Australia, however, grants demonstrate counter-cyclicality that was not apparent in the regression above.¹⁴ It appears that grants actually increase in response to symmetric negative shocks. Recall that grants in Australia are formulaic and relatively far removed from the discretion of politicians in the yearly budget, since key allocation decisions have been delegated to the Commonwealth Grants Commission. Next, note that the non-discretionary co-participation programs of the Latin American federations exhibit counter-cyclical responses to negative shocks. In contrast, discretionary transfers are quite pro-cyclical. In Brazil and India, discretionary transfers are dramatically curtailed in response to negative shocks, while in Argentina, such grants grow disproportionately during good times.

An examination of the expenditure and surplus results also yields some clarifications of previous findings. First, consider the United States. In spite of our opening remarks about job losses among teachers and social workers, we see that most of the pro-cyclicality of expenditures in the model with year dummies comes from expansions during good times. In Canada, the result of the model with year dummies is quite similar to the United States. Dummying out the effect of

¹⁴ Note that the rather fickle positive coefficient in the Australia regression above is actually reversed if the Northern Territory is included.

symmetric shocks to the provinces, it appears that positive asymmetric shocks yield expansions in spending, while unexpectedly low income is uncorrelated with expenditures. Yet the Canadian model without year dummies yields negative, though not quite significant, coefficients for both positive and negative shocks, suggesting that if anything, the Canadian provinces demonstrate a hint of weakly counter-cyclical expenditure policy. The German states, by contrast, apparently respond primarily to negative shocks by cutting expenditures. The Brazilian results suggest severe pro-cyclicality both in good times and bad whether symmetric shocks are dummied out or not. In Argentina, while expenditures increase in response to symmetric positive shocks, there appears to be an inter-regional insurance-type effect since expenditures increase in response to asymmetric negative shocks. Recall that there is a similar negative coefficient in the asymmetric shock model for revenue-sharing receipts in Argentina.

Though overwhelming, the results of these two sections do come together to tell an interesting story. The most basic account is that there are very few negative coefficients for expenditure and revenue items. Pro-cyclicality is the rule in the provinces and states of the world's federations. Own-source and total revenues are always highly pro-cyclical. When they are non-discretionary, grant programs may well play an inter-regional insurance role, shifting additional resources to states that suffer from asymmetric negative shocks. But when common income shocks are considered, grants are either acyclical or pro-cyclical, with the possible exception of Australia, where the central government has essentially no discretion over grants. In the cases where the central government most clearly has discretion, grants are unmistakably pro-cyclical.

V. A Dynamic Approach

Up to this point, the empirical approach has been fairly static, examining how budget components respond to yearly fluctuations in income. This section, in contrast, examines the dynamic reaction of budgets to innovations in provincial economies by using lagged levels of

GSP. This step is important for a number of reasons. First, we expect that economic shocks have budgetary implications over a number of years. A sharp contraction in the business cycle this year, for instance, is likely to reduce revenues for a number of years to come. Second, it is possible that the cyclical properties noted above are very short-term and therefore less problematic than if the effects were very persistent through time. On the other hand, if procyclicality continues through time, it raises even greater concerns about the capacity of subnational taxing and spending to exacerbate business cycles. Third and finally, we expect there to be some interesting differences across federations in how budgetary components respond to economic changes through time. There is solid evidence, for instance, that the U.S. states respond to positive economic shocks immediately with sharply improved revenue collection, while expenditures increase more slowly (Sorensen, Wu, and Yosha 2001). The net result is a tendency toward consistent (if small) surpluses (deficits) over several years in the presence of a positive economic innovation (deterioration). Consistent with the “voracity effect”, however, we expect provincial governments in Argentina and Brazil to be politically incapable of running surpluses. In contexts of volatile tax bases and political clientelism, the pressure to increase spending at once in response to positive economic shocks is likely irresistible. The result should be that income shocks will produce similar effects for both revenues and expenditures in such cases, thus eliminating the potential for saving in good economic times.

To investigate the dynamic response of provincial budgets to provincial income, we regress per capita real state surpluses, revenues, and expenditures on gross state product and four lags. The models also include a panel of dummies for fixed provincial effects, but do not include year dummies to control for common shocks experienced by all states in a particular year.¹⁵ Since both revenues and expenditures are non-stationary, we do not calculate parameter estimates.

¹⁵ The inclusion of year dummies yields broadly similar results. The most notable difference is the tendency for revenues and expenditures to revert to the mean more quickly when controlling for national shocks.

Instead, we graph the predicted effect of a \$100 (or national equivalent thereof) permanent increase in GSP on the budget components over the five-year period.

This approach has a number of costs and benefits. On the positive side, the graphs present the real change in national currency units to budget components of a similar increase in income across provinces in the six countries. As a result, the shape of the graphs are directly comparable across cases, allowing us to examine how budgetary components move in each national setting. This is also a common approach in the literature, which provides some useful benchmarks with which to compare our results. Furthermore, preliminary analysis of differenced models suggest that the results are not a function of the levels estimation strategy. The most significant downsides to the approach are that different national currencies make the scale of the changes incomparable across cases and that it requires the calculation of national equivalencies to a \$100 innovation in GSP in the U.S. states. The first problem is surmountable, but not given current space constraints. To overcome the second challenge, we calculated the U.S.' \$100 GSP increase as a percentage of average GSP, which amounts to .43 percent. We then multiplied each nation's average GSP in its own currency by .0043 to produce an innovation equivalent in scale to \$100. These values are reflected in the graphs reported below.

[GRAPHS HERE]

Graphs 1 through 6 show some similarities across all nations. Most notably and consistent with the findings above, both revenue and expenditure tend to increase over the course of the five year period in response to similar permanent increases in provincial income. In no case does either budget category revert to the mean by the end of the period. Likewise, the most significant increases in revenues and expenditures are almost always in the first two years after the initial income shock. Subsequently, the impact of the shock tends to diminish.

These broad similarities aside, the graphs show nations that follow one of two patterns. In the first, which include the United States, Canada, and Australia, provincial revenues climb (fall) sharply in the initial year in which GSP increases (falls), with expenditures going up (down) more slowly through time, though at varying speeds across these countries. The result is that the surplus responds positively (negatively) in these cases, reverting to zero after between two (Australia) and five (Canada) years. In the U.S., expenditures draw near revenues after four years. In Canada and the U.S., the fiscal response is quite slow and smooth, occurring gradually over the course of the entire five-year period. In Australia, on the other hand, spending goes up quite sharply in the second year after the increase in GSP, eliminating surpluses quite quickly. This last finding is quite interesting in light of the previous results on Australia's anti-cyclical expenditure characteristics. The dynamic analysis here suggests that while expenditures do decrease in the initial year of the income increase consistent with counter-cyclical spending, they behave very pro-cyclically subsequently. Thus, Australia may not be the outlier over the medium term that previous sections suggest.

The second pattern includes the German, Brazilian, and Argentine cases. Unlike the dynamic described above, here revenues and expenditures move together quite closely. Note that the difference is not on the revenue side—like the U.S., Canadian, and Australian states, regional governments in these cases evidence a sharp increase in revenues in the initial year of the income innovation. Indeed, the Brazilian states and Argentine provinces are noteworthy for the very strong response of revenues in the first year. These cases are quite different, however, on the expenditure side, where spending responds immediately rather than increasing more smoothly. One important result is that provinces in these three countries are unable to run surpluses in the initial years of the five-year period. Not surprisingly, these are also the three cases with the highest income elasticity of expenditures and the only ones with acyclical surpluses (with year dummies) in Table 1 above.

Two potential explanations to these latter findings present themselves. The first is the aforementioned voracity effect. Tornell and Lane (1999) suggest that in societies with weak institutional foundations and politics that rely on fiscal redistribution, powerful interest groups will consume all of an unexpected fiscal windfall. In such contexts, politicians find it impossible to resist the siren call of spending. Though probably informative with regards to the Brazilian and Argentine contexts, such an argument provides less insight into the behavior of the German Länder. A more generalizable explanation may lay with the aforementioned discussion of soft budget constraints. It is noteworthy that all three of these cases have seen considerable fiscal bailouts of provincial governments by their national counterparts. Of course, the Brazilian and Argentine cases are in a league unto themselves on this account, but a pair of Länder in Germany have also benefited from post hoc rescues, while others may hope for the same. Under these soft budget constraints, there are no incentives for provincial governments to save since the bailouts provide more benefits to the most troubled provinces. Any province that fails to increase spending in response to a positive revenue shock would produce savings (surpluses) and be hurting its capacity to attract bailouts in the long run.

The general findings in this section suggest that federations where provincial governments approximate sovereigns as they do in Canada, the U.S., and perhaps increasingly Australia, they are able to engage in some level of smoothing over the business cycle. In contrast, where provincial revenues, access to credit, and bailouts depend on the center, provincial governments seem to have incentives to engage in more strongly pro-cyclical fiscal policy. However, there is again no evidence of counter-cyclical spending in any of the cases.

VI. Conclusion

Three findings stand out. The most general and theoretically interesting is that subnational finance in these seven federations is overwhelmingly pro-cyclical. Given the near universal pro-cyclicity of revenues and expenditures and the lack of intergovernmental grants

with insurance effects, it appears that the recent tax increases and expenditure cuts of U.S. state governments in response to recessions is the rule rather than the exception. And while the constituent governments in all of the OECD federations under analysis do respond to negative shocks with increased budget deficits (presumably funded by debt), in no case does this clearly translate into counter-cyclical expenditures. The only cases that even approach countercyclical (or even acyclical) expenditures are Canada and Australia. The Canadian provinces appear to achieve this through borrowing on international credit markets during downturns. On the other hand, Australia's centrally regulated but highly non-discretionary systems of transfers and especially loan allocation seem to allow it to avoid pro-cyclical expenditures, though only in the very short term. Given key features of subnational finance in these federations discussed above, it would seem that provincial fiscal policy is, indeed, pro-cyclical by design, raising serious questions about the capacity of governments to combat the business cycle in contexts of ongoing decentralization. Particularly where provincial governments are responsible for important social policies (for which demand increases in bad economic times), the implications for the poor and unemployed may be very serious.

Second, despite suggestions in the normative federalism literature and possible misinterpretations of recent empirical literature, there is very little evidence that federal governments use intergovernmental grants to smooth regional economic shocks. Quite the contrary, when common shocks are allowed to influence the results, grants are positively associated with the budget cycle in most cases. Closer examination of the data suggests that this results from the tendency of national governments to cut grants in response to negative economic shocks. Such is particularly the case when grants are distributed at the discretion of national leaders. These results provide compelling evidence for a political economy interpretation of intergovernmental finance whereby national officials find it easier to shift fiscal burdens onto subnational governments than engage in retrenchment themselves. And while interpersonal transfers may limit some of the damage associated with pro-cyclical grants at the individual level,

they do not smooth subnational finances. Given that the fiscal federalism canon has assigned the fiscal stabilization function to the national government, these findings will further dismay those who favor Keynesian demand management.

Third, subnational finance in these federations appears to fall into two broad categories: the very pro-cyclical and the less so. Where provincial governments approximate sovereigns as they do in Canada, the U.S., and increasingly Australia, they are able to engage in some level of smoothing over the business cycle. In contrast, where provincial revenues, access to credit, and bailouts depend on the center as they do in Brazil, Argentina, and Germany, provincial governments seem to have incentives to engage in more strongly pro-cyclical fiscal policy. We suspect that the difference results primarily from the provincial incentives established by national bailouts. Where provincial leaders effectively compete to extract bailouts by running deficits, there is no reason for them to save during good times. As a result, spending and revenue move in concert. We are unsure, however, about the precise mechanisms, and a crucial question remains: Why would bailout hungry provinces cut spending in bad times as the data suggests they do in Brazil?

More generally, our analysis does not explain why subnational governments do not try harder to smooth expenditures. The Canadian provinces and especially the U.S. states—some of which are larger than European countries—could probably borrow (and save) much more than they do. The most obvious explanation for the fact that the U.S. states are less inclined than their Canadian counterparts to borrow during recessions is the presence of formal borrowing restrictions, but of course we cannot rule out the possibility that American voters have different expectations and beliefs than Canadian voters, or that some other aspect of institutional design accounts for the difference.

These findings have important implications for ongoing debates in the European Union. Key characteristics of several of the more decentralized members of the EU suggest that the impressive levels of procyclicality observed in our cases are likely to be evident elsewhere. In

Italy, for instance, weak regional revenue bases combine with an extensive system of discretionary grants in a fiscal system that suffers from high levels of vertical fiscal imbalance.¹⁶ In Belgium, a large system of inter-personal tax-transfers at the national level serves to limit inequalities between the Walloon and Flemish regions, but the regions themselves have historically been financed largely by transfers (mostly from the income tax) on the basis of three criteria—population, revenues generated by personal income tax, and surface area—and the recent experiment with limitations on regional borrowing suggest that the dynamics found in this paper are likely to apply.¹⁷ In Sweden, Finland and Austria, extensive expenditure decentralization is financed through large intergovernmental grants. There is some evidence of an important role for central discretion in the allocation of those grants (Worthington and Dollery 1998; Dahlberg and Johansson 2002), which raises the potential for the kind of strategic burden-shifting discussed in this paper. All told, our cases suggest that there is likely to be an ongoing conflict between the stabilizing role played by national governments and the pro-cyclical policies of regional governments. In many cases, this conflict will be exasperated by ongoing moves to decentralize areas of social spending to regional governments.

Indeed, the results presented here seem much more relevant for the European Union than the oft-cited studies, starting with Sachs and Sala-i-Martin (1991), demonstrating that federal inter-personal transfers shift in favor of regions hit by asymmetric negative shocks in the U.S. and elsewhere. Some seem to interpret this as evidence that proper currency unions require a centralized tax-transfer system to smooth such asymmetric shocks. While they may do something to shield individuals from cyclical variations, they would do nothing for subnational governments. Indeed, regardless of what central governments do, subnational authorities simply cannot or will not smooth income shocks, symmetric or otherwise. One key implication is that

¹⁶ Subnational governments in Italy raise less than a third of the revenue needed to meet expenditures (Emiliani, Lugaresi, and Ruggiero 1997). The remainder comes in the form of grants.

¹⁷ Note that reforms in 2001 did give the regions more tax autonomy. See Gérard (2001).

automatic stabilizers at the national level across member states are likely to counteracted, in part, by pro-cyclical policy at the regional level.

With regards to the threat of subnational fiscal deficits to fiscal targets among member states, these findings also suggest that the popularity of intergovernmental fiscal rules or “national stability pacts” as a means to coordinate policy are probably misplaced. Just as some research suggests that national rules are either epiphenomenal (Alt et al. 2001) or ineffective (EC 2003: 185), such mechanisms are unlikely to provide a stable foundation for balanced subnational finances. As the EC (2003) explains many such agreements lack teeth, both in monitoring and sanctioning regional governments that exceed deficit targets. Indeed, recent attempts among member states aside, the only nations with a long history of such an approach are Argentina, Brazil, and Mexico—all such attempts have ended badly thanks in large part to the underlying dynamics described in this paper.

There is room for some optimism, however, when we look at the member states in context of a broader EU “federation”. The fact that they are sovereigns suggests that they may expect to look more like the Canadian provinces with their modestly counter-cyclical deficits than constituent governments in other federations. On the other hand, however, Maastricht’s “Excessive Deficit Procedure,” if enforced, introduces a limitation to debt financing that is likely to constrain their capacity to smooth expenditures during recessions. In this respect, the member states are likely to approximate the U.S. states with their balanced budget laws, which introduce a noteworthy pro-cyclical quality to state finances. There is reason, therefore, for the many proponents of Keynesianism in Europe to worry about the implications of European integration for the capacity of national governments to combat economic downturns as they have in the past.

Finally, we have considerable research to do. First, a number of questions persist with respect to the ways in which national and regional fiscal policies interact. Most importantly, one would like to know the degree to which counter-cyclical national and pro-cyclical subnational policies cancel each other out. Similarly, to what degree do interpersonal tax-transfer systems

make up for subnational fiscal retrenchment during bad times? Second, while this paper improves on the non-comparative nature of the literature on subnational finance, it takes politics only minimally into account. The next (and, frankly, more interesting) step is to investigate the role of subnational and intergovernmental political incentives in shaping provincial fiscal policy across the world's federations. Questions abound: How does the partisan flavor of provincial governments affect their desire to smooth the business cycle? Are liberal parties more likely to run larger deficits than their conservative counterparts as Alt and Lowry have found of the U.S. states? Does shared intergovernmental partisanship influence the distribution of federal grants to subnational governments? Does strong representation of regions or co-partisanship affect the center's willingness to "offload" burdens onto subnational governments? How does the competitiveness of subnational politics affect the propensity for deficit financing? How do different party systems shape intergovernmental struggles over fiscal policy? The theoretical and empirical challenges to answering these questions are daunting, but given intellectual and policy trends, the political puzzles are quite compelling.

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Table 1: Determinants of Subnational Fiscal Cyclicity

	Volatility of Tax Base	Discretionary Grants	Access to Credit	Severity of Business Cycle	Expected Degree of Pro-cyclicality
U.S.	Medium	Medium	Medium	Low	Medium
Canada	Medium	Low	High	Medium	Low
Germany	Low	Low	Low	Low	Medium
Australia	Medium	Low	Medium	Low	Medium
India	High	Medium	Low	High	High
Brazil	High	Medium	Low	High	High
Argentina	High	Medium	Low	High	High

Table 1: Income elasticities for provincial budget items

		Revenue	Own-source revenue	Grants	Revenue-sharing receipts	Discretionary grants	Expenditures	Surplus
U.S. states	without year dummies	0.44 ***	0.54 ***	0.14	na	na	0.15 *	0.04 **
	including year dummies	0.36 ***	0.52 ***	-0.12	na	na	0.18 ***	0.06 ***
Canadian provinces	without year dummies	0.32 ***	0.39 ***	0.20	na	na	-	0.13 ***
	including year dummies	0.59 ***	0.76 ***	-	na	na	-	0.22 ***
German Länder	without year dummies	0.78 ***	na	0.30	na	na	0.23	0.22 *
	including year dummies	0.40 ***	na	-0.75	na	na	0.58 ***	-
Australian states	without year dummies	0.80 ***	1.75 ***	-	na	na	-	0.20 *
	including year dummies	0.85 ***	1.13 ***	0.56 *	na	na	-0.63 *	0.48 ***
Indian states	without year dummies	0.42 *	-	-	-	-	0.67 ***	-
	including year dummies	0.25	-	-	-	-	0.67 ***	-
Brazilian states	without year dummies	1.00 ***	0.83 ***	0.42 *	-	2.47 ***	0.97 ***	-
	including year dummies	0.81 ***	1.18 ***	0.23	-0.71 ***	1.68 ***	0.93 ***	-0.01 *
Argentine provinces	without year dummies	0.37 ***	0.76 ***	0.35 **	0.28	-	0.34 ***	-
	including year dummies	-	-	-	-	0.62	-	-

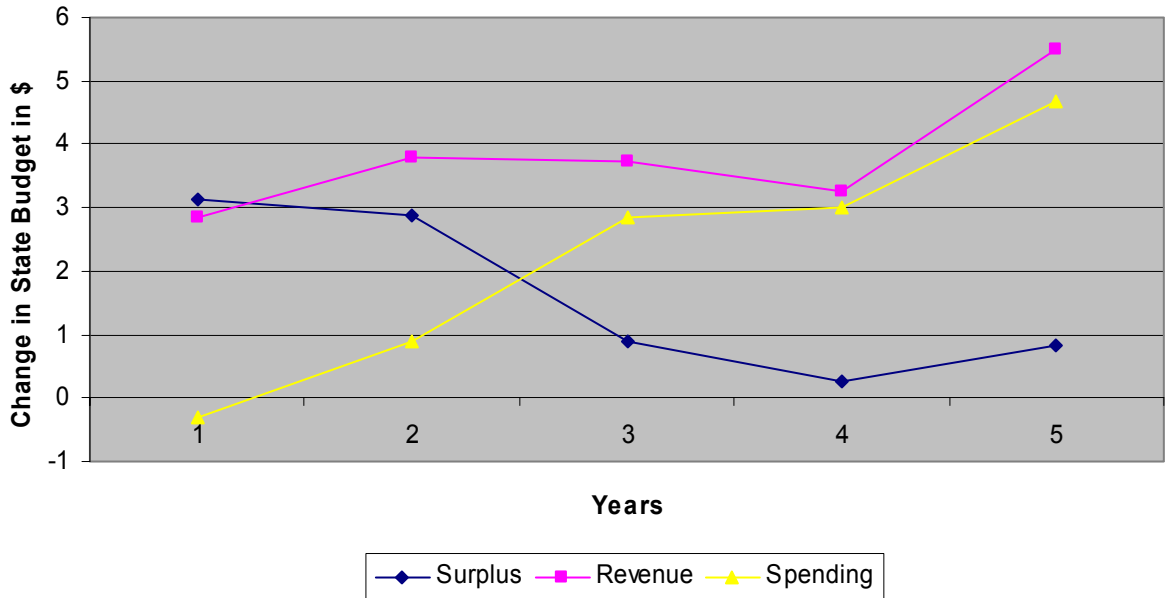
Each cell contains the elasticity obtained from a separate bivariate (fixed effects) regression. Only coefficients where $p < .25$ are reported; otherwise the cell is blank.

Table 2: Responses of provincial budget items to positive and negative shocks

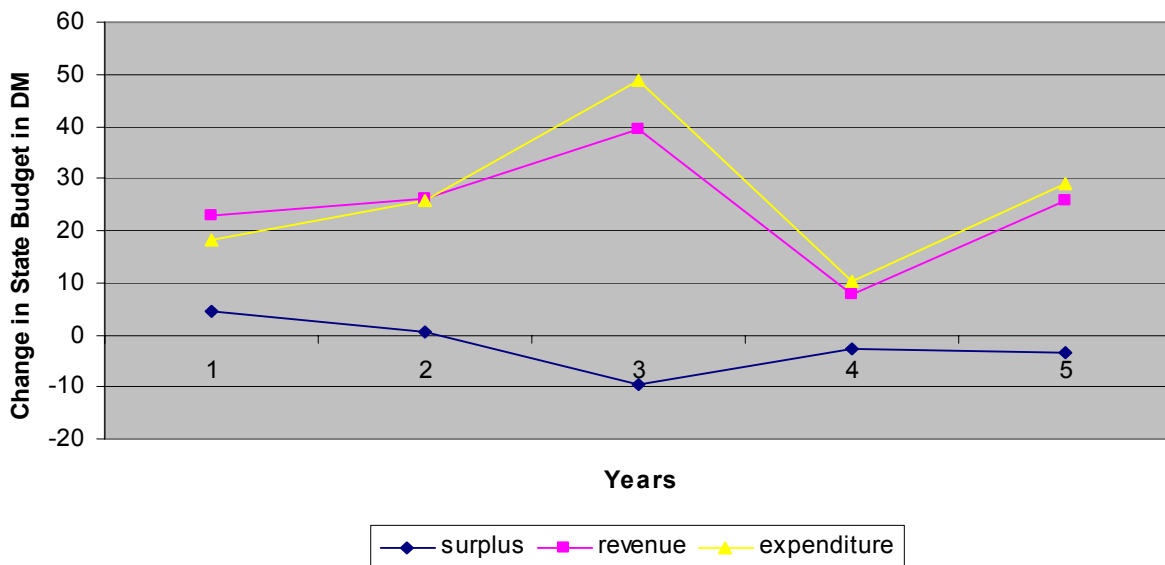
		Revenue		Own-source revenue		Grants		Revenue-sharing receipts		Discretionary grants	
		Pos. shock	Neg. shock	Pos. shock	Neg. shock	Pos. shock	Neg. shock	Pos. shock	Neg. shock	Pos. shock	Neg. shock
U.S. states	without year dummies	0.49 ***	0.41 ***	0.78 ***	0.30 ***	-	0.66 **	na		na	
	including year dummies	0.48 ***	0.30 ***	0.66 ***	0.41 ***	-	-				
Canadian provinces	without year dummies	-	0.30	-	0.39 *	-0.25	0.13	na		na	
	including year dummies	0.54 ***	0.56 ***	0.74 ***	0.70 ***	0.16	-0.37				
German Länder	without year dummies	-	1.10 ***		na	-	-	na		na	
	including year dummies	0.33 *	0.57 ***			-	-				
Australian states	without year dummies	1.18 ***	0.82 **	1.43 *	3.03 ***	1.02	-2.48 ***	na		na	
	including year dummies	0.69 *	0.77 **	1.01 *	1.13 *	-	0.54				
Indian states	without year dummies	.	0.67 *	.	.	-1.5	1.5	.	.	.	2.16 *
	including year dummies	.	0.61 *
Brazilian states	without year dummies	0.95 ***	0.93 **	1.87 ***	0.83 *	-	-	0.54	-1.30 *	-	7.16 ***
	including year dummies	0.84 ***	1.17 ***	1.59 ***	0.80	0.40	0.47	-	-1.12	-	6.56 ***
Argentine provinces	without year dummies	0.32 ***	-	0.36	0.81 ***	0.25 **	-	-	-	2.28 **	-
	including year dummies	-	-0.29 ***	-	-	-	-0.25 **	-	-0.44 ***	1.06 **	-

		Expenditures		Surplus	
		Pos. shock	Neg. shock	Pos. shock	Neg. shock
U.S. states	without year dummies	-	-	0.06 *	0.07 **
	including year dummies	0.37 ***	-	-	0.07 **
Canadian provinces	without year dummies	-0.25	-0.28	-	0.26 ***
	including year dummies	0.36 **	-	-	0.33 ***
German Länder	without year dummies	-	0.38	-	0.39 *
	including year dummies	0.38	0.73 ***	-	-
Australian states	without year dummies	-	-	-	0.47 *
	including year dummies	-1.02	-	0.53 *	0.48 **
Indian states	without year dummies	.	1.13 ***	.	.
	including year dummies	.	1.22 ***	.	.
Brazilian states	without year dummies	0.91 **	0.81	-	-
	including year dummies	0.95 ***	1.33 ***	-0.02	-0.02
Argentine provinces	without year dummies	0.28 ***	-	-	-
	including year dummies	-	-0.35 **	-	-

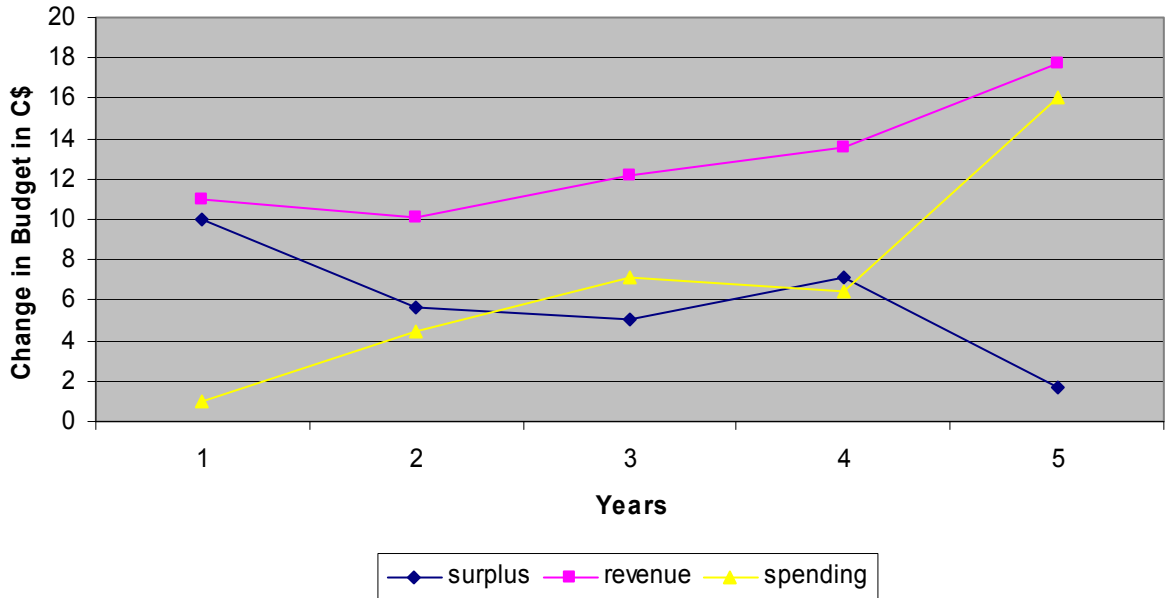
US: Effect on State Budget of a \$100 Permanent Increase in GSP



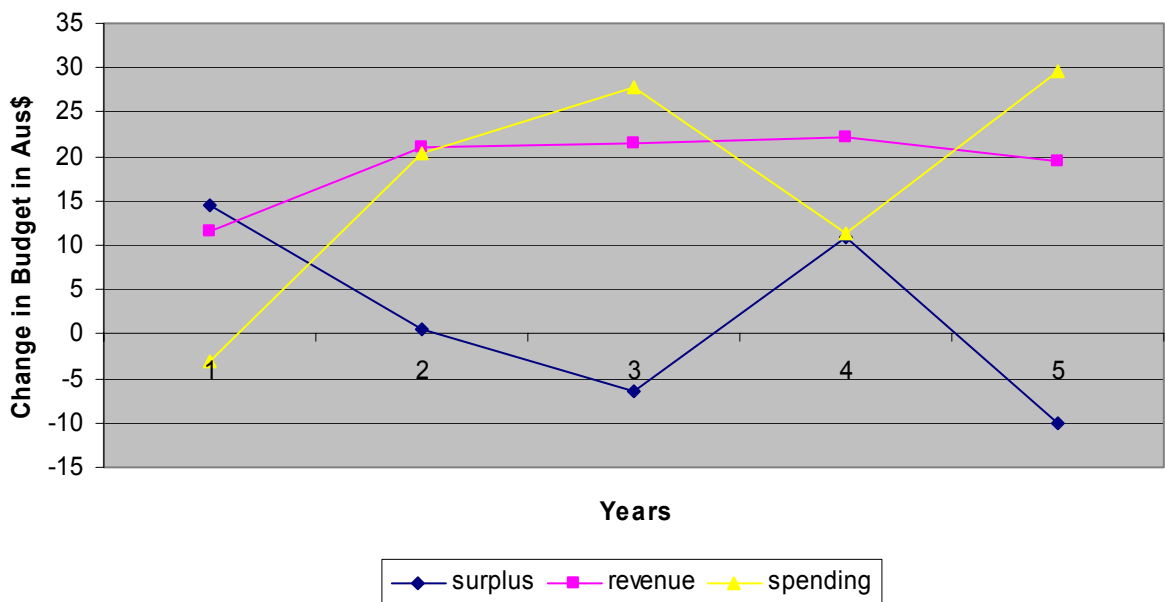
Germany: Effect on State Budget of a 158 DM Permanent Increase in GSP



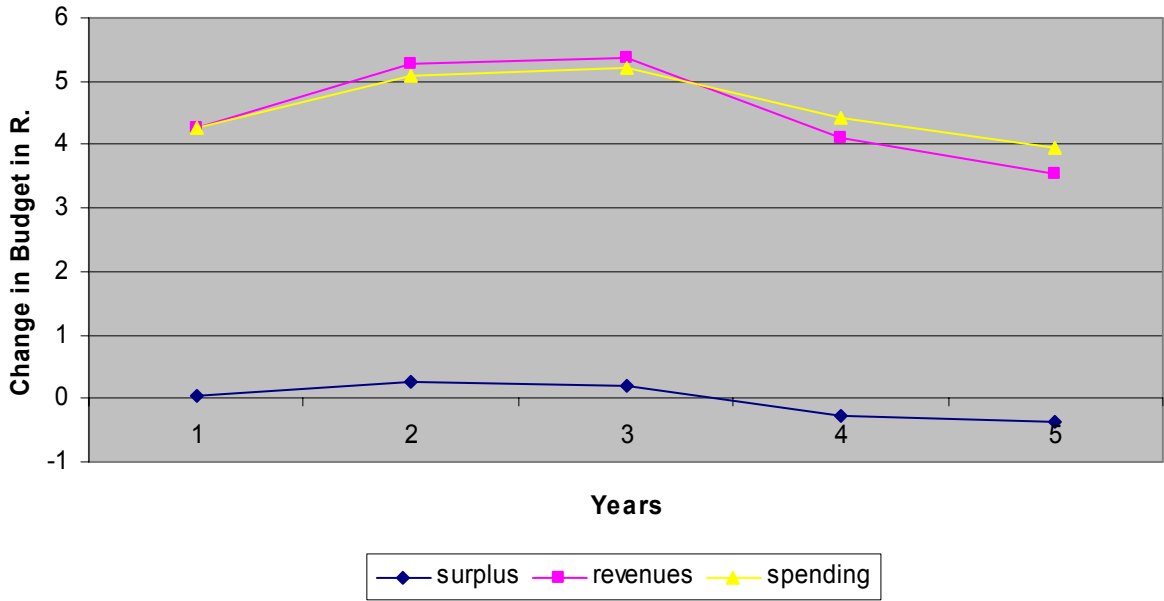
Canada: Effect on Provincial Budget of a 70 C\$ Permanent Increase in GSP



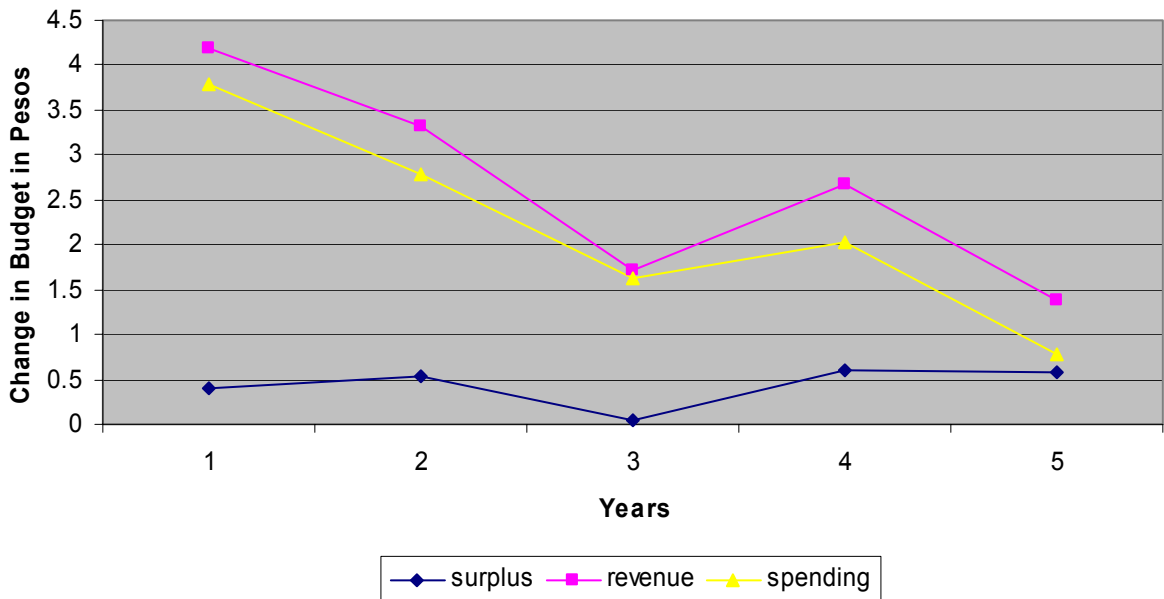
Australia: Effect on State Budget of a 100 A\$ Permanent Increase in GSP



Brazil: Effect on State Budget of a 14 R. Permanent Increase in GSP



Argentina: Effect on State Budget of a 31 Peso Permanent Increase in GSP



Appendix

	Number of constituent units	Years	States dropped	Sources		Details on inflation adjustment
				Fiscal data	Income data	
U.S. states	49	1977-1997	DC, Alaska			
Canadian provinces	10	1968-1997				
German Länder	10	1974-1995				
Australian states	7	1990-2001	Northern Territory			
Indian states	14	1985-2001				
Brazilian states	26	1986-1998	Federal District			
Argentine provinces	23	1980-2001	City of BA			