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## Costs, Preferences, and Institutions: An Empirical Analysis of the Determinants of Government Decentralization

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Dan Stegarescu

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## Nontechnical Summary

Many industrial, as well as developing and transition countries are increasingly re-allocating government functions from central government to regional or local governments. Despite this worldwide tendency, large differences in fiscal design across levels of government still persist and are not likely to disappear in the near future. Apart from normative considerations, these issues therefore raise the question about the common factors which determine observed cross-country differences in the distribution of spending and taxing powers between levels of government.

According to the “Decentralization Theorem”, the efficient allocation of government functions between different layers of government is determined by the trade-off between the benefits of decentralized provision of public goods, which allows for differentiation according to local preferences and conditions, and the costs of missing coordination in case of inter-jurisdictional spillovers and potential economies of scale. Recent work on fiscal federalism shows that apart from these traditional cost-benefit aspects, political decision-making processes and the underlying institutional rules determine the choice between centralization and decentralization in democracies. The delegation of political decision-making to elected representatives is shown to create a common-pool problem, collusive behavior and vote-trading leading in the end to inefficiently high public spending and centralization. However, the empirical literature provides only limited cross-national evidence on the implications of collective decision-making for government decentralization, and particularly, on the role of specific institutional rules.

This paper takes a comprehensive empirical approach which integrates costs, preferences, and institutions to verify the contribution of the fiscal federalism literature to the explanation of cross-country differences in the degree of decentralization. More specifically, we investigate the predictions of Lockwood (2004) and Redoano and Scharf (2004) according to which national referendums or participation of elected or appointed subnational representatives in decision-making processes concerning centralization or decentralization of government functions and revenues lead to excessive centralization, as compared to direct involvement of the citizens of the subnational entities.

For this purpose, a detailed analysis and quantification of decision-making institutions is carried out for a sample of 23 OECD countries from 1965 to the present. Based upon this, we investigate empirically the effect of specific institutions on the degree of fiscal decentralization, explicitly considering institutional changes over time, and controlling for preference heterogeneity, economies of scale and other determinants of the vertical government structure and of the demand for public services.

The results of the cross-sectional time-series regression analysis indicate that apart from preference heterogeneity, economies of scale, and other demand side factors, institutions are significant in explaining cross-national differences in the degree of fiscal decentralization. With total subnational tax revenues or direct expenditures reported in public finance statistics as dependent variable, participation of sub-central governments in central decision-making leads to more decentralization. However, when using a new indicator of decentralization instead which accounts for tax-raising powers of sub-central government, it turns out that particularly participation of representatives delegated by sub-central governments and legislatures in central decision-making concerning both the assignment of spending and taxing powers and other issues of national legislation is associated with less subnational fiscal autonomy and more tax centralization. In contrast to this, direct involvement of the citizens through regional referendums leads to increased decentralization of taxing powers. On the other hand, contrary to previous analyses at the subnational level, direct democracy at the national level is mostly found to be associated with increased centralization.

The new contribution of this analysis is therefore twofold. First, these estimates support the collusion hypothesis and recent theoretical contributions in fiscal federalism which emphasize the role of decision-making institutions. Bargaining at the national level provides sub-central governments with more financial resources from the common pool to spend, while at the same time independent tax-raising autonomy is restricted. And second, the analysis shows how important it is to use in empirical studies an indicator of decentralization which accounts for subnational decision-making autonomy instead of received expenditure and revenue shares.

# COSTS, PREFERENCES, AND INSTITUTIONS: AN EMPIRICAL ANALYSIS OF THE DETERMINANTS OF GOVERNMENT DECENTRALIZATION<sup>†</sup>

DAN STEGARESCU<sup>‡</sup>

## Abstract

This paper examines the factors determining vertical government structures. An empirical analysis for a panel of OECD countries indicates that apart from preferences, economies of scale, and other factors, institutions explain cross-national differences in the degree of fiscal decentralization. Accounting for taxing powers of subnational governments, the evidence strongly supports the collusion hypothesis according to which delegation of decision-making concerning the assignment of powers and national legislation to subnational representatives leads to increased tax centralization, as compared to direct participation of the citizens of the subnational entities. On the other hand, direct democracy at the national level is associated with higher centralization.

**Keywords:** Determinants of Decentralization, Decision-making Institutions, Decentralization Theorem, Collusion Hypothesis

**JEL Classification:** H71, H72, H77

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# 1 Introduction

Issues of fiscal federalism and public sector decentralization are increasingly gaining popularity in public finance literature and government practice.<sup>1</sup> Many industrial, as well as developing and transition countries have increasingly reallocated government functions from central government to regional or local governments. Despite this worldwide tendency, large differences in fiscal design across levels of government still persist and are not likely to disappear in the near future. Also, contrary to common expectations, several federal states are found to be more centralized than formally unitary countries.

Apart from normative considerations, these issues therefore raise the question about the common factors which determine observed cross-country differences in the distribution of spending and taxing powers between levels of government. General reference for the analysis of vertical government structures is the theory of fiscal federalism in the tradition of Musgrave (1959) and Oates (1972). According to the “Decentralization Theorem”, the efficient allocation of government functions between different layers of government is determined by the trade-off between the benefits of decentralized provision of public goods, which allows for differentiation according to local preferences and conditions, and the costs of missing coordination in case of inter-jurisdictional spillovers and potential economies of scale. Consequently, national public goods, like defense, as well as income redistribution and macroeconomic stabilization are more efficiently provided by the central government, whereas local public goods with geographically limited benefits should typically be in the competency of local governments.

Hence, the optimal degree of decentralization of the public sector depends both on the degree of inter-jurisdictional heterogeneity and the characteristics of the public goods supplied. The welfare-maximizing view, however, fails to explain enduring deviations from the ideal-point in the real world. This is, for example, illustrated by the persistence of different levels of decentralization among countries with similar economic and preference structures. First, the theoretical considerations hinge on the crucial assumptions of missing coordination between local governments, and policy uniformity in case of centralization, which in general are both theoretically and empirically dismissed.<sup>2</sup> Another reason may be related to the problems of preference revelation and excludability described in the literature on public goods. But the most important limitation consists in neglecting the role of elected policymakers and of decision-making processes in democracies.

The importance of decision-making rules is already emphasized by Oates (1972: 18), who pointed out that “[...]it is the extent to which the decisions themselves reflect local interests that matters for the economist, and constitutional structure assumes importance only to the degree that it affects the responsiveness of the provision of local services to local preferences.” Institutions have long time been viewed as “veils” which were supposed not to affect policy outcomes, the literature usually assuming that policies are in line with the preferences of the median voter. As shown by recent theoretical and empirical work, the median voter model does not always hold, institutional rules actually playing an important role. This suggests the explicit inclusion of the collective decision-making process and of the institutional set-up in explaining the observed degree of fiscal decentralization.

The Leviathan theory in the tradition of Brennan and Buchanan (1980) argues that

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<sup>1</sup>See, e.g., Oates (1999).

<sup>2</sup>Some recent contributions, e.g., Lockwood (2002), and Schwager (1999b) depart from the uniformity assumption. In practice, centralized systems often differentiate the levels of public goods according to heterogeneous tastes. On the other hand, constitutions often contain specific provisions aimed at ensuring a certain degree of uniformity of socio-economic and legal conditions, and at preventing preferential treatment of single jurisdictions.

decentralization leads to efficiency enhancing fiscal competition and constrains revenue-maximizing activities of governments.<sup>3</sup> Yet, in spite of decentralization, local governments may cooperate in order to establish political cartels, the result being inefficiently high public spending and taxation. Without considering the extreme case of revenue-maximizing Leviathans, more recent theoretical contributions of Besley and Coate (2003), Lockwood (2002, 2004), and Redoano and Scharf (2004), among others, show that preferences and technologies, as well as political decision-making processes and the underlying institutional rules determine the choice between centralization and decentralization.

These political-economic considerations, however, have only partly been addressed in empirical studies. Most of the empirical work deals with the determinants of the degree of decentralization as derived from the traditional theory of fiscal federalism, mostly using cross-sectional analyses of industrial and developing countries<sup>4</sup>, or of subnational governments<sup>5</sup>. In general, the results support the “Decentralization Theorem”, showing that particularly heterogeneous countries or jurisdictions are more decentralized. The role of collective decision-making and of institutional rules has instead been analyzed mostly with respect to the level of public spending and revenue, and particularly, for subnational governments. Collusion among sub-central governments, as measured by the share of federal grants in sub-central government revenue, is generally shown to increase the size of consolidated government and of each separate level of government.<sup>6</sup> Other studies report a negative effect of bicameralism<sup>7</sup> and of budget referendums and citizen initiatives<sup>8</sup> on the level of public spending and revenue.

With respect to the vertical government structure, democracies and countries with federal constitutions are generally found to be more decentralized. At the subnational level, Schaltegger and Feld (2001) and Matsusaka (1995, 2000) detect a positive impact of budget referendums and citizen initiatives on the degree of fiscal decentralization of Swiss cantons, and respectively, US states. This is explained by the direct control exercised by citizens on the government budget and the higher demand for local instead of state public services. Corresponding cross-national evidence for the effect of direct democracy at the national level is, yet, largely missing. Based on a comparative analysis, Blankart (2000) suggests that referendums at the federal level contributed to higher decentralization in Switzerland as compared to Germany, however, without providing an empirical verification. Vaubel (1996) analyzes the impact of decision-making institutions in a cross-section of industrial and developing countries. He shows that particularly independence of constitutional courts from central government, and, to a lesser extent, involvement of subnational entities and citizens in constitutional amendment concerning subnational competencies are associated with increased decentralization.

All in all, the empirical literature provides only limited cross-national evidence on the implications of collective decision-making for government decentralization, and particularly, on the role of specific institutional rules. This paper takes a comprehensive empirical

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<sup>3</sup>See also Edwards and Keen (1996).

<sup>4</sup>See, e.g., Pryor (1967), Oates (1972), Pommerehne (1977), Kee (1977), Wasylenko (1987), Panizza (1999) and Garrett and Rodden (2003). Patsouratis (1990) provides time series analyses for a few EU member countries.

<sup>5</sup>See, e.g., Litvack and Oates (1970), Mullen (1980), Giertz (1983), Wallis and Oates (1988), and Strumpf and Oberholzer-Gee (2002) for US states.

<sup>6</sup>See Shadbegian (1999) for US states and Grossman and West (1994) for Canadian provinces.

<sup>7</sup>Bradbury and Crain (2002) analyze the influence of different bases of representation of bicameral parliaments. They show for US states that decreased constituent homogeneity across bicameral chambers tends to reduce redistributive spending and increase spending on public goods instead. The reason is that bicameral differences restrict the ability of coalitions to manipulate fiscal policy for redistributive purposes. Bradbury and Crain (2001) provide evidence for a positive relationship between legislative size and spending across countries, the effect being stronger in unicameral legislatures than in bicameral legislatures.

<sup>8</sup>See Feld and Kirchgässner (2001), and Feld and Matsusaka (2003) for Swiss cantons, and Matsusaka (1995) for US states. Note, however, that Matsusaka (2000) finds a positive correlation between public spending and initiatives in US states before the Second World War.



approach which integrates costs, preferences, and institutions to verify the contribution of the fiscal federalism literature to the explanation of cross-country differences in the degree of decentralization. More specifically, we investigate the predictions of Lockwood (2004) and Redoano and Scharf (2004) according to which national referendums or participation of elected or appointed subnational representatives in decision-making processes concerning the assignment of government functions and revenues lead to excessive centralization, as compared to direct involvement of the citizens of the subnational entities.

For this purpose, a detailed analysis of decision-making institutions is carried out for a sample of OECD countries from 1965 to the present. Based upon this, we investigate empirically the effect of specific institutions on the degree of fiscal decentralization, explicitly considering institutional changes over time, and at the same time controlling for preference heterogeneity, economies of scale and other determinants of the vertical government structure and of the demand for public services. In doing so, issues of institutional endogeneity are taken into account. Since commonly used measures tend to misrepresent the degree of fiscal decentralization, a corrected measure of tax decentralization is used instead which accounts for tax-raising powers of sub-central government. This allows us to conduct a more appropriate test of the collusion and the common-pool hypotheses laid down in the literature.

The results of the empirical analysis indicate that institutions, as well as costs and preferences have a significant impact on the degree of fiscal decentralization. When accounting for tax-raising powers of sub-central government, the evidence strongly supports the collusion hypothesis according to which delegation of decision-making concerning the assignment of powers and national legislation to subnational representatives leads to increased tax centralization, whereas direct participation of the citizens of the subnational entities has the opposite effect. On the other hand, there is some evidence that direct democracy at the national level tends to be associated with increased centralization.

The paper is organized as follows. We begin with a summary of the main theoretical results of recent political-economic work on fiscal federalism. Section 3 provides a descriptive-comparative analysis of decision-making institutions of OECD countries. In the next two sections, the investigation approach is discussed and the empirical analysis is carried out. Finally, section 6 draws the conclusions.

## 2 Decision-Making Institutions and Government Decentralization

The degree of public sector decentralization is commonly associated with the share of sub-central government in total public output. Consequently, decision-making institutions are expected to affect the degree of decentralization in two ways. The first aspect involves the decision on the formal assignment of functional responsibilities, revenues and legislative powers across levels of government. Given this decision, the second aspect concerns the concrete policy choice of each government unit.<sup>9</sup>

The validity of the “Decentralization Theorem” hinges on the extent to which local preferences or demands for decentralization are actually transferred into corresponding policy outcomes. Within this context, institutions generally act as a link between voter tastes and policy outcomes and influence the choice of the decision-makers and the nature of their interactions. In democracies political decision-making powers are either assigned

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<sup>9</sup>These considerations follow the constitutional economics approach, see, e.g., Buchanan (1967), which assumes that at the first stage the constitution is designed, and at the second stage policies are chosen.

directly to the citizens or delegated to elected representatives of the local communities. One may generally distinguish between three or four important veto players: central government, national legislature, and, if existing, the upper chamber of parliament consisting of elected or designated subnational representatives, and finally, voters. In case of delegated decision-making, the representation of voter preferences ultimately depends on the way the delegates are chosen and on the rules of collective decision-making.

Contrary to the predictions of the traditional median voter model, more recent work has shown that decisions taken by elected politicians significantly diverge from the preferences of the median voter in their districts.<sup>10</sup> According to Buchanan and Tullock (1962) and Weingast et al. (1981), collusive behavior in political choice institutions is stronger when representatives are selected on a geographic basis than if they are selected at large from across the nation. Representatives elected in geographically based constituencies view the tax base as a common pool from which to finance geographically targeted projects. Consequently they engage in vote-trading by approving projects which do not correspond to their preferences in exchange for financial support of projects which benefit their own constituencies. Particularly universalistic legislatures where decisions are taken cooperatively in contrast to legislatures dominated by minimum winning coalitions tend to favor collusive behavior. This happens particularly in the area of distributive policies where benefits are geographically concentrated, while costs can be spread across all constituencies through generalized taxation. While internalizing the benefits of expenditures, the constituencies underestimate the costs imposed on the economy. Geographical representation thus leads in the end to the formation of policy cartels and inefficient over-spending. According to the “Law of 1/n” excessive spending is expected to increase with the number of legislative districts.

Analogously, the same common-pool problem arises with respect to the assignment of functions and revenues in multi-level government structures. The Leviathan theory in general assumes that decentralization is associated with increased fiscal competition, thus constraining revenue-maximizing behavior of sub-central governments. However, according to the collusion hypothesis of Brennan and Buchanan (1980), lower level governments may cooperate and form tax and expenditure cartels in order to oppose competitive pressures of fiscal decentralization and to reap higher rents.

Due to the intrinsic instability related to their public good character, the implementation of political cartels requires the support of a higher authority. Being typically less exposed to fiscal competition, the central government is in the best position to enforce collusive agreements between subnational governments. Therefore, tax collusion may imply the transfer of taxing powers to the central government, which then imposes a uniform tax and shares the revenues with the lower levels of government either through vertical grants or other explicit rules of tax sharing. Fiscal equalization payments between subnational governments represent a further option. Despite centralization of public funds, lower level governments may retain full spending autonomy. Even without considering the extreme case of Leviathans, as a result of the common-pool problem, participation of representatives of subnational entities in central decision-making is expected to lead to over-centralization, particularly with respect to taxing powers.

Blankart (2000) provides an application for Germany, suggesting that increasing government centralization resulted from tax and expenditure cartels formed by the Länder governments. Within this context, the *Kompetenzkompetenz* of the federal government, i.e. the constitutional power to take over sub-central government legislation, is assumed to have significantly contributed to enforce cartelization. In contrast to this, by allo-

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<sup>10</sup>This is also increasingly supported by empirical evidence, see, e.g., Pommerehne (1978), Peltzman (1992) or, more recently, Gerber and Lewis (2004). The significant impact of initiatives and referendums on policy outcomes reported in the empirical literature is generally interpreted as evidence that legislatures do not implement median voter preferences.

cating the ultimate taxing power to the voters, referendums are expected to prevent cartelization and logrolling of elected legislators. The possible conduct of referendums, and particularly citizen initiatives force greater agreement between voter preferences and policy outcomes. The over-spending problem becomes less likely, since referendums make vote-trading across jurisdictions more difficult. Furthermore, citizens are supposed to internalize the total social costs of public funds, and not only a part of them.<sup>11</sup> Apart from the behavior of elected legislators, the fact that referendums deal with very specific issues, as compared to general elections where multi-dimensional issues are decided at once, is expected to further intensify the correspondence between preferences of the median voters and actual policy outcomes.<sup>12</sup>

The results of empirical studies at the subnational level mentioned in the introduction mostly support these views. The empirical evidence does, however, not allow one to say with confidence whether the observed discrepancy between voter preferences and policy outcomes is due to vote-trading, as described above, or to other reasons, like, for example, missing information of the legislators. Also, as indicated by the analysis of Matsusaka (2000), provisions for popular initiatives and, to a lesser extent, for referendums might only lead to policies closer to the voters' ideal-point. Whether voters are in favor of cutting or increasing public spending is not a priori clear and would depend on their cultural and social background.

These general considerations are confirmed by recent theoretical work which integrates the traditional cost-benefit approach of the "Decentralization Theorem" with different rules for decision-making on the vertical allocation of functions and financial resources. In general, the choice of centralization or decentralization is assumed to be prior to the legislative bargaining process. Crémer and Palfrey (1996) show that federal states, where the decision on centralization has to be approved in a referendum by a majority of districts, are more centralized than unitary states, where the majority of votes at the national scale is decisive.<sup>13</sup> Provided that heterogeneity is not too high, this is explained by the aggregation of preferences at the district level. Extending this analysis to allow for efficiency gains and even for local differentiation in centralized provision of public goods, Lockwood (2004) reaches a different conclusion. He shows that in case of strong interregional preference heterogeneity, i.e. when the distribution of project benefits across regional medians is negatively single-peaked, regional referendums in federal states lead to less centralization than national referendums in unitary states, and vice versa for a positively single-peaked distribution of project benefits. The intuition for this result is that in federal referendums the median voters' preferences in each region are decisive, dissenting regional voters not being taken into account, whereas in unitary referendums the national median, and thus the majority of the electorate overall is decisive. Provided that interregional preferences are not uniformly distributed, regional and national medians differ.

Finally, Redoano and Scharf (2004) compare decisions on policy centralization taken either directly by the citizens in each region or by elected regional representatives. They demonstrate that in case of strong preference heterogeneity, the conduct of regional referendums is associated with less centralization, as compared to bargaining between elected regional policymakers in representative democracies. The reason is that in a representative democracy voters in a pro-centralization jurisdiction can induce another jurisdiction to cooperate and centralize policies by electing a representative which commits to the policy preferred by the other jurisdiction. Owing to vote-trading between regional repre-

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<sup>11</sup>See also Besley and Case (2002).

<sup>12</sup>According to Besley and Coate (2000) citizen initiatives allow an "unbundling" of issues as compared to representative democracies.

<sup>13</sup>Note that in line with the median voter theorem, regional and national referendums are supposed there to yield similar results to decisions taken by regional, and national representatives, respectively.

representatives, centralization finally occurs and the policy preferred by the reluctant region is chosen. In contrast to this, in a referendum democracy the median voter of each region decides independently upon centralization, the heterogeneity of preferences therefore preventing an agreement.

Related work focuses instead on the efficiency issues of legislative bargaining of locally elected representatives in different systems of centralized decision-making. Besley and Coate (2003) and Gradstein (2000), among others,<sup>14</sup> show that apart from heterogeneity and spillovers, the benefits of centralization or decentralization depend upon the involvement of local jurisdictions in national legislation. Without participation of subnational entities with equal rights in centralized decision-making,<sup>15</sup> especially smaller jurisdictions run the risk of being dominated by the national majority or powerful jurisdictions. From this viewpoint, centralized decision-making proves to be more attractive in countries with constitutionally guaranteed fair representation of minorities or of the constituent jurisdictions.<sup>16</sup> To some extent, these analyses confirm Oates' insights demonstrating that centralization is the most efficient arrangement when spillovers are high and heterogeneity is low. Cooperative or unanimous central decision-making therefore has the advantage of protecting minority rights, and moreover, the status quo. Yet, on the other hand, it creates the common-pool problem and incentives to inter-jurisdictional vote-trading as mentioned above, thus increasing the inefficiency of centralization.<sup>17</sup>

To conclude, two empirically testable implications arise when combining the different theoretical considerations described above. First, provided that preference heterogeneity is high, we expect direct participation of the citizens of the subnational entities (regional referendums) in central decision-making on the vertical assignment of government functions and revenues to lead to less centralization, as compared to decisions made by delegated subnational representatives. This is due to the fact that collusive behavior interferes with the interregional differences in preferences which might support decentralization. Accordingly, involvement of subnational representatives in other areas of ordinary national legislation might also produce increased central government spending. Necessary preconditions for cartelization are, thus, a geographically based representation, the provision of mechanisms of cooperative decision-making, such as the upper chamber of parliament, and the power of the central government to stabilize collusive arrangements. Second, the open issue is, to what extent and in which direction does direct democracy at the national level (national referendum) influence the level of central government spending and taxation, and, thus, indirectly the degree of fiscal decentralization, too.

### 3 An Institutional Overview of OECD Countries

The analysis of the determinants of fiscal decentralization draws on a sample of 23 OECD countries, including only comparable nations with long-standing and well func-

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<sup>14</sup>See also the related contributions of Alesina et al. (2001), and Wrede (2004).

<sup>15</sup>In the above mentioned literature, legislatures providing appropriate representation of subnational entities are referred to as cooperative or egalitarian legislatures, as compared to non-egalitarian legislatures where decisions are made by a minimum winning coalition.

<sup>16</sup>Seabright (1996), Schwager (1999a), and Zantman (2002) also show that decentralization improves the control over policymakers and prevents a non-benevolent central government from giving preference to certain jurisdictions. These considerations may have influenced constitutional design in several federal states, and even the decision-making rules in the European Union. For example, Section 99 of the Australian Constitution explicitly forbids preferential treatment of any state by the Commonwealth.

<sup>17</sup>Besley and Coate (2003) show that due the common-pool problem, centralization is strictly inferior to decentralization even when both spillovers and heterogeneity are low. The problems involved by unanimity rules are best illustrated by the outcomes of decision-making processes in the Council of the European Union. There, the agreement to some major projects was often obtained in exchange for the allocation of additional resources or projects to the reluctant countries.

tioning democratic institutions. In view of the empirical analysis, this section provides a detailed description and quantification of the mechanisms of representation and participation of subnational entities in centralized decision-making and of the institutions of direct democracy at the national level. Due to the large institutional heterogeneity across countries, the different institutional details are summarized by means of qualitative indicators.<sup>18</sup>

### 3.1 Participation of Subnational Entities in Central Decision-Making

To begin with, we compare the extent to which subnational entities participate in decision-making on the assignment of government functions and financial resources across levels of government and on other issues of centralized legislation. Within this context, as argued above, both the form of participation and the rules for decision-making and legislation have to be taken into account. The form of participation at the national level determines the extent to which local preferences are translated into policy outcomes. One may distinguish between *direct participation*, which involves the electorate or elected institutions of the component entities, and *indirect participation*, when decisions are taken by delegated representatives of the entities to an upper chamber of the national parliament.<sup>19</sup> Conditioning on the form of representation of local preferences, the rules of collective choice ultimately determine the decision-making power of the subnational entities and, thus, influence the policy choice itself.

#### 3.1.1 Representation in the Upper Chamber

Table 1 first presents an overview of the different forms of representation of subnational entities in the upper chamber of the national parliament in the 23 OECD countries considered here. The quantification relies particularly on information collected from constitutional and legal documents of the individual countries and covers the period 1965-2003, taking institutional changes into account.

In federal systems of government powers are typically divided among the federal government and the state or regional governments, whereas in unitary states control of the government is given to the central government which can regulate certain powers to local governments. Typical characteristics of most federal states are the historical formation through the association of formerly sovereign states or colonies and the equal or disproportionately strong representation of the component units in the upper chamber of a bicameral national parliament. However, this characterization does not always hold. Belgium, for example, was gradually transformed from a unitary state into a federal state between 1970 and 1994. Moreover, among federal states the form and the extent of geographical representation in the upper chamber varies considerably. Apart from the federal states, different forms of subnational representation in the upper chamber also exist in regionalized unitary countries like Italy and since 1978 also in Spain, and even in strictly unitary countries like France or the Netherlands.

Following Tsebelis and Money (1997) and Lijphart (1984), subnational representation in the upper chamber may be classified along two dimensions: the method of selection of the representatives and the degree of representation of the component sub-units. The composite index of subnational representation presented in the last column of Table 1 combines these two aspects.<sup>20</sup> The method of selection (column 5) determines the way geographically based preferences are aggregated and the extent to which incentives for

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<sup>18</sup>A description of the data sources is provided in the Appendix.

<sup>19</sup>This classification partly draws on Council of Europe (1997).

<sup>20</sup>See Table 4 in the Appendix for details on the construction of the indices.

Table 1: Representation of subnational entities at the national level, 2003

	Fed. state <sup>a</sup>	Parl. <sup>a</sup>	Subnational representatives in upper chamber	Index of subnat. representation			
				Method select. (0-1)	Symmetry (0-1)	Overrepr. (0-1)	Comp. index (0-2)
AUS	1901	bicam.	direct election in the states (equal number repres. per state)	0.60	1.00	0.82	<i>1.51</i>
AUT	1918 1945	bicam.	indir. election by Länder parliam. (prop. to population, min. number of representatives per Land)	0.80	0.25	0.25	<i>1.05</i>
BEL	1994	bicam.	election on linguistic basis: 56% dir. elected (prop. repres.), 30% indir. elected by legislatures of linguist. communities (French-Flemish parity), rest coopted <sup>b</sup>	0.49	0.71	0.13	<i>0.91</i>
CAN	1867	bicam.	appointed by PM/governor-general on provincial basis (asymmetrical)	0.40	0.17	0.87	<i>0.92</i>
DEN		unicam. (1953)					
FIN		unicam.					
FRA		bicam.	indir. election by electoral colleges representing all sub-nat. entities	0.20	0.00	0.00	<i>0.20</i>
GER	1871 1949	bicam.	appointed by Länder governments (prop. to popul., min. number repr. per Land; uniform vote per Land)	1.00	0.50	0.81	<i>1.66</i>
GRE		unicam.					
ICL		unicam. <sup>c</sup>					
IRL		bicam.					
ITA		bicam.	direct election on regional basis (prop. to population, min. number representatives per region)	0.20	0.02	0.36	<i>0.39</i>
JAP		bicam.					
LUX		unicam.					
NED		bicam.	indir. election by electoral college of provinces	0.20	0.00	0.00	<i>0.20</i>
NEZ		unicam.					
NOR		unicam. <sup>c</sup>					
POR		unicam.					
SPA		bicam. (1978)	80% dir. elected in provinces (equal number repres. per province), 20% indir. elected by regional parliam. (min. number repres. per region)	0.32	0.13	0.66	<i>0.71</i>
SWE		unicam. (1970)	formerly bicameral: indir. election by electoral college				
SWI	1848	bicam.	direct election in the cantons (equal number of repr. per canton)	0.60	1.00	0.88	<i>1.54</i>
UK		bicam.					
USA	1787	bicam.	dir. election in the states (equal number repr. per state); before 1914: indir. election by state parl.	0.60	1.00	0.91	<i>1.56</i>

Note: <sup>a</sup> year of coming into force. <sup>b</sup> before 1994, 28% of the representatives were indirectly elected by the provincial councils, the rest by proportional representation and cooptation. <sup>c</sup> formally bicameral legislatures, which, however, according to Lijphart (1984) should not be treated as such since they are elected as one body and divide themselves into two chambers after the election. The figures for symmetry of representation and degree of overrepresentation are averages for the period 1965-2003 (GER: after 1991).

collusive behavior among subnational representatives may be created. We assume that representatives directly elected in the regions are less inclined to take common attitudes and engage in logrolling than representatives appointed by the regional governments or legislatures which are subject to their instructions.<sup>21</sup> The reason for this is the stronger re-election restriction imposed on them by the voters of their constituency. The degree of representation of the individual sub-units is described in terms of the number of representatives of the smallest unit as compared to both the largest unit (symmetry of representation, column 6) and its own population share (degree of overrepresentation, column 7). The stronger the control of subnational governments on the representatives delegated to the upper chamber, and the more equal the representation of the component subnational units, the more likely vote-trading and the common-pool problem will occur.

The overview shows that subnational representatives are either elected directly by the people of the constituent units (Australia, Switzerland, USA, and, partly, Italy), or indirectly by electoral colleges (Netherlands, France) or regional parliaments (Austria), or they are appointed by the central government (Canada) or the regional governments (Germany). Mixed forms are found in Belgium and Spain, where in the former since 1994 representation is based on linguistic rather than on geographic criteria.

In line with the theoretical expectations, the figures in column (7) of Table 1 indicate that most federal countries tend to considerably overrepresent the smaller component units, their share of seats in the legislature exceeding their share of population. Interestingly enough, formally non-federal countries like Italy and Spain have higher degrees of subnational overrepresentation than Austria and Belgium, where the number of representatives is more or less proportional to the population. As can be seen in column (6), Australia, Switzerland, and the USA even grant equal representation regardless of the units' population. On the contrary, representation of Canadian provinces is strongly asymmetric. According to the composite index, Germany has the highest extent of subnational representation at the national level, being followed by the USA, Switzerland and Australia.

### 3.1.2 Forms of Participation

Besides the formal representation in the upper chamber, the influence of subnational entities on policy choices at the national level depends on their relative power of decision-making. The political-economic literature shows that apart from the distribution of veto rights, the allocation of agenda control and agenda-setting powers plays an important role.<sup>22</sup> The higher the required majority of subnational representatives or entities to pass legislation, the stronger is the power of each unit to block decisions. Quasi-unanimous decision-making therefore tends to preserve the status quo. However, as discussed before, the resulting implications are divergent for direct and indirect forms of participation.

Taking form of participation and decision-making power into account, indices representing the degree of direct and indirect participation of subnational entities in central decision-making on different issues are presented in Figures 1 and 2 for the countries involved.<sup>23</sup> The power of veto increases with the majority required in the lower chamber to overrule a (suspensive) veto in the upper chamber and with the required majority of subnational entities or representatives to agree legislation.

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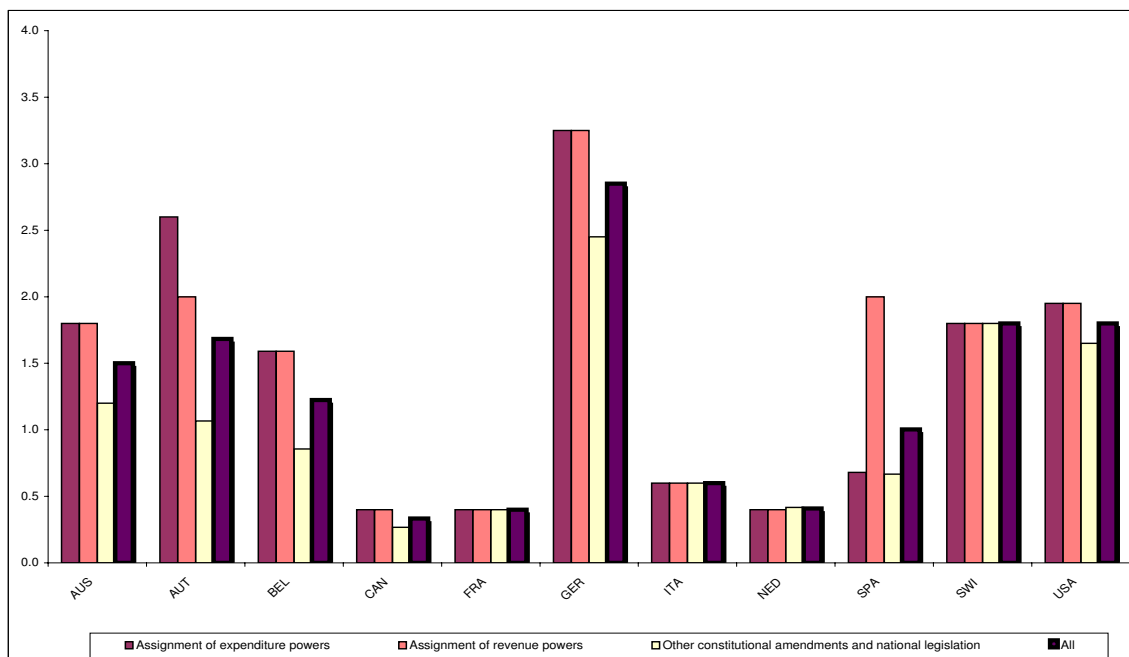
<sup>21</sup>The strongest form of interest aggregation represents Germany, where each Land has only a uniform vote in the upper chamber.

<sup>22</sup>See, e.g., Baron and Ferejohn (1989).

<sup>23</sup>See Table 5 in the Appendix for details on the construction of the indices. A further aspect which could be taken into account is the existence of interchamber conference committees which are expected to facilitate logrolling. See Tsebelis and Money (1997) with respect to this.

The indicator developed here differs from the related approach of Vaubel (1996) by treating direct and indirect participation separately, and in accounting for both the form of representation and the power to veto and to initiate legislation at the national level. Furthermore, we distinguish between decision-making on the assignment of spending and taxing powers to levels of government, and consider also other issues of centralized policymaking, such as constitutional amendments not concerning the subnational entities, and financial and non-financial national legislation. By this, we can later test directly the theoretical considerations discussed in the previous section.

Figure 1: Indirect participation of subnational entities in central decision-making, 2003



Note: The detailed figures are presented in Table 6 in the Appendix.

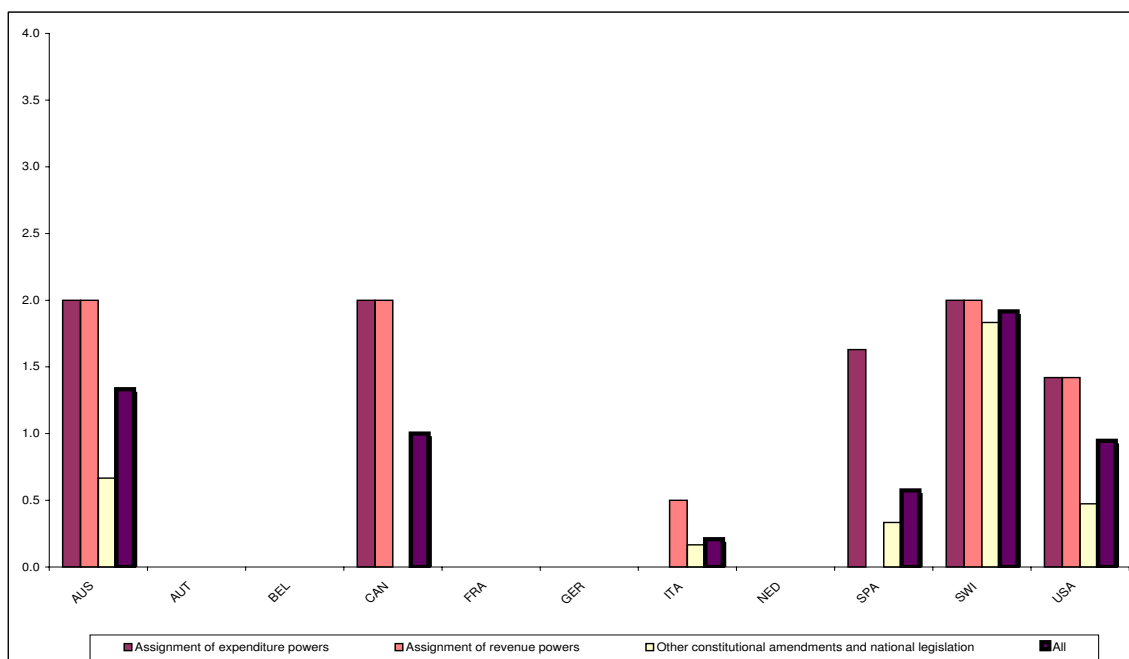
The assignment of spending and taxing powers to levels of government is stipulated by the constitution in most federal countries, and by ordinary legislation in the national parliament in most unitary countries. The reallocation of competencies requires the approval of the absolute majority of the upper chamber consisting of regional representatives in Australia and Switzerland, and of a two thirds majority in Austria, Germany, and the USA. However, in Austria and in the regionalized states such as Spain and Italy, only the assignment of regional government functions is explicitly laid down in the constitution. Even if the lower chamber of parliament ultimately decides on the allocation of financial resources, direct negotiations are previously taking place between sub-central governments and the central government in Austria and, since 1987, also in Spain. In the case of Spain, assignment and transfer of government functions is laid down in the constitution, as well as in ordinary laws with constitutional character and in specific regional autonomy statutes negotiated separately with each region. Therefore, interregional asymmetries concerning the distribution of competencies exist. Belgium represents a further special case. The expenditure competencies of the French and Flemish communities and of the three regions are laid down in the constitution and in special ordinary legislation respectively. The financial resources of both the three regions and these two communities are also determined by special ordinary law. The allocation of expenditure and revenue powers requires since 1970 and 1989 the consent of the majority of each linguistic group and of a total majority of two thirds in each chamber of parliament respectively.



Accordingly, the figures indicate for Germany and, to a lesser extent, for Austria the highest degree of indirect participation in decision-making concerning the assignment of expenditure and revenue powers. Collusive behavior and centralization of taxing powers might therefore be more pronounced in these two countries. This seems to be confirmed by the recent federalism reform debates in both countries which from the outset exclude the transfer of taxing powers to lower level governments. Note that a high degree of participation in the assignment of revenue is also reported for Spain. On the other hand, despite being a federal country, subnational representatives in the upper chamber are shown to play a minor role in Canada. This is due to the fact that the Canadian Senate partly resembles the British House of Lords in consisting of representatives appointed by the prime minister almost for life, who do not exercise their veto power in practice.

Except for other constitutional amendments which likewise require the approval of the absolute or two thirds majority of both chambers in most federal countries, subnational representatives are generally less involved in ordinary national legislation, and particularly, in the adoption of financial laws. Switzerland represents an exception on this matter. Considering all issues of central decision-making, Germany, and to a lesser extent, Switzerland and the USA report the highest degree of indirect participation.<sup>24</sup>

Figure 2: Direct participation of subnational entities in central decision-making, 2003



Note: The detailed figures are presented in Table 7 in the Appendix.

In addition to representation in the national parliament, a few countries also provide for direct participation of subnational entities in central decision-making. Strictly speaking, provisions for national referendums requiring a double majority of citizens and regions correspond to the separate conduct of regional referendums. We assume that representation of local preferences is higher and, thus, the probability of vote-trading lower, when decisions at the national level have to be approved directly by the citizens of the individual jurisdictions instead of the jurisdictional legislatures.

Apart from the upper chamber, reallocation of spending and taxing powers and other

<sup>24</sup>Note also that subnational entities furthermore participate indirectly in the election of the head of state in Italy, Switzerland, and the USA. In the case of the latter, apart from disproportional representation of the states in the electoral college, in the absence of an absolute majority the House of Representatives elects the President, with each state having one vote. These aspects are, however, not taken into account here.

constitutional amendments must be approved by a majority of the national electorate and the majority of states and cantons (double majority) in Australia and Switzerland, whereas in the USA they require the agreement of the legislatures of three-quarters of the states. In Canada all issues concerning the provinces have to be approved by a qualified majority of the provincial legislatures, even providing the possibility of opting out for disagreeing provinces. In Spain, depending on the autonomy statute, the transfer of expenditure competencies to the autonomous communities often requires the consent of both the legislature and the voters of the region concerned. At the level of national legislation, direct participation is even more restrained, Switzerland being the only country to provide for regional referendums on certain financial and non-financial bills and to allow regional legislatures to introduce a bill in the national parliament. Consequently, the highest degree of direct participation over all issues is reported for Switzerland, followed by Australia, Canada, and the USA.

### 3.1.3 Further Institutional Aspects

Apart from participation in central decision-making, further institutional aspects may permit the expansion of central government powers, particularly in federal countries. The first aspect involves the legislative *Kompetenzkompetenz* of the central government mentioned by Blankart (2000) which helps ensure tax and expenditure cartels. In Germany this is typically associated with concurrent legislative powers giving the central government the power to exhaust all aspects of a specific matter, the subnational entities retaining the power to legislate only as long as that matter has not been exhausted by the central government. The power of the central government to appropriate certain functions and revenues of subnational government is explicitly stipulated in Art. 72(1) and 105(2) of the German Basic Law. Despite precedent negotiations between all levels of government, in Austria taxing powers and the distribution of revenues are ultimately determined by federal legislation. With respect to taxing powers, only Australia, Canada, Sweden, Switzerland, USA and, to a lesser extent, Italy since the constitutional reform of 2001, provide for parallel tax finding powers of central and sub-central government. In all other countries the central government retains the ultimate tax-raising competency.

Increased centralization might additionally be stimulated by constitutional provisions empowering the central government to legislate in all areas not explicitly assigned to sub-central government. The “necessary and proper clause” in the US Constitution (Art. I, Sec. 8(18)), for example, gives the Congress powers inferred from the constitution, but not stated exactly. Accordingly, the federal government may pass laws that have universal applicability in order to implement its remaining powers. Section 91(29) of the Canadian Constitution Act of 1867 and Art. 149(3) of the Spanish Constitution provide for similar residual competencies of the central government.

A further aspect concerns the extent to which the central government is legally committed to pursuing uniformity and to reducing inter-jurisdictional disparities. For example, in Germany concurrent legislation is weighted in favor of the federal government with the aim to ensure uniformity of living conditions and economic and legal unity and to remove interregional distortive effects (Art. 72(2) of the Basic Law). Similar, though weaker uniformity and equality requirements also exist in Canada (Sec. 36 of the Constitution Act of 1982) and in Spain (Art. 138 of the Constitution).

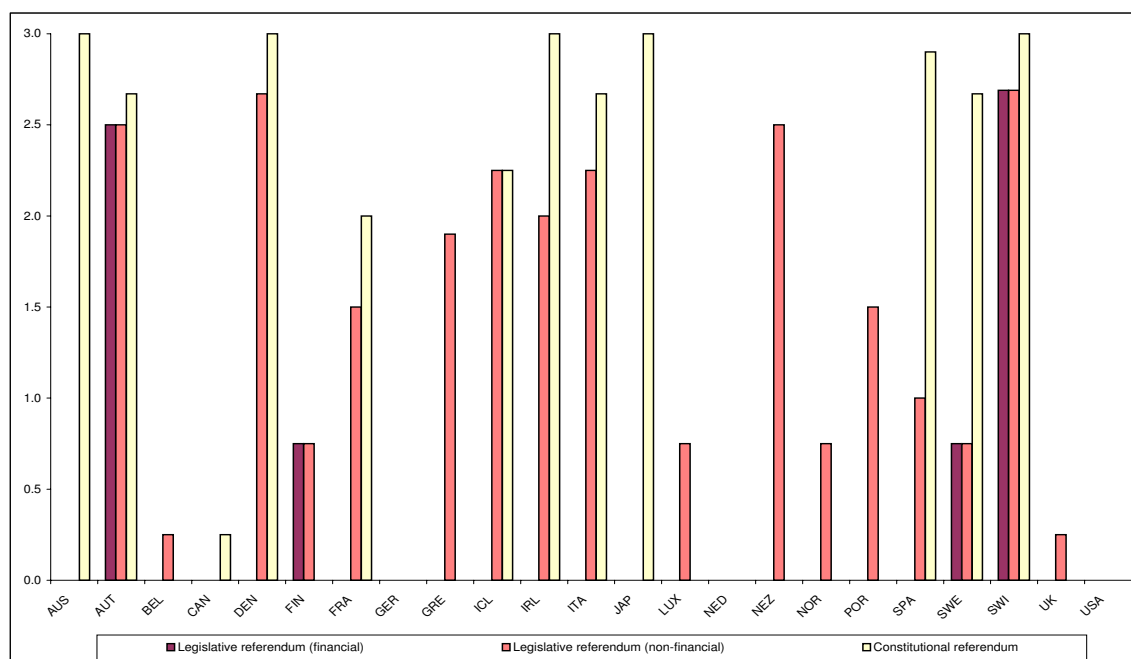
Finally, Vaubel (1996) points to the important role of constitutional or supreme courts which rule power conflicts between federal and sub-central government. There is some evidence that particularly judicial reinterpretation of constitutional provisions regarding the uniformity of certain legal or socio-economic conditions tends to favor the expansion of central government powers over time. For example, since the 1980s the US Supreme

Court increasingly strengthened federal powers with regard to the regulation of interstate commerce and social legislation.<sup>25</sup> The same occurs in the European Union where decisions of the Court of Justice concerning the functioning of the Common Market and harmonization of legislation tend to support the expansion of the competencies of the Commission. On the other hand, in Spain most competency conflicts were decided in favor of the autonomous communities, and recently, in Germany the powers of the Länder in the field of education were strengthened by the constitutional court.

### 3.2 Direct Democracy at the National Level

Apart from subnational entities, the extent to which the national electorate takes part directly in spending and tax decisions of the central government, is expected to affect the degree of fiscal decentralization. In the following, we provide an overview of the main instruments of direct democracy at the national level in OECD countries. Previous work focused instead on referendums and citizen initiatives at the local or regional level of government.<sup>26</sup> The approach taken in this paper consists in adapting the indicators of direct democracy rights developed by Stutzer (1999) and Frey and Stutzer (2000) in order to address the greater complexity and diversity of institutions across countries.

Figure 3: Direct democracy at the national level (referendums), 2003



Note: The detailed figures are presented in Table 9 in the Appendix.

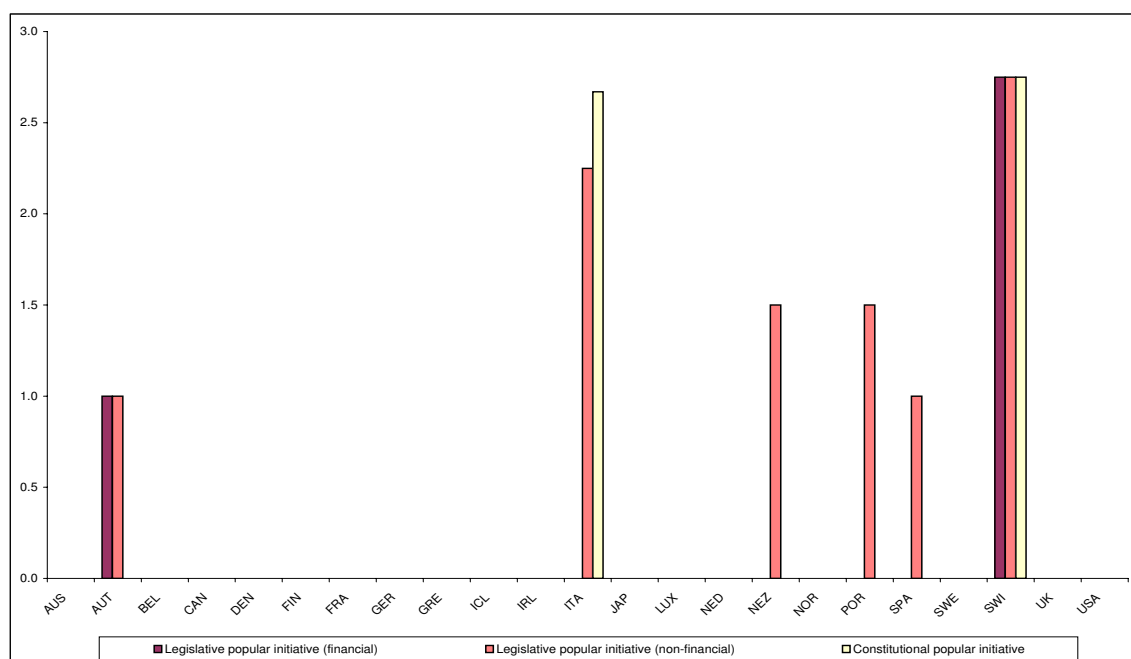
Usually, the different legal instruments of direct democracy are classified according to the issues involved (constitutional or legislative) and the form of initiation (referendums or popular initiatives).<sup>27</sup> Referendums are commonly defined as a vote on a measure

<sup>25</sup>See Elazar (1994).

<sup>26</sup>The only exception is Vaubel (1996) who constructed an index of direct popular participation in constitutional amendments concerning subnational competencies.

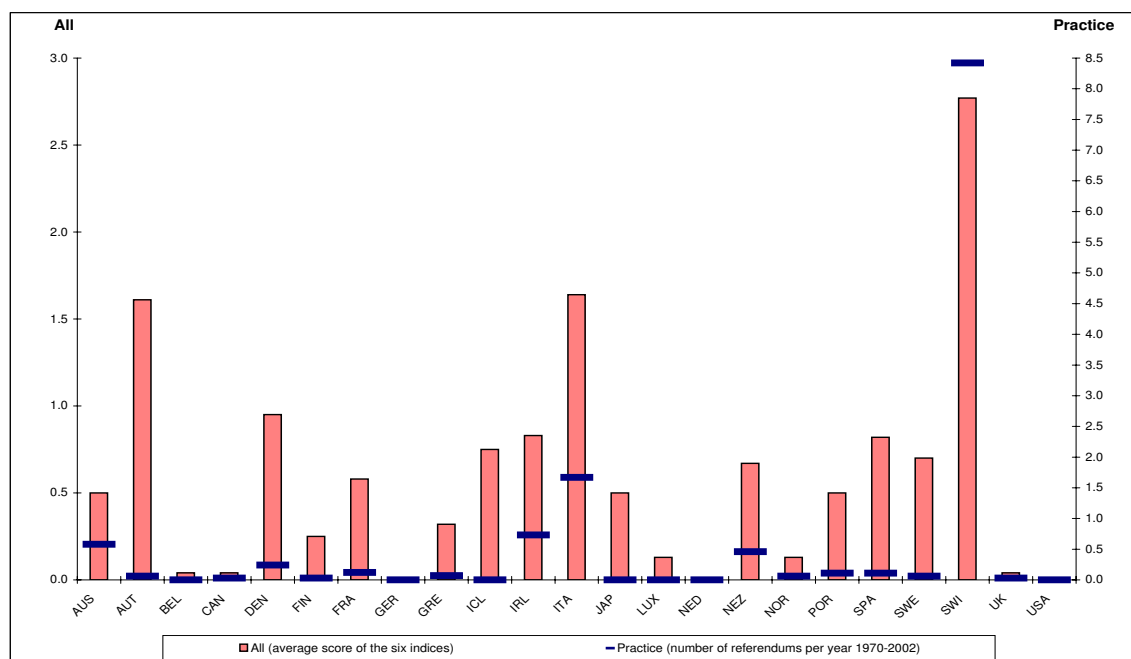
<sup>27</sup>See Hug and Tsebelis (2002) for an overview. More detailed classifications also consider, e.g., the number of veto players and who is able to frame the question of the popular vote. According to the initiator, Mueller (1996) distinguishes between constitutionally mandated referendum, government-initiated referendum, citizen-initiated veto and citizen initiative. One might also further differentiate between positive referendums aimed at changing the status quo, and negative referendums which stop a bill that intends to change the status quo.

Figure 4: Direct democracy at the national level (popular initiatives), 2003



Note: The detailed figures are presented in Table 9 in the Appendix.

Figure 5: Direct democracy at the national level (all instruments), 2003



Note: The detailed figures are presented in Table 9 in the Appendix.

adopted by the parliament, whereas the initiative allows citizens to propose an amendment which may be adopted in a popular vote. By removing agenda control from the legislature, initiatives exert a stronger control over policymaking. In case of legislative referendums one may furthermore differentiate between financial issues which are related to spending and tax policy and non-financial issues.

Following this classification, the extent of direct democratic control is quantified for each of the six instruments according to three major parameters. First, there is the range of specific objects which can be submitted to referendum or popular initiative. Second, we discriminate between referendums that are required (mandatory) and those that are not (facultative). In case of the latter, only a predetermined number of signatures from citizens, or a particular quorum of members of the national parliament or of regional parliaments can request a referendum. The lower the legal threshold to initiate a referendum, the higher is the extent of direct democracy. Most empirical evidence confirms the fact that the effects of citizen initiatives are largest with relatively easy ballot access in terms of low signature requirements. And, finally, we consider whether the different legal instruments have a binding legal effect on policymaking, that is, whether the results are decisive or only consultative.<sup>28</sup> Consequently, a mandatory decisive referendum on each policy issue represents the strongest form of direct democratic control.

The extent of direct democracy at the national level is evaluated for the 23 OECD countries according to the legal and constitutional provisions. Figures 3 and 4 present the figures on referendums and popular initiatives for the latest available year. As expected, the figures indicate the highest degree of direct democracy for Switzerland, both in terms of legal provisions and referendum practice. This is particularly true for popular initiatives on legislative and constitutional matters. Moreover, as already described, a double majority of the citizens and the cantons is required in many cases. Except for Switzerland, only Austria and Italy provide for citizen initiatives on financial and constitutional matters respectively. Countries like Denmark or Ireland, for example, which quite often hold referendums on constitutional amendments concerning the transfer of sovereignty to the European Union, are not allowing for citizen initiatives at the national level.

In general, referendums on constitutional matters are typically more widespread among OECD countries than referendums on legislative matters or popular initiatives. Again, financial referendums are only provided for in very few countries, particularly in Switzerland and Austria, whereas most constitutions explicitly rule out a popular vote on strictly budgetary matters.

On aggregate, Figure 5 indicates that apart from Switzerland, referendums are rarely used in a regular and systematic way at the national level. Nonetheless, important direct democratic elements are also legally enshrined in a few other countries like Italy and Austria. Note, however, that in the case of the latter, as in cases of other countries, legal provisions and practice also significantly fall apart.<sup>29</sup> On the other hand, national referendums are explicitly ruled out in Germany, the Netherlands, the USA, or are rarely conducted in few exceptional cases such as Belgium, Canada, and the United Kingdom. In contrast to this, particularly in the USA, and increasingly in Germany too, direct democracy is intensively practiced at the regional or local level.

These results thus confirm the general view that referendums are more common at the regional and local levels than at the national level. More recently, an overall tendency towards greater direct participation of citizens in local and, to a lesser extent, in national policymaking, has been noticed across all OECD countries. Accordingly, during the last 30 years, elements of direct democracy have been introduced at the national level in a couple of countries including Finland, Greece, Italy, New Zealand, Portugal and Sweden. In general, legal provisions for direct democracy seem to change more frequently than mechanisms of participation of subnational entities in decision-making which rather reflect long-standing considerations.

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<sup>28</sup>See Table 8 in the Appendix for the construction of the indices.

<sup>29</sup>Though the coefficient of correlation is very high (0.784), there is no perfect correspondence between the composite index of direct democracy and the period-averaged number of national referendums among OECD countries.

## 4 Quantitative Analysis

The determinant influence of decision-making institutions on the degree of fiscal decentralization described in section 2 is tested empirically for the OECD countries. We verify particularly the theoretical predictions of the Leviathan theory and of Lockwood (2004) and Redoano and Scharf (2004) according to which direct involvement of the citizens of the subnational entities in central decision-making tends to be associated with less centralization as compared to national referendums or to delegation of decision-making to elected or appointed subnational representatives. In the following section, the empirical model is presented and the explanatory variables are described.

### 4.1 Empirical Model

The quantitative analysis covers the panel of 23 OECD countries presented above for the period 1965-2001.<sup>30</sup> The focus on comparable industrial nations enables us to determine those factors which explain differences among countries with longstanding well functioning democratic institutions, similar degrees of economic and social development, and common cultural and political traditions. Accordingly, Greece, Spain, and Portugal are included in the sample just after transition to democracy.

The empirical model relates the degree of fiscal decentralization to decision-making institutions, and to other factors which determine both the vertical assignment of government functions and revenues, and the demand for local or national public services. Whereas the vertical assignment of competencies depends on the costs and benefits of decentralized provision and the institutional rules, the budgetary shares of the different expenditure categories and the extent of public or private supply depends on the relative demand for certain public goods.

Formally, the estimation equation is described by

$$Decentr_{it} = \beta_0 + \beta_1 \cdot Cost_{it} + \beta_2 \cdot Prefer_{it} + \beta_3 \cdot Diverse_{it} + \beta_4 \cdot Instit_{it} + u_{it},$$

where  $Decentr_{it}$  is the degree of fiscal decentralization of country  $i$  in period  $t$ , as represented by the share of sub-central government expenditure in consolidated general government expenditure.<sup>31</sup> Considering only sums spent directly by sub-central government, intergovernmental transfers are attributed to the recipient levels of government.  $Instit_{it}$  is a vector of different decision-making rules, explicitly taking variation over time into account. In line with the “Decentralization Theorem”, we furthermore control for the cost of decentralization in terms of foregone economies of scale and spillovers ( $Cost_{it}$ ), and for the extent of inter-jurisdictional heterogeneity of preferences and conditions ( $Prefer_{it}$ ). Finally,  $Diverse_{it}$  denotes a set of further variables controlling for the demand for certain public services and decentralization. A more detailed discussion of the variables is presented below.

Differently to other studies, we refrain from considering the role of history. Since the vertical government structure exhibits considerable inertia over time, the inclusion of the past degree of decentralization in the estimation equation would explain most of the variation in the contemporaneous degree of decentralization, without providing any information about the factors actually determining government structures.

The empirical model is estimated by ordinary least squares regressions on cross-sectional

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<sup>30</sup>The period considered depends on the data available for the different measures of decentralization. Note that due to gaps in the data the panel is unbalanced.

<sup>31</sup>See the Appendix for a description of all variables and the data used in the regression analysis.

time-series. The pooling of time series and cross-sections permits large-sample analysis that draws on temporal and cross-national variation. As compared to using only country means, pooled regression has the advantage of using additional information which can make the estimates more precise. On the other hand, the time dimension in the data is not adequately exploited and simultaneity problems may arise due to the omission of potential explanatory variables. It could be more appropriate to include country fixed effects to absorb all country-specific factors which are constant over time. However, fixed effects models leave the explanation of time-invariant cross-country differences to the intercepts and therefore allow no analysis of the effect of specific institutions which barely change over time. Also, it may be difficult to control for institutional endogeneity and, thus, for sources of unobserved heterogeneity with country fixed effects when other country-specific characteristics do not change over time, either.

Therefore, we prefer to estimate pooled ordinary least squares regressions with robust standard errors. Nonetheless, the results of the analysis should be treated with a certain caution, since panel data are only of limited value when some variables, like institutions, vary across countries, but rarely within countries over time.

A final specification has to be made with respect to the degree of fiscal decentralization. To investigate the resulting implications of the common-pool problem and of collusive behavior of sub-central governments associated with participation in centralized decision-making, one has to focus alternatively on government revenue. Since the Leviathan theory assumes intergovernmental transfers to reflect collusive behavior, previous empirical work used the share of grants received from central government in total revenue of sub-central government to test the collusion hypothesis.

Taking a different approach, we verify the direct implications of this theory by analyzing the effect of subnational participation in central decision-making on the degree of tax decentralization. Since the collusion hypothesis predicts the formation of tax cartels to prevent fiscal competition, we expect participation of delegated subnational representatives in central decision-making to be associated with lower tax autonomy of sub-central government and, thus, with a lower degree of tax decentralization. The problem consists, however, in using public finance statistics which report tax revenues at the level of government which ultimately receives them, irrespective of whether it has discretion upon them. This makes it difficult to clearly identify whether collusive behavior leads to centralized tax legislation. We therefore use a corrected indicator of decentralization which takes account of actual tax-raising powers of sub-central governments. Accordingly, the degree of tax decentralization is defined as the share of autonomous own tax revenue of sub-central government in total tax revenue of consolidated general government.<sup>32</sup> Consequently, yields from shared taxes or from taxes determined by central government legislation are excluded from sub-central government revenues.

## 4.2 Institutions

### 4.2.1 Institutional Variables

The empirical analysis focuses on the role of institutions of representation and decision-making of subnational entities and citizens. Generally speaking, the direct effect of specific institutions on policy outcomes may be better tested by using dummy variables instead of indices which suffer from a certain degree of arbitrariness. However, due to the complexity and diversity of institutional rules, this is a very difficult task in cross-country comparisons. Despite several shortcomings, the indicators developed in section

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<sup>32</sup>See Stegarescu (2004) for the construction of this indicator (*TD1*) based on the methodological framework provided by OECD (1999), and for corresponding time series for OECD countries.

3 have the advantage of aggregating a multitude of institutional aspects into one measure and as a result removing potential multicollinearity problems in the empirical analysis and increasing the degrees of freedom. The figures indicate considerable institutional variation across OECD countries and, though to a lesser extent, even across time in certain cases. Note again that institutional changes in the course of time are explicitly taken into account in the regression analysis.

The first set of institutions considered in the quantitative analysis contains rules which determine the form of participation of subnational entities in central decision-making. These may affect the decision on the vertical assignment of government functions and revenues, as well as the level of central government spending and taxation. Analogously to previous studies, we begin with considering first the role of *federal* constitutions. However, this dummy variable captures only differences between federal and non-federal countries, and not within either groups. The institutional analysis has shown that representation of subnational entities at the national level differs considerably among federal states and even exists in some formally unitary countries. Accordingly, one cannot necessarily conclude that federal constitutions per se lead to more fiscal decentralization, as commonly expected.

Therefore, second, the index of *subnational representation* constructed in section 3 is used instead. To account for both form of representation and decision-making power, we also employ alternatively the indices of *direct* and *indirect subnational participation* in central decision-making. Note that the effects of either forms of participation are analyzed separately. This allows us to test explicitly the implications of regional referendums on the assignment of competencies described in Redoano and Scharf (2004) and Lockwood (2004), and to draw on a larger sub-sample consisting of 11 countries with subnational representation, as compared to the 6 to 7 federal states. According to the theoretical literature, direct participation of the citizens of the subnational entities is expected to prevent collusive behavior inherent in cooperative decision-making at the national level and, thus, excessive centralization. Finally, in order to test the effect of instruments assumed to enforce political cartels among sub-central governments, a dummy variable is included which considers whether the central government disposes over the ultimate competency in terms of tax legislation (*central tax competency*).

The second set of institutions to be considered is directly related to the budgetary policy of the central government and, thus, may indirectly affect the degree of fiscal decentralization, too. The effect of citizen participation in decision-making with respect to central government spending and revenue is tested by the inclusion of the indices of *direct democracy* presented before. To account for the discrepancy between legal provisions and practice, the average annual number of national referendums is used alternatively.

Apart from subnational or direct citizen participation in decision-making, further institutions which might exert an influence on the level of central government public spending and taxation, are taken into account. A large empirical literature has recently shown that presidential regimes are associated with smaller governments and majoritarian electoral rules with less welfare spending and lower taxes.<sup>33</sup> Majoritarian electoral systems are characterized by stronger geographically based representation. In line with the previous theoretical discussion, they are thus assumed to favor spending programs that can be geographically targeted to powerful minorities. The plurality rule reduces the minimal coalition of voters needed to win the election. In contrast to this, proportional representation induces politicians to fully internalize the policy benefits for a larger group of voters, and, therefore, to put emphasis on universal expenditure programs, such as

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<sup>33</sup>See particularly Persson and Tabellini (1999, 2001), Persson (2002, 2003), Persson et al. (2003), and Milesi-Ferretti et al. (2002).



social transfers. Moreover, proportional electoral systems produce fragmented coalition governments, which in turn lead to more moderate policies with less pronounced partisan cycles. Analogously, weaker political accountability and the confidence vote requirement in parliamentary regimes also encourage more stable legislative majorities resulting in higher taxes and higher spending, as compared to presidential systems.

In terms of the vertical government structure one might therefore expect the share of central government expenditure or revenue in total public sector expenditure or revenue to be lower in presidential regimes and under majoritarian electoral rules, all other things being equal. On the other hand, reduction of the number of veto players in presidential systems and first-past-the-post nature of plurality systems are assumed to insulate the executive power and permit certain groups to impose their authority.<sup>34</sup> These mechanisms therefore provide worse protection and representation of minorities in general, at the same time increasing the likelihood of uneven distribution of public goods. Apart from this, the missing requirement of a vote of confidence in the legislature favors a stronger central government. As a consequence, presidential regimes may be associated with higher centralization, too.

To account for these effects, a dummy variable is introduced which classifies as *presidential regimes* where the executive is not accountable to the legislature through a vote of confidence. The multitude of dimensions of electoral rules is instead represented by a continuous measure for the degree of disproportionality of the *electoral system*.

#### 4.2.2 Endogeneity Issues

The common assumption in most empirical studies is that institutions are exogenous. Particularly institutional rules laid out in the constitution are rather difficult to modify. This view is also supported by the institutional overview provided in the present study, which detected only few institutional changes during the last 38 years in OECD countries. In particular, rules of subnational representation and participation in central decision-making appeared to exhibit considerable inertia over time, Spain and Belgium being the only exceptions. Therefore, one can exclude, at least in the short run, possible reverse causation going from policy outcomes, the choice of decision-making rules generally preceding the decision on the vertical assignment of competencies or on the budgetary policy.

This long-time inertia does, however, not necessarily justify treating institutions as fully exogenous. Serious problems arise in estimating the impact of institutions on fiscal decentralization when institutions are in reality endogenous, i.e. they are determined by other observed or unobserved factors.<sup>35</sup> As noted by Poterba (1996), observed correlations between institutions and policy outcomes could be spurious, when they simply reflect the influence of an omitted third variable on both, namely voter preferences for certain policies. For example, if citizen initiatives are associated with more fiscal decentralization, this might be due to the fact that voters support rules which prevent collusive behavior of legislators and over-centralization. One may also imagine that heterogeneous regions join a federation provided that they have disproportionately large representation in the upper chamber of parliament and participate with equal rights in central decision-making. Since heterogeneity induces at the same time a higher degree of decentralization in line with the traditional fiscal federalism theory, it may interfere with the centralizing effect of cooperative decision-making mechanisms.

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<sup>34</sup>See Aghion et al. (2004).

<sup>35</sup>See, e.g., Besley and Case (2002), or, Persson and Tabellini (2001) for a discussion of institutional endogeneity issues. Aghion et al. (2004) provide evidence for a causal relationship between institutions and different socio-cultural and historical factors, such as ethno-linguistic fractionalization and legal and colonial origin.

One must not exclude the possibility that politicians choose institutions strategically to affect future policy outcomes.<sup>36</sup> This is particularly the case when rules are set up by ordinary laws which could be easily changed by the government majority in parliament. Nonetheless, except for few examples, fundamental institutions rarely change in functioning democracies. Therefore, even if institutions are assumed to partly reflect deeper cultural or societal aspects, they also have important direct effects on policy outcomes due to their inertia. The more difficult it is to change the institutions, the more valuable the cross-country variation is in identifying the effect of these institutions on the degree of fiscal decentralization.

Not considering these endogeneity issues, one runs the risk of omitted-variable bias in estimating the effect of institutions. One possibility to address endogeneity consists in instrumenting one institution using another. However, this approach may not be reasonable, since one has to assume then that the institution used as an instrument is not itself correlated with the unobservables. Therefore, in order to take into account that institutions and fiscal decentralization may be determined simultaneously by other right hand side factors, we include institutions in our regressions and at the same time control for costs and benefits of decentralization and voter tastes for decentralization. For ordinary least squares to yield an unbiased estimate of the effect of institutions, we have then to assume in the usual way that institutions are uncorrelated with the error term. This is the approach taken by previous studies on the effect of institutions on public spending, too, which account for the political affiliation of executive or legislative power, or for cultural influences.<sup>37</sup> Strictly speaking, both inter-jurisdictional heterogeneity of preferences and general tastes for centralized or decentralized provision of public goods have to be taken into account.

### 4.3 Costs and Heterogeneity of Preferences

According to the “Decentralization Theorem” missing coordination in decentralized provision of public goods leads to costs in terms of foregone economies of scale and inter-jurisdictional spillovers. On the other hand, decentralization allows to tailor public services to local preferences and conditions.

Following the empirical literature, the present analysis captures potential economies of scale and spillovers of public goods by the size of the country in terms of *population* and *area*, and by the spatial allocation of the population, as depicted by the degree of *urbanization*. The higher the size and the geographic concentration of the population, the more likely economies of scale in the consumption of public goods could be exploited at lower levels of government, thus increasing the benefits of decentralization. In addition to this, the costs of centralized information, administration, and decision-making are likely to increase with the size of the country, whereas spillovers of public goods tend to decrease with geographic area. It is also commonly assumed that the diversity of preferences increases with the size of the country, thus supporting decentralization.<sup>38</sup> Apart from this, the degree of urbanization is also included to control for potential differences between urban and rural areas in benefits of spending and costs of raising revenues. Some authors, like, e.g., Brecht (1932), argue that more urbanized areas are associated with higher per capita costs of local public goods, which, *ceteris paribus*, would imply a higher degree of fiscal decentralization.

<sup>36</sup>Certain changes in electoral rules which occurred in France and Italy, or frequent alterations of the delimitation of electoral constituencies seem to support this view.

<sup>37</sup>See Poterba (1995), Dafflon and Pujol (2001), Pujol and Weber (2003), and Feld and Matsusaka (2003), among others.

<sup>38</sup>See, e.g., Alesina and Spolaore (1997), and, also, Greenberg (1956) with respect to linguistic diversity. This claim, however, lacks clear empirical evidence. For example, small countries like Belgium or Switzerland are more heterogeneous than certain large countries like France, Australia, or even the USA.

Measurement of inter-jurisdictional preference heterogeneity is confronted with several problems. First of all, preference heterogeneity has multiple dimensions which cannot be summarized by simple aggregate measures. The extent of preference diversity is expected to differ depending on the public goods concerned. For example, local preferences for certain national public goods like defense or welfare might be more homogeneous than preferences for typical local public goods like school education or local infrastructure. Therefore a disaggregated approach to testing the implications of the “Decentralization Theorem” for individual public services might be more appropriate. Comparing interregional differences in voting behavior in national referendums on specific objects could provide a direct measure of preference heterogeneity.<sup>39</sup> Alternatively, Strumpf and Oberholzer-Gee (2002) represent intra-state heterogeneity of preferences of US states based on estimates of local tastes for the liquor control policy.

However, a disaggregated approach cannot be easily replicated in cross-country analyses in view of the difficulty of defining strictly comparable issues submitted to voting. Also, as shown before, national referendums are missing or considerably restrained in several countries. The alternative therefore consists in using proxies for aggregate preference heterogeneity based on interregional cultural or economic differences. Previous studies on fiscal decentralization approximate inter-jurisdictional diversity of preferences by means of the degree of ethno-linguistic *fractionalization*.<sup>40</sup> This is calculated as one minus the Herfindahl index of ethno-linguistic group shares, and measures the likelihood that two randomly selected individuals belong to different ethnic or linguistic groups.

Two problems have to be taken into account when using these fractionalization measures. By focusing only on the number and the relative size of ethnic or linguistic groups, the geographical distribution of the different ethnic or cultural groups is not accurately represented. Since the geographical sorting of people with similar preferences constitutes the crucial precondition for the validity of the “Decentralization Theorem”, one has to implicitly assume that the ethnic or linguistic structure is perfectly correlated with the spatial allocation of the population.<sup>41</sup> Moreover, these indicators also ignore the extent of inter-cultural differences, assuming equal distances. Greenberg (1956) and Fearon (2003) propose alternative fractionalization measures which account for the resemblance or “cultural distance” between the different ethno-linguistic groups. However, note that these classifications are only based on purely philological considerations.<sup>42</sup>

Another problem of common fractionalization measures is related to the fact that preferences are determined by a multitude of ethno-linguistic, cultural, social or economic factors. Therefore it is not clear which aspect is likely to dominate for a particular political issue or in a certain country at a certain time.<sup>43</sup> However, as the history of secessionist movements shows, linguistic cleavages seem to be strongest.<sup>44</sup> Therefore, despite being highly imperfect proxies, we rely on data provided by the Ethnologue project on linguistic fractionalization to capture preference heterogeneity, since better quantitative

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<sup>39</sup>This is the approach taken by Dafflon and Pujol (2001) who measure fiscal preferences of Swiss cantons drawing on the voters’ behavior in federal fiscal referendums.

<sup>40</sup>See, e.g., Panizza (1999), and Garrett and Rodden (2003). Fearon (2003) and Alesina et al. (2003) provide more recent data and a general discussion of the measurement of ethno-linguistic, religious and cultural diversity.

<sup>41</sup>For instance, some studies report high degrees of fractionalization for certain countries like Australia, the Netherlands or the USA. However, the different groups considered there often represent recently immigrated people who have no deeply rooted local traditions, and who are dispersed throughout the country, instead of being geographically concentrated.

<sup>42</sup>Alternatively, inter-cultural differences might be better represented by surveys on regional identification and attachment to the nation, like those conducted by the Euro-Barometer.

<sup>43</sup>See, e.g., Laitin and Posner (2001) for a detailed critique of common fractionalization measures. They propose a more disaggregated approach. They also point to problems associated with the endogeneity of ethnic or linguistic distinctions to other political and economic variables. However, over sufficiently long time horizons these structures are expected to be exogenous.

<sup>44</sup>This is illustrated, e.g., by the cases of Belgium, Spain, Quebec, USSR, Yugoslavia, or even of the canton Jura in Switzerland. The empirical analysis of Pujol and Weber (2003) also shows that language plays an important role in explaining fiscal preferences of Swiss cantons.

measures which account for all aspects mentioned above are not yet available. Though not removing all difficulties, these data have the definite advantage of considering only indigenous languages and dialects in each country, thus, e.g., excluding languages of recent immigrants. Since it is not necessarily clear to which extent linguistic differences actually reflect different preferences for public goods, we refrain from considering the degree of resemblance of the different language groups.

In addition to the measure of linguistic fractionalization, which is constant over time, the degree of *regional disparity* of per capita income is used as an indicator of time-variant interregional heterogeneity of preferences and endowments. We expect higher interregional income disparity to be associated with more decentralization. On the other hand, however, the demand for stronger central government support or interregional risk-sharing may increase with income disparity.<sup>45</sup>

#### 4.4 Other Determinants

We also control for the influence of other potential determinants of government decentralization, such as historical, social, cultural and economic conditions. First, we consider the country's *legal origin* by including a dummy variable for legal systems based on English common law. Civil law is commonly regarded as an instrument of the State in expanding its power, whereas the common law tradition puts more emphasis on the private and property rights of individuals. Religion, or, more precisely, the percentage of *Catholic* population, is also included as a proxy for general preferences for centralization and a strong central government. Cultural theories classify the Catholic doctrine as more hierarchical and interventionist than the Protestantism, which stresses individual responsibility instead. Strong preferences for uniformity and solidarity are expected to be associated with support for a strong central government and interregional and inter-personal income redistribution. La Porta et al. (1999) indeed provide some empirical evidence that Catholic and civil law countries are more interventionist than Protestant and common law countries. However, even if these aspects are transferred into the political sphere, it is not necessarily clear whether a more interventionist state might be more centralized, too.

Following the empirical literature, we also consider the voter ideology in order to capture preferences for certain institutions or policy outcomes. This is done by focusing on the party composition of the central government, since political power is basically exercised through the cabinet. As a proxy for government ideology we use the fraction of seats held by leftist parties in total seats of the government coalition in the legislature (*left government*). According to the partisan theory, politicians base their decisions on the preferences of their parties and of the voters who support them rather than on the preferences of all voters.<sup>46</sup> This theory predicts that left-dominated governments favor higher public spending. The empirical literature, however, provides quite inconclusive evidence with respect to the partisan cycle hypothesis<sup>47</sup> and neglects for the most part the resulting implications for the vertical government structure. One may, for example,

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<sup>45</sup>Note that, in general, regional indicators involve certain difficulties. First, in several countries regional boundaries often change for political or administrative reasons, thus questioning the exogeneity and integrity of administrative divisions, and, at the same time, affecting the measurement of interregional disparity. Certain EU countries, such as Ireland, Greece or Finland, created development regions without vesting them with real fiscal powers, in order to allocate EU structural funds payments. This aspect is directly related to another problem, that of comparing countries with autonomous regional governments, with countries where regions merely represent administrative units of central government or statistical areas.

<sup>46</sup>See, e.g., Hibbs (1977) and Castles (1982). Poole and Rosenthal (1996) provide some evidence from the United States that legislators' ideology matters.

<sup>47</sup>Cameron (1978), and Hicks and Swank (1992), among others, show that left governments are associated with higher public spending and revenues. On the other hand, Blais et al. (1993) find only small differences between spending patterns of left and right governments.

argue that left governments are more concerned with equity considerations and therefore favor state control and stronger centralization.

Further standard control variables capturing varying demands for certain public goods are included, too. According to the “laws” of Wagner (1876) and Popitz (1927), economic development and growing prosperity are associated with the expansion and centralization of the public sector. For example, demand for income redistribution and the establishment of generous welfare systems are expected to be positively related to higher income per capita. This also corresponds to the Meltzer-Richard hypothesis according to which an increase in the mean income relative to the income of the decisive median voter increases the size of government.<sup>48</sup> On the other hand, empirical evidence shows that high-income countries are likely to be more decentralized, a typical characteristic of underdevelopment being the relative unimportance of local government. This is explained by higher real costs of decentralized structures at lower stages of economic development due to scarcity of qualified administrative staff, and to costs of political coordination and creation of local government institutions.<sup>49</sup> Apart from this, increasing wealth is expected to raise the diversity of preferences, too, thus fostering demands for fiscal decentralization. In order to control for these effects, we include the natural log of real *income* (GDP) *per capita*.

Since there may exist certain life-cycle patterns to demand for public services, the demographic structure is represented by the *dependency ratio*, the proportion of population aged below 15 or above 64. Since the degree of decentralization also reflects the budgetary share of different government activities, we finally control for temporary expenditure and revenue effects. The inclusion of a dummy variable taking the value of 1 for years of national *elections* captures possible electoral cycles mentioned in the literature. Central government expenditure are expected to increase in the run-up to national elections and to decrease the year after, and vice versa with respect to tax revenues.<sup>50</sup> The degree of expenditure (revenue) decentralization might therefore be lower (higher) in election years. Different elasticities of expenditure and revenue of the different levels of government with respect to business cycles are finally accounted for by the inclusion of the *rate of growth* of real per capita income.

## 5 Results

The degree of fiscal decentralization is first regressed on the non-institutional determinants presented above, and, afterwards, on alternative institutional indicators. The results of the regression analysis for direct government expenditure are presented below in Table 2. In view of the pooled time-series cross-sectional data structure, we estimate robust standard errors which account for both heteroscedasticity and an unspecified autocorrelation structure within units according to Newey and West (1987).<sup>51</sup> The F-tests indicate that all model coefficients are jointly significant, and the goodness of fit of the regression is very high. Checks for collinearity and outliers have been carried out. The territorial change in Germany is accounted for by the inclusion of a dummy variable for

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<sup>48</sup>See Meltzer and Richard (1981).

<sup>49</sup>See, e.g., Oates (1972) and Wheare (1963). However, as Kee (1977) found out, this more likely reflects fundamental differences between industrial and developing countries, the relationship between income and decentralization disappearing when considering only high-income countries.

<sup>50</sup>Persson and Tabellini (2001, 2003), e.g., provide some evidence for electoral cycles, depending on the electoral rules and the political regime.

<sup>51</sup>The alternative estimation of robust standard errors using the White/Huber-sandwich-estimator (see White, 1980) adjusted for within-country clustering of errors leads to less precise estimates, without significantly changing the results. However, according to Davidson and MacKinnon (1993), the reliability of the White variance matrix estimator is questionable in case of small samples or cross-sections.

the period after reunification.

With respect to the variables capturing economies of scale and spillovers, only the geographic size has the expected positive effect on fiscal decentralization. Contrary to previous studies, the estimates report a negative significant effect of urbanization and, though mostly insignificant, of population size. One possible explanation might be that these variables capture both demand and supply side aspects, the demand for certain public services provided by the central government possibly dominating vis-à-vis the economies of scale aspect. For example, urban agglomeration is typically associated with higher inter-jurisdictional spillovers and stronger demand for social transfer programs, both involving an increased role of the central government.

The estimates for both linguistic fractionalization and regional disparity are clearly in line with the “Decentralization Theorem”, indicating that heterogeneous countries are more decentralized. On the other hand, countries with civil law traditions and predominantly catholic population are shown to be more centralized. We have also checked whether increased factor mobility may support centralization. According to Bolton and Roland (1996), under certain conditions, perfect mobility removes the diversity of fiscal policies across jurisdictions. Apart from this, high inter-jurisdictional mobility is typically associated with increased spillovers and reflects a low diversity of preferences. Indeed, the inclusion of a measure of interregional individual *mobility* yields a negative effect on the degree of fiscal decentralization (not shown), however, without considerably contributing to the goodness of fit of the regression.<sup>52</sup>

With respect to the role of economic development, the results confirm previous studies in providing evidence that higher income countries are more decentralized. The demographic composition also plays a certain role. As the percent of population below 15 or above 64 increases, either the demand for central government services increases or the demand for local services decreases, thus reducing the degree of decentralization. Electoral and business cycles seem to play a minor role, partly indicating that the share of sub-central government expenditure is lower in years of national elections and strong economic growth. According to these findings, the income elasticity of demand for centrally provided services seems to exceed that for subnational services. Finally, we provide some evidence that party ideology matters for policy outcomes. Contrary to the expectations, central governments dominated by leftist parties are correlated with a higher degree of expenditure decentralization. The results are consistent with those of Schaltegger and Feld (2001) and with recent developments in a number of countries which indicate that leftist cabinets tend to support government decentralization<sup>53</sup> and to commit to restrictive fiscal policy.

As can be seen, the inclusion of institutional variables considerably improves the goodness of fit of the regressions. With minor exceptions, the effects of the other variables remain unchanged. Due to multicollinearity, different indicators of decision-making institutions are included separately. To check for endogeneity, Hausman tests have been carried out by first regressing institutions on other variables which represent preferences and costs, and, afterwards, by including the derived residuals in the initial regressions. The tests indicate strict exogeneity. Note again that institutional changes in the course of time are explicitly taken into account by the indicators employed here.

As expected, presidential regimes which are typically associated with stronger central governments and weaker representation of minorities have a highly significant negative effect on government decentralization. In contrast to this, the degree of disproportionality of the electoral system seems to play no clear role. We have also tested the hypothesis

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<sup>52</sup>The results of regressions using alternative specifications not shown here are available upon request.

<sup>53</sup>This has been the case in France and Spain under socialist governments at the beginning of the 1980s, or, more recently, in the United Kingdom under the Labor government.

Table 2: OLS estimates of fiscal decentralization, direct expenditure (incl. social security), 23 OECD countries, 1970-2001

	Dep. var.: Degree of expenditure decentralization						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Population</i>	-.012 ** (.006)	-.005 (.006)	-.003 (.005)	-.008 (.005)	.000 (.005)	-.006 (.005)	-.006 (.006)
<i>Area</i>	.027*** (.006)	.034*** (.006)	.024*** (.006)	.028*** (.006)	.015*** (.006)	.026*** (.005)	.026*** (.006)
<i>Urbanization</i>	-.276*** (.065)	-.311*** (.077)	-.238*** (.065)	-.314*** (.072)	-.252*** (.069)	-.241*** (.071)	-.242*** (.079)
<i>Fractionalization</i>	.159*** (.043)	.147*** (.040)	.140*** (.040)	.120*** (.037)	.040 (.041)	.070 (.043)	.070 (.050)
<i>Regional disparity</i>	.330*** (.094)	.232 ** (.094)	.149 (.093)	.169 * (.097)	.231 ** (.092)	.230*** (.089)	.231*** (.086)
<i>Per capita income</i>	.170*** (.027)	.181*** (.031)	.118*** (.033)	.145*** (.029)	.151*** (.029)	.144*** (.028)	.144*** (.029)
<i>Catholic</i>	-.160*** (.036)	-.158*** (.026)	-.189*** (.033)	-.181*** (.028)	-.166*** (.030)	-.151*** (.030)	-.151*** (.038)
<i>Legal origin</i>	.097*** (.024)	.076*** (.026)	.035 (.025)	.059 ** (.024)	.033 (.024)	.040 (.026)	.040 (.026)
<i>Dependency ratio</i>	-1.058*** (.364)	-.731 * (.443)	-.788 ** (.385)	-.792 ** (.396)	-.566 (.376)	-.704 * (.396)	-.707 * (.394)
<i>Growth rate</i>	-.196 (.163)	-.197 (.139)	-.092 (.131)	-.129 (.132)	-.039 (.134)	-.079 (.136)	-.078 (.138)
<i>Election</i>	-.006 (.005)	-.005 (.004)	-.007 * (.004)	-.008 * (.004)	-.008 ** (.004)	-.008 * (.004)	-.008 * (.004)
<i>Left government</i>	.052*** (.169)	.036 ** (.016)	.028 * (.015)	.028 * (.015)	.026 * (.014)	.030 ** (.015)	.030 ** (.015)
<u>Institutions:</u>							
<i>Presidential regime</i>		-.102*** .025	-.081*** (.025)	-.094*** (.024)	-.080*** (.025)	-.091*** (.024)	-.091*** (.025)
<i>Electoral system</i>							.009 (.235)
<i>Direct democracy</i>		.011 (.014)	.002 (.012)	-.002 (.013)	-.015 (.012)	-.020 (.015)	-.020 (.015)
<i>Federal</i>			.098*** (.018)				
<i>Subnat. represent.</i>				.061*** (.013)			
<i>Subnat. particip.<sup>a</sup> (direct)</i>					.074*** (.011)	.072*** (.018)	.072*** (.020)
<i>Subnat. particip.<sup>a</sup> (indirect)</i>					.014 * (.008)	.023 ** (.010)	.023 * (.012)
No. obs.	482	482	482	482	482	482	482
adj. R <sup>2</sup>	.682	.737	.782	.768	.799	.779	.779

Note: Newey-West heteroscedasticity and autocorrelation consistent standard errors are in brackets. \*\*\*, \*\*, and \* indicate significance at 1%, 5% and 10% levels, respectively. All regressions include a dummy variable for Germany after reunification whose coefficient is not reported. <sup>a</sup> the following alternative indices have been used: decision-making on the assignment of expenditure powers (5), and on all policy areas (6)-(7). The degree of fiscal decentralization is measured as total expenditure and lending minus repayments of sub-central government, exclusive of transfers to other levels of government, in % of consolidated general government expenditure including social security, but excluding EU payments (source: IMF, Government Finance Statistics Yearbook, except for BEL – Banque Nationale de Belgique, and JAP – OECD, National Accounts; own calculations).

according to which the common-pool problem in fiscal policy might be more pronounced under broad-based coalition governments, where the number of veto players is higher.<sup>54</sup> Coalition governments may therefore lead to over-spending at the national level and, *ceteris paribus*, to a lower degree of decentralization. The inclusion of a measure of political *fragmentation* of the central *government* (not shown) yielded, however, no significant effect.

The decentralizing effect of referendums found by Schaltegger and Feld (2001) and Matsusaka (1995, 2000) for subnational governments cannot be confirmed at the national level. The coefficients of direct democracy are insignificant and the signs are contradictory. First of all, this is not surprising when considering that the conduct of referendums is more restricted at the national level as compared to the local level, certain highly decentralized countries like the USA or Canada do not provide for national referendums at all. Also, as shown in section 3.2, with the exception of Switzerland, financial issues are usually excluded from popular consultation at the national level. Indeed, a decentralizing effect is only supported when considering alternatively only legal provisions for financial referendums and initiatives or the referendum practice in terms of the average number of national referendums (not shown).<sup>55</sup> An alternative explanation for the inconclusive effect of national referendums may be provided by the Meltzer-Richard hypothesis according to which more unequal income distribution will create a majority in favor of increased redistribution. The decisive national median voter – who is distinct from the regional median voters – may consequently support more centralization aimed to increase redistribution. As concluded by Matsusaka (2000), too, the spending reducing impact of initiatives is not certain. Initiatives only serve to adjust policy outcomes to citizens' preferences, yet, citizens may prefer higher central government spending.

With respect to the participation of subnational entities in central decision-making, the estimates confirm the standard result of previous studies according to which countries with a federal constitution are more decentralized than unitary countries. The index of subnational representation which also accounts for regional representation in certain unitary countries, has also a highly significant positive effect on expenditure decentralization, which is consistent with the analysis of Vaubel (1996).

The evidence also supports a significant positive relationship between participation of subnational entities in central decision-making and the degree of expenditure decentralization. Particularly participation in the assignment of spending powers performs better than the federalism dummy in explaining the variation in the degree of decentralization. The effect is generally stronger for direct than for indirect forms of participation. However, note that the coefficient of linguistic fractionalization becomes insignificant especially when taking account of direct subnational participation in central decision-making. This possibly indicates that particularly in heterogeneous countries certain decisions at the national level have to be approved additionally by the voters or legislatures of the regions in order to prevent excessive centralization.

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<sup>54</sup>Roubini and Sachs (1989) show that fragmented coalition governments are associated with higher budget deficits in industrial countries.

<sup>55</sup>The last result seems to partly contradict Besley and Case (2002) who argue that the actual conduct of initiatives need not be a good indicator of their influence, since the effect of an initiative can be felt even if it is not actually called. This might be certainly true with respect to citizen initiatives at subnational levels, or when referendums are frequently held. Hence, the referendum intensity does not only reflect the restrictions imposed upon organization, but also deeply rooted traditions of "citizen participation". For example, in Austria, despite extensive legal provisions, referendums are barely conducted at the national level.



Table 3: OLS estimates of fiscal decentralization, tax revenue, 23 OECD countries, 1965-2001

	Dep. var.: Degree of tax decentralization Total tax revenue (TD3)				Auton. own tax revenue (TD1)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Population</i>	-.011 (.007)	-.002 (.007)	.003 (.006)	-.006 (.007)	-.022*** (.006)	-.018*** (.006)	-.018*** (.006)	-.018*** (.006)
<i>Area</i>	.040*** (.007)	.048*** (.007)	.029*** (.007)	.035*** (.007)	.040*** (.006)	.044*** (.006)	.043*** (.006)	.045*** (.006)
<i>Urbanizat.</i>	-.431*** (.083)	-.499*** (.091)	-.349*** (.075)	-.512*** (.083)	-.475*** (.068)	-.480*** (.081)	-.469*** (.080)	-.480*** (.082)
<i>Fractional.</i>	.284*** (.059)	.270*** (.051)	.219*** (.045)	.204*** (.051)	.442*** (.056)	.427*** (.053)	.423*** (.054)	.428*** (.054)
<i>Reg. dispar.</i>	.267** (.125)	.135 (.115)	-.013 (.106)	.008 (.118)	.049 (.091)	-.009 (.088)	-.019 (.089)	-.006 (.091)
<i>P.c. income</i>	.280*** (.027)	.301*** (.036)	.204*** (.027)	.249*** (.029)	.233*** (.027)	.236*** (.029)	.229*** (.029)	.237*** (.028)
<i>Catholic</i>	-.114*** (.031)	-.108*** (.026)	-.137*** (.026)	-.137*** (.024)	-.215*** (.034)	-.212*** (.032)	-.214*** (.033)	-.212*** (.032)
<i>Legal origin</i>	.010 (.031)	-.016 (.032)	-.095*** (.020)	-.051** (.023)	.056** (.026)	.045* (.026)	.039 (.026)	.045* (.026)
<i>Depen. ratio</i>	.805 (.534)	1.257** (.539)	1.265*** (.407)	1.346*** (.462)	.956** (.419)	1.126*** (.431)	1.127*** (.431)	1.125*** (.434)
<i>Growth rate</i>	-.544** (.233)	-.580*** (.212)	-.234 (.154)	-.355** (.170)	-.429** (.205)	-.416** (.190)	-.392** (.177)	-.420** (.183)
<i>Election</i>	-.002 (.006)	-.002 (.005)	-.007* (.004)	-.009* (.005)	-.003 (.004)	-.002 (.005)	-.003 (.004)	-.002 (.004)
<i>Left govern.</i>	.020 (.019)	.009 (.018)	-.009 (.017)	-.006 (.017)	-.012 (.016)	-.018 (.016)	-.020 (.016)	-.018 (.016)
<u>Institutions:</u>								
<i>Pres. regime</i>		-.119*** (.025)	-.085*** (.019)	-.110*** (.021)		-.059*** (.020)	-.057*** (.021)	-.059*** (.020)
<i>Dir. democr.</i>		.003 (.019)	-.019 (.013)	-.029* (.015)		.010 (.015)	.009 (.016)	.011 (.017)
<i>Federal</i>			.198*** (.020)				.014 (.026)	
<i>Subnat. repr.</i>				.123*** (.020)				-.002 (.019)
No. obs.	549	549	549	549	549	549	549	549
adj. R <sup>2</sup>	.621	.663	.781	.740	.739	.753	.753	.753

In order to provide a more appropriate test of the implications of the common-pool problem for public revenues, the analysis focuses next on the degree of tax decentralization, drawing on the corrected indicator presented in Stegarescu (2004). Table 3 confronts the results for total tax revenues of sub-central government as reported in public finance statistics (columns 1-4, indicator *TD3*), and for autonomous own tax revenues accounting for tax-raising powers (columns 5-8, indicator *TD1*). Note, again, that in case of the latter, changes in tax-raising powers of sub-central government in the course of time are explicitly taken into account.

The estimates for the corrected decentralization measure (*TD1*) which accounts for tax-raising autonomy clearly confirm the expectations according to which the more decision-making is delegated to representatives of subnational entities, the more centralized are the taxing powers. In contrast to this, direct participation of the regional electorate or of regional legislatures in decisions concerning the assignment of taxing powers or other policy areas has a significant positive effect on the degree of tax decentralization. Furthermore, as expected, countries where the central government possesses the ultimate

Table 3 (cont.): OLS estimates of fiscal decentralization, tax revenue

	Dep. var.: Degree of tax decentralization							
	Total tax revenue (TD3)				Auton. own tax revenue (TD1)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Population</i>	-0.007 (.006)	-0.009 (.006)	-.018*** (.007)	-.005 (.007)	-.001 (.005)	-.002 (.005)	-.005 (.005)	-.010* (.006)
<i>Area</i>	.031*** (.008)	.037*** (.007)	.028*** (.007)	.028*** (.008)	.026*** (.007)	.030*** (.005)	.028*** (.006)	.024*** (.006)
<i>Urbanizat.</i>	-.467*** (.094)	-.452*** (.091)	-.522*** (.097)	-.335*** (.099)	-.309*** (.074)	-.301*** (.070)	-.324*** (.074)	-.306*** (.074)
<i>Fractional.</i>	.215*** (.076)	.201*** (.070)	.239*** (.074)	.083 (.070)	.216*** (.067)	.195*** (.055)	.207*** (.057)	.228*** (.059)
<i>Reg. dispar.</i>	.103 (.112)	.107 (.120)	.226* (.122)	.180 (.121)	-.018 (.084)	.073 (.084)	.111 (.089)	.039 (.088)
<i>P.c. income</i>	.244*** (.030)	.245*** (.030)	.239*** (.030)	.243*** (.032)	.222*** (.026)	.236*** (.024)	.234*** (.025)	.174*** (.026)
<i>Catholic</i>	-.137*** (.030)	-.118*** (.028)	-.175*** (.038)	-.056** (.027)	-.143*** (.029)	-.127*** (.026)	-.145*** (.031)	-.157*** (.031)
<i>Legal origin</i>	-.051** (.025)	-.053** (.023)	-.059*** (.021)	-.088*** (.028)	-.047** (.020)	-.040** (.019)	-.042** (.018)	-.033 (.022)
<i>Depen. ratio</i>	1.529*** (.446)	1.352*** (.469)	1.075** (.466)	1.102** (.512)	1.390*** (.392)	1.337*** (.358)	1.249*** (.361)	.962** (.382)
<i>Growth rate</i>	-.361** (.170)	-.350** (.171)	-.234 (.161)	-.378** (.176)	-.302** (.144)	-.292** (.129)	-.255** (.127)	-.201 (.147)
<i>Election</i>	-.007 (.005)	-.007 (.005)	-.005 (.005)	-.005 (.005)	-.003 (.004)	-.002 (.004)	-.002 (.004)	-.006 (.004)
<i>Left govern.</i>	-.007 (.018)	-.004 (.018)	-.009 (.018)	.003 (.018)	-.003 (.017)	-.008 (.014)	-.010 (.015)	-.024 (.016)
<u>Institutions:</u>								
<i>Pres. regime</i>	-.100*** (.022)	-.109*** (.022)	-.122*** (.023)	-.105*** (.025)	-.048*** (.018)	-.050*** (.017)	-.054*** (.017)	-.044** (.021)
<i>Elect. system</i>			1.061*** (.277)				.338 (.213)	
<i>Dir. democr.</i>	-.036** (.016)	-.043** (.018)	-.044*** (.016)	-.014 (.016)	-.015 (.014)	-.035*** (.013)	-.035*** (.013)	-.008 (.012)
<i>Subnat. par.<sup>a</sup> (direct)</i>	.047* (.025)	.067** (.029)	.047 (.028)		.119*** (.023)	.191*** (.021)	.185*** (.021)	
<i>Subnat. par.<sup>a</sup> (indirect)</i>	.064*** (.010)	.063*** (.013)	.092*** (.015)		-.033*** (.009)	-.065*** (.008)	-.055*** (.011)	
<i>Cen. tax com.</i>				-.187*** (.041)				-.199*** (.032)
No. obs.	549	549	549	549	549	549	549	549
adj. R <sup>2</sup>	.746	.737	.757	.708	.805	.848	.849	.807

Note: Newey-West heteroscedasticity and autocorrelation consistent standard errors are in brackets. \*\*\*, \*\*, and \* indicate significance at 1%, 5% and 10% levels, respectively. All regressions include a dummy variable for Germany after reunification whose coefficient is not reported. The degree of tax decentralization is measured as the share of sub-central government total tax revenue (TD3), and alternatively, autonomous own tax revenue (TD1), in tax revenue of consolidated general government, excluding social security (source: Stegarescu (2004) based on OECD, Revenue Statistics). <sup>a</sup> the following alternative indices have been used: decision-making on the assignment of revenue powers (1) and (5), and on all policy areas (2)-(3) and (6)-(7).

competency in tax legislation are found to be more centralized.

These results therefore support the predictions of Redoano and Scharf (2004) and the collusion hypothesis. On the other hand, the estimates now contradict the analysis of Vaubel (1996), indicating that stronger subnational representation at the national level has a negative, though statistically insignificant, effect on tax decentralization. Also, in terms of tax autonomy, the estimates provide no clear support for the hypothesis that federal countries are more decentralized than unitary countries. However, in order to take a closer look at the upper chamber of parliament, dummy variables for different types of regional representation have been used alternatively (not shown). As expected, only upper chambers consisting of representatives delegated by regional governments or legislatures are strongly correlated with higher centralization.

Interestingly enough, certain differences are also reported for other variables when comparing the estimates for the expenditure and the revenue side of the public sector. For example, the centralizing effects of business cycles and national referendums are stronger for tax revenues. Also, the signs of the dependency ratio and legal origin are reversed and become partly ambiguous, whereas electoral cycles and government ideology lose significance. However, with regard to the revenue side of the public sector, other determining factors are possibly omitted, such as the mobility of different tax bases or economies of scale in tax collection, which are assumed to determine the assignment of taxing powers to different levels of government. In general, the goodness of fit of the regressions is higher when considering only autonomous tax revenues.

The divergent results therefore indicate the importance of correct measurement of fiscal decentralization in quantitative analyses. In order to control for the presence of common patterns of cross-sectional or “spatial” correlation, additional regressions have been run including year dummies (not shown). The previous results are mainly confirmed. However, this methodological approach seems rather suited to studies in the subnational context, since subnational entities are more likely to be exposed to common exogenous influences. For a cross-country analysis this is, at most, relevant for groups of countries, such as EU countries, which are strongly integrated with each other. Finally, with few exceptions, the robustness of the results is also confirmed by alternative OLS regressions on three-year-averages (not shown).

## 6 Summary and Conclusions

Recent work on fiscal federalism shows that apart from traditional cost-benefit aspects, institutional rules underlying decision-making processes considerably influence the choice of the vertical government structure. The delegation of political decision-making to elected representatives is shown to create a common-pool problem, collusive behavior and vote-trading leading in the end to inefficiently high public spending and centralization.

The purpose of this paper was to verify empirically the contribution of these theoretical approaches to explaining observed cross-national differences in the degree of public sector decentralization, by focusing on the role of specific institutions. In particular, we tested the recent theoretical predictions made by Lockwood (2004) and Redoano and Scharf (2004), that national referendums or participation of elected or designated representatives of subnational entities in decision-making concerning the assignment of government functions and revenues across levels of government leads to increased centralization, as compared to decisions taken by the citizens of the subnational entities directly.

A comparative-descriptive analysis for a sample of 23 OECD countries during the period 1965 to 2003 indeed reveals a large variety of institutions of direct democracy and

decision-making at the national level, even among formally federal countries. The time-series cross-sectional regression analysis then relates the degrees of expenditure and tax decentralization to institutional indicators, at the same time controlling for heterogeneity of preferences and conditions, economies of scale, and other determinants of the vertical government structure and of the demand for local or national public services. In doing so, the quantitative approach taken in this paper addresses the issue of institutional endogeneity and explicitly accounts for institutional changes over time.

The results are mostly in line with the “Decentralization Theorem”, indicating that large and linguistically and economically heterogeneous countries are more decentralized. In general, factors depicting general preferences and the demand for local or national public services significantly contribute to explaining cross-national differences in decentralization. The analysis also indicates that institutions actually influence policy outcomes. For example, presidential regimes are found to be associated with increased centralization. With total subnational tax revenues (indicator *TD3*) or with direct expenditures as dependent variable, participation of sub-central governments in central decision-making leads to more decentralization. However, when accounting for tax-raising powers of sub-central governments instead (indicator *TD1*), it turns out that particularly participation of representatives delegated by sub-central governments and legislatures in central decision-making concerning both the assignment of spending and taxing powers and other issues of national legislation is associated with less subnational fiscal autonomy and more centralization. In contrast to this, direct involvement of the citizens through regional referendums leads to more decentralization of tax-raising powers. On the other hand, contrary to previous analyses at the subnational level, direct democracy at the national level mostly tends to favor increased centralization.

The new contribution of this analysis is therefore twofold. First, these estimates support the collusion hypothesis and the predictions of Lockwood (2004) and Redoano and Scharf (2004). Bargaining at the national level provides sub-central governments with more financial resources from the common pool to spend, while at the same time independent tax-raising autonomy is restricted. And second, the analysis shows how important it is to use in empirical studies an indicator of decentralization (*TD1*), which accounts for subnational decision-making autonomy instead of received expenditure and revenue shares.

The empirical analysis suffers from certain limitations. First, one should be cautious in drawing final conclusions with respect to the role of institutions, since the analysis draws on a small cross-section of countries, only half of which provide for subnational representation at the national level. A second difficulty consists in accurately quantifying institutional rules by means of indicators. And, finally, problems related to institutional endogeneity and the omitted variable bias cannot be completely ruled out. Possible extensions may involve the consideration of a larger sample of democratic countries, the correct measurement of the degree of decentralization with respect to public expenditures, and the conduct of a disaggregated analysis of the determinants of decentralization for different government functions.

Notwithstanding this, the main contribution of the present study to the positive theory of fiscal federalism consists in providing cross-national evidence that cost-benefit aspects, as well as institutional rules determine the observed degree of public sector decentralization. Furthermore, the analysis presented a detailed approach to the quantification and comparison of institutions and pointed to the general sensitivity of empirical results to the correct measurement of fiscal decentralization.

## Appendix

Table 4: Index of subnational representation in the upper chamber

	Definition	Score
(A)		
Method of selection	no subnational representation	0.0
(0-1)	limited subnat. representation: either indirectly elected by electoral college as collective representatives of the subnat. entities, coopted by the other members of the upper chamber, or directly elected on a regional basis with guaranteed minimum representation	0.2
	representatives of subnat. entities: either appointed by central government on a regional basis, or directly elected on a quasi-territorial basis	0.4
	representatives of subnat. entities: directly elected by the citizens of the regions	0.6
	representatives of subnat. entities: indirectly elected by regional legislatures	0.8
	representatives of subnat. entities: appointed by regional governments	1.0
(B)		
Symmetry of represent.	Ratio of legislative seats of smallest region to those of largest region	
(0-1)		
(C)		
Degree of overrepres.	= 1 – ratio of population share of smallest region to its share of seats in the legislature	
(0-1)		

The *index of subnational representation in the upper chamber* (0-2) takes account of the method of selection of the subnational representatives as a whole (A), and the degree of representation of the individual subnational units (B, C). Scores ranging from 0 to 1 are allocated to each of the three aspects. In case of mixed methods of selection, the score for each form is weighted with the corresponding share of representatives. With respect to symmetry of representation, a value of 1 denotes equal representation of all sub-units. The degree of overrepresentation of small sub-units is lowest in case of perfect proportional representation, which takes the value of 0.

Some notes on the entities considered in the calculation of the degree of representation: in Australia and Canada only states and, respectively, provinces; in Belgium only French and Flemish communities (before 1994: only representatives indirectly elected by the provinces); in Spain only representatives indirectly elected by the regional parliaments. The composite index is finally constructed by summing up the scores for the method of selection and the arithmetic average of symmetry of representation and degree of overrepresentation :  $(A)+[(B)+(C)]/2$ .

Table 5: Indices of participation of subnational entities in central decision-making

	(A) Form of representation	Score (0-1)	(B) Power of legislat. initiation	Score (0-1)	(C) Veto power	Score (0-3)
Direct	none	0.0	none	0	none	0.00
particip.	region. legislat.	0.5	= 1 – required	0-1	suspensive veto	1.00
	region. elector.	1.0	major. regions each region	1	absolute veto, major. of regions to agree:	
					absolute majority	2.00
					two-thirds	2.25
					three-quarters	2.50
				four-fifths	2.75	
				unanimity	3.00	
Indirect	<i>index subn.</i>		none	0	none	0.00
particip.	<i>repr. upper ch.</i>		equal powers to	1	suspens. veto, major.	
	(method select.)		lower chamber		lower chamber to overrule:	
					simple majority	1.00
					two-thirds	1.25
					three-quarters	1.50
					unanimity	1.75
					absolute veto, major. upper chamber to agree:	
					absolute majority	2.00
					two-thirds	2.25
					three-quarters	2.50
				four-fifths	2.75	
				unanimity	3.00	

The *indices of direct/indirect participation of subnational entities in central decision-making* (0-4) take into account the form of representation of subnational entities and the power of decision with respect to the different issues of centralized decision-making. The method of selection of subnational representatives to the upper chamber described above determines the form of representation of subnational entities in indirect decision-making. With respect to power of decision-making, we further distinguish between the power to initiate legislation and the power to veto decisions, thereby giving the veto power a stronger weight. In case of different decision-making procedures for issues belonging to the same policy area, average scores are calculated.

The indices are constructed for each policy area by multiplying form of representation by the sum of legislative initiation and veto powers:  $(A) \cdot [(B) + (C)]$ . The composite index of participation covering all issues of national decision-making is then derived as the mean value of the average degree of participation in the assignment of competencies (expenditure and revenue powers) and the average degree of participation in other issues of national legislation (constitutional amendments not concerning subnational entities, national financial and non-financial legislation).

Table 6: Indirect participation of subnational entities in central decision-making, 2003

	Assignment of expenditure powers				Assignment of revenue powers				Constit. amendments (not concerning sub-nat. entities)			
	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total
	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)
AUS	0.60	1.00	2.00	<i>1.80</i>	0.60	1.00	2.00	<i>1.80</i>	0.60	1.00	2.00	<i>1.80</i>
AUT	0.80	1.00	2.25	<i>2.60</i>	1.00 <sup>c</sup>	1.00	1.00	<i>2.00</i>	0.80	1.00	1.00	<i>1.60</i>
BEL	0.49	1.00	2.25	<i>1.59</i>	0.49	1.00	2.25	<i>1.59</i>	0.49	1.00	2.25	<i>1.59</i>
CAN	0.40	1.00	0.00	<i>0.40</i>	0.40	1.00	0.00	<i>0.40</i>	0.40	1.00	0.00	<i>0.40</i>
FRA	0.20	1.00	1.00	<i>0.40</i>	0.20	1.00	1.00	<i>0.40</i>	0.20	1.00	2.00	<i>0.60</i>
GER	1.00	1.00	2.25	<i>3.25</i>	1.00	1.00	2.25	<i>3.25</i>	1.00	1.00	2.25	<i>3.25</i>
ITA	0.20	1.00	2.00	<i>0.60</i>	0.20	1.00	2.00	<i>0.60</i>	0.20	1.00	2.00	<i>0.60</i>
NED	0.20	0.00	2.00	<i>0.40</i>	0.20	0.00	2.00	<i>0.40</i>	0.20	0.00	2.25	<i>0.45</i>
SPA	0.32	1.00	1.13 <sup>b</sup>	<i>0.68</i>	1.00 <sup>c</sup>	1.00	1.00	<i>2.00</i>	0.32	1.00	1.25	<i>0.72</i>
SWI	0.60	1.00	2.00	<i>1.80</i>	0.60	1.00	2.00	<i>1.80</i>	0.60	1.00	2.00	<i>1.80</i>
USA	0.60	1.00	2.25	<i>1.95</i>	0.60	1.00	2.25	<i>1.95</i>	0.60	1.00	2.25	<i>1.95</i>
	National financial legislation				National non-finan. legislation				All <sup>a</sup>			
	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total				
	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)	(0-4)			
AUS	0.00	0.00	0.00	<i>0.00</i>	0.60	1.00	2.00	<i>1.80</i>	<b>1.50</b>			
AUT	0.00	0.00	0.00	<i>0.00</i>	0.80	1.00	1.00	<i>1.60</i>	<b>1.68</b>			
BEL	0.00	0.20	0.00	<i>0.00</i>	0.49	1.00	1.00	<i>0.98</i>	<b>1.22</b>			
CAN	0.40	0.00	0.00	<i>0.00</i>	1.40	1.00	0.00	<i>0.40</i>	<b>0.33</b>			
FRA	0.20	0.00	1.00	<i>0.20</i>	0.20	1.00	1.00	<i>0.40</i>	<b>0.40</b>			
GER	1.00	0.00	1.55 <sup>b</sup>	<i>1.55</i>	1.00	1.00	1.55 <sup>b</sup>	<i>2.55</i>	<b>2.85</b>			
ITA	0.20	1.00	2.00	<i>0.60</i>	0.20	1.00	2.00	<i>0.60</i>	<b>0.60</b>			
NED	0.20	0.00	2.00	<i>0.40</i>	0.20	0.00	2.00	<i>0.40</i>	<b>0.41</b>			
SPA	0.32	1.00	1.00	<i>0.64</i>	0.32	1.00	1.00	<i>0.64</i>	<b>1.00</b>			
SWI	0.60	1.00	2.00	<i>1.80</i>	0.60	1.00	2.00	<i>1.80</i>	<b>1.80</b>			
USA	0.60	0.00	2.00	<i>1.20</i>	0.60	1.00	2.00	<i>1.80</i>	<b>1.80</b>			

Note: <sup>a</sup> mean value of the average degree of participation in the assignment of competencies and the average degree of participation in other issues of national legislation. <sup>b</sup> these are average veto power scores which represent different decision-making procedures according to the issues involved. Germany: on average 55% of ordinary laws had to be approved by the regional chamber in the past (score 2.0). Spain: mean value considering that a veto of the upper chamber can be overridden by a two-thirds majority in the lower chamber in case of provisions stipulated in the constitution (score 1.25), and by simple majority in case of provisions laid down by simple law (score 1.0). <sup>c</sup> the value of 1.0 is assigned to the form of representation in Austria and Spain, since sub-central governments negotiate the distribution of funds and taxing powers directly with the central government.

Table 7: Direct participation of subnational entities in central decision-making, 2003

	Assignment of expenditure powers				Assignment of revenue powers				Constit. amendments (not concerning sub-nat. entities)			
	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total
	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)
AUS	1.00	0.00	2.00	2.00	1.00	0.00	2.00	2.00	1.00	0.00	2.00	2.00
AUT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CAN	0.50	1.00	3.00 <sup>c</sup>	2.00	0.50	1.00	3.00 <sup>c</sup>	2.00	0.00	0.00	0.00	0.00
FRA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ITA	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.50	0.00	0.00	0.00	0.00
NED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPA	0.63 <sup>b</sup>	1.00	1.50 <sup>b</sup>	1.63 <sup>b</sup>	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.50
SWI	1.00	0.00	2.00	2.00	1.00	0.00	2.00	2.00	1.00	0.00	2.00	2.00
USA	0.50	0.33	2.50	1.42	0.50	0.33	2.50	1.42	0.50	0.33	2.50	1.42
	National financial legislation				National non-finan. legislation				All <sup>a</sup>			
	Form	Legis. init.	Veto	Total	Form	Legis. init.	Veto	Total				
	(0-1)	(0-1)	(0-3)	(0-4)	(0-1)	(0-1)	(0-3)	(0-4)	(0-4)			
AUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>1.33</b>			
AUT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>			
BEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>			
CAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>1.00</b>			
FRA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>			
GER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>			
ITA	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.50	<b>0.21</b>			
NED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>			
SPA	0.00	0.00	0.00	0.00	0.50	1.00	0.00	0.50	<b>0.57</b>			
SWI	0.75 <sup>b</sup>	1.00	1.00 <sup>b</sup>	1.75 <sup>b</sup>	0.75 <sup>b</sup>	1.00	1.00 <sup>b</sup>	1.75 <sup>b</sup>	<b>1.92</b>			
USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.95</b>			

Note: <sup>a</sup> mean value of the average degree of participation in the assignment of competencies and the average degree of participation in other issues of national legislation. <sup>b</sup> these are average scores which represent different decision-making procedures according to the issues involved. Spain: mean value considering that in certain regions changes of the autonomy statute have to be approved by both the legislature and the voters of the region (form of representation 0.75, veto power 2.0), and, otherwise, the regional legislatures have only a suspensive veto (form of representation 0.5, veto power 1.0), the ultimate decision being taken by the national parliament. Switzerland: the indices for national legislation equally take into account that cantonal legislatures have the power to initiate national legislation (form of representation 0.5, veto power 0) and that a double majority of the electorate at the national and the cantonal level is required in referendums on certain bills (form of representation 1.0, veto power 2.0). <sup>c</sup> Provinces in Canada are assigned the maximum veto power since they have the right to opt out in case of disagreeing with constitutional amendments concerning them.



Table 8: Indices of direct democracy at the national level

	(A) Objects submitted to referendum	Score (0-1)	(B) Power of initiation	Score (0-1)	(C) Effect of referendum	Score (0-1)
Legislative referendum	none, ruled out	0.00	unanimity	0	non-binding	0
	specif. ad hoc law, exceptional cases	0.25	facultat. referen. (= 1 – required major.	0-1	binding	1
	specif. in constit.	0.50	for initiat. national, regional parliaments)			
	all objects	1.00	compulsory referen.	1		
Constit. referendum	none, ruled out	0.00	unanimity	0	non-binding	0
	specif. ad hoc law, exceptional cases	0.25	facultat. referen. (= 1 – required major.	0-1	binding	1
	total const. revision	0.50	for initiat. national, regional parliaments)			
	partial const. revis.	1.00	compulsory referen.	1		
Legislative popular initiative	none, ruled out	0.00	none	0.00	non-binding	0
	legisl. petition, no compulsory referen.	0.25	% of electorate: >10%	0.25	binding	1
	specif. in constit.	0.50	5%-10%	0.50		
	all objects	1.00	1%-5%	0.75		
				0%-1%	1.00	
Constit. popular initiative	none, ruled out	0.00	none	0.00	non-binding	0
	specif. ad hoc law, exceptional cases	0.25	% of electorate: >10%	0.25	binding	1
	total const. revision	0.50	5%-10%	0.50		
	partial const. revis.	1.00	1%-5%	0.75		
				0%-1%	1.00	

The *indices of direct democracy* (0-3) take into account the range of specific objects which can be submitted to a vote, the power of initiation in terms of the legal threshold and the effect of the consultation. In case of various legal provisions falling into the same category, the instrument with the highest score is preferred. With respect to referendums initiated by ad hoc laws, we distinguish whether provisions for the organization are stipulated in the constitution or not. In case of the first, a higher degree of direct democratic control is assigned by considering additionally the majority needed for initiation; otherwise not.

The extent of direct democratic control is evaluated for each instrument by summing up these three criteria, each being equally weighted: (A)+(B)+(C). The composite index of direct democracy at the national level is then derived as the non-weighted average of the six legal instruments considered here.

Table 9: Direct democracy at the national level, 2003

	Legislative referendum (non-financial)				(financial)				Constitutional referendum			
	Object	Init.	Effect	Total	Object	Init.	Effect	Total	Object	Init.	Effect	Total
	(0-1)	(0-1)	(0-1)	(0-3)	(0-1)	(0-1)	(0-1)	(0-3)	(0-1)	(0-1)	(0-1)	(0-3)
AUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	3.00
AUT	1.00	0.50	1.00	2.50	1.00	0.50	1.00	2.50	1.00	0.67	1.00	2.67
BEL	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25
DEN	1.00	0.67	1.00	2.67	0.00	0.00	0.00	0.00	1.00	1.00	1.00	3.00
FIN	0.25	0.50	0.00	0.75	0.25	0.50	0.00	0.75	0.00	0.00	0.00	0.00
FRA	0.50	0.00	1.00	1.50	0.00	0.00	0.00	0.00	1.00	0.00	1.00	2.00
GER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRE	0.50	0.40	1.00	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ICL	0.25	1.00	1.00	2.25	0.00	0.00	0.00	0.00	0.25	1.00	1.00	2.25
IRL	0.50	0.50	1.00	2.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	3.00
ITA	0.50	0.75	1.00	2.25	0.00	0.00	0.00	0.00	1.00	0.67	1.00	2.67
JAP	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	1.00	1.00	1.00	3.00
LUX	0.25	0.50	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NEZ	0.50	1.00	1.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOR	0.25	0.50	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POR	0.50	0.00	1.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPA	0.50	0.50	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.90	1.00	2.90
SWE	0.25	0.50	0.00	0.75	0.25	0.50	0.00	0.75	1.00	0.67	1.00	2.67
SWI	1.00	0.69	1.00	2.69	1.00	0.69	1.00	2.69	1.00	1.00	1.00	3.00
UK	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 9 (cont.): Direct democracy at the national level, 2003

	Legislative popular initiative								Constitutional popular initiative				All <sup>a</sup>	Practice <sup>b</sup>
	(non-financial)				(financial)				Object	Init.	Effect	Total		
	Object	Init.	Effect	Total	Object	Init.	Effect	Total						
(0-1)	(0-1)	(0-1)	(0-3)	(0-1)	(0-1)	(0-1)	(0-3)	(0-1)	(0-1)	(0-1)	(0-3)	(0-3)		
AUS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.50</b>	0.58
AUT	0.25	0.75	0.00	1.00	0.25	0.75	0.00	1.00	0.00	0.00	0.00	0.00	<b>1.61</b>	0.06
BEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.04</b>	0.00
CAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.04</b>	0.03
DEN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.95</b>	0.24
FIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.25</b>	0.03
FRA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.58</b>	0.12
GER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	0.00
GRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.32</b>	0.07
ICL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.75</b>	0.00
IRL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.83</b>	0.73
ITA	0.50	0.75	1.00	2.25	0.00	0.00	0.00	0.00	1.00	0.67	1.00	2.67	<b>1.64</b>	1.67
JAP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.50</b>	0.00
LUX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.13</b>	0.00
NED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	0.00
NEZ	1.00	0.50	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.67</b>	0.46
NOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.13</b>	0.06
POR	0.50	0.00	1.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.50</b>	0.11
SPA	0.25	0.75	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.82</b>	0.11
SWE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.70</b>	0.06
SWI	1.00	0.75	1.00	2.75	1.00	0.75	1.00	2.75	1.00	0.75	1.00	2.75	<b>2.77</b>	8.42
UK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.04</b>	0.03
USA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	0.00

Note: <sup>a</sup> average score of the six indices. <sup>b</sup> average number of referendums per year (1970-2002).

## Data Sources and Definitions

**Degree of fiscal decentralization** Sub-central government expenditure (revenue) as a share of consolidated general government expenditure (revenue). Different measurement concepts. [Source for direct expenditure: IMF, Government Finance Statistics Yearbook. Source for tax revenue: Stegarescu (2004) based on OECD (1999) and OECD Revenue Statistics. Own calculations]

**Population** Natural log of population in 1000. [Source: IMF; World Bank]

**Area** Natural log of geographic area in 1000  $km^2$ . [Source: Eurostat; OECD; World Bank]

**Urbanization** Fraction of urban population. [Source: Eurostat; OECD; World Bank]

**Fractionalization** Greenberg index of linguistic diversity (0-1).

$$F = 1 - \sum_{i=1}^n p_i^2$$

where  $p_i$  is the population share of the language group  $i$ . The index varies from 0, indicating the least degree of fractionalization, to 1, indicating the greatest. [Source: <http://www.ethnologue.com>]

**Regional disparity** Coefficient of variation of regional gross domestic product, gross value added or income per capita. [Source: Eurostat, REGIO Database, and, Regional Accounts; national statistics. Own calculations]

**Per capita income** Natural log of real GDP per capita, in prices of 1995, in ECU/EUR. [Source: IMF, International Financial Statistics. Own calculations]

**Catholic** Proportion of population that is Roman Catholic. [Source: CIA World Factbook; Encyclopaedia Britannica (1989), World Data Annual]

**Legal origin** Dummy=1 for legal system based on English common law. [Source: CIA World Factbook]

**Dependency ratio** Proportion of population aged below 15 or above 64. [Source: OECD, Labor Force Statistics. Own calculations]

**Mobility** Number of interregional migrants per 1000 inhabitants; average over the period 1965-2001. [Source: Eurostat, REGIO Database, and, Regional Accounts; national statistics. Own calculations]

**Growth rate** Rate of growth of real GDP per capita. [Source: IMF, International Financial Statistics. Own calculations]

**Election** Dummy=1 for national election. [Source: Ismayr (1999); Mackie and Rose (1991); <http://www.polisci.com>]

**Left government** Share of leftist parties (communist, socialist, social-democrat, ecologist) in total seats of the government coalition in the legislature. [Source for the classification of the parties: Castles and Mair (1982), Ware (1996), Armingeon et al. (2004), Lane et al. (1997); own compilation. Source for the data: Ismayr (1999), Mackie and Rose (1991), Woldendorp et al. (1998), Lane et al. (1997), <http://www.polisci.com>. Own calculations]

**Government fragmentation** Index of party fragmentation of the central government.

$$GF = 1 - \sum_{i=1}^N s_i^2$$

where  $s_i$  is the share of party  $i$  in total seats of the government coalition in the legislature. [Source: own calculations based on party classification and electoral and government statistics, see above]

**Presidential regime** Dummy=1 for presidential regime, i.e. regimes where the elected executive is not accountable to the legislature through a vote of confidence. [Source: Lane and Ersson (1987); Lane et al. (1997)]

**Electoral system** Ghallagher-Index of disproportionality of the electoral system.

$$D = \sqrt{0.5 \cdot \sum_{i=1}^N (v_i - s_i)^2}$$

where  $v_i$  is the percentage of votes and  $s_i$  the percentage of seats received by party  $i$ . The lower the value, the more proportional is the electoral system, with 0 indicating perfect proportional representation. Average for the period 1970-2001. [Source: own calculations based on electoral results, see above]

**Direct democracy (index all)** Average of the indices of direct democracy at the national level (0-3), see description above. [Source: Research and Documentation Centre on Direct Democracy (<http://c2d.unige.ch>); Kaufmann and Waters (2004); Hug and Tsebelis (2002); national constitutions. Own calculations]

**Direct democracy (practice)** Average number of referendums per year during 1970-2002. [Source: Research and Documentation Centre on Direct Democracy (<http://c2d.unige.ch>)]

**Federal Dummy**=1 for federal state. [Source: own calculations]

**Subnational representation** Index of subnational representation in the upper chamber, see description above. [Source: Council of Europe (1997), Ismayr (1999), Tsebelis and Money (1997); national constitutions. Own calculations]

**Subnational decision-making (direct/indirect)** Indices of direct and indirect participation of subnational entities in central decision-making, see description above. [Source: see *subnational representation*]

**Central tax competency** Dummy=1 for ultimate competency of the central government in terms of tax legislation. [Source: Council of Europe (1997), Stegarescu (2004). Own calculations]

## Descriptive Statistics

Variable	Mean	Std.Dev.	Min.	Max.
Degree of fiscal decentralization:				
Direct expend. (incl. social security)	0.321	0.154	0.031	0.626
Total tax revenue	0.233	0.172	0.001	0.645
Autonomous own tax revenue	0.191	0.166	0.000	0.615
Population	9.348	1.624	5.257	12.560
Area	5.413	1.849	1.099	9.208
Urbanization	0.737	0.140	0.239	0.972
Fractionalization	0.246	0.201	0.000	0.650
Regional disparity	0.196	0.087	0.000	0.452
Per capita income	9.588	0.460	8.150	10.698
Catholic	0.401	0.358	0.001	0.940
Legal origin	0.262	0.440	0.000	1.000
Dependency ratio	0.347	0.026	0.299	0.429
Mobility	18.192	10.484	2.405	45.793
Growth rate	0.026	0.029	-0.105	0.272
Election	0.291	0.455	0.000	1.000
Left government	0.340	0.402	0.000	1.000
Government fragmentation	0.270	0.282	0.000	0.794
Presidential regime	0.155	0.362	0.000	1.000
Electoral system	0.056	0.039	0.013	0.181
Direct democracy (index all)	0.551	0.672	0.000	2.770
Direct democracy (financial)	0.226	0.657	0.000	2.720
Direct democracy (practice)	0.575	1.751	0.000	8.424
Federal	0.277	0.448	0.000	1.000
Subnat. representation	0.460	0.608	0.000	1.655
Subnat. decision-making (direct):				
Assignment expend. powers	0.383	0.752	0.000	2.000
Assignment revenue powers	0.358	0.719	0.000	2.000
All policy areas	0.261	0.525	0.000	1.917
Subnat. decision-making (indirect):				
Assignment expend. powers	0.664	0.961	0.000	3.250
Assignment revenue powers	0.631	0.931	0.000	3.250
All policy areas	0.559	0.807	0.000	2.850
Central tax competency	0.774	0.418	0.000	1.000

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