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Closing the Gap: Fiscal Imbalances and Intergovernmental Transfers in Developed Federations

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CLOSING THE GAP: FISCAL IMBALANCES AND INTERGOVERNMENTAL TRANSFERS IN DEVELOPED FEDERATIONS

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Abstract:

This paper discusses the concepts of vertical fiscal imbalance (the fiscal gap) and horizontal fiscal imbalance (equalization) and uses several statistics to measure these concepts for eight industrially developed federations: Australia, Austria, Belgium, Canada, Germany, Spain, Switzerland, and the United States. Although the periods covered and the detail provided vary from country to country due to limitations in data availability, the overall coverage in this paper seems more complete and comparable than in previous studies. The paper also outlines briefly the types of intergovernmental fiscal transfers used to deal with fiscal imbalances in the eight countries under consideration. Although this account is necessarily highly condensed, given the complexity of transfer systems in most countries, the frequency with which changes are made, and the difficulty of obtaining complete information, it is nonetheless broadly accurate.

JEL Classification: H70; H73; H77

Keywords: Horizontal and vertical fiscal imbalances; fiscal gap; equalization; intergovernmental transfers; federal finance

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CLOSING THE GAP:
FISCAL IMBALANCES AND INTERGOVERNMENTAL TRANSFERS IN DEVELOPED FEDERATIONS

INTRODUCTION:

This paper has three objectives. First, we discuss the concepts of vertical fiscal imbalance (the fiscal gap) and horizontal fiscal imbalance (equalization) and measure these concepts as comparably as possible for eight developed federations: Australia, Austria, Belgium, Canada, Germany, Spain, Switzerland, and the United States. The periods covered and the detail provided necessarily vary somewhat from country to country. Nonetheless, the coverage is more complete and comparable than any we have seen in the literature. Secondly, we discuss briefly the types of intergovernmental fiscal transfers used to deal with these imbalances in these countries. Given the complexity of the transfer systems in most countries, the frequency with which changes are made, and the difficulty of obtaining complete information, this account is necessarily highly condensed and may not be entirely up-to-date, but it is broadly accurate. Finally, in a brief concluding section we sketch a few lessons that seem to emerge from this comparative and largely descriptive analysis.

CONCEPTS AND MEASUREMENTS:

Fiscal imbalance seems inherent in federal countries. As a rule, federal governments tend to collect most taxes while state and local governments are often responsible for more expenditures than can be financed from sources of revenue directly under their control. The resulting difference between expenditures and own-source revenues at different levels of government is called *vertical fiscal imbalance (VFI).* At the same time, within each subnational level of government there are invariably some jurisdictions that are richer than others. The resulting difference in the resources available to governments at the same level is called *horizontal fiscal imbalance (HFI)*. Each of these concepts carries with it a fair amount of philosophical baggage. Each is also difficult to measure in an unambiguous way. Before proceeding to the comparative analysis of the next section, we shall therefore discuss these two concepts, and the role of intergovernmental fiscal transfers in dealing with them, at somewhat more length.

Concepts of Fiscal Imbalance:

Vertical Fiscal Imbalance:

If "imbalance" is the problem, then "balance" would seem to be the solution. It is thus not surprising that the concept of vertical fiscal imbalance – the "fiscal gap" as it has been called (Boadway and Hobson, 1993) – is often discussed as though in an ideal federation the own-source revenues of each level of government should be sufficient to finance the expenditure for which it is responsible without recourse to intergovernmental fiscal transfers.[1] Vertical fiscal balance, thus

[1] This perspective is implicit in Wheare's (1963, p.93) classic statement that "both general and regional governments must each have under its independent control financial resources sufficient to perform its exclusive functions." It is used explicitly in this sense by Hunter (1977) is his seminal work on vertical fiscal imbalance.

understood, seems to require that each level of government should have separate and independent revenue sources sufficient to finance the expenditures assigned to that level, no more and no less. In other words, given the assignment of expenditures, revenues should, it is argued, be assigned so that there is no "imbalance" between revenues and expenditures at any level of government.

In a world in which in many countries the most rapidly expanding expenditure sectors – education and health, for example – have been assigned to regional (state, provincial) governments, the implication of this position is generally that more revenues should be assigned to subnational governments. In Canada, for example, this interpretation of fiscal balance has been used frequently by the province of Quebec as an argument for more revenue authority.[2] Among the advantages of such "tax separation" – in which every level of government, as it were, "stands on its own bottom" – are that local autonomy and accountability are strengthened and that the fiscal system is more transparent, with citizens being less confused by overlapping fiscal jurisdictions as to what they are paying for, and to whom.[3]

On the other hand, there is no reason why governments that are so minded could not overcome taxpayer confusion and the inadequate attribution of political responsibility without recourse to strict revenue separation. Nor is there any guarantee that even strict separation would lead to such benefits. If governments really want citizens to understand what is going on, they can achieve this end without separate taxes. If they do not, separate taxes alone will do little to help matters. Moreover, even the strongest adherents of tax separation at the regional level (in Canada at least) generally seem strangely reluctant to apply similar reasoning to the local level of government, where it is surely equally applicable or inapplicable on logical (if not necessarily on constitutional) grounds. Finally, and perhaps most importantly, so long as governments at the same jurisdictional level have different levels of fiscal resources relative to their expenditure responsibility, even the most far-reaching attempt to resolve VFI by devolving revenue resources cannot succeed.

To make this last point clearer, it is important to understand that the two concepts of fiscal balance mentioned above – VFI and HFI – cannot be cleanly separated. One way to think of VFI, for example, is that it might be considered to be eliminated – that is, vertical fiscal balance is achieved – when expenditures and revenues (excluding transfers) are balanced for the *richest* local government, measured in terms of its capacity to raise resources on its own (Bird 1993). Even if this is achieved, fiscal gaps or VFI will of course still remain for all poorer local governments. Generally, however, although it is common to discuss such gaps instead in terms of HFI, that is, as a problem of achieving horizontal fiscal balance *within* the regional or local government sector rather than vertical balance *between* levels of government. In any case, however it is defined, whether and to what extent HFI (VFI for poorer jurisdictions under another name) is considered a problem is, of course, a highly political issue in most federal countries, as discussed below.

Before turning to how VFI may be measured, consider the ways in which it might be eliminated, assuming vertical balance is viewed as an appropriate or desirable policy goal. First, as just discussed, the assignment of expenditures can be taken as fixed and more revenue-raising powers devolved to subnational jurisdictions. Alternatively, revenue powers may be taken as fixed and some expenditure powers reassigned to the federal level. In Canada, for example, this is

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[2] Compare, for example, the Tremblay report of 1954 (Kwavnick, 1973, p.215) and the Seguin Commission of 2001 (Commission, 2001a, p.4).

[3] Another advantage of tax separation might be to make it more difficult for governments to, as it were, form a "cartel" against citizens, thus reducing their ability to exploit them unduly (Brennan and Buchanan, 1980).

essentially how the gradually expanding social security system (unemployment insurance and old age pensions) was initially dealt with in the middle of the last century (Bryden, 1972), through constitutional amendments to "federalize" these expenditure functions.[4]

Vertical fiscal gaps may in principle be closed also simply by reducing subnational expenditures or raising subnational revenues from existing sources, just as federal governments may rectify any inverse imbalance or deficit (revenues exceeding expenditures) at the central level by increasing their expenditures or reducing their taxes. Like all governments, federal governments are seldom reluctant to expand their own expenditures or, less commonly, to lower their taxes. Often, federal governments also argue that subnational governments can both spend more efficiently and increase their "fiscal effort." No doubt there is at least as much room for improvement in these respects at the subnational level in most countries as at the federal level. Nonetheless, while each of these paths has been followed to some extent at some times in most federal countries, as a rule sufficient mismatch in the revenues and expenditures assigned to different levels of government remains so that some balancing role is invariably assigned to intergovernmental fiscal transfers.

Intergovernmental fiscal transfers, no matter what their stated purpose may be, are thus often intended to, and in any case have the result of, helping to close the fiscal gap. Indeed, one way in which VFI is sometimes measured is simply as the ratio of transfers to subnational expenditures. This measure has the considerable virtue of being easy to calculate. Moreover, if one ignores borrowing, it may provide a useful measure of the actual level of VFI prevailing in any country in any year in terms of fiscal flows. But this measure tells us nothing about the extent to which the more fundamental concerns about political accountability and economic efficiency that presumably underlie the concept of VFI are legitimate. The transfer/expenditure ratio measure does not get to the heart of the concept because it does not take into account the extent to which transfers, other subnational revenues, and indeed even subnational expenditures reflect federal or subnational policy decisions.

Recognizing this problem, analysts have developed more refined measures of VFI. Hunter (1974, 1977), for instance, proposed three such "coefficients of vertical imbalance." Essentially, these measures took into account, to varying degrees, net borrowing by subnational governments, "shared taxes," and the degree to which federal transfers were "conditional." His intent in constructing these measures was to define more precisely the extent to which the basic allocation of revenues and expenditures was such that "governments at each level can command the financial resources necessary for them to carry out their expenditure responsibilities and to be held accountable for both spending and taxing decisions" (Mathews, 1980, p.10). In other words, what Hunter was attempting to do was to distinguish between revenue sources that were under federal control and those that were under state control. He did so by assuming in one measure that unconditional transfers did not reduce state autonomy, in another that they did, and in a third that not only such transfers (and borrowing) compromised state autonomy but so also did shared taxes to some extent. Hunter's judgments as to how to assess such "autonomy" could of course be questioned, and soon were (e.g. by Thimmaiah, 1976). Nonetheless, despite its inherent subjectivity, variants of this approach are still used in the literature (e.g., Rezk, 1998).

Since we too follow essentially this approach in the measures presented in the next section, it is incumbent on us first to recognize explicitly the defects of this approach and then to explain why

[4] Subsequently, the later expansion of education, health, and social welfare expenditures in Canada was dealt with instead by increasing federal transfers to provinces, first in the form of broad conditional grants, and then in the form of essentially unconditional grants.

we nonetheless use it here. The defects are obvious. They are both conceptual and empirical. Conceptually, focusing on actual deficits and surpluses at different levels of government is obviously a very limited approach to the broad problem of VFI, however the data are manipulated. Hettich and Winer (1983), for instance, argued years ago that ideally one needs a more logically consistent approach related to such fundamental concerns as the maximization of social welfare. Less ambitiously, an obvious refinement would be to focus not on actual but on "structural" budget balances – that is, the balances inherent in current expenditure and tax policies at each level of government. A recent Canadian study by Matier, Wu, and Jackson (2001), for example, first projects expenditures and revenues at each level of government under various demographic and economic assumptions and then considers the extent to which the fiscal positions of each level are sustainable in the framework of an intertermporal budget constraint. Under this approach, VFI exists if one level has "room" to reduce taxes or increase (program) spending while satisfying its intertemporal constraint and another level would have to increase taxes or reduce spending to do so. Although more formal, the results of this approach seem very sensitive to both model specification and empirical assumptions and are hence are unlikely to be accepted by all.[5]

In any event, we cannot undertake such an ambitious dynamic analysis for all the countries covered here, so we are constrained to work only with actual past data. Even then, we have to be aware of important differences in the real significance of numbers purporting to measure the same thing in different countries and even in the same country at different times. For example, "shared taxes" are an important source of subnational revenue in many countries. In some instances, however, such taxes may simply be central taxes, a share of which flows to subnational governments through a distribution formula (as with the German VAT, for example). Such "tax sharing" is of course simply an intergovernmental transfer. In other instances, however, "shared" taxes may be "truly subnational" in the sense that the tax rates are set by subnational governments although the taxes are collected by the central government (as with most provincial PITs in Canada). Precisely how such data are recorded in statistical sources as well as the meaning of the measures provided thus need to be considered carefully in interpreting international comparisons. As OECD (1999) and Ebel and Yilmaz (2001) demonstrate, for example, measures of "fiscal decentralization" and the interpretation of those measures are highly sensitive to assumptions about whether and to what extent state and local taxes are actually "controlled" by those governments. All measures of VFI based on available internationally comparable fiscal data are thus invariably and inevitably questionable to some extent. Nonetheless, since such measures are the only ones available, they are used with due caution in this paper, as discussed in more detail at the beginning of the next section.

Horizontal Fiscal Imbalance:

We noted earlier that HFI might be interpreted as the VFI that is, so to speak, "left over" when the VFI problem of revenue-expenditure imbalance is solved for the richest subnational government. As a rule, however, HFI is discussed in very different terms than VFI, and indeed close consideration of HFI raises serious questions about the meaning of VFI as that term is usually discussed. Essentially, as we have already noted, VFI is usually measured (as we do in the next section) in terms of the *actual* "gap" between subnational expenditures and the subnational "own source" revenues available to finance those expenditures. If horizontal fiscal balance is interpreted in the same gap-filling sense as vertical fiscal balance, however, what is implied is that sufficient

[5] This approach, in contrast to that utilized by Quebec's Seguin Commission (Commission, 2001a), yields the result that there is no VFI in Canada. It is perhaps not entirely coincidental that the authors are employed by the Federal Department of Finance.

transfers are needed to equalize revenues (including transfers) and the *actual* expenditures of each subnational government.

Such "fiscal dentistry," as this approach has been called (Rao and Chelliah, 1991), clearly makes no sense. Equalizing the actual outlays of subnational governments in per capita terms (raising all to the level of the richest subnational government) in effect ignores differences in local preferences and hence one of the main rationales for decentralization in the first place. It also ignores local differences in needs, costs, and own revenue-raising capacity. Equalizing actual outlays would discourage both subnational revenue-raising effort and subnational expenditure restraint, since under this system those with the highest expenditures and the lowest taxes would get the largest transfers. These problems are of course well recognized. But what seems less often to be noted is that just as any transfer, no matter what its rationale may be, helps resolve the VFI problem, so any transfer – even one intended purely to "close the gap" – may have adverse incentive effects on subnational fiscal decisions. The appropriate incentive design of transfers, no matter what their stated rationale may be, is thus a critical element in intergovernmental fiscal relations in any country.

Three different topics are often confused when HFI – or "equalization" as it is often labeled – is discussed. First, many writers, perhaps especially in the United States (the only federal country that has no general equalization transfers), often discuss the equity aspects of intergovernmental transfers as though the principal objective of such transfers is to reduce disparities in per capita incomes in different regions.[6] Interregional equity is not interpersonal equity, however, and it is important to keep the two concerns distinct. Sometimes transfers to poor regions may help poor people. Sometimes they may not. If the principal objective of policy is to alleviate poverty, intergovernmental transfers are unlikely to be either the most appropriate or the most efficient way to achieve this aim. Nonetheless, such transfers have their own rationales and should not be judged solely or primarily in terms of their effects on individuals at different income levels.

Secondly, much public discussion of intergovernmental transfers in all countries tends to focus on the relation between such transfers and the issue of "regional disparity." While generally ill-defined, regional disparity is often interpreted in such a way that the supposed objective of transfers is to reduce such disparity, whether understood in terms of differences in per capita income between states or localities or in terms of differential regional growth rates, unemployment rates, or some other economic variable.[7] Reducing such regional disparities may not always be a sensible policy objective, but countries are of course free to attempt to do so if they wish, and they may use intergovernmental transfers as a policy instrument in any such attempt.[8] It is thus not uncommon to find that an important indicator of "need" in transfer formulas is some measure of the level of economic well-being in recipient regions, such as per capita regional income. Basing intergovernmental transfers solely on such concerns, however, can easily produce undesirable economic incentives. Moreover, as with the case of interpersonal equity as a policy objective, it is important to distinguish the aim of reducing regional disparity from the narrow concept of fiscal equalization between government income (or spending) that seems most directly relevant to transfer design.

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[6] For an example, see Oakland (1994). Further discussion of the distinction between interpersonal and interregional transfer objectives may be found in Rao and Das-Gupta (1995) and Bird and Rodriguez (1999).

[7] Bird (1966) discusses the many facets of "regional balance" as a policy objective.

[8] Such transfers are compared to other policy instruments in Bird (1982).

Equalization transfers in this third sense may have two distinct rationales. The first is to provide the necessary underpinning for decentralization in general (and, as discussed below, for matching transfers), by equalizing to some level the fiscal capacity of territorial entities, thus putting all closer to being on the same footing with respect to incentives. A second rationale might be to provide sufficient resources to enable all local governments, even the smallest and poorest, to provide a basic package of local services.[9] From a purely economic point of view, the second of these objectives may appear to make little sense. Often, however, small rural areas are simply not able to provide any significant local services without such transfers.[10]

In part to avoid the disincentive problem noted above, most countries which have formal equalization transfers avoid revenue-pooling and generally aim either to equalize the *capacity* of local governments to provide a certain level of public services or the actual *performance* of this level of service by local governments (Bird and Smart, forthcoming). The performance criterion, which adjusts the transfer received in accordance with the perceived *need* for the aided service (and which may also allow for cost differentials) is often more attractive to central governments because the level of service funded is then in effect determined centrally, and transfers can be made conditional on the provision of that level of service. Unfortunately, unless adequate adjustment is made for differential fiscal capacity, with this system once again that government which tries least will receive the most.

In contrast, under *capacity* equalization, which is more applicable to federal settings in which subnational governments have constitutional expenditure and revenue responsibilities, the aim is to provide each local government with sufficient funds (own-source revenues plus transfers) to deliver a centrally-predetermined level of services. (Differentials in the cost of providing services may or may not be taken into account.) Transfers are based on a measure of each jurisdiction's *potential* revenue-raising capacity (such as assessed values for property taxes or measured tax bases for other taxes) and not on actual revenues. Provided revenue capacity is measured accurately – seldom an easy task in practice – such transfers will create no disincentive for local governments to raise revenues because at the margin the local government still bears full fiscal responsibility for expenditure and taxing decisions – essentially because transfers are lump-sum (inframarginal) in nature.

Full equalization (as defined above in the sense of closing all gaps) will be achieved only if the standard revenue-raising capacity which the grant is intended to provide is set at the level of the richest local government. In most countries, budgetary constraints lead to lower standards, such as the average revenue-raising capacity of local governments. In such cases, localities with below-average capacities obviously remain disadvantaged.[11]

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[9]The objective of providing similar public services regardless of location may conflict with the desirability of migration from less (privately) productive to more productive locations. Although this subject has been discussed extensively (if not very conclusively) in the literature, it is not further considered here.

[10] It should perhaps be emphasized that this lack of local resources need not necessarily imply a lack of local capacity to make and implement suitable expenditure decisions.

[11]An exception is when the positive transfers required to bring those below the average up to the average are financed by negative transfers from those above the average (as in the *finanzausgleich* of Germany and the similar system in Denmark and the Baltic states). Such transparent "Robin Hood" policies are of course inevitably controversial. More generally, the effects of any grant system are obviously determined in part by how the grants are financed (Musgrave 1961), but this important question cannot be discussed further here.

As even this brief discussion suggests, HFI is clearly a much more complex concept than VFI. Correspondingly, it is even more difficult to measure satisfactorily. In the present study, all that we have attempted to do is to provide some indicators of the range of regional disparity in the countries covered and to consider briefly how those disparities have changed over time.

Measuring Fiscal Imbalance:

Vertical Fiscal Imbalance:

Following three earlier studies in this series (Boadway and Watts, 2000, "Fiscal Federalism," 2000, and Watts and Hobson, 2000),[12] as well as the pioneering work by Hunter (1977), we have constructed several VFI statistics for all years since 1970 for which data on the eight developed federal countries are available in the IMF Government Finance Statistics Yearbook.[13] A number of assumptions had to be made to obtain as consistent series as possible, in particular with respect to transactions within the subnational sector. Essentially, however, for each level of government (central, state, local, and consolidated subnational) for each country we calculated three progressively narrowing measures of vertical imbalances, as follows:

Type 1: Unrestricted budget balances for the central, local, regional, and subnational governments (sum of regional and local governments):

$$SVI_j^I = \frac{(\text{Re}venue + Grants)_j - (Expenditure + Lending)_j}{(Expenditure + Lending)_j} \cdot 100\% \qquad \textbf{[1]}$$

where j = consolidated central government, regional government, local government, or subnational government.

Type 2: Budget balances, excluding net intergovernmental transfers between the government of interest and other levels of government:

$$SVI_j^{II} = \frac{(\text{Re}venue + Grants)_j - (Net\ Intergovernmental\ Grants)_j - (Expenditure + Lending)_j}{(Expenditure + Lending)^{NT}{}_j} \cdot 100\% \qquad \textbf{[2]}$$

where the superscript abbreviation *NT* indicates that figures are net of intergovernmental transfers.

[12] The data used here appear to be similar to those used in these studies, with a few minor differences, particularly arising from an apparent mislabeling of a table in the U.S. study. We have used positive values to stand for surpluses, as seems more intuitively sensible, instead of the negative values used in these studies.

[13] Specifically, the 1980-81, 1986, 1993, and 2000 editions of the GFS Yearbook were used, with some missing values being taken from other editions. See Ebel and Yilmaz (2001) on problems with using GFS data in the analysis of intergovernmental finance.

Type 3: Budget balances, excluding intergovernmental transfers and intergovernmental net borrowing (the latter term, denoted in the formula as *IGNB*, is a negative of the Net Lending to Other Levels of Government account as it is used in the IMF Government Finance Statistics Yearbook):

$$SVI_j^{III} = \frac{(\mathrm{Re}venue + Grants)_j - (Net\ Intergovernmental\ Grants)_j - (IGNB)_j - (Expenditure + Lending)_j}{(Expenditure + Lending)^{NT}{}_j + (IGNB)_j} \cdot 100\% \quad \textbf{[3]}$$

In addition, for each country we have calculated three alternative coefficients of vertical imbalance reflecting the shares of subnational expenditures that are covered with intergovernmental transfers (CVI 1) or intergovernmental transfers and intergovernmental borrowing (CVI 2), and not covered with own revenues (CVI 3).

CVI 1: Intergovernmental transfer share in subnational government expenditure:

$$CVI_1 = \frac{(Net\ Intergovernmental\ Grants)_{SNG}}{(Expenditure + Lending)^{NT}{}_{SNG}} \quad \textbf{[4]}$$

In addition, two subcategory coefficients are calculated separately to reflect individual shares of net current and capital intergovernmental transfers that partially cover the total subnational government *(SNG)* expenditure:

$$CVI_1^{Cur} = \frac{(Current\ Intergovernmental\ Grants)_{SNG}}{(Expenditure + Lending)^{NT}{}_{SNG}} \quad \textbf{[5]}$$

$$CVI_1^{Cap} = \frac{(Capital\ Intergovernmental\ Grants)_{SNG}}{(Expenditure + Lending)^{NT}{}_{SNG}} \quad \textbf{[6]}$$

CVI 2: Intergovernmental transfer and intergovernmental net borrowing share in the subnational government expenditure:

$$CVI_2 = \frac{(Net\ Intergovernmental\ Grants)_{SNG} + (IGNB)_{SNG}}{(Expenditure + Lending)^{NT}{}_{SNG}} \quad \textbf{[7]}$$

CVI 3: Share of subnational government expenditure that is not covered by the subnational government's own revenues:

$$CVI_3 = 1 - \left(\frac{(\mathrm{Re}venue + Grants)_{SNG} - (Net\ Intergovernmental\ Grants)_{SNG} - (IGNB)_{SNG}}{(Expenditure + Lending)^{NT}{}_{SNG}} \right) \quad \textbf{[8]}$$

Higher values of these CVI correspond to a higher degree of vertical fiscal imbalance and thus reflect a higher level of dependence by subnational government (regional and local governments) on transfers and lending from the central government. The third coefficient differs from the first two in that it incorporates subnational government budget deficits or surpluses. Although all three formulas should allow one to make similar conclusions regarding a time trend in vertical fiscal imbalances, the third CVI is thus somewhat more volatile.[14]

Appendix Table A.1 reports the data source tables from the IMF Government Finance Statistics Yearbook for those variables used in calculating the VFI statistics and coefficients. Appendix Tables A.2-A.9 report the measures described above for each year for each of our eight countries. As an example, Table 1 presents the figures for the first two VFI measures set out above, as well as the three main CVI measures, calculated for 1997, the last year for which data are available for all countries. Figures 1-3 provide a comparative picture of the three main CVI measures over the period as a whole.

Table 1: Measures of Vertical Imbalance, 1997

Measure	*Australia*	*Austria*	*Belgium*	*Canada*	*Germany*	*Spain*	*Switzerland*	*United States*
1. Statistic of Vertical Fiscal Imbalance (Type I):								
Regional (1)	9.55	1.56		-2.15	-8.05	-5.21	-5.52	12.80
Subnational (2)	8.32	1.51	2.30	-1.64	-5.79	-2.23	-3.88	8.22
2. Statistic of Vertical Fiscal Imbalance (Type II):								
Regional (1)	-30.59	-44.26		1.07	-2.66	-69.32	-23.87	24.65
Subnational (2)	-29.40	-16.73	-50.88	-10.40	-13.91	-48.23	-15.67	-5.72
3. Coefficients of Vertical Fiscal Imbalance:								
CVI 1	.3772	.1824	.5318	.0875	.0808	.4593	.1126	.1394
CVI 2	.3335	.1824	.5320	.0866	.0809	.4591	.1100	.1395
CVI 3	.2503	.1747	.5088	.1010	.1330	.4502	.0139	.0573

Table Notes:

(1) Regional SVI correspond to measures for regional (state, provincial) government;

(2) Subnational SVI are calculated for subnational government (a consolidated sum of regional and local governments).

[14] It should perhaps be noted that the results would be almost the same if we used simply "expenditure" rather than the IMF GFS concept of "expenditure + lending." "Expenditure" in the GFS covers all nonrecoverable payments by government. Net lending (lending minus repayments) consists of government lending for public policy purposes minus repayments to government and government acquisition of equity participation for public policy purposes minus any sales of such equities by government. Use of the broader concept slightly increases the comparability of data from different countries that structure their public sector finances in different ways in order to achieve the same purposes.

Figure 1: CVI 1: Share of Intergovernmental Transfers in Subnational (Consolidated Regional and Local) Expenditure

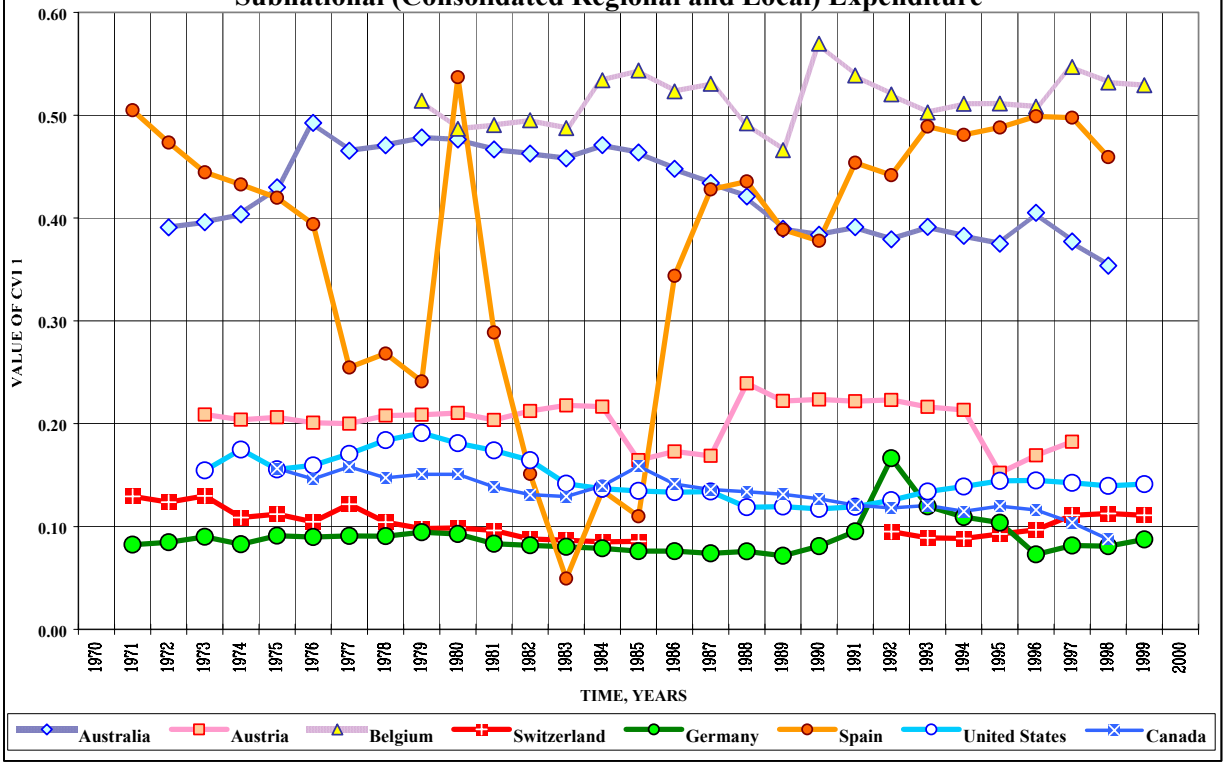


Figure 2: CVI 2: Sum of the Shares of Intergovernmental Transfers and Intergovernmental Net Borrowing in Subnational Government Expenditure

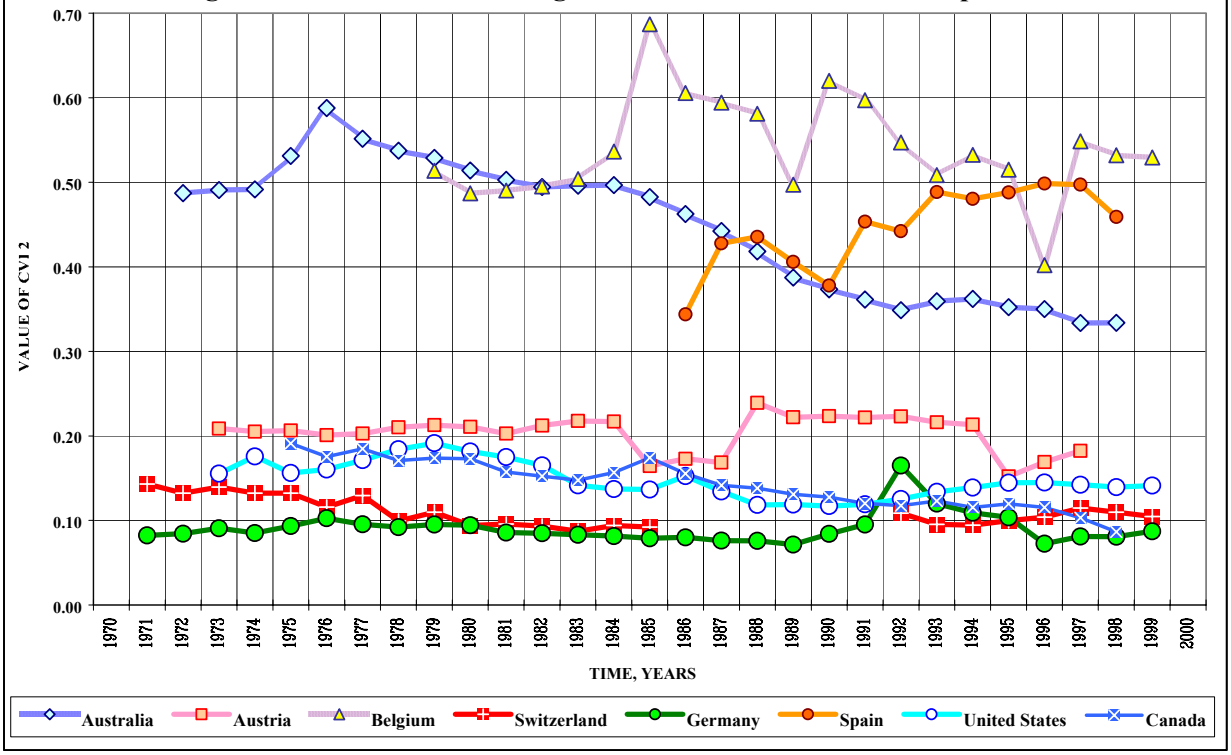
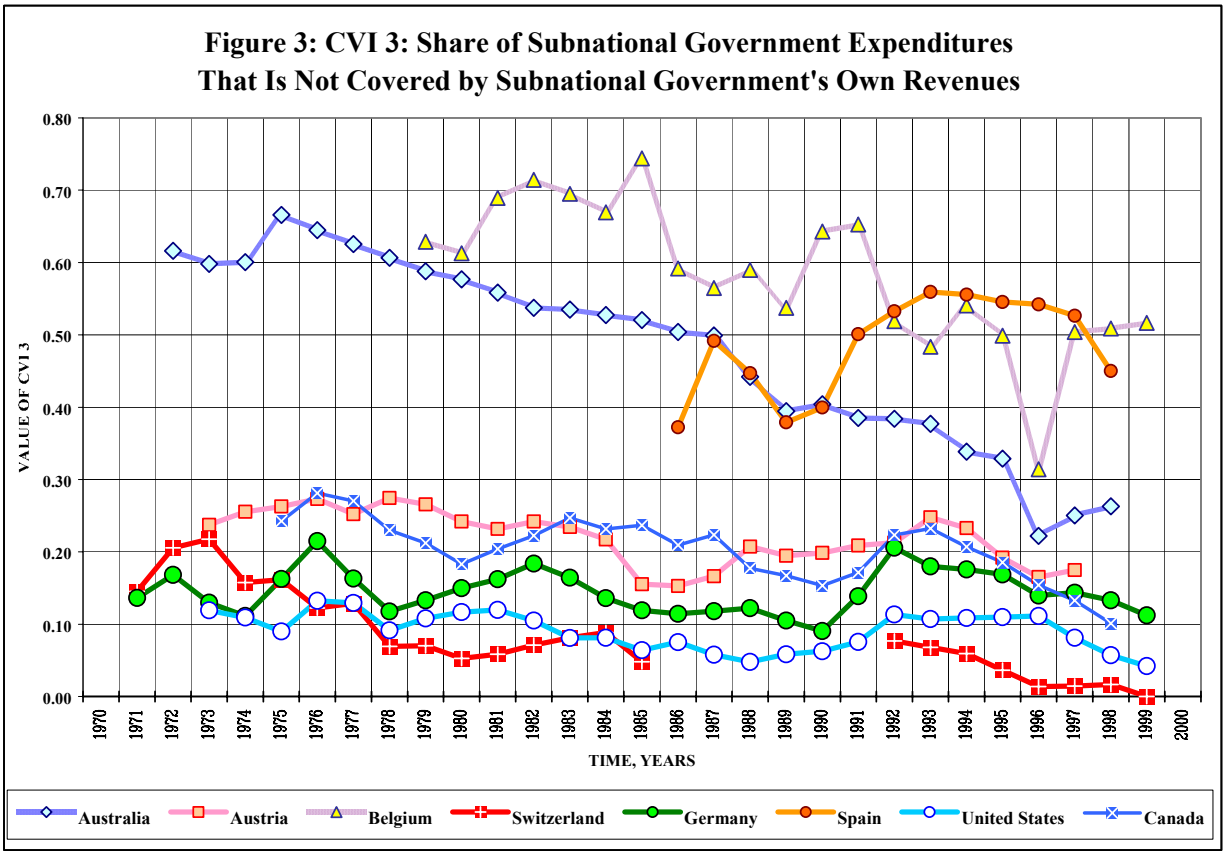


Figure 3: CVI 3: Share of Subnational Government Expenditures That Is Not Covered by Subnational Government's Own Revenues



However the concept is measured, the broad conclusion emerging from these calculations is that VFI has been consistently high in Belgium, has been high but tending to decline in Australia, and high and variable in Spain. In contrast, VFI has been consistently low in Germany, Austria, Switzerland and the United States. Although Canada is also in this lower group, in a result not unfamiliar in other international comparisons, it may also be thought of as holding the middle ground – well below the "high" countries but at the higher end of the "low" countries..

Horizontal Fiscal Imbalance:

Turning to HFI, the picture is even more complicated both conceptually and empirically. Essentially, all we have been able to do is to calculate a series of measures of regional disparity (following Shankar and Shah, 2000) for the countries studied here. Appendix Table A.10 summarizes the available data in the form of six measures of dispersion for several variables, including per capita regional GDP, per capita regional personal income, per capita total regional expenditure, and per capita regional own revenue.[15]

In the discussion that follows, the notation and variable descriptions are as in Shankar and Shah (2000). The capital-letter variables with no subscript denote national aggregates (regional aggregates if the subscript (i) is used) and lower-case-letter variables with subscript (i) denote regional per capita variables. P is national population, p_i is region (i)'s total population, (p_i/P) is the regional population as a fraction of the national total. Similar notation applies to Y and y, which stand for, respectively, the aggregate and per capita values of the variable of interest.

[15] Consult Appendix Table A.10 for detailed data sources on the calculated HFI statistics. The authors also analyzed the available data on gross value added, personal disposable income, total regional revenue, and intergovernmental transfers, although the results are not reported here.

The interpretation of the calculated HFI measures is as follows:

Minimum (maximum) as percent of national average is the ratio of the per capita value in the lowest (highest) region to the national per capita average:

$$\frac{y_{\min}}{\bar{y}} \cdot 100\% \quad \text{and} \quad \frac{y_{\max}}{\bar{y}} \cdot 100\% \qquad \textbf{[9]}$$

Maximum to minimum ratio is the per capita value for the richest region divided by the per capita value for the poorest region:

$$MMR = \frac{y_{\max}}{y_{\min}} \qquad \textbf{[10]}$$

A value of one for MMR would represent perfect equality. Larger values show regional inequalities. In many countries, of course, there are "exceptional" cases such as city-states (Germany), sparsely populated poor territories (Canada), or sparsely populated rich territories (Alaska, in the United States) that may affect the results. Nonetheless, this ratio provides a simple and easy to comprehend measure of regional disparity.

Dispersion indexes measuring dispersion around the mean include the unweighted and weighted coefficients of variation and the relative mean deviation:

$$CV_U = \frac{\sqrt{\sum_i \frac{(y_i - \bar{y}_U)^2}{N}}}{\bar{y}_U}; \quad CV_W = \frac{\sqrt{\sum_i (y_i - \bar{y})^2 \cdot \frac{p_i}{P}}}{\bar{y}}; \quad R_W = \frac{\sum_i |y_i - \bar{y}| \cdot \frac{p_i}{P}}{\bar{y}} \qquad \textbf{[11]}$$

where $\bar{y} = \frac{Y}{P} = \sum_{i=1}^{N}(y_i \cdot \frac{p_i}{P})$ and $\bar{y}_U = \frac{1}{N}\sum_{i=1}^{N}(y_i)$ are the weighted average (national per capita average) and the unweighted average, respectively.

The most useful such measure for our purposes is the weighted coefficient of variation, in which a value of 0 represents perfect equality. This measure (in which the values used for different regions are weighted by population) is better for inter-country comparisons because it is not dependent on the number of regions.

Finally, the **Theil index** is a measure of dispersion calculated so that when the variable measured is proportional to regional population, it takes the value of 0:

$$T = \sum_i \frac{y_i}{\bar{y}} \cdot \frac{p_i}{P} \cdot \log\left(\frac{y_i}{\bar{y}}\right) \qquad \textbf{[12]}$$

The range of values for different HFI measures found in the eight countries over the period for which data were available is shown in Appendix Table A.10 (the numbers in parentheses correspond to the values for the latest year for which observations were available in each series).[16] A more dynamic picture of the first (and simplest) of these measures – minimum and maximum values as a percent of national average – is shown in Figures A.1-A.8 in the Appendix. These Figures depict changes in the minimum and maximum regional (state, provincial) values as percent of national average for per capita personal income or gross regional product (gross value added for Belgium), depending upon data availability, over the period for which data are available. Note that Figures A.1-A.8 incorporate the information about all regions within each country, including territories and other special-status regions (this partially explains some of the variability hikes in the time series).

Some of the patterns displayed in these different measures undoubtedly reflect problems with the quality and comparability of the underlying data, which has been taken from a wide variety of national and international sources.[17] Still, despite the problems inherent in attempting to compare such disparate data, on the whole these data clearly show that there are considerable differences in regional disparities both across countries and over time. In terms of the richest-to-poorest ratio (MMR) for regional GDP, for example, Germany and the United States are highest and Austria, Belgium, and Spain lowest with Canada, not unexpectedly, in the middle. The picture is not that different for other measures. Bird and Vaillancourt (2001) suggest with respect to Canada that the difference between regional disparity measured in terms of GDP and in terms of personal income may provide a useful measure of the effects of government policy in the sense that the former represents "market" outcomes and the latter the post-tax-transfer outcomes. From this perspective, for the only two countries for which this comparison can be made, Canada does appear to have a more "equalizing" system than the United States – hardly a surprising result.

A comparison more directly related to equalization as discussed above (that is, in interjurisdictional as opposed to interpersonal terms) is of regional "own revenue" compared to total regional expenditure: the difference suggests the extent to which intergovernmental transfers offset horizontal "imbalances." Unfortunately, once again the data limit us to comparing only two countries, in this case Canada and Australia. In 1991, for example, the weighted coefficient of variation for both regional own revenue and total regional expenditure in Australia was much lower than that in Canada, with substantial equalization being apparent in both countries. Closer examination of the Canadian case, as shown in Figure 4, suggests, however, that the equalizing effect of transfers was much greater in the earlier (1961-85) period than in the later (post-1985) period, presumably reflecting the major change in transfer programs that took place in the mid-1980s. In contrast, the comparable data for Australia (Figure 5) show almost the opposite picture, with the degree of equalization rising steeply in the early 1980s.

[16] Detailed numerical data for each year are available from the authors.

[17] Details are available from Appendix Table A.10 and from the authors.

Figure 4: Maximum-to-Minimum Ratio (MMR) for Per Capita Provincial Government Finance Statistics, Canada

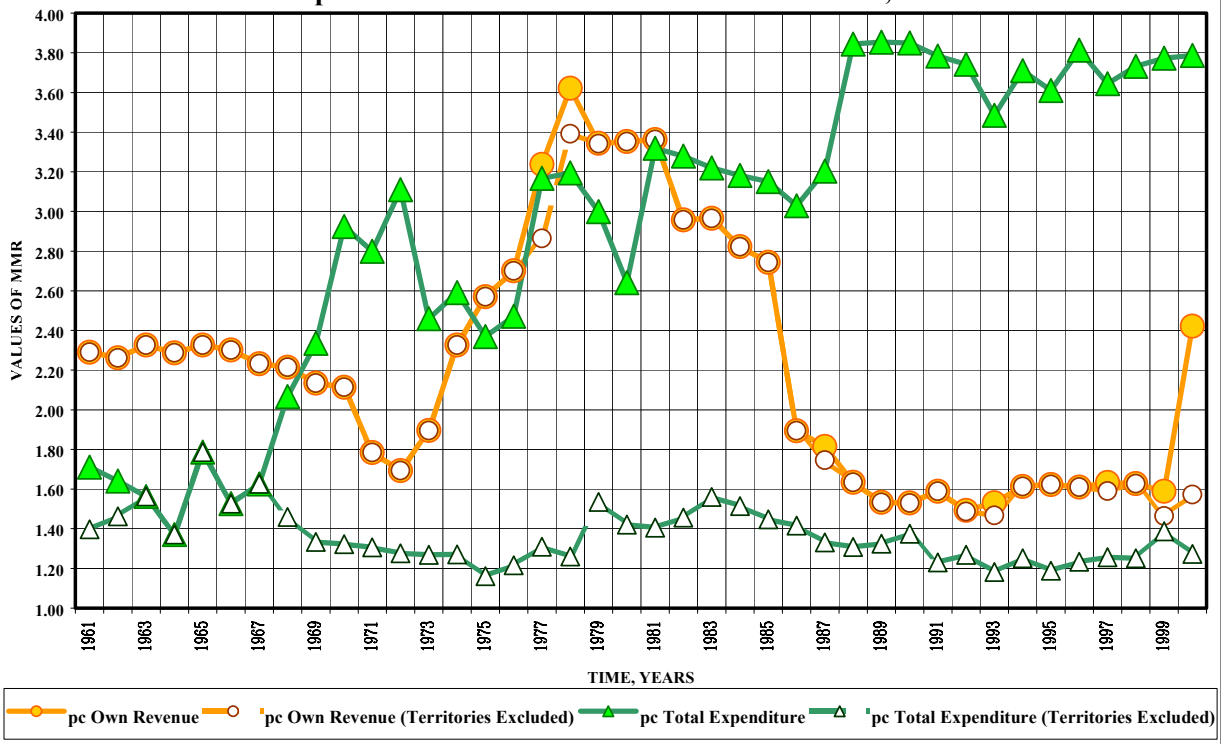
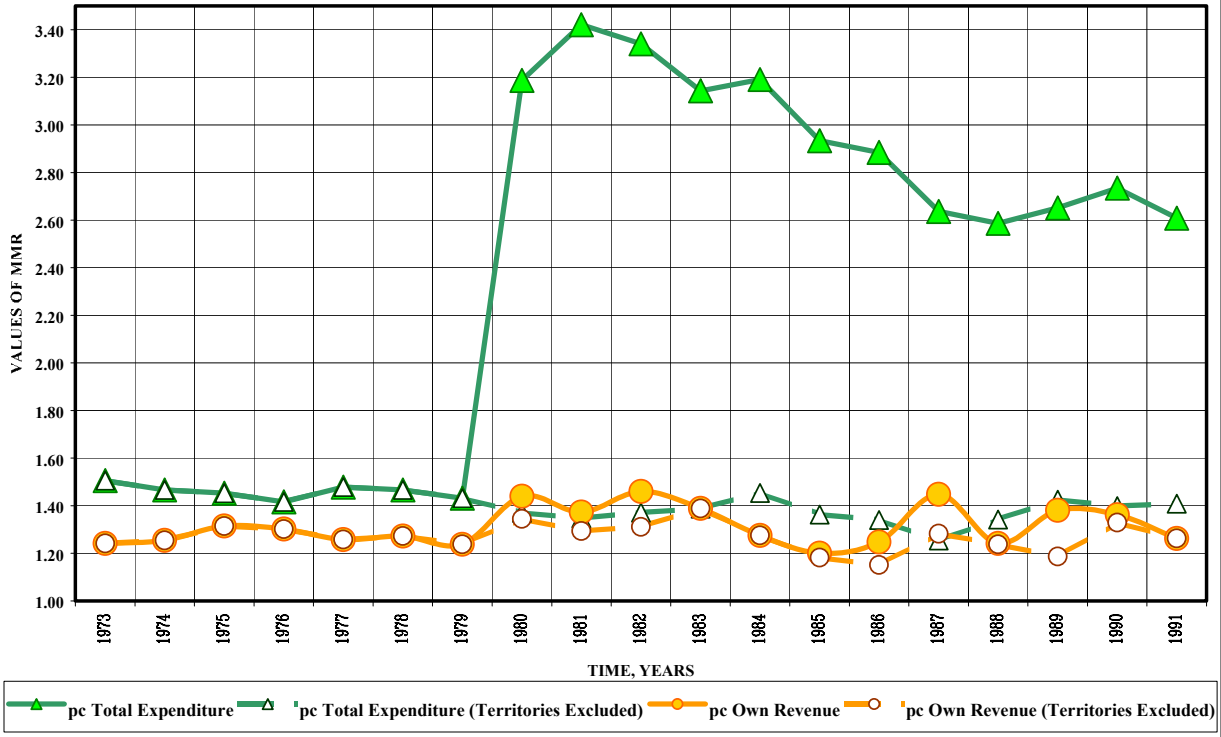


Figure 5: Maximum-to-Minimum Ratio (MMR) for Per Capita Regional Government Finance Statistics, Australia



INTERGOVERNMENTAL FISCAL TRANSFERS:

In every country, intergovernmental transfers are the major way in which fiscal imbalances are rectified, to the extent that they are. Table 2 presents a brief quantitative picture of transfers in the eight countries covered in this study. In most cases, these simple numbers hide a complex system of intergovernmental transfers that has often changed substantially even over the period covered in the table.[18]

Table 2: The Importance of Intergovernmental Transfers [(1)]

Country	Transfers as % of Total Regional Spending[(2)]				Transfers as % of Total Central Revenues[(3)]			
	1970	1980	1990	1998[(4)]	1970	1980	1990	1998[(4)]
Australia	46.4	53.3	44.6	40.7	26.5	34.2	30.0	25.6
Austria	33.0	34.7	36.1	46.5	10.0	9.8	9.6	12.6
Belgium[(5)]		51.0	53.5	53.7		9.7	7.3	6.9
Canada	23.7	19.5	16.4	13.8	24.0	22.5	19.6	14.1
Germany	15.3	16.1	15.0	17.3	6.9	7.6	6.3	6.8
Spain		97.5	67.4	65.8		0.3	17.8	22.2
Switzerland	28.5	26.9	19.2	30.7	19.4	17.0	16.2	16.1
U.S.A.	27.7	26.4	21.1	25.0	12.9	11.6	9.9	12.4

Table Notes:

(1) The data source is IMF, Government Finances Statistics Yearbooks, various years.

(2) Transfers as percent of Regional Spending = Grants to Regional Governments from Other Levels of Government (St. A. VII.18) as percent of Total Regional Expenditure and Net Lending (St. C.1).

(3) Transfers as percent of Central Revenues = (St.A.VII.18) as percent of Total Consolidated Central Government Revenue and Grants (A.1).

(4) Year indicated or closest year for which data available.

(5) For Belgium, data refer to local governments.

As Table 2 indicates, transfers are most important as a source of finance for regional expenditures in Spain, Belgium, Austria, and Australia, and least important in Canada and Germany, with the United States and Switzerland in between. On the other hand, transfers are especially important as a share of central spending in Australia and Spain and least important in Belgium and Germany. Over time, transfers have become less important as regional funding sources in Canada and Spain, more important in Austria, and have varied in importance over time in the other countries. In themselves, these figures are perhaps not very illuminating. In Table 3, we have therefore attempted to summarize some of the more important characteristics of the main current transfer programs in the various countries.[19] The country notes following the table elaborate a number of the key points.

[18] Readers should also be cautioned that only regional (state, province) data are covered in the table (except for the case of Belgium for which only local data were available) and that no account is taken of regional-local fiscal relations, which differ considerably from country to country.

[19] The most recent comparative treatment of federal finance in developed countries, covering most of our countries is Commission (2001b), although this study contains no explicit comparisons. Further details on the various countries may be found in this source and in the other documents cited for each country.

Table 3: Major Intergovernmental Transfers: Some Key Features

Country	*Pop. (Mln.)*	*No. of Regions*	*Distributive Pool*	*Formula*	*Revenue Autonomy*	*Other*
Australia	19	6 (8)	GST	Needs/capacity	Little	Five-year adjustment
Austria	8	9	Specific taxes	Population/revenues	No	
Belgium	10	3/3	Specific taxes	Derivation + equalization(PIT)/ Enrolment (VAT)	No	
Canada	30	10 (13)	Formula-driven	Capacity/ per capita	Yes	Five-year adjustment
Germany	82	16	VAT +	Population/revenues	Some	Also "fraternal" equalization
Spain	40	17	Specific taxes	Population/expenditure responsibilities (health) +small equalization	Little	
Switzerland	7	26		Capacity/needs	Yes	
United States	282	50 (51)	None	None	Yes	

Explanatory Notes to Table 3:

1. Australia:

The equalization pool is determined by collections from the GST in the previous year. This amount is distributed on the basis of a recommendation by the Commonwealth Grants Commission with respect to "state relativities," subject to final revision by the federal cabinet. The CGC determines "relativities" on the basis of detailed estimations of revenue capacities and expenditure needs, allowing for needs met by other federal transfers such as the significant specific-purpose transfers for health and education. Detailed calculations of relativities are made every five years. Australian states have no significant independent revenue sources.

2. Austria:

Shares of a number of specific federal taxes are distributed to the provinces, essentially on a per capita basis. In addition, much as in Germany, states receive a per capita federal grant sufficient to bring their average per capita tax revenue up to the national average. The states have few independent revenue sources.

3. Belgium:

Belgium's complex federal system of Regions and Communities is financed essentially by shares of the VAT (based on enrolment in education) and PIT (on a derivation basis). Regions (not Communities) have some ability to impose their own PIT but have not done so. There is a small equalization program for Regions intended to equalize their PIT yields.

4. Canada:

Equalization is based on estimates by the federal finance department of provincial revenue capacities. It is implicitly assumed that per capita expenditure needs are the same across provinces. (For the territories, such needs are also factored into the grant equation.) No explicit account is taken of other federal transfers. The total amount distributed is generated by the formula. A quantitatively more important transfer, the Canada Social and Health Transfer, is essentially distributed on an equal per capita basis.

5. Germany:

75% of VAT is shared with the states on a population basis, and the balance goes to states with below-average tax receipts to enable them to attain 95% of the national average. In addition, states with below-average revenue yields, particularly those in the former GDR and small states, receive supplementary transfers. Unusually, there is also an explicit interstate equalization formula that distributes funds horizontally from financially strong to financially weak states based on calculations of fiscal need and capacity.

6. Spain:

Strictly speaking, Spain is not a federation. Different states are treated quite differently in fiscal terms: some (the foral states) collect all taxes in their territory and remit a fixed negotiated share to the center; the majority of states receive most of their funds in the form of federal transfers, with the amounts depending first on the extent of their expenditure responsibilities (high vs. low-responsibility states) and secondly – in principle though not yet in practice – on whether they have accepted increased autonomy to levy their own taxes. The basic unconditional transfer is mainly distributed on a population basis although with some adjustment for other "need" factors. A similar formula is used for the main conditional transfer (for health). In addition, there is a small equalization fund, but it is conditioned on spending on specific investment projects.

7. Switzerland:

Swiss transfers include substantial equalization elements in both general transfers and in a wide variety of specific transfers. The basic redistributive factor is a "financial capacity" index, which includes a small weighting factor for "needs," that figures both in many specific transfers and in several important tax-sharing arrangements. Swiss cantons, like Canadian provinces, have a considerable degree of revenue autonomy.

8. United States:

Uniquely, the United States has no transfers explicitly intended to rectify either VFI or HFI. There is no general equalization transfer, but equalization components are often included in specific purpose transfers. Such transfers are often intended to influence local priorities in pursuit of federal objectives. States have considerable fiscal autonomy.

Obviously, it is not possible to depict anything like the complexity of these systems adequately in a table, or even in this paper. Many details peculiar to each country are necessarily left unmentioned here and all we can attempt to do in the balance of this section is to present a very brief and preliminary outline of some of the major features of the current system of transfers in the various countries. It would require another, and much more detailed, study to do more.

Australia:[20]

Australia's 19 million people live in six states and two territories (the Northern Territory and the Australian Capital Territory). State and local government spending is important – accounting for a bit less than half of all government spending in recent years, with education and health being especially important areas for subnational spending. But the federal government controls all important sources of revenue, so transfers are an important source of state revenues, as seen in Table 2. Indeed, among the established federations, Australia is the clearest case in which long-standing vertical fiscal imbalance has been dealt with almost exclusively by intergovernmental fiscal transfers. This key characteristic of the Australian system has not been affected by the most recent significant reform of intergovernmental fiscal relations, in 2000.

There are two major forms of transfer. First, there are a number of transfers to finance specific programs, particularly health and education. The substantial funds transferred in this way, amounting to about half of all transfers, are earmarked to the designated programs. Some are allocated on the basis of the pattern of expenditures at the time the transfer was established and others are allocated more on demographic or need factors. Second, and more interesting, there is a formal equalization system intended to remedy both vertical and horizontal fiscal imbalance arising from differences in the fiscal capacity of states and the cost of delivering public services (owing to demographic and other factors).

The amount to be distributed by equalization is now determined by collections from the GST (which was established in 2000).[21] All the proceeds of this tax go to the states and are distributed according to the state "relativities" calculated by the Commonwealth Grants Commission every five years for 41 expenditure and 18 revenue categories. Essentially, the formula provides for an equal per capita transfer (related to VFI) plus adjustments for differences in delivery costs (for a standard set of services) and for differences in revenue capacity (the revenue a state could obtain if it applied average state taxes to its own tax bases). The states may spend these funds in any way they wish.

Austria:[22]

Austria has nine states (and a population of eight million). It is highly centralized in many ways, but, as in Germany, most services are in fact delivered by subnational governments, which have few independent revenues and are, as Table 2 shows, heavily dependent on federal transfers. The system is similar to that in Germany but even more complex. These transfers mainly take the form of assigning various percentages of specific federal taxes to be transferred, largely on a per

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[20] This section draws on Bird (1986), Commission (2001b), Rye and Searle (1996), and Craig (1997).

[21] It is important to note that both federal and state governments must unanimously approve any change in this tax. States are protected from any loss of revenue resulting from the recent reform by a transitional compensation transfer, if necessary.

[22] This section is based mainly on Bird (1986) and Genser (2001).

capita basis, but to some extent also on a derivation basis for the PIT and a variety of other factors for other taxes. In addition, over half of the states receive a per capita federal grant sufficient to bring their average per capita tax revenue up to the national average. The amount of this transfer is open-ended although of course heavily influenced by the extent of equalization in the much more important tax sharing arrangements. These arrangements are established for several years at a time (currently, for 2001-2004). Unlike Germany, however, the states have almost no independent revenue authority and little influence on federal decisions. Although these basic arrangements have been little changed for decades, they are, as in many federal countries, frequently subject to criticism from all sides for a variety of reasons.

Belgium:[23]

The Belgian federation is new, but exceptionally complex. Its 10 million people are organized into two different types of entities, regions and communities, with the regions (Flemish, Walloon, and Brussels-Capital) being geographically defined while the communities (Flemish, French, and German) are defined by language. In reality, however, the Flemish Community and Flemish region are essentially merged and there is a single Flemish government, while there are two French governments (the French Community and the Walloon Region). The German Community has jurisdiction over several communes (municipalities) in the Walloon region, and both of the other Communities have jurisdiction in Brussels.

As Table 2 suggests, the central government is fiscally dominant in Belgium, accounting for most spending and financing most local spending through transfers. The Communities do not have any taxes or fiscal autonomy. The Regions in principle can, with the agreement of the federal government, impose a surcharge on the personal income tax but have not yet done so. Most Community revenues come from a share of VAT and most Regional revenues from a share of PIT. The income tax revenues are distributed essentially in proportion to the revenues produced by the income tax in each entity. In addition to a few specific transfers, there is also a modest equalization program which provides an unconditional transfer to regions in which the average per capita yield of the PIT falls below the national average.[24] On the other hand, as from 2000, VAT proceeds are distributed in accordance with the number of pupils aged between 6 and 17 enrolled in primary and secondary schools in the community.[25]

Canada:[26]

Canada's 30 million people are organized in 10 provinces and 3 sparsely populated northern territories. Canadian provinces have significant fiscal autonomy and, as Table 2 shows, have over time become decreasingly dependent, as a group, on federal transfers. Nonetheless, such transfers are still important, particularly for the poorer provinces.

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[23] This section draws on Commission (2001b), Bayanet and de Bruycker (2001) and Bullinger (2001).

[24] Nothing is ever simple in the world of intergovernmental finance: actually, when a region's average per capita yields are below the national average, it receives a fixed amount per inhabitant and the percentage point difference between its average and the national average.

[25] From 1989 to 2000, VAT was shared as a fixed percentage, based on the number of pupils in each community in 1988.

[26] This section is based mainly on Bird and Vaillancourt (2001, 2002). See also Boadway and Watts (2000), and Commission (2001c).

Abstracting from its complex history and oversimplifying considerably, the present transfer system may be thought of as having two principal components. The first component is the Canada Social and Health Transfer (CHST), which is essentially an equal per capita transfer to all provinces intended to deal with vertical imbalance. Despite its name the CHST is in effect an unconditional transfer, with the amount distributed determined by the federal government. The second component is the Equalization Transfer, which is an unconditional open-ended transfer calculated to enable the seven recipient provinces to provide, should they choose to do so, reasonably comparable levels of services to the national average level if they impose (more or less) national average levels of tax. The mechanics of this formula in effect assume that per capita needs are equal in all provinces and focus on measuring "representative" tax bases for over 30 different revenue sources.

Germany:[27]

Germany (with 82 million people) now has sixteen states, since the addition of five new states with the disappearance of the former East Germany in 1990. Two states (Bremen, Hamburg) are city-states. The key component in Germany's vertical intergovernmental financial relations is the VAT, of which 49.75% currently goes to the states (and another 2.2% to municipalities). 75% of the total going to the states is distributed on the basis of population, and the balance is distributed to those states in which the average per capita shared personal and corporate income tax (and local business tax) is lower than the national average, to raise their financial capacity to 92% of the national average. In addition, through several shared-cost programs, the federal government covers 50% of the cost of higher education and programs to develop regional economic structure, 60% of support for agriculture, and 70% of shoreline preservation.

Since reunification, however, an additional important component of the intergovernmental fiscal picture has consisted of a series of special "additional" transfers. The largest of these is a simple additional transfer to the former GDR states, followed by an additional transfer to states as needed to upgrade the financial capacity index of all regions to at least 99.5%. Other special transfers are intended to compensate western states for loss of transfers resulting from integration and to assist smaller states and two states (Bremen and Saarland) with special budget restructuring problems. In total, these special payments currently exceed both the basic VAT sharing and the special "fraternal" equalization system described next.

Unique among federal states, Germany has an explicit mechanism for horizontal fiscal equalization (*finanzausgleich*) among the states which is financed entirely out of state revenues. This scheme is intended to equalize the financial capacity of states, defined as the per capita tax revenue of the state and 50% of that of the communes, to at least 95% of the average. The formula takes into account both size and population density. States with above-average capacity are "taxed" progressively at rates between 15% and 80% of the excess over 100% of the average, and states below average are "subsidized" up to 100% of the deficiency below 92% and at a rate of 37.5% for any remaining deficiency.

Although less sophisticated than the Australian system in its determination of either need or capacity, in total Germany clearly has the most strongly equalizing transfer system among federal states, as mandated by its constitution. Recently, however, the system has been criticized by many as "too equalizing" in the sense of both unduly penalizing fiscal effort in rich states and unduly

[27] This section draws on Bird (1986), Commission (2001b), Rodden (2001), Walti (2001), Spahn (1996, 2000), Spahn and Franz (2000), and Spahn and Fottinger (1997).

subsidizing fiscal laxity and profligacy in poor states, particularly as a result of the "special" transfers described above (Baretti, Huber, and Lichtblau, 2000). Beginning in 2005, it has therefore been decided both to make some limited changes in the equalization system (for example, including a larger fraction of local revenues) and perhaps also to eliminate some of the special payments.

Spain:[28]

Spain's 40 million people live not in a federal state but in a "state of autonomies." The country is organized in seventeen "autonomous communities" (ACs), which are responsible for an increasing share of public expenditure, most of which is financed by fiscal transfers.[29] 30% of PIT proceeds are distributed on a derivation basis to the ACs, half as an unconditional transfer and half as a partial cession of the tax field to those states that have opted to set their own rates. Although fourteen states agreed to this arrangement in the current five-year (1997-2001) agreement, none has yet set its own tax rates. ACs also share central revenue on the basis of a formula that takes into account such factors as population, area, relative wealth, and fiscal effort. They also receive conditional transfers for social services (notably health) which are distributed on the basis of similar factors. Within the so-called "common regime" (the system that applies outside the two "foral" regions discussed below), some regions – the "high responsibility" regions – are responsible for health and education, functions which account for up to 80% of their spending. The formulas for distributing revenue vary for high and low-responsibility regions, but population dominates in both.

In addition, there is an explicit equalization fund under which ACs with per capita income less than 75% of the average – interestingly, not the average in Spain but that in the European Union -- can receive payments based on a formula dominated by population (87.5%), with smaller weights for area, unemployment, net migration, and population dispersion. These funds, however, are both small – less than 2% of AC revenue compared to 9% (in 1998) from the EU regional fund – and must be spent on designated investment projects.

Beginning in 2002, the share of PIT going to ACs will increase to 33%, and they will in addition receive 35% of VAT, 40% of the major excise taxes, and all taxes on registration and electricity. In addition to this substantial increase in transfers, state fiscal autonomy will be expanded in the sense that ACs will be able to set hydrocarbon taxes and will also have broader jurisdiction with respect to some other taxes (especially inheritance and estate taxes) already within their control.

A final peculiarity of the very special Spanish version of "federalism" is that two regions, the Basque Country and Navarre, are, for historic reasons, subject to a separate "foral" regime under which they collect all taxes within their territory (except customs duties) and remit a share to the central government, with the share of remittance depending in principle upon the estimated services provided in the region by the central government. In practice, however, the remittance has been based on a percentage of the difference between the national cost of the services not devolved to the ACs and the national revenue of the taxes not devolved – a curious concept that amounts to choosing a number somewhere between the region's income share and its population share. This number has not been updated since 1981.

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[28] This section draws on Commission (2001b), Castells (2001), Garcia-Mila and McGuire (2001), and Vinuela (2000).

[29] There are 18 ACs if one takes into account Ceuta and Melilla, a special-status Spanish region in North Africa.

Switzerland:[30]

Switzerland was the second country to follow the federal path, after the United States. Today, its seven million people live in 26 cantons, each of which has a very high degree of autonomy in many spheres, including the fiscal one. Although cantons are precluded from VAT and other sales taxes, income and other direct taxes are important sources of revenue for them. Given the small size of the cantons, it is not surprising that there are considerable divergences among them, and given Switzerland's history and political structure, it is not surprising that there is a significant equalization component in many federal programs.

The most important federal fiscal transfers are those for specific projects in a wide variety of spending sectors. As in the United States, there are many such specific grants and most of them have some equalization component. In the Swiss case, however, a specific "financial capacity" index is generally used, based on per capita cantonal revenue (30%), potential per capita tax revenue (30%), tax burden (20%) and needs (20%), with most of these components in turn being calculated in accordance with specific formulas. In addition to the specific transfers, there is also an important unconditional transfer – 56.7% based on derivation and the remainder on the financial capacity index – of 30% of the proceeds of the federal PIT. Similarly, 10% of the revenue from federal withholding taxes (half on a per capita basis and half on the index), up to 12% of customs duties on fuel (42% on the index basis), and 2/3 of earnings of Swiss National Bank (3/8 on the index) go to the cantons.

This cumbersome system is obviously the product of history and much political negotiation. Unsurprisingly, as in many federal countries, many are unhappy with either the results, the lack of logic in the methods, or both. Switzerland, more than any other country, is a "bottom-up" federalism, in which change can come about only when virtual unanimity is achieved. Hence, although a major review of these arrangements has been under way for some years, it seems unlikely that change will be accepted any more quickly or more easily in this area of Swiss policy than in most others.

United States:[31]

The United States is the oldest and largest federal state in the world. Its 282 million people live in 50 states (and 1 territory, the District of Columbia). States have independent taxing powers and substantial expenditure responsibilities, notably with respect to education. As in Switzerland, federal and state taxes are essentially independent, but unlike Switzerland, there is no formal "revenue-sharing" system between federal and state (or local) governments. Indeed, there are no transfers specifically intended to deal with either VFI or HFI at the federal-state level. Nonetheless, as Table 2 shows, there are very substantial intergovernmental fiscal transfers in the United States, especially to finance various social programs carried out at the state and local levels.

The most important federal transfers are those that fund health programs administered by the states, acting essentially as agents of the federal government, although they have considerable leeway in many details. The situation is similar with respect to many welfare programs, as well as

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[30] This section draws on Bird (1986), Commission (2001b), Spahn (1996, 1997), Ayrton (2001), Stauffer (2001) and Dafflon (1999).

[31] This section draws on Bird (1986), "Fiscal Federalism" (2000), and Commission (2001b).

various expenditures in education and transport. Although there is an attempt in many of these programs to relate transfers to such indicators of need as per capita income, there is no general system of equalization and no apparent concern that the result is that states with lower fiscal capacities cannot provide services at levels similar to richer states. At bottom, the general American attitude appears to be that if people want better services they should move to where they can find them…and preferably pay for them themselves.

CONCLUSION:[32]

No simple conclusions emerge from this study, and no certain guidelines to what any country can, or should, do. Indeed, as one of us (Bird, 1986) said some years ago in concluding an earlier international comparison of fiscal federalism, in the end every country seems to march essentially to its own drummer in this area -- designing transfers as it sees fit, equalizing to the extent it chooses to do so, and providing very different degrees and types of autonomy to its sub-national governments.

For example, no simple factors seem to explain national differences in the "taste" for equalization. As May (1969) noted long ago equalization policies may be strong *either* where there is strong sense of national unity and no regional tendencies to separation – for example, Germany – *or* where there are strong regional conflicts and fiscal transfers are in effect used to buy off potential separatism – as has been argued at times to be the case in Russia (Treisman, 1999) and to some extent in Canada (Bird, Bucovetsky, and Foot, 1969). Indeed, as the various studies in Bird and Stauffer (2001) indicate, equalization transfers may at times weaken and at times strengthen centrifugal forces in more heterogeneous federations.

What does emerge clearly from this partial and brief review of some very complex question is that different federal countries can and do operate their intergovernmental fiscal affairs in very different ways, that they can and do make significant changes in how they operate from time to time, and that the systems of fiscal relations that exist appear more to reflect the political and economic realities that gave rise to them than they shape those realities. Important as they are in most countries, in the end intergovernmental fiscal transfers are the *instruments,* not the *determinants* of public policy. The importance and design of such transfers may therefore change from time to time in particular countries as the balance of forces shaping policy alters. Similarly, the effects of transfers on such possible policy goals as "regional balance," the equalization of regional per capita incomes, and the level of public service provision in regions of different economic capacity may vary considerably from country to country and time to time. Each federation is a complex political and economic entity tracing out a path-dependent course in a changing environment: it is not surprising that no simple lessons or rules appear to emerge from the very diverse experiences depicted, however imperfectly, in this paper.

Nonetheless, we shall conclude by citing a few "lessons" suggested not only by consideration of the transfer systems described above but also by wider investigations carried out by us and many others in a much larger set of countries.

[32] This section is based in part on earlier discussion in Bird (1986) and Bird and Smart (forthcoming). It draws also, of course, on the many other studies cited in these sources.

First, as just noted, whether a country has any equalization transfers or not is a matter for it to decide. There is nothing inherent in the federal form of government to require such transfers or to govern their importance of form. The United States, to cite a prominent example, has no general equalization transfer.

Second, should a country choose to have such transfers, it is generally advisable, from the points of view of both the grantor and recipient governments, for the total pool of resources to be distributed in a stable but flexible way (e.g. as a percentage of central taxes, adjustable every few years). Interestingly, however, no country within this study actually follows this procedure. Instead, most assign specific proportions of designated taxes to fund regional transfers despite the obvious danger of biasing national tax decisions.[33]

Third, in principle, equalization transfers should take into account both need and capacity and should do so in as simple, reliable, and transparent a fashion as possible. As experience around the world shows, many transfer designs are feasible and, as usual, no one size or shape fits all countries. Australia, Canada, and to some extent Switzerland make special efforts to take account of revenue capacities. Most of the other countries discussed here seem more concerned to measure needs. None seems too concerned with either simplicity or transparency. Transfer systems are designed by officials and politicians who seldom have much interest in making public finance issues readily comprehensible by wider circles.

Finally, if an equalization transfer is properly designed, and if – most importantly -- sub-national governments both have adequate discretion in tax policy and are fully politically accountable for their policy decisions, there is no need to include specific incentive features to encourage additional tax effort (unless it is desired to expand the public sector). From this perspective, Canada, the United States, and Switzerland – the countries in which states have the most fiscal autonomy – should presumably be those least concerned with the effects of transfers on fiscal effort, although even there specific features of the transfer systems may give rise to concern.[34]

Unfortunately, experience suggests that this last condition seems especially difficult to satisfy in many countries. Central governments are reluctant to give up sufficient fiscal room for local decision-making. Subnational governments are equally reluctant to accept full political responsibility for decisions. And both levels of government seem often to benefit from the obscure complexity that too often characterizes fiscal federalism in practice with the result that, as mentioned above, few countries are publicly transparent about who is doing precisely what to whom and with whose money. These complex matters cannot be more fully discussed in the present paper,[35] but the bottom line is simply that a federal country that can do these things correctly can, if it chooses, have a good system of equalization transfers that should enable all regions of the country to provide at least a minimal standard of public services without unduly discouraging subnational fiscal effort.

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[33] If a central government has to increase taxes for fiscal reasons, which tax is it more likely to increase: one where it receives all the proceeds, or one where all the proceeds go to the states (as in the Australian GST)?

[34] For example, see Bird and Smart (forthcoming) for references to this concern in Canada and Switzerland.

[35] For further discussion of some of these matters, see Bird (2000a, b, c).

REFERENCES:

Australian Bureau of Statistics (various) *Australian National Accounts. National Income and Expenditure*.

Australian Bureau of Statistics (various) *Government Financial Estimates. Australia*. Catalogue No.5501.0.

Ayrton, Robert (2001) "Case Study: Switzerland," in Dietmar Braun et al., eds., *Fiscal Policy Decisions in Federal States*, University of Lausanne.

Baretti, C., B. Huber, and K. Lichtblau (2000) "A Tax on Tax Revenue. The Incentive Effects of Equalizing Transfers: Evidence from Germany," Working Paper, CESifo, University of Munich.

Bayenet, Benoit and Philippe de Bruycker (2001) "Belgium: A Unique Evolving Federalism," Paper prepared for World Bank Institute.

Bird, Richard M. (1966) "Tax-Subsidy Policies for Regional Development," *National Tax Journal,* 19: 113-124.

Bird, Richard M. (1982) "Expenditure Policy and Regional Development," *Rivista di diritto finzziario e scienze delle finanze*, 41 (December): 483-503.

Bird, Richard M. (1986) *Federal Finance in Comparative Perspective* (Toronto: Canadian Tax Foundation).

Bird, Richard M. (1993) "Threading the Fiscal Labyrinth: Some Issues in Fiscal Decentralization," *National Tax Journal*, 46: 207-27.

Bird, Richard M. (2000a) "Sub-National Revenues: Realities and Prospects," in Shahid Javed Burki and Guillermo E. Perry, eds., *Decentralization and Accountability of the Public Sector*, Annual World Bank Conference on Development in Latin America and the Caribbean (Washington).

Bird, Richard M. (2000b) "Rethinking Tax Assignment: The Need for Better Subnational Taxes," *Tax Notes International,* vol. 20, May 8: 2069-96.

Bird, Richard M. (2000c*) Intergovernmental Fiscal Relations in Latin America: Policy Designs and Policy Outcomes* (Washington: Inter-American Development Bank).

Bird, Richard M. and Edgardo Rodriguez (1999) "Decentralization and Poverty Alleviation," *Public Administration and Development*, 19: 199-219.

Bird, Richard M. and Michael Smart (forthcoming) "International Fiscal Transfers: International Lessons for Developing Countries," *World Development*.

Bird, Richard M. and Thomas Stauffer, eds. (2001) *Intergovernmental Fiscal Relations in Fragmented Societies*, Etudes et Colloques 33, Institut du Federalisme Fribourg (Bale: Helbig and Lichtenhahn).

Bird, Richard M. and Francois Vaillancourt (2001) "The Role of Intergovernmental Fiscal Arrangements in Maintaining an Effective State in Canada," in Richard Bird and Thomas Stauffer, eds., *Intergovernmental Fiscal Relations in Fragmented Societies*, Etudes et Colloques 33, Institut du Federalisme Fribourg (Bale: Helbig and Lichtenhahn).

Bird, Richard M. and Francois Vaillancourt (2002) "Changes in Canadian Federal Arrangements, 1945-2001: A Tale of Success, Failure, and Inertia," Paper prepared for Federalism Project, Stanford University.

Bird, Richard M., Bucovetsky, Meyer W., and David K. Foot (1969) *The Growth of Public Employment in Canada* (Montreal: Institute for Research on Public Policy).

Boadway, Robin W. and Paul Hobson (1993) *Intergovernmental Finance in Canada* (Toronto: Canadian Tax Foundation).

Boadway, Robin W. and Ronald Watts (2000) "Fiscal Federalism in Canada," Institute for Intergovernmental Relations, Queen's University, July.

Brennan, Geoffrey and James M. Buchanan (1980) *The Power to Tax* (Cambridge: Cambridge University Press).

Bryden, W. Kenneth (1972) *Old Age Pensions and Policy-Making in Canada* (Montreal: McGill-Queen's Press).

Bullinger, Anne-Marie (2001) "Case Study: Belgium," in Dietmar Braun et al., eds., *Fiscal Policy Decisions in Federal States*, University of Lausanne.

Bundesamt fur Statistik (various) *Statistisches Jahrbuch der Schweiz*.

Castells, Antoni (2001) "The Role of Intergovernmental Finance in Achieving Diversity and Cohesion: The Case of Spain," in Richard Bird and Thomas Stauffer (eds.) *Intergovernmental Fiscal Relations in Fragmented Societies*, Etudes et Colloques 33, Institut du Federalisme Fribourg (Bale: Helbig and Lichtenhahn).

Commission on Fiscal Imbalance (2001a) *Fiscal Imbalance: Problems and Issues* (Quebec, 2001).

Commission on Fiscal Imbalance (2001b) *Intergovernmental Fiscal Arrangements* (Quebec, 2001).

Commission on Fiscal Imbalance (2001c) *Federal Transfer Programs to the Provinces* (Quebec, 2001).

Craig, Jon (1997) "Australia," in Teresa Ter-Minassian, ed., *Fiscal Federalism in Theory and Practice* (Washington: IMF).

Dafflon, Bernard (1999) "Fiscal Federalism in Switzerland; A Survey of Constitutional Issues, Budget Responsibility, and Equalization," Working Paper No. 278, Department of Political Economy, University of Fribourg.

Ebel, Robert D. and Serdar Yilmaz (2001) "On the Measurement and Impact of Fiscal Decentralization," World Bank Institute, Washington, July.

Eurostat (1979) *Regional Accounts ESA,* 156-161.

Eurostat (various) *Regions Statistical Yearbook.*

Eurostat (various). *Statistics in Focus: Regions.*

"Fiscal Federalism in the United States" (2000) Institute for Intergovernmental Relations, Queen's University.

Garcia-Mila, Teresa and Therese J. McGuire (2001) "Fiscal Decentralization in Spain: An Asymmetric Transition to Democracy," Paper prepared for World Bank Institute.

Genser, Bernd (2001) "Interjurisdictional Fiscal Equalization in Austria: A Gordian Knot Puzzle," Paper prepared for the 57th Congress of the International Institute of Public Finance, Linz, August.

Hettich, Walter and Stanley Winer (1983) "Vertical Imbalance in the Fiscal Systems of Federal States," Working Paper 56-82-83, Graduate School of Industrial Administration, Carnegie-Mellon University.

Hunter, J.S.H. (1974) "Vertical Intergovernmental Financial Imbalance: A Framework for Evaluation," *Finanzarchiv*, no. 2, 481-92.

Hunter, J.S. . (1977) *Federalism and Fiscal Balance* (Canberra: Australian National University Centre for Research on Federal Financial Relations).

Instituto Nacional de Estadistica (various) *TEMPUS Databank, CRE - Contabilidad Regional de España* (Spanish Regional Accounts).

Instituto Nacional de Estadistica (various) *TEMPUS Databank, Proyecciones y Estimaciones Intercensales de Población*.

International Monetary Fund (various) *Government Finance Statistics Yearbook.*

Kwavick, David, ed., (1973) *The Tremblay Report* (Toronto: McClelland and Stewart).

Mathews, Russell (1980) *Revenue Sharing in Federal Systems* (Canberra: Australian National University Centre for Research on Federal Financial Relations).

Matier, Chris, Wu, Lisa, and Harriet Jackson (2001) "Analyzing VFI in a Framework of Fiscal Sustainability," paper presented to CEA, June.

May, R.J. (1969) *Federalism and Fiscal Adjustment* (London: Oxford at the Clarendon Press).

Musgrave, Richard A. (1961) "Approaches to a Fiscal Theory of Political Federalism," in *Public Finances: Needs, Sources, and Utilization*, National Bureau of Economic Research (Princeton: Princeton University Press).

Oakland, William H. (1994) "Fiscal Equalization: An Empty Box?" *National Tax Journal,* 47: 199-209.

OECD (1999) *Taxing Powers of State and Local Governments* (Paris).

OSTAT Statistisches Jahrbuch (1999-2000), 483.

Rao, M. Govinda and Raja J. Chelliah (1991) *Survey of Research on Fiscal Federalism* (National Institute of Public Finance and Policy).

Rao, M. Govinda and A. Das-Gupta (1995) "Intergovernment Transfers and Poverty Alleviation," *Environment and Policy C: Government and Policy*, 13: 1-23.

Rezk, Ernersto (1998) "Argentina: Fiscal Federalism and Decentralization," in Richard M. Bird and Francois Vaillancourt (eds.) *Fiscal Decentralization in Developing Countries* (Cambridge: Cambridge University Press).

Rodden, Jonathan (2001) "And the Last shall be First: Federalism and Fiscal Outcomes in Germany," October.

Rye, C. Richard and Bob Searle (1996) "The Fiscal Transfer System in Australia," in Ahmad, Ehtisham (ed.), *Financing Decentralized Expenditures: An International Comparison of Grants* (Edward Elgar).

Shankar, Raja and Anwar Shah (2000) "Bridging the Economic Divide within Nations: A Scorecard on the Performance of Regional Policies in Reducing Regional Income Disparities," World Bank, November.

Spahn, Paul Bernd (1996) "Intergovernmental Transfers in Switzerland and Germany," in Ahmad, Ehtisham (ed.), *Financing Decentralized Expenditures: An International Comparison of Grants* (Edward Elgar).

Spahn, Paul Bernd (1997) "Switzerland," in Teresa Ter-Minassian, ed., *Fiscal Federalism in Theory and Practice* (Washington: IMF).

Spahn, Paul Bernd (2000) "Germany at the Junction between Solidarity and Subsidiarity," Paper prepared for World Bank Institute.

Spahn, Paul Bernd and Oliver Franz (2000) "Consensus Democracy and Interjurisdictional Fiscal Solidarity in Germany," November.

Spahn, Paul Bernd and Wolfgang Fottinger (1997) "Germany," in Teresa Ter-Minassian, ed., *Fiscal Federalism in Theory and Practice* (Washington: IMF).

Stauffer, Thomas (2001) "The Case of Switzerland," in Richard Bird and Thomas Stauffer, eds., *Intergovernmental Fiscal Relations in Fragmented Societies*, Etudes et Colloques 33, Institut du Federalisme Fribourg (Bale: Helbig and Lichtenhahn).

Thimmaiah, G. (1976) "Vertical Intergovernmental Financial Balance: A Restatement," *Finanzarchiv*, 34, no. 2, 497-508.

Treisman, Daniel S. (1999) *After the Deluge: Regional Crises and Political Consolidation in Russia* (Ann Arbor: University of Michigan Press).

U.S. Department of Commerce, Bureau of Economic Analysis. (various) *Regional Economic Information System Database*.

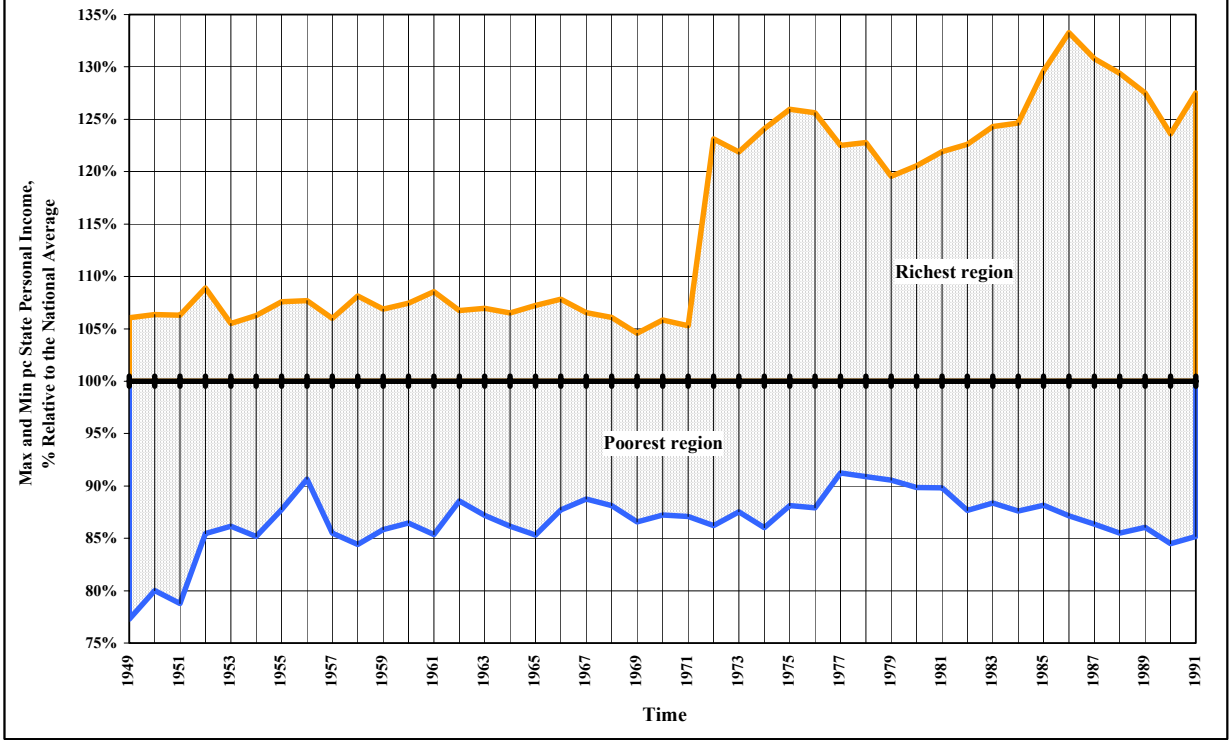
Vinuela, Julio (2000) "Fiscal Decentralization in Spain," International Monetary Fund.

Walti, Sonja (2001) "Case Study: Germany," in Dietmar Braun et al., eds., *Fiscal Policy Decisions in Federal States*, University of Lausanne.

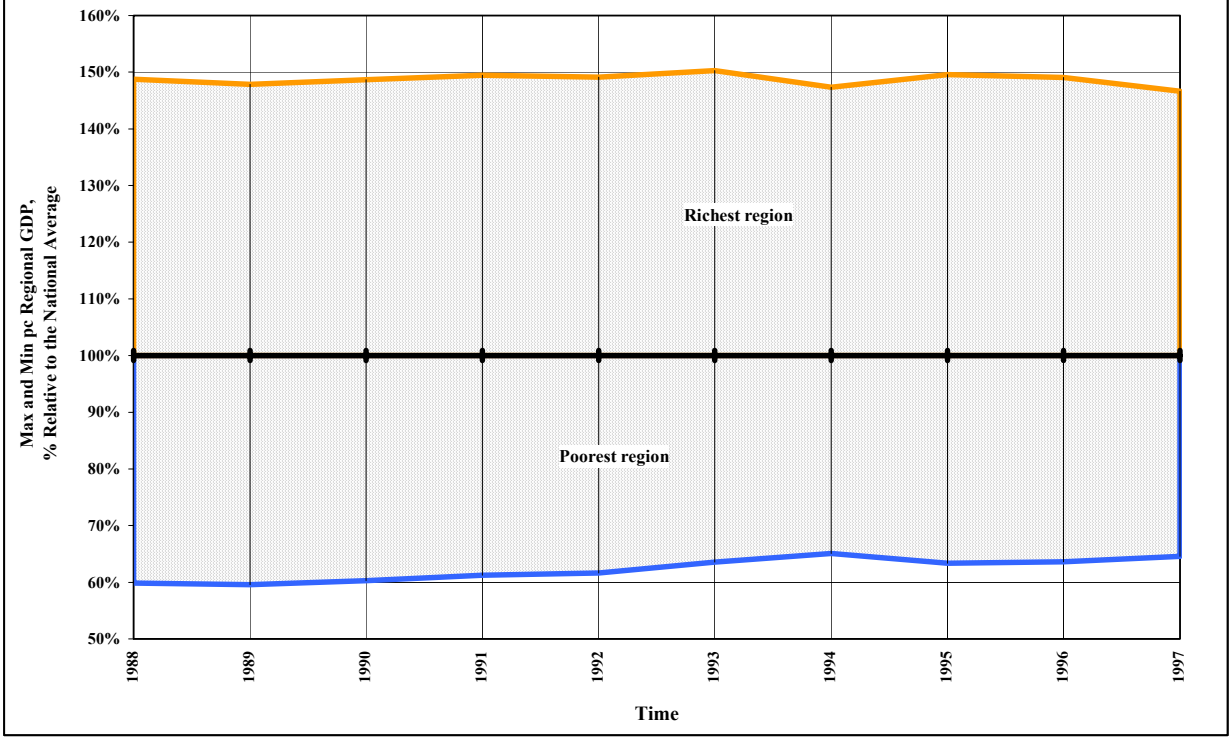
Watts, Ronald and Paul Hobson (2000) "Fiscal Federalism in Germany," Institute for Intergovernmental Relations, Queen's University, December.

Wheare, Kenneth C. (1963) *Federal Government,* 4th ed. (London: Oxford University Press).

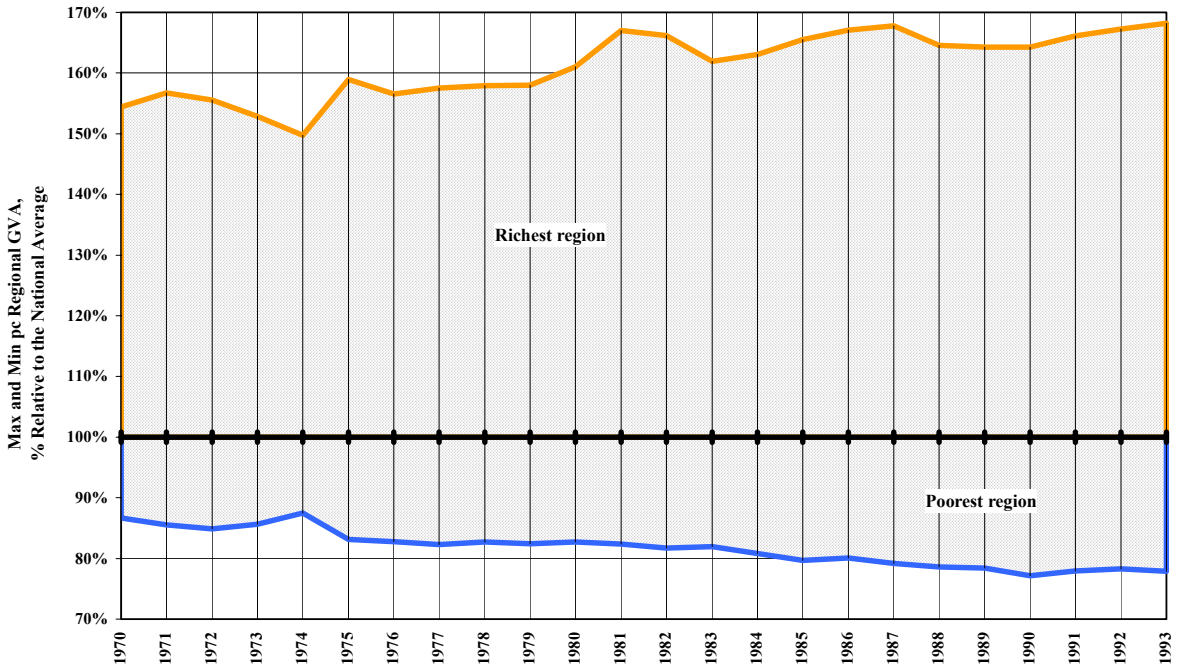
Appendix Figure A.1: AUSTRALIA: Maximum and Minimum Per Capita State Personal Income, % Relative to the National Average



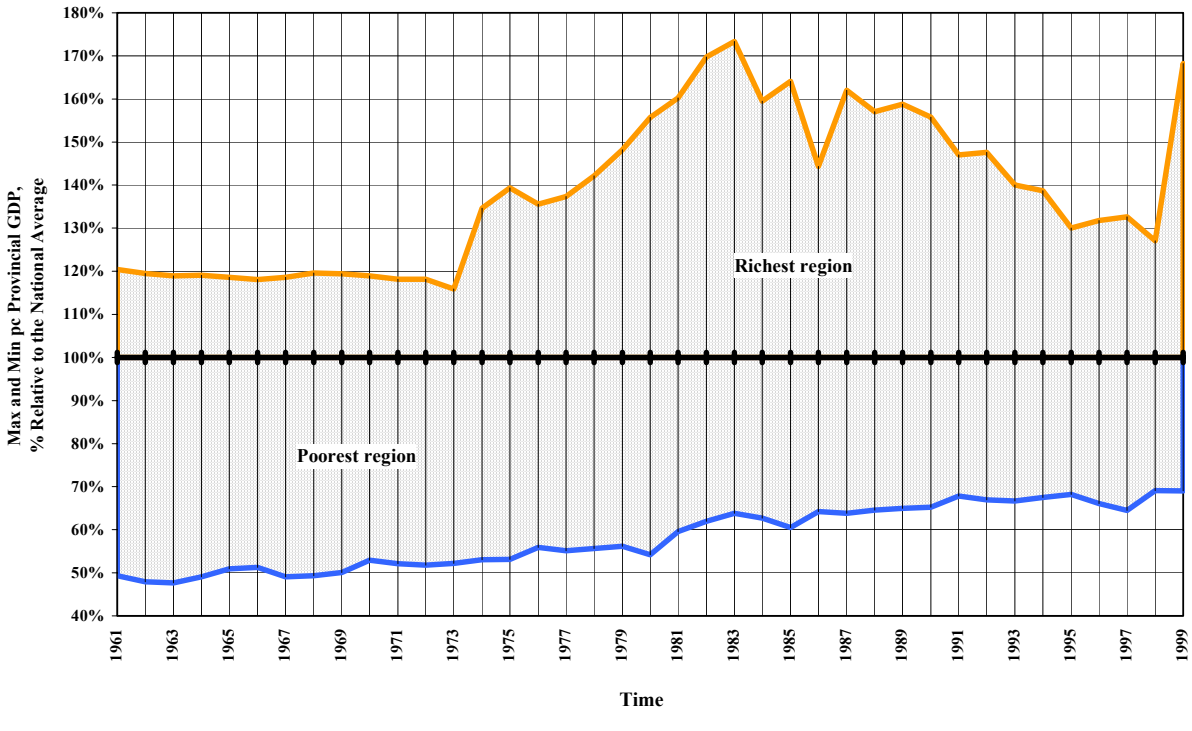
Appendix Figure A.2: AUSTRIA: Maximum and Minimum Per Capita Regional GDP, % Relative to the National Average



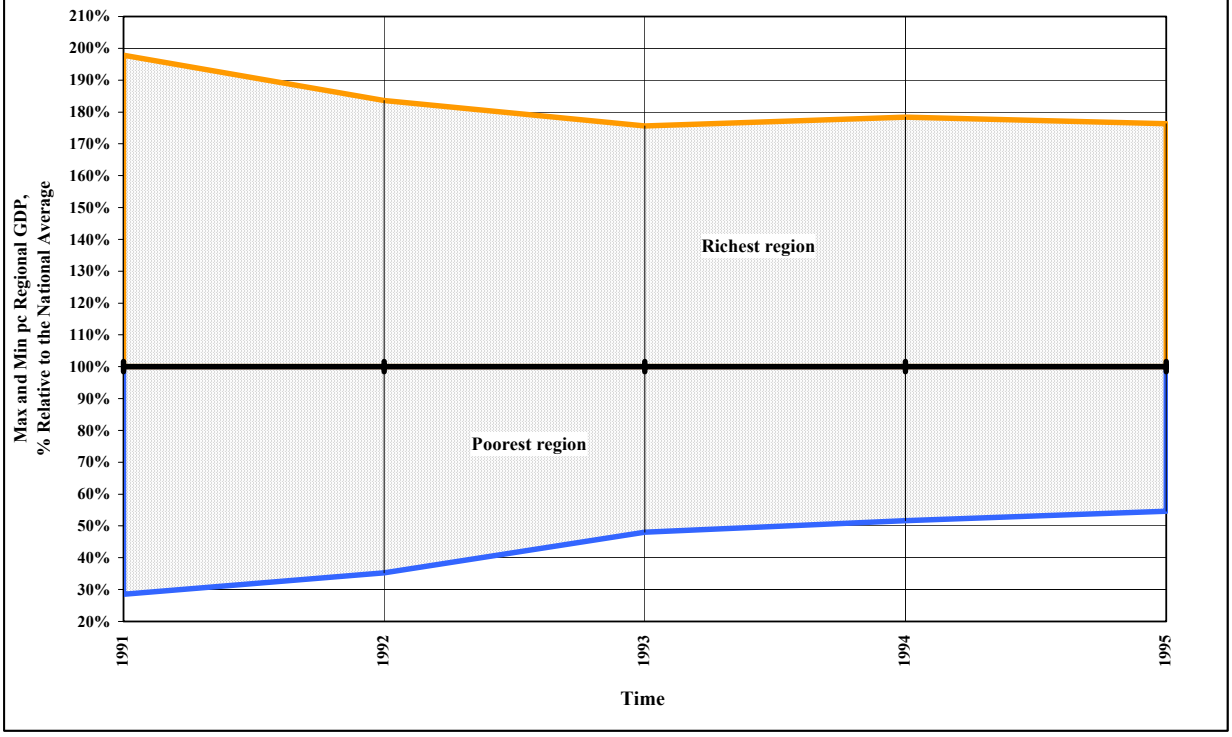
Appendix Figure A.3: BELGIUM: Maximum and Minimum Per Capita Regional Gross Value Added, % Relative to the National Average



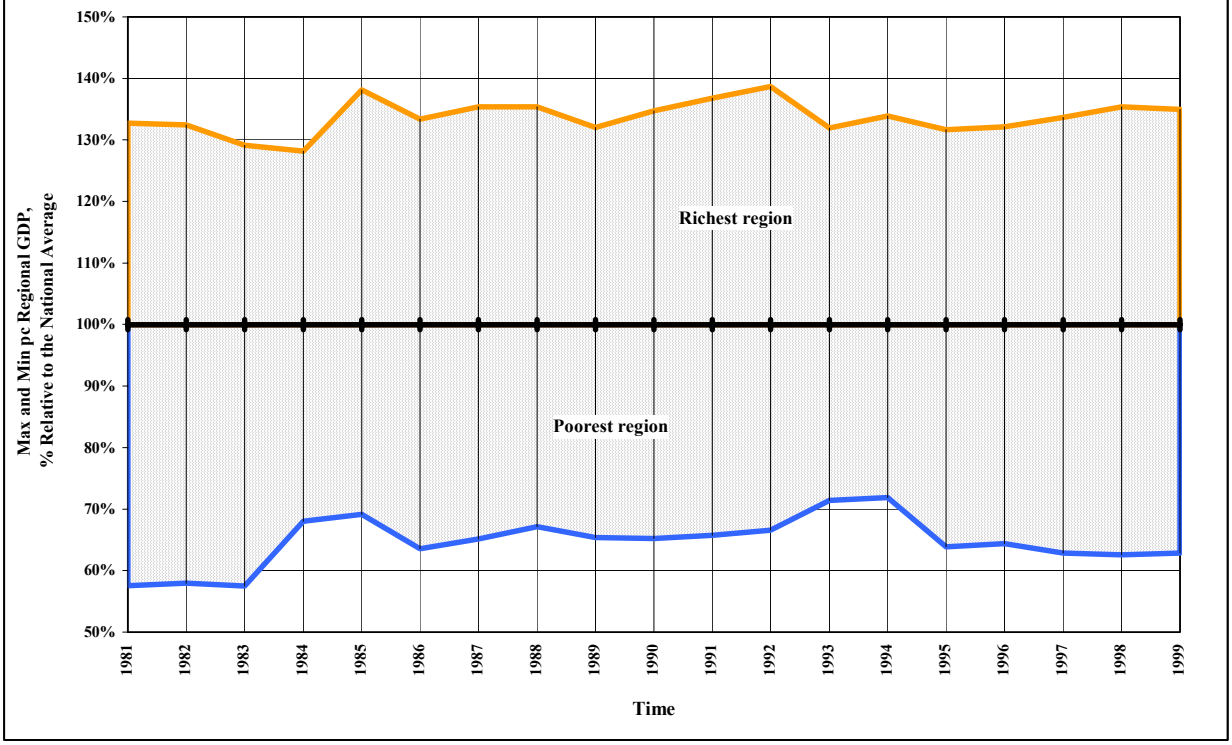
Appendix Figure A.4: CANADA: Maximum and Minimum Per Capita Provincial GDP, % Relative to the National Average



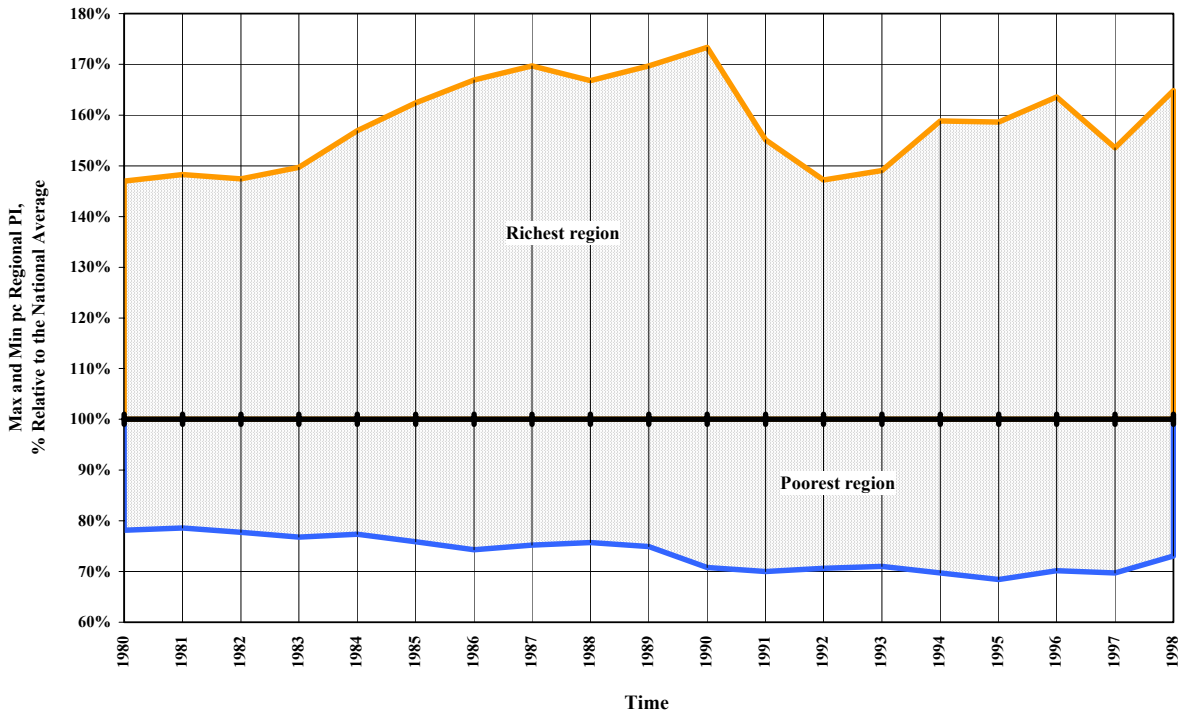
Appendix Figure A.5: GERMANY: Maximum and Minimum Per Capita Regional GDP, % Relative to the National Average



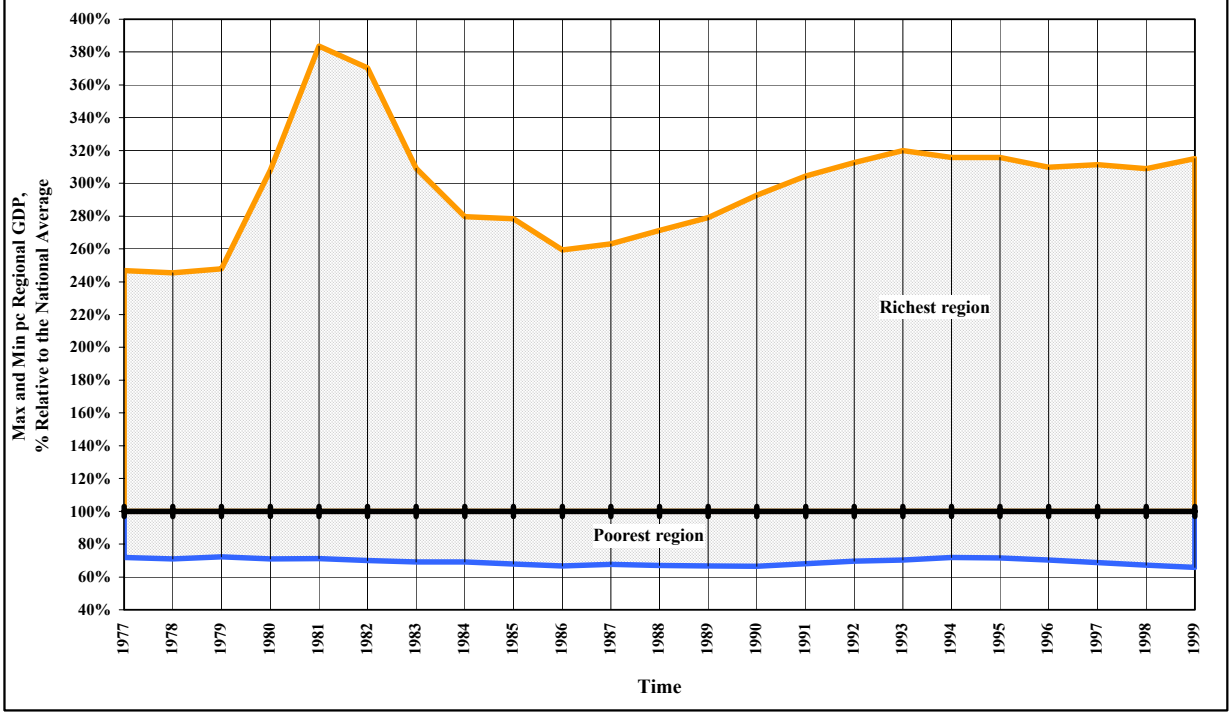
Appendix Figure A.6: SPAIN: Maximum and Minimum Per Capita Regional GDP, % Relative to the National Average



Appendix Figure A.7: SWITZERLAND: Maximum and Minimum Per Capita Regional Personal Income, % Relative to the National Average



Appendix Figure A.8: UNITED STATES: Maximum and Minimum Per Capita Regional GDP, % Relative to the National Average



APPENDIX TABLE A.1: TECHNICAL NOTES ON DERIVING MEASURES OF VERTICAL FISCAL IMBALANCE AS PRESENTED IN TABLES A.2-A.9

The following table serves as a technical supplement to data Tables A.2-A.9. Table A.1 presents formulae used to calculate different measures of vertical fiscal imbalance and links the components of these formulae to specific government finance accounts. The accounts are labeled according to the IMF Government Finance Statistics classification. The Table also contains common abbreviations used throughout data Tables A.2-A.9.

PART 1: IMF GOVERNMENT FINANCE STATISTICAL ACCOUNTS:		
Assigned number	**Source Table in the IMF GFS Yearbook**	**Account Title**
Accounts on Regional Government (State, Regional, or Province Government):		
10	St. B. I	Total regional expenditure, excluding net lending (borrowing)
11	St. C. I	Total regional expenditure and net lending
12	St. A. II	Total regional revenue (current and capital), excluding grants
13	St. A. I	Total regional revenue (current and capital) and grants
14	St. A. VII. 18	Grants to regional government from other levels of government
15	**16 + 17**	**IGT from regional government to other levels of government**
16	St. C. III. 3.2. (3.3)	Current intergovernmental transfers
17	St. C. IV. 7.1.1	Capital intergovernmental transfers
18	**14 - 15**	**Net IGT to regional government from other levels of government**
19	(-) of St. C. V. 8.1	Net borrowing by regional government from other levels of government
21	St. S. 11	**Overall regional government surplus/deficit**
22	**21 / 11**	**Regional government surplus/deficit in percentage terms**
Accounts on Local Government:		
25	L. B. I	Total local expenditure, excluding net lending (borrowing)
26	L. C. I	Total local expenditure and net lending
27	L. A. II	Total local revenue (capital and current), excluding grants
28	L. A. I	Total local revenue (capital and current) and grants
29	L. A. VII. 18	Grants to local government from other levels of government
30	**31 + 32**	**IGT from local government to other levels of government**
31	L. C. III. 3.2. (3.3)	Current intergovernmental transfers
32	L. C. IV. 7.1.1	Capital intergovernmental transfers
33	**29 - 30**	**Net IGT to local government from other levels of government**
34	(-) of L. C. V. 8.1	Net borrowing by local government from other levels of government
36	L. S. 11	**Overall local government surplus/deficit**
37	**36 / 26**	**Local government surplus/deficit in percentage terms**
Consolidated Central Government Accounts:		
40	A. I	Total consolidated central government revenue and grants
41	C. I	Total consolidated central government expenditure and net lending
42	**(43+45)-(44+46)**	**Net IGT from consolidated central government to subnational government**
43	C. III. 3.2	Current transfers to subnational government
44	A. VII. 18.1	Current grants from subnational government
45	C. IV. 7.1.1	Capital transfers to subnational government
46	A. VII. 18.2	Capital grants from subnational government
47	C. V. 8.1	Subnational net borrowing from the central government
49	**S. 11**	**Overall consolidated central government surplus/deficit**
50	**49 / 41**	**Consolidated central government surplus/deficit in percentage terms**
Subnational Government (Consolidated Regional and Local Governments) Accounts:		
52	**11+26**	**Total subnational government expenditure and net lending**
53	**(21+36)/52**	**Subnational government surplus/deficit in percentage terms**

APPENDIX TABLE A.1 CONTINUED:

PART 2: CALCULATING MEASURES OF VERTICAL FISCAL IMBALANCE:	
Formula in terms of assigned numbers	**Measure of Vertical Fiscal Imbalance**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers)	
50 = 49 / 41	Consolidated central government balance
22 = 21 / 11	Regional government balance
37 = 36 / 26	Local government balance
53 = (21+36)/(11+26)	Subnational government (consolidated RG and LG) balance
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers)	
(49+42)/(41-43-45)	Adjusted consolidated central government balance (excluding IGT)
(21-18)/(11-15)	Adjusted regional government balance (excluding IGT)
(36-33)/(26-30)	Adjusted local government balance (excluding IGT)
(21+36-42)/(52-44-46)	Adjusted subnational government balance (excluding IGT)
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing)	
(49+42+47)/(41-43-45-47)	Adjusted CCG balance (excluding IGT and intergovernmental net borrowing)
(21-18-19)/(11-15+19)	Adjusted RG balance (excluding IGT and intergovernmental net borrowing)
(36-33-34)/(26-30+34)	Adjusted LG balance (excluding IGT and intergovernmental net borrowing)
(21+36-42-47)/(52-44-46+47)	Adjusted SNG balance (excluding IGT and intergovernmental net borrowing)
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total subnational government expenditure	
42/(52-44-46)	CVI 1 (IGT share in subnational government expenditure)
(43-44)/(52-44)	CVI 1.Cur (Current IGT share in subnational government expenditure)
(45-46)/(52-46)	CVI 1.Cap (Capital IGT share in subnational government expenditure)
(42+47)/(52-44-46)	CVI 2 (IGT and intergovernmental net borrowing share in SNG expenditure)
1 - (13+28-42-47)/(52-44-46)	CVI 3 (Uncovered subnational government expenditure)

PART 3: COMMON ABBREVIATIONS:	
Abbreviation	**Meaning**
CCG	Consolidated central government
IGNB	Intergovernmental net borrowing
IGT	Intergovernmental transfers
LG	Local government (municipalities, counties, and districts)
RG	Regional government (states, regions, provinces, territories)
SNG	Subnational government (Consolidated sum of regional and local governments)

APPENDIX TABLE A.2: MEASURES OF VERTICAL FISCAL IMBALANCE, AUSTRALIA

AUSTRALIA	YEAR (Fiscal Year Ending June 30)														
Measures of VFI	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-2.58	-0.75	-1.52	-7.08	-2.28	-13.73	-16.41	-11.27	-12.28	-11.51	-6.31	-2.82	-1.39	-9.12	-13.67
Regional government balance			-12.31	-10.13	-9.88	-12.88	-5.33	-7.57	-7.16	-5.68	-5.88	-5.35	-4.05	-4.20	-3.84
Local government balance			-16.18	-14.23	-17.14	-17.18	-8.24	-6.05	-5.27	-7.46	-8.99	-7.16	-5.86	-1.98	1.78
Subnational government (RG and LG) balance			-12.89	-10.74	-10.90	-13.46	-5.70	-7.39	-6.93	-5.90	-6.27	-5.58	-4.28	-3.89	-3.07
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	24.65	35.80	32.91	26.64	34.53	20.73	22.04	28.40	28.37	31.08	39.28	43.32	42.99	31.02	24.70
Adjusted RG balance (excluding IGT)			-57.65	-55.57	-56.17	-61.20	-59.36	-58.91	-59.16	-58.63	-57.49	-57.12	-55.67	-56.14	-56.27
Adjusted LG balance (excluding IGT)			-28.35	-29.17	-28.71	-36.00	-29.85	-24.06	-25.60	-27.15	-27.70	-26.98	-27.11	-21.29	-21.18
Adjusted SNG balance (excluding IGT)			-51.98	-50.33	-51.25	-56.44	-54.96	-53.92	-53.99	-53.72	-53.91	-52.25	-50.54	-49.68	-50.16
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	40.97	48.62	45.44	38.71	46.55	33.28	33.96	40.00	37.41	38.11	44.84	48.77	47.55	36.02	27.83
Adjusted RG balance (excluding IGT and IGNB)			-57.63	-55.54	-56.13	-61.13	-59.30	-58.86	-59.13	-58.56	-57.53	-57.08	-55.64	-56.10	-56.24
Adjusted LG balance (excluding IGT and IGNB)			-28.35	-29.17	-28.52	-35.92	-29.77	-23.94	-25.53	-27.10	-27.46	-26.88	-26.99	-21.43	-21.19
Adjusted SNG balance (excluding IGT and IGNB)			-56.20	-54.63	-55.19	-60.45	-58.87	-57.58	-56.87	-55.95	-55.58	-53.91	-52.06	-51.53	-51.42
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)			0.3909	0.3959	0.4035	0.4299	0.4925	0.4654	0.4706	0.4782	0.4764	0.4668	0.4626	0.4579	0.4708
CVI 1.Cur (Current IGT share in SNG expenditure)			0.2886	0.2953	0.2978	0.3128	0.3829	0.3713	0.3889	0.4035	0.4063	0.4016	0.4008	0.3919	0.3975
CVI 1.Cap (Capital IGT share in SNG expenditure)			0.1023	0.1006	0.1057	0.1170	0.1097	0.0940	0.0817	0.0747	0.0701	0.0652	0.0618	0.0661	0.0734
CVI 2 (IGT and IGNB share in SNG expenditure)			0.4872	0.4908	0.4914	0.5312	0.5878	0.5515	0.5374	0.5288	0.5140	0.5027	0.4943	0.4960	0.4967
CVI 3 (Uncovered SNG expenditure)			0.6161	0.5982	0.6004	0.6657	0.6448	0.6254	0.6067	0.5878	0.5766	0.5585	0.5372	0.5348	0.5275

(APPENDIX TABLE A.2 CONTINUED)

AUSTRALIA	YEAR (Fiscal Year Ending June 30)														
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-10.29	-7.92	-3.48	3.00	7.47	8.68	1.97	-8.98	-12.82	-11.54	-9.25	-3.73	1.56	13.02	6.06
Regional government balance	-4.57	-4.91	-6.62	-2.87	-1.17	-2.85	-2.27	-4.05	-1.93	2.27	2.23	13.91	9.55	8.15	-2.48
Local government balance	1.12	0.69	0.31	0.89	2.19	-4.46	-2.93	0.19	-0.60	3.09	3.25	5.43	-0.07	-0.29	1.04
Subnational government (RG and LG) balance	-3.78	-4.14	-5.69	-2.37	-0.73	-3.07	-2.36	-3.51	-1.76	2.38	2.36	12.82	8.32	7.11	-2.03
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	28.22	30.19	36.22	45.61	50.38	53.48	43.86	26.66	22.52	21.99	23.73	31.75	39.31	58.36	
Adjusted RG balance (excluding IGT)	-55.87	-54.51	-54.63	-49.18	-43.84	-44.91	-44.72	-44.82	-43.97	-38.74	-37.77	-29.15	-30.59	-29.93	
Adjusted LG balance (excluding IGT)	-21.01	-19.42	-18.70	-18.66	-16.13	-19.24	-17.43	-15.68	-19.20	-13.26	-12.42	-10.89	-15.78	-16.08	
Adjusted SNG balance (excluding IGT)	-50.16	-48.92	-49.10	-44.47	-39.67	-41.44	-41.47	-41.44	-40.88	-35.88	-35.14	-27.69	-29.40	-28.26	
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	30.50	31.97	37.30	45.20	50.05	51.81	39.50	22.79	18.60	19.57	21.07	25.47	33.57	54.89	
Adjusted RG balance (excluding IGT and IGNB)	-55.94	-54.47	-54.62	-49.18	-43.82	-44.91	-44.72	-44.83	-43.99	-38.75	-37.78	-29.17	-30.60	-29.93	
Adjusted LG balance (excluding IGT and IGNB)	-21.05	-19.62	-18.84	-18.80	-16.26	-19.31	-17.47	-15.80	-19.27	-13.26	-13.63	-16.16	-17.51	-17.64	
Adjusted SNG balance (excluding IGT and IGNB)	-51.08	-49.66	-49.52	-44.31	-39.54	-40.83	-39.68	-39.59	-38.94	-34.55	-33.64	-23.48	-26.18	-26.81	
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.4637	0.4478	0.4341	0.4210	0.3894	0.3837	0.3912	0.3793	0.3912	0.3826	0.3750	0.4051	0.3772	0.3537	
CVI 1.Cur (Current IGT share in SNG expenditure)	0.3895	0.3790	0.3717	0.3672	0.3403	0.3325	0.3318	0.3319	0.3282	0.3380	0.3403	0.3700	0.3451	0.3299	
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0742	0.0688	0.0623	0.0538	0.0491	0.0512	0.0593	0.0474	0.0630	0.0446	0.0347	0.0351	0.0321	0.0237	
CVI 2 (IGT and IGNB share in SNG expenditure)	0.4826	0.4624	0.4423	0.4181	0.3873	0.3735	0.3614	0.3488	0.3593	0.3622	0.3523	0.3501	0.3335	0.3339	
CVI 3 (Uncovered SNG expenditure)	0.5205	0.5038	0.4992	0.4419	0.3946	0.4042	0.3850	0.3839	0.3769	0.3384	0.3288	0.2219	0.2503	0.2628	

APPENDIX TABLE A.3: MEASURES OF VERTICAL FISCAL IMBALANCE, AUSTRIA

AUSTRIA	YEAR (Fiscal Year Ending December 31)											
Measures of VFI	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)												
Consolidated central government balance	-5.62	-5.00	-11.37	-13.04	-10.61	-10.73	-9.99	-8.80	-7.79	-12.05	-14.66	-11.29
Regional government balance	3.00	2.92	-1.03	-1.33	-0.20	-3.39	-4.43	-2.78	-2.02	-2.12	-2.26	-0.59
Local government balance	-7.95	-11.89	-10.16	-12.70	-9.76	-10.30	-7.77	-5.69	-6.16	-5.74	-3.38	-1.61
Subnational government (RG and LG) balance	-3.31	-5.67	-6.25	-7.79	-5.60	-7.24	-6.26	-4.38	-4.30	-4.08	-2.86	-1.13
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)												
Adjusted CCG balance (excluding IGT)	5.16	6.32	-1.30	-3.38	-0.90	-0.89	-0.28	1.03	1.84	-2.72	-5.73	-2.09
Adjusted RG balance (excluding IGT)	-38.20	-37.93	-40.62	-40.37	-39.33	-41.45	-42.11	-41.62	-40.53	-41.45	-41.70	-39.32
Adjusted LG balance (excluding IGT)	-17.62	-21.02	-19.06	-21.55	-19.51	-21.08	-18.89	-14.71	-14.83	-14.88	-11.69	-10.31
Adjusted SNG balance (excluding IGT)	-24.21	-26.09	-26.90	-27.93	-25.65	-28.08	-27.19	-25.48	-24.72	-25.36	-24.67	-22.80
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)												
Adjusted CCG balance (excluding IGT and IGNB)	5.16	6.39	-1.29	-3.38	-0.76	-0.77	-0.06	1.05	1.80	-2.72	-5.73	-2.06
Adjusted RG balance (excluding IGT and IGNB)	-38.02	-37.03	-40.46	-40.21	-39.01	-41.26	-42.00	-41.53	-40.71	-41.33	-41.47	-39.01
Adjusted LG balance (excluding IGT and IGNB)	-17.62	-21.02	-19.06	-21.55	-19.51	-21.08	-18.89	-14.67	-14.88	-12.81	-9.76	-8.10
Adjusted SNG balance (excluding IGT and IGNB)	-24.21	-26.17	-26.92	-27.93	-25.84	-28.25	-27.50	-25.50	-24.66	-25.36	-24.67	-22.84
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure												
CVI 1 (IGT share in SNG expenditure)	0.2088	0.2039	0.2061	0.2009	0.2001	0.2078	0.2086	0.2104	0.2036	0.2123	0.2178	0.2165
CVI 1.Cur (Current IGT share in SNG expenditure)	0.1868	0.1826	0.1853	0.1799	0.1841	0.1916	0.1919	0.1965	0.1915	0.1948	0.1974	0.1976
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0216	0.0209	0.0204	0.0206	0.0155	0.0156	0.0163	0.0131	0.0109	0.0169	0.0198	0.0183
CVI 2 (IGT and IGNB share in SNG expenditure)	0.2088	0.2050	0.2064	0.2009	0.2027	0.2101	0.2129	0.2107	0.2029	0.2123	0.2177	0.2171
CVI 3 (Uncovered SNG expenditure)	0.2374	0.2554	0.2627	0.2733	0.2522	0.2744	0.2656	0.2420	0.2316	0.2420	0.2345	0.2171

(APPENDIX TABLE A.3 CONTINUED)

AUSTRIA	YEAR (Fiscal Year Ending December 31)												
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)													
Consolidated central government balance	-11.73	-14.46	-13.62	-12.32	-9.70	-11.39	-11.56	-9.13	-12.06	-13.59	-12.21	-9.82	-6.60
Regional government balance	-0.17	2.04	-0.18	2.73	0.80	3.14	1.68	1.05	-2.17	-1.53	-5.30	-0.56	1.56
Local government balance	-0.34	-0.36	-1.21	1.36	2.20	0.40	-0.89	-0.29	-5.25	-3.67	-4.87	0.12	1.46
Subnational government (RG and LG) balance	-0.26	0.76	-0.73	2.01	1.55	1.67	0.29	0.33	-3.83	-2.68	-5.07	-0.19	1.51
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)													
Adjusted CCG balance (excluding IGT)	-4.80	-7.65	-6.72	-2.30	0.13	-1.81	-1.80	1.25	-2.31	-4.24	-5.80	-2.60	1.73
Adjusted RG balance (excluding IGT)	-27.83	-26.16	-28.09	-37.02	-37.47	-35.20	-36.38	-38.29	-40.76	-39.51	-36.11	-33.57	-44.26
Adjusted LG balance (excluding IGT)	-7.68	-8.66	-9.90	-10.40	-9.24	-10.13	-8.71	-9.64	-13.75	-11.55	-9.95	-6.23	-6.69
Adjusted SNG balance (excluding IGT)	-16.71	-16.51	-17.60	-21.88	-20.63	-20.66	-21.89	-21.97	-25.47	-24.04	-20.44	-17.10	-16.73
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)													
Adjusted CCG balance (excluding IGT and IGNB)	-4.79	-7.65	-6.72	-2.30	0.13	-1.81	-1.80	1.25	-2.31	-4.24	-5.80	-2.60	1.73
Adjusted RG balance (excluding IGT and IGNB)	-27.54	-25.98	-27.88	-36.78	-37.33	-34.94	-36.19	-38.09	-40.53	-39.30	-35.90	-33.40	-44.05
Adjusted LG balance (excluding IGT and IGNB)	-5.81	-7.44	-9.00	-8.88	-8.50	-8.35	-7.24	-8.15	-12.90	-11.07	-8.59	-6.46	-6.69
Adjusted SNG balance (excluding IGT and IGNB)	-16.72	-16.52	-17.60	-21.87	-20.63	-20.66	-21.88	-21.97	-25.47	-24.04	-20.44	-17.10	-16.73
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure													
CVI 1 (IGT share in SNG expenditure)	0.1645	0.1729	0.1686	0.2391	0.2220	0.2234	0.2218	0.2230	0.2162	0.2134	0.1521	0.1691	0.1824
CVI 1.Cur (Current IGT share in SNG expenditure)	0.1435	0.1489	0.1471	0.1608	0.1457	0.1482	0.1455	0.1485	0.1435	0.1430	0.1162	0.1320	0.1498
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0204	0.0233	0.0209	0.0771	0.0753	0.0745	0.0755	0.0739	0.0721	0.0698	0.0347	0.0362	0.0325
CVI 2 (IGT and IGNB share in SNG expenditure)	0.1645	0.1729	0.1686	0.2390	0.2220	0.2234	0.2218	0.2230	0.2162	0.2133	0.1521	0.1690	0.1824
CVI 3 (Uncovered SNG expenditure)	0.1553	0.1529	0.1664	0.2072	0.1946	0.1985	0.2088	0.2126	0.2477	0.2330	0.1920	0.1651	0.1749

APPENDIX TABLE A.4: MEASURES OF VERTICAL FISCAL IMBALANCE, BELGIUM

BELGIUM	YEAR (Fiscal Year Ending December 31)														
Measures of VFI	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-4.50	-7.40	-10.88	-8.68	-5.63	-10.51	-12.22	-12.45	-13.86	-15.05	-15.00	-21.85	-19.47	-21.71	-22.59
Regional government balance															
Local government balance									-12.01	-13.10	-20.23	-22.21	-19.47	-13.66	-5.90
Subnational government (RG and LG) balance									-12.01	-13.10	-20.23	-22.21	-19.47	-13.66	-5.90
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	3.53	0.39	-3.29	-1.11	2.12	-3.21	-4.85	-5.00	-6.63	-8.26	-7.73	-15.61	-13.18	-15.41	-16.73
Adjusted RG balance (excluding IGT)															
Adjusted LG balance (excluding IGT)									-65.91	-66.20	-71.08	-71.78	-68.33	-67.20	-61.51
Adjusted SNG balance (excluding IGT)									-63.49	-61.85	-69.35	-71.80	-68.29	-67.10	-60.25
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	3.41	0.24	-3.36	-1.25	1.93	-3.21	-4.84	-4.99	-6.63	-8.26	-7.73	-15.61	-12.95	-15.38	-15.03
Adjusted RG balance (excluding IGT and IGNB)															
Adjusted LG balance (excluding IGT and IGNB)									-65.91	-66.20	-71.08	-71.78	-68.33	-67.20	-61.51
Adjusted SNG balance (excluding IGT and IGNB)									-63.47	-61.85	-69.35	-71.80	-68.80	-67.18	-65.23
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)									0.5141	0.4868	0.4903	0.4951	0.4874	0.5339	0.5434
CVI 1.Cur (Current IGT share in SNG expenditure)									0.4632	0.4422	0.4362	0.4334	0.4279	0.4633	0.4904
CVI 1.Cap (Capital IGT share in SNG expenditure)									0.0499	0.0437	0.0536	0.0613	0.0589	0.0700	0.0526
CVI 2 (IGT and IGNB share in SNG expenditure)									0.5136	0.4868	0.4903	0.4951	0.5038	0.5363	0.6868
CVI 3 (Uncovered SNG expenditure)									0.6287	0.6129	0.6893	0.7144	0.6951	0.6695	0.7441

(APPENDIX TABLE A.4 CONTINUED)

BELGIUM	YEAR (Fiscal Year Ending December 31)													
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)														
Consolidated central government balance	-19.61	-17.94	-14.55	-12.88	-13.22	-11.45	-12.36	-13.56	-12.11	-8.53	-6.75	-5.39	-4.12	-3.90
Regional government balance														
Local government balance	0.87	2.47	-1.35	-4.44	-2.82	-5.87	2.46	1.35	-1.19	1.17	7.25	4.37	2.30	1.26
Subnational government (RG and LG) balance	0.87	2.47	-1.35	-4.44	-2.82	-5.87	2.46	1.35	-1.19	1.17	7.25	4.37	2.30	1.26
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)														
Adjusted CCG balance (excluding IGT)	-13.99	-12.05	-8.71	-7.22	-6.81	-5.12	-6.44	-8.11	-6.30	-2.27	-0.40	1.47	2.69	2.84
Adjusted RG balance (excluding IGT)														
Adjusted LG balance (excluding IGT)	-58.83	-58.28	-57.72	-57.78	-57.38	-59.22	-53.38	-52.59	-58.88	-56.08	-50.27	-51.18	-50.89	-51.95
Adjusted SNG balance (excluding IGT)	-51.44	-50.58	-50.55	-51.07	-59.80	-59.76	-49.56	-48.89	-52.32	-49.97	-43.47	-50.31	-50.88	-51.65
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)														
Adjusted CCG balance (excluding IGT and IGNB)	-13.02	-11.28	-7.57	-6.81	-6.20	-4.38	-6.11	-8.04	-6.04	-2.22	-1.81	1.49	2.70	2.84
Adjusted RG balance (excluding IGT and IGNB)														
Adjusted LG balance (excluding IGT and IGNB)	-58.83	-58.28	-57.72	-57.78	-57.38	-59.22	-53.38	-52.59	-58.88	-56.08	-50.27	-51.18	-50.89	-51.95
Adjusted SNG balance (excluding IGT and IGNB)	-55.14	-53.54	-54.60	-52.54	-61.73	-61.98	-50.88	-49.19	-53.31	-50.15	-36.74	-50.38	-50.89	-51.66
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure														
CVI 1 (IGT share in SNG expenditure)	0.5232	0.5307	0.4920	0.4661	0.5696	0.5387	0.5203	0.5026	0.5112	0.5114	0.5083	0.5469	0.5318	0.5291
CVI 1.Cur (Current IGT share in SNG expenditure)	0.4707	0.4835	0.4442	0.4147	0.5146	0.4879	0.4780	0.4640	0.4675	0.4639	0.4607	0.4980	0.4785	0.4787
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0522	0.0469	0.0474	0.0511	0.0546	0.0506	0.0421	0.0380	0.0435	0.0471	0.0467	0.0487	0.0532	0.0503
CVI 2 (IGT and IGNB share in SNG expenditure)	0.6057	0.5943	0.5811	0.4972	0.6201	0.5971	0.5471	0.5085	0.5325	0.5150	0.4019	0.5483	0.5320	0.5293
CVI 3 (Uncovered SNG expenditure)	0.5917	0.5646	0.5897	0.5374	0.6430	0.6526	0.5190	0.4835	0.5407	0.4988	0.3142	0.5039	0.5088	0.5165

APPENDIX TABLE A.5: MEASURES OF VERTICAL FISCAL IMBALANCE, CANADA

CANADA	YEAR (Fiscal Year Ending March 31)											
Measures of VFI	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)												
Consolidated central government balance		-16.98	-15.52	-14.31	-19.75	-22.30	-17.96	-15.73	-10.44	-22.13	-24.55	-25.29
Regional government balance	-3.80	-3.97	-10.96	-8.70	-5.62	-2.11	-1.50	-5.26	-8.85	-12.80	-9.46	-8.22
Local government balance	-7.97	-7.73	-9.72	-8.33	-6.46	-7.57	0.20	-3.30	-2.44	-2.63	-2.43	-1.11
Subnational government (RG and LG) balance	-5.17	-5.14	-10.58	-8.58	-5.89	-3.83	-0.99	-4.68	-7.01	-9.93	-7.49	-6.26
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)												
Adjusted CCG balance (excluding IGT)		3.75	4.38	9.61	1.34	-1.91	3.78	4.25	9.43	-5.89	-7.61	-7.10
Adjusted RG balance (excluding IGT)	-7.57	-9.01	-17.53	-15.59	-9.32	-4.94	-3.78	-9.46	-12.49	-15.74	-13.05	-11.83
Adjusted LG balance (excluding IGT)					-52.61	-52.28	-49.65	-49.19	-47.98	-47.87	-49.43	-47.40
Adjusted SNG balance (excluding IGT)		-20.78	-25.19	-24.40	-20.62	-18.89	-16.07	-18.51	-20.11	-22.83	-21.44	-22.14
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)												
Adjusted CCG balance (excluding IGT and IGNB)		9.84	9.57	15.00	5.81	2.19	8.01	7.74	13.55	-2.96	-4.98	-4.84
Adjusted RG balance (excluding IGT and IGNB)	-6.64	-7.57	-16.25	-14.06			-3.67	-8.48	-11.07	-14.33	-12.66	-11.28
Adjusted LG balance (excluding IGT and IGNB)												
Adjusted SNG balance (excluding IGT and IGNB)		-23.44	-27.33	-26.35	-22.45	-20.72	-17.89	-20.02	-21.78	-24.24	-22.77	-23.33
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure												
CVI 1 (IGT share in SNG expenditure)		0.1564	0.1462	0.1582	0.1473	0.1506	0.1507	0.1383	0.1310	0.1290	0.1395	0.1588
CVI 1.Cur (Current IGT share in SNG expenditure)		0.1564	0.1462	0.1582	0.1473	0.1506	0.1507	0.1383	0.1310	0.1290	0.1395	0.1588
CVI 1.Cap (Capital IGT share in SNG expenditure)												
CVI 2 (IGT and IGNB share in SNG expenditure)		0.1911	0.1756	0.1847	0.1710	0.1737	0.1730	0.1572	0.1524	0.1477	0.1567	0.1743
CVI 3 (Uncovered SNG expenditure)		0.2425	0.2814	0.2705	0.2299	0.2120	0.1829	0.2040	0.2225	0.2470	0.2316	0.2369

(APPENDIX TABLE A.5 CONTINUED)

CANADA	YEAR (Fiscal Year Ending March 31)												
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)													
Consolidated central government balance	-16.79	-11.73	-10.75	-15.79	-15.30	-18.00	-20.14	-21.85	-22.25	-18.80	-15.01	-8.09	1.97
Regional government balance	-6.62	-10.27	-4.83	-4.77	-3.60	-6.45	-13.71	-14.65	-12.36	-9.12	-5.70	-4.37	-2.15
Local government balance	-2.25	-2.86	-1.75	-1.07	-0.55	-2.34	-2.80	-1.59	-1.24	-0.45	0.37	0.12	-0.27
Subnational government (RG and LG) balance	-5.41	-8.21	-3.97	-3.79	-2.78	-5.33	-10.74	-11.08	-9.33	-6.76	-4.03	-3.15	-1.64
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)													
Adjusted CCG balance (excluding IGT)	0.95	7.98	8.75	1.29	0.92	-3.03	-5.60	-7.02	-8.08	-3.14	1.06	7.17	16.60
Adjusted RG balance (excluding IGT)	-9.49	-14.57	-9.08	-8.51	-7.51	-9.88	-16.75	-19.40	-15.35	-12.07	-8.10	-4.04	1.07
Adjusted LG balance (excluding IGT)	-47.70	-47.50	-46.99	-39.77	-38.57	-40.21	-41.92	-41.48	-40.67	-41.10	-40.54	-38.41	-37.24
Adjusted SNG balance (excluding IGT)	-19.53	-21.80	-17.34	-16.91	-15.49	-17.41	-22.57	-23.14	-20.83	-18.76	-15.65	-13.52	-10.40
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)													
Adjusted CCG balance (excluding IGT and IGNB)	3.14	8.98	9.55	1.26	1.02	-3.09	-5.67	-6.64	-7.98	-3.18	0.99	7.09	16.41
Adjusted RG balance (excluding IGT and IGNB)	-9.43												
Adjusted LG balance (excluding IGT and IGNB)													
Adjusted SNG balance (excluding IGT and IGNB)	-20.65	-22.24	-17.71	-16.90	-15.55	-17.38	-22.53	-23.34	-20.88	-18.74	-15.61	-13.48	-10.31
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure													
CVI 1 (IGT share in SNG expenditure)	0.1412	0.1359	0.1337	0.1312	0.1270	0.1206	0.1181	0.1204	0.1148	0.1198	0.1161	0.1036	0.0875
CVI 1.Cur (Current IGT share in SNG expenditure)	0.1412	0.1359	0.1337	0.1312	0.1270	0.1206	0.1181	0.1204	0.1148	0.1198	0.1161	0.1036	0.0875
CVI 1.Cap (Capital IGT share in SNG expenditure)													
CVI 2 (IGT and IGNB share in SNG expenditure)	0.1553	0.1415	0.1381	0.1310	0.1277	0.1203	0.1176	0.1230	0.1155	0.1196	0.1156	0.1031	0.0866
CVI 3 (Uncovered SNG expenditure)	0.2094	0.2235	0.1772	0.1670	0.1534	0.1716	0.2232	0.2322	0.2069	0.1853	0.1541	0.1327	0.1010

APPENDIX TABLE A.6: MEASURES OF VERTICAL FISCAL IMBALANCE, GERMANY

GERMANY	YEAR (Fiscal Year Ending December 31)														
Measures of VFI	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	4.36	3.53	2.88	5.41	-2.41	-11.98	-9.35	-7.20	-6.99	-6.82	-5.94	-7.35	-6.03	-6.25	-5.80
Regional government balance	-4.08	-6.37	-1.47	-1.74	-6.91	-13.83	-10.01	-5.20	-6.92	-7.90	-11.23	-12.87	-11.23	-9.33	-8.04
Local government balance	-10.15	-13.44	-9.34	-5.94	-8.77	-9.19	-3.83	-1.27	-1.38	-4.09	-3.92	-6.71	-4.80	-0.89	0.73
Subnational government (RG and LG) balance	-6.67	-9.44	-4.85	-3.52	-7.69	-11.92	-7.51	-3.62	-4.69	-6.36	-8.23	-10.33	-8.60	-5.94	-4.53
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	11.96	11.59	11.39	13.47	5.71	-5.39	-2.70	-0.52	0.19	0.44	0.49	-1.35	-0.27	-0.75	-0.64
Adjusted RG balance (excluding IGT)					-4.65	-12.50	-8.13	-2.33	-2.94	-3.48	-7.13	-10.24	-8.59	-7.12	-5.03
Adjusted LG balance (excluding IGT)					-34.83	-35.34	-29.56	-26.63	-28.04	-31.28	-30.98	-32.58	-30.15	-25.06	-23.85
Adjusted SNG balance (excluding IGT)	-15.00	-18.01	-13.90	-11.82	-16.84	-20.99	-16.66	-12.71	-14.16	-15.69	-16.59	-18.55	-16.67	-13.84	-12.15
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	11.96	11.56	11.48	13.72	5.95	-4.34	-2.33	-0.40	0.27	0.58	0.69	-1.09	-0.05	-0.53	-0.42
Adjusted RG balance (excluding IGT and IGNB)					-4.92	-12.78	-8.40	-2.44	-3.03	-3.70	-7.38	-10.61	-8.93	-7.48	-5.51
Adjusted LG balance (excluding IGT and IGNB)					-35.17	-35.61	-30.13	-26.73	-28.10	-31.38	-30.57	-32.02	-29.67	-24.44	-23.17
Adjusted SNG balance (excluding IGT and IGNB)	-15.00	-17.99	-13.98	-12.03	-17.04	-22.01	-17.04	-12.84	-14.25	-15.82	-16.79	-18.81	-16.90	-14.10	-12.42
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.0824	0.0846	0.0900	0.0827	0.0909	0.0897	0.0908	0.0905	0.0943	0.0927	0.0832	0.0817	0.0802	0.0787	0.0759
CVI 1.Cur (Current IGT share in SNG expenditure)	0.0510	0.0522	0.0510	0.0439	0.0560	0.0574	0.0566	0.0606	0.0651	0.0648	0.0586	0.0598	0.0597	0.0588	0.0555
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0310	0.0321	0.0385	0.0385	0.0346	0.0321	0.0339	0.0296	0.0289	0.0277	0.0244	0.0218	0.0204	0.0198	0.0203
CVI 2 (IGT and IGNB share in SNG expenditure)	0.0825	0.0843	0.0908	0.0851	0.0934	0.1027	0.0954	0.0920	0.0953	0.0943	0.0856	0.0849	0.0831	0.0817	0.0790
CVI 3 (Uncovered SNG expenditure)	0.1362	0.1682	0.1296	0.1113	0.1626	0.2149	0.1629	0.1177	0.1329	0.1497	0.1623	0.1837	0.1643	0.1361	0.1193

(APPENDIX TABLE A.6 CONTINUED)

GERMANY	YEAR (Fiscal Year Ending December 31)														
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-3.50	-2.98	-3.52	-5.54	-0.54	-5.45	-7.14	-6.93	-7.19	-3.87	-5.19	-6.10	-4.04	-2.89	
Regional government balance	-6.85	-7.11	-7.48	-6.63	-2.56	-6.54	-7.92	-8.66	-9.54	-9.55	-9.34	-9.53	-8.05	-6.04	-2.06
Local government balance	0.45	-1.01	-1.46	0.35	0.87	-2.01	-1.78	-5.38	-4.08	-3.20	-4.23	-2.65	-2.37	1.75	0.83
Subnational government (RG and LG) balance	-3.90	-4.64	-5.04	-3.80	-1.16	-4.67	-5.40	-7.29	-7.28	-6.92	-7.24	-6.78	-5.79	-3.17	-0.99
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	1.88	2.39	1.96	-0.59	5.50	1.22	3.82	1.65	0.70	3.51	-0.21	-0.64	1.35	2.52	
Adjusted RG balance (excluding IGT)	-2.55	-2.93	-3.52	-2.82	1.19	-2.94	-6.67	-11.92	-10.47	-9.10	-2.60	-4.79	-2.66	-0.88	4.89
Adjusted LG balance (excluding IGT)	-24.23	-25.58	-26.36	-24.21	-23.63	-25.96	-25.06	-35.10	-34.00	-31.59	-32.35	-31.12	-30.56	-29.92	-30.64
Adjusted SNG balance (excluding IGT)	-11.52	-12.05	-12.65	-10.98	-9.26	-14.22	-22.07	-19.27	-18.24	-17.33	-14.56	-14.96	-13.91	-11.93	
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	2.17	2.56	1.96	-0.59	5.76	1.23	3.72	1.69	0.69	3.50	-0.23	-0.66	1.35	2.51	
Adjusted RG balance (excluding IGT and IGNB)	-2.55	-2.93	-3.52	-2.82	1.19	-2.94	-6.67								
Adjusted LG balance (excluding IGT and IGNB)	-23.81	-25.39	-26.08	-24.08	-23.84										
Adjusted SNG balance (excluding IGT and IGNB)	-11.87	-12.25	-12.65	-10.98	-9.56	-14.22	-21.96	-19.32	-18.22	-17.32	-14.54	-14.94	-13.91	-11.92	
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.0760	0.0739	0.0758	0.0716	0.0809	0.0953	0.1664	0.1195	0.1092	0.1038	0.0729	0.0814	0.0808	0.0874	
CVI 1.Cur (Current IGT share in SNG expenditure)	0.0553	0.0546	0.0549	0.0549	0.0592	0.0940	0.1239	0.0918	0.0845	0.0813	0.0417	0.0518	0.0555	0.0596	
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0205	0.0193	0.0208	0.0166	0.0216	0.0013	0.0424	0.0276	0.0247	0.0224	0.0310	0.0295	0.0252	0.0275	
CVI 2 (IGT and IGNB share in SNG expenditure)	0.0799	0.0762	0.0758	0.0716	0.0842	0.0953	0.1651	0.1200	0.1091	0.1036	0.0726	0.0811	0.0809	0.0873	
CVI 3 (Uncovered SNG expenditure)	0.1143	0.1179	0.1221	0.1049	0.0906	0.1386	0.2058	0.1798	0.1758	0.1689	0.1395	0.1436	0.1330	0.1123	

APPENDIX TABLE A.7: MEASURES OF VERTICAL FISCAL IMBALANCE, SPAIN

SPAIN	YEAR (Fiscal Year Ending December 31)														
Measures of VFI	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-3.39	-7.71	-2.66	-1.23	-5.52	-7.88	-4.18	-8.77	-9.04	-12.75	-14.77	-17.44	-17.92	-19.32	-23.90
Regional government balance											10.83	-8.47	-6.23	-11.98	-9.82
Local government balance	4.12	-3.71	-3.74	-5.78	-12.41	-14.75	-23.93	-9.99	-5.58	-5.30	-8.62	-2.92	-8.97	2.45	1.40
Subnational government (RG and LG) balance	4.12	-3.71	-3.74	-5.78	-12.41	-14.75	-23.93	-9.99	-5.58	-5.30	-8.13	-3.67	-8.32	-2.36	-3.14
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	2.07	-2.84	1.92	3.19	-1.23	-3.96	-1.12	-5.98	-6.80	-8.99	-12.04	-15.79	-15.94	-17.13	-22.31
Adjusted RG balance (excluding IGT)												-72.29	-46.61	-65.59	-58.50
Adjusted LG balance (excluding IGT)	-46.29	-51.10	-48.24	-49.04	-54.49	-54.23	-49.63	-33.68	-27.58	-28.77	-33.98	2.66	-5.97	4.68	6.52
Adjusted SNG balance (excluding IGT)	-46.29	-51.10	-48.24	-49.10	-54.53	-54.33	-49.61	-36.99	-29.80	-59.14	-37.11	-19.00	-13.66	-15.92	-14.29
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Omitted due to incomplete data															
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.5048	0.4734	0.4444	0.4325	0.4197	0.3941	0.2546	0.2681	0.2410	0.5369	0.2888	0.1512	0.1401	0.1349	0.1098
CVI 1.Cur (Current IGT share in SNG expenditure)	0.4952	0.4608	0.4332	0.4205	0.4108	0.3828	0.2304	0.1928	0.2191	0.5055	0.2225	0.0809	0.0874	0.0759	0.0485
CVI 1.Cap (Capital IGT share **in SNG expenditure)**	0.0094	0.0124	0.0111	0.0118	0.0089	0.0111	0.0240	0.0739	0.0214	0.0299	0.0655	0.0664	0.0502	0.0574	0.0583
CVI 2 (IGT and IGNB share in SNG expenditure)	**Full data were not available**														
CVI 3 (Uncovered SNG expenditure)															

(APPENDIX TABLE A.7 CONTINUED)

SPAIN	YEAR (Fiscal Year Ending December 31)												
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)													
Consolidated central government balance	-20.20	-13.42	-11.07	-10.53	-6.57	-9.43	-10.29	-11.41	-17.73	-18.61	-16.40	-15.32	-8.97
Regional government balance	-5.53	-12.50	-2.37	-0.26	-7.47	-9.21	-13.42	-9.67	-12.11	-9.97	-8.29	-7.85	-5.21
Local government balance	-6.42	-4.03	-5.24	-2.49	-5.13	-5.83	-8.11	-7.85	-5.56	-3.35	-3.48	0.29	2.79
Subnational government (RG and LG) balance	-6.02	-8.05	-3.82	-1.43	-6.32	-7.72	-11.24	-8.94	-9.60	-7.45	-6.43	-4.79	-2.23
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)													
Adjusted CCG balance (excluding IGT)	-12.52	-1.65	1.61	1.29	6.47	11.63	11.38	12.57	2.79	2.28	6.34	8.77	16.73
Adjusted RG balance (excluding IGT)	-65.13	-79.28	-74.40	-68.06	-69.88	-75.29	-78.74	-80.18	-80.56	-78.68	-79.06	-78.28	-69.32
Adjusted LG balance (excluding IGT)	-23.45	-30.28	-25.19	-24.79	-24.83	-27.86	-29.58	-30.48	-28.77	-27.79	-27.97	-23.81	-18.25
Adjusted SNG balance (excluding IGT)	-40.60	-50.95	-47.48	-40.35	-44.37	-53.35	-55.70	-58.01	-57.89	-56.40	-56.46	-54.64	-48.23
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)													
Adjusted CCG balance (excluding IGT and IGNB)	-12.52	-1.65	1.61	1.89	6.47	11.61	11.41	12.55	2.77	2.26	6.33	8.75	16.71
Adjusted RG balance (excluding IGT and IGNB)													
Adjusted LG balance (excluding IGT and IGNB)													
Adjusted SNG balance (excluding IGT and IGNB)	-40.61	-50.95	-47.48	-41.35	-44.37	-53.33	-55.72	-58.00	-57.88	-56.39	-56.44	-54.63	-48.22
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure													
CVI 1 (IGT share in SNG expenditure)	0.3438	0.4276	0.4355	0.3886	0.3777	0.4538	0.4418	0.4889	0.4807	0.4881	0.4988	0.4976	0.4593
CVI 1.Cur (Current IGT share in SNG expenditure)	0.2600	0.3353	0.3680	0.3404	0.3329	0.4078	0.3944	0.4573	0.4498	0.4678	0.4778	0.4775	0.4355
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0809	0.0907	0.0654	0.0448	0.0405	0.0445	0.0461	0.0307	0.0301	0.0198	0.0204	0.0196	0.0227
CVI 2 (IGT and IGNB share in SNG expenditure)	0.3439	0.4276	0.4355	0.4057	0.3777	0.4534	0.4422	0.4886	0.4804	0.4878	0.4986	0.4973	0.4591
CVI 3 (Uncovered SNG expenditure)	0.3722	0.4917	0.4470	0.3792	0.3996	0.5010	0.5326	0.5594	0.5558	0.5455	0.5421	0.5265	0.4502

APPENDIX TABLE A.8: MEASURES OF VERTICAL FISCAL IMBALANCE, SWITZERLAND

SWITZERLAND	YEAR (Fiscal Year Ending June 30)														
Measures of VFI	**1970**	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	3.60	1.83	6.31	2.78	4.04	-2.42	-3.18	-2.47	-0.42	-3.27	-0.98	0.54	-0.29	-1.80	-0.44
Regional government balance	0.57	-7.25	-7.18	-3.33	-3.45	-3.33	-4.42	-1.68	-1.07	-0.38	-0.74	-1.45	-2.49	-2.74	-0.94
Local government balance	-6.21	-11.73	-12.92	-7.38	-7.80	-3.83	-1.11	2.29	3.59	3.15	2.78	0.66	-2.01	-1.56	4.20
Subnational government (RG and LG) balance	-2.27	-9.15	-9.59	-5.03	-5.30	-3.54	-3.05	-0.04	0.89	1.13	0.77	-0.54	-2.28	-2.23	1.27
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	23.05	21.52	29.34	19.05	21.11	11.52	12.17	10.30	11.60	8.31	10.70	11.62	10.32	8.30	9.49
Adjusted RG balance (excluding IGT)	-14.63	-22.25	-27.10	-21.15	-22.42	-21.47	-24.01	-19.87	-17.67	-16.72	-16.79	-15.92	-12.67	-12.07	-9.71
Adjusted LG balance (excluding IGT)	-19.03	-24.25	-25.05	-18.87	-17.62	-13.74	-11.46	-6.91	-6.75	-7.01	-7.02	-9.18	-11.53	-11.33	-5.37
Adjusted SNG balance (excluding IGT)	-15.24	-21.70	-22.74	-16.05	-16.63	-14.10	-15.32	-10.45	-8.87	-8.69	-8.81	-9.35	-11.00	-10.81	-7.23
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	25.54	23.15	31.49	23.20	24.81	13.26	13.35	9.63	13.28	7.72	10.64	12.41	10.42	9.51	10.36
Adjusted RG balance (excluding IGT and IGNB)	-14.63	-22.25	-27.10	-21.15	-22.42	-21.47	-24.01	-19.87	-17.67	-16.72	-16.79	-15.92	-12.67	-12.07	-9.71
Adjusted LG balance (excluding IGT and IGNB)	-19.03	-24.25	-25.05	-18.87	-17.62	-13.74	-11.46	-6.91	-6.75	-7.01	-7.02	-9.18	-11.53	-11.33	-5.37
Adjusted SNG balance (excluding IGT and IGNB)	-16.39	-22.36	-23.50	-17.96	-18.30	-15.05	-15.98	-10.02	-9.95	-8.28	-8.77	-9.85	-11.07	-11.61	-7.85
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.1292	0.1237	0.1297	0.1089	0.1120	0.1046	0.1216	0.1041	0.0979	0.0985	0.0960	0.0879	0.0865	0.0851	0.0854
CVI 1.Cur (Current IGT share in SNG expenditure)	0.0524	0.0501	0.0546	0.0399	0.0477	0.0369	0.0474	0.0448	0.0435	0.0445	0.0485	0.0429	0.0445	0.0439	0.0457
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0753	0.0721	0.0736	0.0673	0.0627	0.0657	0.0719	0.0576	0.0528	0.0525	0.0462	0.0438	0.0408	0.0401	0.0385
CVI 2 (IGT and IGNB share in SNG expenditure)	0.1430	0.1322	0.1395	0.1322	0.1324	0.1157	0.1295	0.0993	0.1099	0.0941	0.0956	0.0935	0.0873	0.0942	0.0921
CVI 3 (Uncovered SNG expenditure)	0.1454	0.2056	0.2175	0.1578	0.1616	0.1225	0.1287	0.0691	0.0700	0.0525	0.0584	0.0709	0.0814	0.0883	0.0482

(APPENDIX TABLE A.8 CONTINUED)

SWITZERLAND	YEAR (Fiscal Year Ending June 30)													
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)														
Consolidated central government balance							-3.79	-5.85	-10.02	-6.69	-3.31	-4.16	-4.46	1.92
Regional government balance						-4.48	-8.24	-8.54	-10.32	-7.08	-3.82	-4.06	-5.52	-1.81
Local government balance						-2.72	-6.47	-7.32	-3.23	-2.36	-2.19	-1.29	-1.50	-1.42
Subnational government (RG and LG) balance						-3.74	-7.50	-8.02	-7.37	-5.10	-3.12	-2.90	-3.88	-1.65
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)														
Adjusted CCG balance (excluding IGT)							5.60	2.33	-3.21	1.20	5.60	5.84	5.63	13.54
Adjusted RG balance (excluding IGT)						-19.26	-21.10	-22.87	-23.74	-21.23	-18.62	-21.55	-23.87	-18.87
Adjusted LG balance (excluding IGT)						-12.28	-16.32	-16.44	-12.07	-10.06	-9.04	-7.75	-7.13	-7.16
Adjusted SNG balance (excluding IGT)							-17.87	-17.85	-17.08	-14.99	-13.18	-14.37	-15.67	-12.97
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)														
Adjusted CCG balance (excluding IGT and IGNB)							7.15	3.05	-2.62	1.91	6.36	6.27	5.36	12.86
Adjusted RG balance (excluding IGT and IGNB)						-19.21	-21.07	-22.78	-23.69	-21.20	-18.58	-21.50	-23.86	-18.88
Adjusted LG balance (excluding IGT and IGNB)														
Adjusted SNG balance (excluding IGT and IGNB)							-18.96	-18.38	-17.57	-15.58	-13.80	-14.71	-15.45	-12.44
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure														
CVI 1 (IGT share in SNG expenditure)							0.0950	0.0889	0.0883	0.0928	0.0967	0.1108	0.1126	0.1109
CVI 1.Cur (Current IGT share in SNG expenditure)							0.0561	0.0561	0.0542	0.0577	0.0618	0.0791	0.0818	0.0799
CVI 1.Cap (Capital IGT share in SNG expenditure)							0.0349	0.0293	0.0306	0.0313	0.0310	0.0280	0.0270	0.0271
CVI 2 (IGT and IGNB share in SNG expenditure)							0.1085	0.0954	0.0944	0.0998	0.1039	0.1148	0.1100	0.1048
CVI 3 (Uncovered SNG expenditure)							0.0767	0.0680	0.0591	0.0364	0.0137	0.0145	0.0165	0.0000

APPENDIX TABLE A.9: MEASURES OF VERTICAL FISCAL IMBALANCE, UNITED STATES

UNITED STATES	YEAR (Fiscal Year Ending September 30)												
Measures of VFI	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)													
Consolidated central government balance	-8.13	-6.31	-1.60	-15.66	-19.39	-12.33	-12.39	-6.85	-12.24	-10.96	-16.00	-23.66	-19.88
Regional government balance	5.12	7.14	4.52	1.53	5.65	6.39	7.21	4.41	4.87	3.90	5.25	4.94	9.93
Local government balance	2.18	6.18	8.76	4.03	2.74	12.34	9.54	8.83	6.30	8.44	6.97	6.32	4.29
Subnational government (RG and LG) balance	3.64	6.67	6.61	2.78	4.19	9.28	8.34	6.52	5.54	6.01	6.07	5.60	7.25
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)													
Adjusted CCG balance (excluding IGT)	5.97	9.89	13.45	-3.34	-6.51	2.43	2.68	8.36	0.55	0.64	-6.96	-15.87	-11.60
Adjusted RG balance (excluding IGT)	22.64	25.82	26.52	20.00	21.52	22.77	23.92	22.60	20.76	18.65	25.22	24.06	28.59
Adjusted LG balance (excluding IGT)	-35.07	-35.70	-33.26	-37.00	-39.66	-34.21	-37.69	-39.61	-39.96	-37.34	-36.02	-34.42	-34.52
Adjusted SNG balance (excluding IGT)	-11.80	-10.81	-8.95	-13.17	-12.86	-9.12	-10.74	-11.59	-11.86	-10.44	-8.08	-8.08	-6.21
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)													
Adjusted CCG balance (excluding IGT and IGNB)	6.08	10.02	13.52	-3.27	-6.43	2.46	2.75	8.43	0.65	0.70	-6.95	-15.84	-11.47
Adjusted RG balance (excluding IGT and IGNB)	22.64	25.82	26.52	20.00	21.52	22.77	23.92	22.60	20.76	18.65	25.22	24.06	28.59
Adjusted LG balance (excluding IGT and IGNB)	-35.07	-35.70	-33.26	-37.00	-39.66	-34.21	-37.69	-39.61	-39.96	-37.34	-36.02	-34.42	-34.52
Adjusted SNG balance (excluding IGT and IGNB)	-11.89	-10.91	-9.00	-13.24	-12.94	-9.16	-10.80	-11.66	-11.96	-10.50	-8.09	-8.13	-6.39
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure													
CVI 1 (IGT share in SNG expenditure)	0.1544	0.1747	0.1556	0.1595	0.1705	0.1840	0.1908	0.1811	0.1740	0.1644	0.1415	0.1368	0.1346
CVI 1.Cur (Current IGT share in SNG expenditure)	0.1295	0.1517	0.1352	0.1393	0.1454	0.1567	0.1587	0.1505	0.1436	0.1382	0.1197	0.1145	0.1110
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0249	0.0230	0.0204	0.0201	0.0251	0.0273	0.0321	0.0306	0.0304	0.0263	0.0218	0.0223	0.0236
CVI 2 (IGT and IGNB share in SNG expenditure)	0.1554	0.1759	0.1562	0.1603	0.1714	0.1843	0.1915	0.1818	0.1751	0.1652	0.1416	0.1373	0.1365
CVI 3 (Uncovered SNG expenditure)	0.1190	0.1092	0.0901	0.1325	0.1295	0.0916	0.1081	0.1166	0.1197	0.1051	0.0809	0.0813	0.0641

(APPENDIX TABLE A.9 CONTINUED)

UNITED STATES	YEAR (Fiscal Year Ending September 30)														
Measures of VFI	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Statistics of Vertical Imbalance (Type 1): Measured by budget balances (including intergovernmental transfers), in percent (%)															
Consolidated central government balance	-21.13	-20.53	-13.95	-13.91	-12.08	-16.73	-19.02	-20.02	-17.03	-13.15	-9.75	-6.97	-1.28	4.08	6.89
Regional government balance	8.89	9.82	10.27	7.46	6.85	5.65	1.61	2.78	3.47	4.30	4.90	9.45	12.80	15.80	
Local government balance	6.45	5.24	3.52	4.42	3.81	2.85	0.73	2.57	2.48	2.46	1.42	2.08	2.73	2.91	
Subnational government (RG and LG) balance	7.75	7.66	7.08	6.04	5.43	4.34	1.20	2.68	3.02	3.47	3.34	6.11	8.22	9.93	
Statistics of Vertical Imbalance (Type 2): Measured by budget balances (excluding intergovernmental transfers), in percent (%)															
Adjusted CCG balance (excluding IGT)	-13.24	-12.00	-5.30	-5.11	-3.12	-8.10	-10.24	-10.00	-5.87	-0.61	3.55	6.67	13.13	20.11	24.38
Adjusted RG balance (excluding IGT)	28.39	29.55	29.93	26.62	26.44	22.98	14.88	14.16	14.09	13.24	12.46	19.69	24.65	28.71	
Adjusted LG balance (excluding IGT)	-33.45	-34.11	-33.64	-32.84	-34.03	-33.85	-35.69	-34.90	-35.63	-35.75	-36.02	-34.97	-33.80	-33.50	
Adjusted SNG balance (excluding IGT)	-5.58	-5.74	-4.80	-5.89	-6.28	-7.57	-11.34	-10.72	-10.87	-10.97	-11.14	-8.12	-5.72	-4.20	
Statistics of Vertical Imbalance (Type 3): Measured by budget balances (excluding intergovernmental transfers and intergovernmental borrowing), (%)															
Adjusted CCG balance (excluding IGT and IGNB)	-11.95	-11.98	-5.33	-5.15	-3.12	-8.11	-10.25	-10.01	-5.87	-0.59	3.56	6.67	13.14	20.12	24.39
Adjusted RG balance (excluding IGT and IGNB)	28.39	29.55	29.93	26.62	26.44	22.98	14.88	14.16	14.09	13.24	12.46	19.69	24.65	28.71	
Adjusted LG balance (excluding IGT and IGNB)	-33.45	-34.11	-33.64	-32.84	-34.03	-33.85	-35.69	-34.90	-35.63	-35.75	-36.02	-34.97	-33.80	-33.50	
Adjusted SNG balance (excluding IGT and IGNB)	-7.38	-5.77	-4.77	-5.85	-6.27	-7.56	-11.33	-10.70	-10.87	-10.98	-11.14	-8.13	-5.73	-4.20	
Coefficients of Vertical Imbalance: Measured by shares of net intergovernmental transfers and intergovernmental borrowing in total SNG expenditure															
CVI 1 (IGT share in SNG expenditure)	0.1332	0.1341	0.1188	0.1193	0.1171	0.1191	0.1254	0.1340	0.1389	0.1444	0.1448	0.1423	0.1394	0.1413	
CVI 1.Cur (Current IGT share in SNG expenditure)	0.1084	0.1104	0.0993	0.0999	0.0997	0.1027	0.1100	0.1190	0.1237	0.1274	0.1283	0.1252	0.1226	0.1255	
CVI 1.Cap (Capital IGT share in SNG expenditure)	0.0248	0.0237	0.0195	0.0194	0.0174	0.0164	0.0154	0.0150	0.0152	0.0170	0.0165	0.0171	0.0168	0.0157	
CVI 2 (IGT and IGNB share in SNG expenditure)	0.1527	0.1343	0.1185	0.1189	0.1171	0.1190	0.1254	0.1338	0.1389	0.1446	0.1449	0.1424	0.1395	0.1413	
CVI 3 (Uncovered SNG expenditure)	0.0753	0.0577	0.0477	0.0585	0.0626	0.0756	0.1133	0.1070	0.1087	0.1098	0.1114	0.0813	0.0573	0.0420	

APPENDIX TABLE A.10: SUMMARY TABLE ON MEASURES OF HORIZONTAL FISCAL IMBALANCE: SAMPLE-PERIOD DATA RANGES FOR EACH VARIABLE AND COUNTRY [(1),(4)]

#	Country	# of Regions (Terr. Excl.)[(2)]	Data (# of Obs.)[(3)]	Min/Max as % of average	Max-Min Ratio (MMR)	Unweighted Coeff. of Var., CV(u)	Weighted Coeff. of Var., CV(w)	Relative Mean Dev., R(w)	Theil index (T)
PER CAPITA REGIONAL (STATE, PROVINCIAL) GDP:									
2	Austria	9	1988-1997 (10)	60 – 150 (65-147)	2.26- 2.48 (2.27)	0.2311-0.2536 (0.2311)	0.2469-0.2694 (0.2469)	0.1971-0.2150 (0.1971)	0.0113 - 0.0146 (0.0123)
3	Belgium	3	1990-1995 (6)	80 – 162 (80-151)	1.89 - 2.02 (1.89)	0.2671-0.3021 (0.2671)	0.1962-0.2209 (0.1962)	0.1264-0.1322 (0.1313)	0.0078 - 0.0096 (0.0078)
4	Canada	13(10)	1961-1999 (39)	48 – 173 (69-168)	1.84 - 2.87 (2.44)	0.2011-0.3571 (0.2699)	0.1232-0.2330 (0.1434)	0.1078-0.1717 (0.1261)	0.0031 - 0.0111 (0.0046)
5	Germany	16(11)	1991-1995 (5)	29 – 198 (55-176)	3.23 – 6.94 (3.23)	0.3538-0.5208 (0.3538)	0.2496-0.3656 (0.2496)	0.1788-0.2627 (0.1788)	0.0141 - 0.0345 (0.0141)
6	Spain	18(17)	1981-1999 (19)	58 – 139 (63-135)	1.85 - 2.31 (215)	0.1760-0.2082 (0.2074)	0.1745-0.2316 (0.2308)	0.1548-0.2086 (0.2081)	0.0062 - 0.0112 (0.0112)
8	United States	51(50)	1977-1999 (23)	66 – 384 (66-315)	3.43 - 5.38 (4.78)	0.2926-0.4660 (0.3448)	0.1489-0.2109 (0.1654)	0.0980-0.1407 (0.1141)	0.0043 - 0.0079 (0.0053)
PER CAPITA REGIONAL (STATE, PROVINCIAL) PERSONAL INCOME:									
1	Australia	8(6)	1949-1991 (43)	77 – 133 (85-127)	1.19 - 1.53 (1.5)	0.0644-0.1371 (0.1288)	0.0154-0.0326 (0.0304)	0.0281-0.0770 (0.0770)	0.0002 - 0.0016 (0.0016)
4	Canada	13(10)	1926-1999 (74)	44 – 139 (73-139)	1.48 - 2.93 (1.90)	0.1227-0.3392 (0.1862)	0.0795-0.2702 (0.0911)	0.0713-0.2308 (0.0826)	0.0013 - 0.0177 (0.0019)
7	Switzerland	26	1980 - 1998 (19)	68 – 173 (73-165)	1.88 - 2.45 (2.26)	0.1720-0.2419 (0.2260)	0.1565-0.2087 (0.2087)	0.1306-0.1710 (0.1696)	0.0052 - 0.0089 (0.0089)
8	United States	51(50)	1929-2000 (72)	32 – 264 (71-137)	1.88 - 8.30 (1.94)	0.1440-0.4747 (0.1552)	0.1180-0.4165 (0.1317)	0.0918-0.3430 (0.1068)	0.0030 - 0.0376 (0.0038)
PER CAPITA REGIONAL (STATE, PROVINCIAL) GOVERNMENT OWN REVENUE:									
1	Australia	8(6)	1973-1991 (19)	76-113 (87-110)	1.20 - 1.46 (1.26)	0.0667-0.1228 (0.0715)	0.0162-0.0393 (0.0273)	0.0290-0.0881 (0.0689)	0.0012 - 0.0116 (0.0022)
4	Canada	13(10)	1961-2000 (40)	49 – 206 (49-118)	1.49-3.62 (2.42)	0.1376-0.4831 (0.2049)	0.0792-0.3626 (0.1084)	0.0465-0.2235 (0.0923)	0.0023-0.0240 (0.0033)
7	Switzerland	26	1998 (1)	56 – 263	4.66	0.4435	0.3951	0.2330	0.0268
8	United States	51(50)	1992-1998 (7)	64 – 473 (66-409)	5.00 - 7.18 (6.17)	0.3845-0.5084 (0.4383)	0.2225-0.2660 (0.2258)	0.1448-0.1906 (0.1448)	0.0091 – 0.0227 (0.0091)
PER CAPITA REGIONAL (STATE, PROVINCIAL) GOVERNMENT TOTAL EXPENDITURE:									
1	Australia	8(6)	1973-1991 (19)	86 - 320 (86-225)	1.42 - 3.42 (2.61)	0.1225-0.5644 (0.3465)	0.0365-0.0786 (0.0509)	0.0527-0.0881 (0.0693)	0.0038 - 0.0134 (0.0038)
4	Canada	13(10)	1961-2000 (40)	63 – 345 (89-338)	1.37-3.85 (3.78)	0.0895-0.5676 (0.5608)	0.0476-0.1723 (0.1471)	0.0340-0.1464 (0.0942)	0.0010-0.0061 (0.0043)
7	Switzerland	26	1996-1998 (3)	59 – 228 (63-228)	3.57 - 3.74 (3.60)	0.3360-0.3370 (0.3370)	0.3217-0.3271 (0.3271)	0.1947-0.2094 (0.2094)	0.0182 - 0.0187 (0.0184)
8	United States	51(50)	1992-1998 (7)	71 – 334 (75-274)	3.66 - 4.72 (3.66)	0.2817-0.3703 (0.2817)	0.1965-0.2519 (0.1982)	0.1479-0.1875 (0.1495)	0.0077 - 0.0210 (0.0079)

Table A.10 continued:

TABLE NOTES:

1	The reported ranges reflect the data for all regions (state, provinces) within each country, including territories and other special-status federation subjects (e.g., Northern Territory and Australian Capital Territory in Australia; Yukon, Nunavut, and Northwest Territory in Canada; Ceuta and Melilla in Spain; Alaska, Hawaii, and District of Columbia in the United States).
2	The Number of Regions column reports the total number of regions (states, provinces) in each country (in parentheses, the total number of regions, excluding special-status federation subjects and territories).
3	The Data column reports a sample time range for each time series, as well as a total number of available observations in the corresponding series.
4	Statistical columns reflect overall ranges in numerical values over corresponding sample time periods (figures in parentheses are calculated values for the last year of each series).

DATA SOURCES:

#	Country	Data	Source:
1	Australia	Personal Income and Population	Australian Bureau of Statistics. *Australian National Accounts. National Income and Expenditure*. 1948/49-1964/65, 1971-72, 1982-83, 1990-91.
		Government Finance Statistics	Australian Bureau of Statistics. *Government Financial Estimates, Australia*. Catalogue No. 5501.0. 1982-83, 1985-86, 1990-91, 1994-94.
2	Austria	Regional GDP	Table 36.12: Regional GDP per capita 1988 to 1997 at current prices, by NUTS 3, in *OSTAT Statistisches Jahrbuch* (1999-2000), 483.
		Population	Eurostat (1996) *Regions Statistical Yearbook,* Table I.1 Average Population, 31-32.
			Eurostat (1993-1998*). Statistics in Focus: Regions,* 6.
3	Belgium	Regional GDP	Eurostat (1993-1998*). Statistics in Focus: Regions*, 2,4.
		Population	Eurostat (1985, 1993, and 1996) *Regions Statistical Yearbook,* Table I.1 Average population.
			Eurostat (1979) *Regional Accounts ESA,* 160-161.
			Eurostat (1997-1998) *Statistics in Focus: Regions*, 4.
4	Canada	All variables	Different CANSIM Series (specific matrix numbers and account codes are available upon request)
5	Germany	Regional GDP	Eurostat (1993-1998*). Statistics in Focus: Regions*, 2,4.
		Population	Eurostat (1993 and 1996) *Regions Statistical Yearbook,* Table I.1 Average population.
			Eurostat (1979) *Regional Accounts ESA,* 156-157.
			Eurostat (1997-1998) *Statistics in Focus: Regions*, 4.

6	Spain	Regional GDP Population	Instituto Nacional de Estadistica, *TEMPUS Databank, CRE - Contabilidad Regional de España* (Spanish Regional Accounts) Eurostat (1997-1998) *Statistics in Focus: Regions,* 5. Instituto Nacional de Estadistica, *TEMPUS Databank, Proyecciones y Estimaciones Intercensales de Población*.
7	Switzerland	All Variables	*Statistisches Jahrbuch der Schweiz* (1985, 1989, 1992, 1995, 1998-2001). Titles of specific tables and corresponding page numbers are available upon request.
8	United States	All Variables	U.S. Department of Commerce, Bureau of Economic Analysis. Regional Economic Information System (specific table codes are available upon request).