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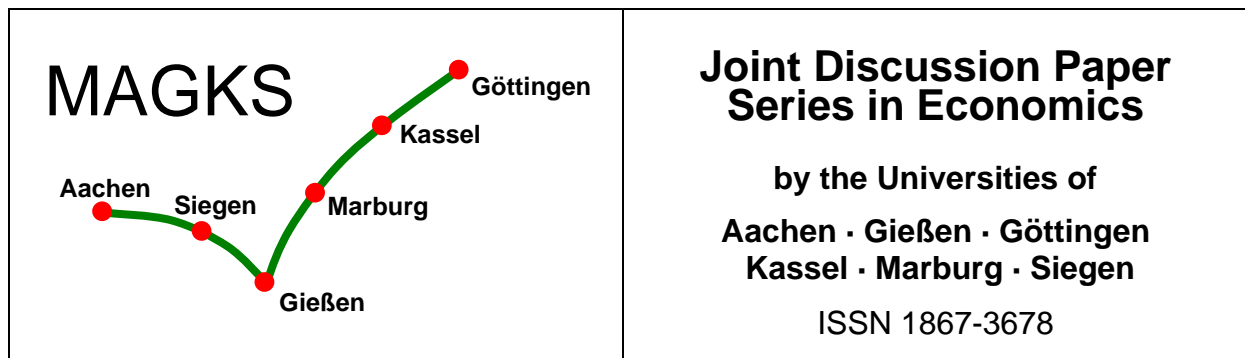
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Federalism and Decentralization – A Critical Survey of Frequently Used Indicators¹

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Abstract:

The economic effects of federalism are unclear: some papers find that federalism has strong positive effects on a number of economically relevant variables, others find negative effects. The results often crucially hinge upon the proxies for federalism used. In this paper, we critically survey the existing indicators for both federalism and fiscal decentralization. We argue that federalism is a constitutional institution whereas decentralization is (the outcome of) a policy choice and that the two ought to be systematically distinguished because decentralization can also occur in non-federally structured states. We further argue that institutional details are very important with regard to federalism and that dummy variables usually capture only very specific aspects of the institutional details. We use factor analysis to test whether the latent variables behind the observed indicators support these assumptions. It is shown that more than two important factors result, implying that a more fine-grained differentiation beyond the distinction between federalism and decentralization might be in order. The correlations of the most important proxies for various aspects of federalism and decentralization with a number of (quasi-) exogenous variables as well as with institutional variables are usually rather modest.

JEL classification: H1, H3, H5, H8.

Key words: Federalism, Fiscal federalism, Decentralization

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Federalism and Decentralization – A Critical Survey of Frequently Used Indicators

1 Introduction

Political scientists but also political and institutional economists have become interested in estimating the economic effects of federalism. Surveys of the emerging literature such as Feld et al. (2004) indicate that the evidence is clearly unclear. We argue that the ambiguity in these results is at least partially due to the indicators used to proxy for federalism: Frequently, no clear-cut distinction between decentralization and federalism is made. Quite often, the existence of federalism is proxied for with a dummy variable, by necessity neglecting many institutional details and differences between the various states counted as federations.

The distinction between federalism and decentralization is particularly relevant if one is interested in the economic effects of constitutions. Glaeser et al. (2004) point out that many studies purporting to measure the economic effects of institutions really only measure the economic effects of policy choices. We argue that many measures of decentralization or devolution can be interpreted as measures of policy choices – and not constitutional ones. It is, hence, argued that federations are a consequence of constitutional choice, whereas decentralization is a consequence of policy choice. Framed as a hypothesis: Federally constituted states can be highly centralized and states constituted in a unitary fashion can be highly decentralized.

Not all federations are alike. Some are described as cooperative and others as competitive. If one is interested in the economic consequences of federalism, it might, hence, be useful to be more specific and to indicate the precise institution that is to have an impact on economic variables.

In this paper we ask whether the conceptual distinction between federalism and decentralization is reflected in the data. To answer the question, we run factor analysis drawing on 25 indicators that have been used as variables for both federalism and decentralization. We find more than one latent factor implying that federalism and decentralization can also be distinguished empirically. We find even more than two latent constructs indicating that the distinction between federalism and decentralization might still be too coarse. Seven aspects of federalism and decentralization can be separated from each other: token executive

elections, sub-national expenditure, fiscal independence, sub-national democracy, federal veto, federal competence and composition of parliament.² Empirically, they can be found in various combinations. Further, proxies for both federalism and decentralization are correlated with a number of geographical, socio-economic and institutional variables. Correlations with potential determinants of federalism as well as other institutions like judicial independence are normally modest which leads us to speculate that the various proxies for federalism and decentralization are rather exogenous.³

The rest of the paper is organized as follows: Section 2 delivers a number of theoretical arguments in favor of a distinction between federally constituted states on the one hand and unitary states that have decentralized some of their functions on the other. Section 3 presents and critically evaluates some of the indicators that have been used as proxies for both federalism and decentralization. Section 4 contains the description of the factor analysis and offers a number of possible interpretations of the resulting factors. Section 5 concludes.

2 Federation vs. Decentralization

Definitions can only be adequate or inadequate; they cannot be true or false. If one is interested in the effects of institutions in general or constitutions more specifically, one needs to take care to measure institutions (or constitutional rules) – and not something else. Glaeser et al. (2004) criticize studies purporting to find evidence in favor of the claim that institutions matter for not measuring institutions, but rather policies. This is why we propose to make a distinction between federalism (or federations) and decentralization (or devolution). A number of empirical studies suggest that this distinction could be relevant with regard to economic consequences. Treisman (2000), for example, finds that federal states have higher corruption levels than unitary states, *ceteris paribus*. Fisman and Gatti (2002), on the other hand, find that fiscal decentralization is strongly and significantly associated with lower corruption levels. These results only seem contradictory: Treisman relies on a dummy variable for federal states

² The new factors are used as explanatory variables in a companion paper (Voigt and Blume 2008) that also contains an explicit theoretical section in which the potential effects of federal structures on a number of economically relevant variables are explicitly described.

³ Correlations with economic variables vary depending on the variables chosen to measure economic effects, e.g. happiness, output per worker or government expenditure. This is relevant for our companion paper (Voigt and Blume 2008), in which we estimate the economic effects of federalism and decentralisation.

whereas Fisman and Gatti really deal with fiscal decentralization which they proxy for by the share of subnational spending over total government spending. Freille (2006) comes up with the intriguing finding that both fiscal decentralization and constitutional centralization (i.e. unitarism) are simultaneously associated with lower corruption. It therefore seems to matter a great deal whether one is interested in the effects of federalism or the effects of decentralized provision of public goods.

Before making a number of theoretical arguments in favor of a distinction between federalism and decentralization, we propose to disentangle the “federalism” concept from the concept “constitutional democracy”. Stepan (2001, 318) argues that it only makes sense to speak of federations if they are constitutional democracies. In constructing measures of federalism, some others have followed suit (Gerring et al. 2006). We beg to differ: If the dichotomy between unitarism and federalism primarily deals with the allocation of government power to either one center (unitarism) or a number of centers (federalism), then the question whether the various legislators have been elected in contested elections or in some other way is a different issue. There is no logically necessary connection between the allocation of government power and the way the governing are elected. Separating the two concepts enables us to identify the consequences of different institutions (constitutional democracy or federalism) with greater precision since we will be able to separate effects of democratic elections from effects that are due to the allocation of government powers.

In defining federalism, we follow Riker (1975, 101): “*Federalism is a political organization in which the activities of government are divided between regional governments and a central government in such a way that each kind of government has some activities on which it makes final decisions.*” Federations thus consist of constituent governments (the regional governments) and one central government and both levels of government are endowed with final decision-making power in some areas. As we are interested in constitutional provisions, we would like to add that at least one area of final decision-making should be explicitly mentioned in the constitution for both the regional governments and the central government. Further, this allocation of decision-making competence can only be expected to be stable over time if it cannot be changed by either the central government or the regional governments unilaterally. In other words: constitutional change requires the consent of both levels of government. Riker himself (ibid., 102) points out that his definition leaves ample room for variation within the group of federally constituted states: at

minimum, the rulers of the federation can make decisions in only one narrowly restricted area, at maximum, they can make decisions in all but one area. Ideally, indicators of federalism ought to reflect these differences.

States set up in a unitary fashion are the opposite of federally organized states: there is only one level of government with final decision making power. Constitutional change can be brought about if the only level of government manages to organize the necessary majority. The dichotomy between federally vs. unitarily organized states is thus to do with the allocation of fundamental competences.

Both federal as well as unitary states can decentralize – or centralize – some activities. But in unitary states, the decision to decentralize can be revoked if the central government so wishes. This shows that even after decentralization, ultimate decision-making power remains with the central government level. The two terms federation and decentralization deal, hence, with different levels of decision making: Federation refers to a trait in the constitutional level whereas the term decentralization describes a policy choice on the post-constitutional one.⁴ This implies that a federal structure can be used to implement a decentralization policy, the two are thus not mutually exclusive. But it also means that a federal structure is NOT a necessary condition to implement decentralization policies as these can also be implemented under unitary constitutions.⁵

Ex ante, we should expect a number of decentralization indicators (such as the share of subnational government spending over total government spending) to be more stable over time in federally constituted states than in unitary states because constitutions are assumed to be stable over time whereas policy choices primarily depend on the preferences of the current government.⁶ If we were to observe high volatility in such indicators although the country has a federal constitution, we might suspect that the factually implemented constitution is not equivalent with the *de jure* constitution.

⁴ The distinction between constitutional vs. post-constitutional choice is fundamental in constitutional political economy (see, e.g., Buchanan 1975).

⁵ We are not the first to emphasize the difference between federalism and decentralization. Authors that have previously stressed the distinction include Diamond (1969) and Elazar (1976).

⁶ Analyzing the variation of the share of subnational government spending over total government spending for the period 1975-1995 and a sample of 120 states (18 of which are federal in the sense of table 2) shows that variation in non-federal states is on average 25% higher than in federal states.

Sturm (2002) contains an instructive table comparing federalism with devolution in a number of dimensions, which we present here in a somewhat modified form. In order to save space, we refrain from discussing any details.

Table 1: Comparing Federalism with Decentralization (Devolution)

	Federalism	Devolution
Constitutional Quality of the Regions	State Quality	Administrations
Competence competence	Central and constituent governments	Central level alone
Concept of Sovereignty	With People	With Parliament
“Guaranteed Existence” of the regions	“ <i>ad infinitum</i> ”	None
Financial Competence	Central and constituent governments	Transfers from the Central State
Principle of Allocation of Tasks	Subsidiarity (“bottom up”)	Delegation (“Top Down”)
Co-Decision in Central Legislation	Second Chamber	None
Conflict Resolution Mechanisms	Negotiation with necessity to find consensus	Negotiation with final say with central government
Conflict Resolution in Case of Conflict	Consent for (some) legislation required; in particular constitutional change. Constitutional Court	None

3 Taking Stock: Available Indicators for Federalism and Decentralization

The main question of this paper is whether the conceptual distinction between federalism and decentralization is reflected in the data. As a first step in answering this question, we take a critical look at all readily available indicators of both federalism and decentralization. As a second step, we run a factor analysis in search of common (latent) factors that hide behind the various indicators of both federalism and decentralization. The factor analysis itself is described in section four. And our third step consists in analyzing the bivariate correlations of the factors with other institutional variables.

This section serves to present as well as to critically discuss the most frequently used indicators. We will not only ask whether the respective indicator under consideration reflects constitutionally safeguarded rules (as opposed to mere policy choices) but also whether it takes into account whether and possibly to what degree the constitutionally mandated rules are factually implemented. This

last distinction appears important as economic effects will only show as a consequence of factually implemented institutions. Unfortunately, this makes the distinction between the constitutional and the post-constitutional level less clear-cut, as post-constitutional choices could also be a proxy for the factual implementation of constitutional rules.⁷

3.1 Decentralization Indicators

We begin by a short overview over the most frequently used decentralization indicators and propose to distinguish (1) fiscal from (2) political and (3) administrative decentralization.

Fiscal Decentralization Indicators

Fiscal decentralization is concerned with the proportion of revenues and expenditures received and spent by subnational government tiers. Most empirical studies on decentralization rely on the ratio between subnational and total revenues or subnational and total expenditures. These are presented in the IMF's Government Finance Statistics Yearbooks. We rely on four such variables: (1) FISCDEC 1 which reflects the sub-national share of total expenditure, (2) FISCDEC 2 reflects the sub-national grants share as a percentage of total sub-national revenues, (3) FISCDEC 3 which is a proxy for vertical imbalance reflecting the transfers to sub-national governments as a share of sub-national government expenditures and (4) FISCDEC 4 which depicts the sub-national own-source revenues as a percentage of total own-source revenues.

These indicators reflect the *de facto* situation with regard to the various shares focused on. Yet, they are subject to a number of criticisms: (i) Governments need not necessarily spend money to induce effects; many regulatory policies are virtually "costless" in terms of the money spent by governments; expenditure shares do, hence, not adequately reflect the political importance of a government tier. (ii) The proportion between money spent on the subnational to the national level does not contain any information regarding the efficiency with which money is being spent. (iii) The proportion does not contain any information on the autonomy that the subnational tiers dispose of in collecting or spending that money. Correspondingly, the information contained in these indicators is limited.

⁷ Voigt (2008) discusses some of the difficulties of measuring real-world institutions.

Based on this last critique and drawing on OECD Revenue Statistics, Stegarescu (2004) has proposed a new indicator that is not based on the expenditure shares of the central and the state-level but instead on the revenue side arguing that the autonomy in determining tax levels or even in introducing entirely new taxes is the single most important criterion. He shows that countries like Austria and Germany score a lot worse with regard to decentralization than in previous indicators. More generally, it is shown that measurement errors can lead to erroneous conclusions particularly with regard to the effects of fiscal decentralization.

The various indicators introduced by Stegarescu are an important improvement. They are available for the period between 1965 and 2001 on an annual basis and thus allow analyzing time trends. In determining the autonomy of lower government tiers to introduce entirely new taxes, or change the tax rate and (or) their base, Stegarescu relies on formal legislation both on the constitutional as well as on the post-constitutional level. For us, this implies two problems: First, since both the constitutional as well as the post-constitutional level are taken into consideration, it is not entirely clear whether the indicators measure (the degree of) federalism or fiscal decentralization. Second, the indicators are based on formal legislation and Stegarescu rightly describes the results as “the potential degree of fiscal autonomy.” It might be replied that this should not be much of a problem since only OECD members are included. On the other hand, cooperation between various government tiers might function particularly well in stable environments – as found in most OECD countries. Two additions appear desirable: Focus on *de facto* fiscal autonomy and increase the number of countries beyond the 23 countries currently included.⁸

Political Decentralization Indicators

The Database of Political Institutions provided by the World Bank (Beck et al. 2000) contains five indicators that are supposed to proxy for “federalism”. We prefer to present the indicators as proxies for the degree of political decentralization because they do not conform with our federalism definition (as they do not depend on the existence of constitutionally secured units having some ultimate decision-making power and the power to veto constitutional change). The aspects of decentralization thus accounted for can, hence, also be found in states with a unitary constitution. Here are the five variables: (i) AUTON asks whether

⁸ Due to the low number of countries for which this indicator has been coded, we refrain from including it in the factor analysis in the next section.

contiguous autonomous regions exist⁹, (ii) MUNI documents whether municipal legislatures and governments are locally elected, (iii) STATE applies the same criteria to state governments, (iv) AUTHOR is coded one if the states have authority over taxing or spending or legislating, and (v) STCONST asks whether the constituencies of the upper house members are the states or the provinces.

The variables AUTHOR and STCONST seem to be closest to a federalism dummy. Yet, AUTHOR is a very coarse measure as it refers to taxing or spending or legislating. As none of these competences needs to be mentioned in the constitution, it cannot be used as an indicator for federalism. This also holds with regard to STCONST.

Christine Kearney's (1999) decentralization indicator contains two variables that focus on one aspect of the MUNI and STATE variables produced by Beck et al. (2000): Her LOCEXE and REGEXE indicators show whether local or regional executives (but not legislatures) are directly or indirectly elected. Rodden (2004, 487) interprets the local election of both municipal and state governments as political decentralization and constructs a combined indicator out of LOCEXE and REGEXE.

The focus of these two variables clearly is on democratic legitimacy of the lower government tiers and not on their competences. They certainly do not reflect any aspect of federalism as defined above.

Structural / Administrative Decentralization

Treisman (2002) proposes to distinguish six different dimensions of decentralization. Those reflecting aspects of structural and administrative decentralization are shortly discussed here. Vertical decentralization refers to the number of government tiers and includes also bodies that are essentially administrative agents of higher level governments. Vertical decentralization could, hence, reflect the hierarchical set-up of unitary states and does not capture a trait specific to federations. Treisman provides variables for both. We label them HIGHTIERNUM and LOWTIERNUM. Treisman also discusses personnel decentralization counting the share of all administrative government personnel that is employed at lower government tiers. We call it SUBEMPLOY.

⁹ The DPI codebook stresses that autonomous regions are not the same as states or provinces. In order to be coded as "1" here, the constitution needs to mention these regions as "autonomous", "independent" or "special". *Prima facie*, this indicator bears little relationship with federalism.

3.2 Federalism Indicators

We now move on to the discussion of the federalism indicators. We begin by a short overview over a number of dummy variables that have been used frequently. A number of recent extensions (e.g. provision of time-series data) are added. Then, variables dealing with constitutionally safeguarded competences occupy center stage. The third group of indicators deals with one specific aspect, namely fiscal rules fixed in the constitution. Finishing our presentation of federalism indicators, some proxies capturing the role of parties are presented.

Federalism Dummies

Most studies interested in the economic effects of federalism (and not in the effects of decentralization) have relied on dummy variables. The federation dummy proposed by Daniel Elazar (1991, 1995) is based on Riker's (1964) definition of federalism; it has been used by many scholars. Dummy variables have also been proposed by a number of other authors including Kearney (1999), Watts (1999), and Derbyshire and Derbyshire (1999) but also by organizations such as the Forum of Federations (2002), an international non-governmental organization located in Canada and the CIA World Factbook (2006). Kearney's (1999) dummy focuses exclusively on whether a country's constitution is federal.¹⁰ Her indicator is interesting because it is available from 1960 until 1995 (in five year intervals). It thus allows to capture constitutional change (it lists, e.g., Cameroon as federal in both 1965 and 1970 but not thereafter and Uganda in 1965 but not thereafter).

¹⁰ The dummy is the answer to the question: "Does the country have a federal constitution?" Her codebook does not specify any criteria.

Table 2: Identification of federal countries in the 1990s according to various authors

COUNTRY	Elazar	Watts	Derbyshire/ Derbyshire	Forum of Federations	CIA- Factbook	Kearny
Argentina	1	1	1	1	0	1
Australia	1	1	1	1	1	1
Austria	1	1	1	1	1	na
Belgium	1	1	1	1	1	na
Bosnia and Herzegovina	0	1	1	1	1	na
Brazil	1	1	1	1	1	1
Canada	1	1	1	1	1	1
Comoros	1	1	1	1	0	na
Ethiopia	0	1	1	1	1	na
Germany	1	1	1	1	1	1
India	1	1	1	1	1	1
Malaysia	1	1	1	1	1	1
Mexico	1	1	1	1	1	1
Micronesia	0	1	1	1	0	na
Nigeria	1	1	1	1	1	na
Pakistan	1	1	1	1	1	1 ^⓪
Russian Federation	1	1	1	1	1	1
South Africa	0	1	0	1	0	0
Spain	1	1	0	1	0	1 [Ⓜ]
St Kitts and Nevis	0	1	1	1	0	na
Sudan	0	0	1	0	0	na
Switzerland	1	1	1	1	1	na
United Arab Emirates	1	1	1	1	1	na
United States	1	1	1	1	1	1
Venezuela, RB	1	1	1	1	1	1
Yugoslavia, FR	1	1	1	na	0	1

Note: ^⓪ but unitary in 1960, [Ⓜ] but unitary until 1985.

Differences in coding appear primarily due to the different points in time for which the coding was done. Ethiopia is, e.g., coded as federal by most observers but not by Elazar. Ethiopia's federal constitution was only penned in 1995, the year in which Elazar's dummy appeared. Spain and South Africa are the only contentious cases. By referring to the text of their constitutions, one would, indeed, have to conclude that they are unitary. That the factual division of power has led some observers to classify these states as federal points at a potential problem of *de facto* classifications: the discretion in coding is higher than with regard to *de jure* classifications.

Constitutionally Assigned Competences

Moving on to the delineation of competences between the various levels of government described in the constitution, we begin by an important allocation decision. By necessity, all constitutions are incomplete. The decision whether the federal government or the constituent governments have the authority to provide a public good not explicitly mentioned by the constitution seems to be an important one: is it the constituent governments that have residual authority – or is it the federal government? Treisman (2002) provides the variable AUTORES that answers exactly this question. A potential problem with this variable is that it was coded on the basis of constitutional texts – and not constitutional reality. It might, hence, not truly reflect reality.

An alternative way to ascertain the constitutionally safeguarded competences of the constituent units consists in asking whether the lower level governments have at their disposal the exclusive right to legislate in at least one policy area. This is reminiscent of the minimal definition of federalism according to Riker discussed above. The indicator is called weak autonomy (AUTOWEAK) because a single issue area is sufficient to be coded one. Many countries that are coded as federal according to the federation dummies presented above are coded as having only AUTORES OR AUTOWEAK but not the two (Canada, India and St. Kitts have AUTORES but not AUTOWEAK, whereas Germany, Mexico, Pakistan, Russia, Spain, the U.S. and Yugoslavia are coded as having AUTOWEAK but not AUTORES). Interestingly, a number of countries coded as unitary according to the general dummies are assigned AUTORES (Azerbaijan, Cyprus, Italy, Luxemburg, Taiwan and Uzbekistan).

Kearney (1999) constructed a related variable which indicates whether the central government can legally deny regional and local authority “with an ease that calls that very authority in to question” (OVERRIDE). In some of the countries coded as federal, the federal government does, indeed, have that competence, and thus seriously calls into question the relevance of the lower tier governments. Federal countries in which federal governments have the competence to override include Argentina, Brazil (between 1965 and 1980), Cameroon (between 1965 and 1970), India, Mexico, Pakistan (coded federal since 1965 where overrides have been possible ever since), Russia (from 1965 until 1985) and Venezuela (from 1960 until 1985). Both Spain and Uganda are interesting cases: although coded as non-federal in 1980 and 1985 (in 1995 in the case of Uganda), the national government did NOT dispose of the competence to override! It seems important to keep in mind that these codings reflect the *de jure* situation which is not necessarily

identical with the *de facto* situation. Additionally, Kearney looked for “legal rights” of the central government which does not necessarily mean “constitutional rights”.

The last indicator to be presented in this section deals with the competence of the constituent units to block (certain kinds of non-financial) legislation. It has also been constructed by Treisman (2002) and is called SUBVETO here. On the one hand, the power to block legislation could be interpreted as one of the cardinal issues of many factually realized federations. Often, both levels need to agree if one level wants to legislate. This has come to be called “gridlock” but could also be viewed as a specific form of cooperative (or non-competitive) federalism. On the other hand, giving the constituent units a say in some important decisions is a necessary condition if it refers to constitutional change.

Constitutionally Assigned Fiscal Competence

The indicators discussed in the last subsection dealt with constitutionally assigned competences in general. We now move on to discuss a specific group of competences, namely fiscal competences. These are of particular interest as the discussion of potential effects of federal structures has concentrated on fiscal rules. The variables discussed here do not deal with fiscal policy outcomes (share of subnational expenditures or revenues) but with fiscal competences.

Kearney (1999) presents a variable describing whether sub-national governments have the formal authority to raise their own revenues via taxation. In order to be coded accordingly, sub-national governments need to have both the right to set the base as well as the right to set the rate. Kearney (1999) assumes two sub-national government tiers to exist. This makes intermediate codings possible when one, but not both sub-national government tiers have the right to set taxes (AUTHORAISE). Kearney herself points out that this variable is crude for at least two reasons: First, it does not capture the extent of the authority to set taxes, huge variation might thus hide behind identically coded countries. Second, the variable only reports the formal authority and not its factual implementation.

The variable SUBVETOFIN created by Treisman (2002) codes whether regionally chosen upper houses of parliament have the constitutional right to block financial legislation. If constituent governments can block financial legislation, this indicates that they are more than political folklore but veto players. Yet, this competence does in no way indicate that the central government refrains from interference with the constituent ones. This competence enables

constituent governments to demand compensation in exchange for their consent, it might even serve as an indicator for cooperative federalism.

The spending autonomy of the lower government levels can also be secured if they have a right to a portion of the revenues accruing on the national level and if these are transferred to them in a regular and unconditional fashion. This is captured by the variable REVSHARE also produced by Kearney (1999). On the one hand, REVSHARE is indeed an indicator for the autonomy of sub-national government tiers. On the other, such rules create incentives for lower government tiers to have specific interests in the federal tax rates. Such institutional provisions thus may induce a cooperative kind of federalism.

Another way besides taxes and grants to raise revenue is to borrow money. Following an approach first developed by the Inter-American Development Bank (IADB 1997), Rodden (2002) constructs a borrowing autonomy index that is based on six different aspects, namely the ability of subnational governments to borrow, whether they need authorization from the central government, whether there are any borrowing constraints and whether debt may not be used for certain expenditures. In addition, the index takes into account whether subnational governments own banks and also whether they own important public enterprises (AUTOBORROW). High scores in this index show that the subnational governments can act independently from the national government.¹¹

Other Potentially Relevant Facts

Riker (1964, 1975) proposed an entirely different take on ascertaining the realized degree of federalism. He distinguishes between fully centralized federalism and partially centralized federalism and observes (1975, 133): “In all the fully centralized federations, the political party system is also fully centralized ... In all the partially centralized federations the political party system is relatively decentralized.” The implication of this observation is that federalism can be measured by measuring the party system. Riker himself made a number of proposals how this could be done (1957, 1964). He relies on two indicators (1975, 137): (1) whether the party that controls the national government also controls the constituent governments and (2) whether party discipline exists on both legislative

¹¹ In the literature on fiscal federalism, the credibility of the national government’s claims not to bail out subnational governments should they need this is intensely debated. Here, we refrain from entering this debate but just mention that a high degree of borrowing autonomy can become an important problem if the central government cannot credibly commit to non-bail out policies.

and executive matters. He is quick in adding a number of problems, e.g., that the concept of party discipline has a different meaning in a two party system than in a multiparty system. Rodden and Wibbels (2002) picked up on this and constructed an indicator reflecting the percentage of state governments controlled by the party of the federal chief executive (COPARTISAN). They generated the variable for 15 federations on an annual basis for the period from 1978 until 1996. In most countries, within-country variation is quite high, shedding doubt on the conjecture that the centralization of parties is a good proxy for the degree of centralization. The only two countries with a stable (and very high) proportion of federal-provincial copartisanship are Malaysia and Mexico.

Enikolopov and Zhuravskaya (2006) have recently used three variables contained in the Database of Political Institutions as proxies for party strength: PARTYAGE reflects the average age of the first and second government parties and the first opposition party. The rationale behind this is that age is supposed to be an indicator for both strength and stability of the party system. The stability is, in turn, an important factor for decisions concerning political careers. GOVFRAC reflects the probability that two deputies picked at random from among the government parties will be of different parties. The lower this value, the stronger the governing party is supposed to be. A slightly different proxy for the strength of parties is total fractionalization among all legislators (FRAC).

Overall, we have presented four indicators of fiscal decentralization, seven political decentralization indicators and three administrative decentralization indicators. Regarding federalism, six dummy variables were mentioned, four indicators for constitutionally assigned competences and four indicators of fiscal competences. Finally, four indicators for the fractionalization of the party system were added. We have thus 14 decentralization indicators, 8 federalism indicators (in addition to the six overall dummies) and 4 additional ones that might have an effect on the policies chosen by federations.

Table 3 summarizes these indicators in one table and gives additional information on the number of countries covered as well as some descriptive statistics. In order to save space, the federalism dummies contained in table 2 are not included again here.

Table 3: Descriptive Statistics

Name	Description	N	Mean	Min	Max	SD
fiscdec1	share of expenditures	85	22.15	0.37	65.39	16.87
fiscdec2	share of grants	89	34.78	0.17	96.79	24.70
fiscdec3	share of transfers	91	34.56	0.16	98.12	26.33
fiscdec4	share of revenues	85	16.28	0.82	51.65	13.02
auton	autonomous regions	132	0.10	0.00	1.00	0.30
muni	local elections	77	1.31	0.00	2.00	0.83
state	state elections	100	0.90	0.00	2.00	0.85
author	state authority	51	0.45	0.00	1.00	0.50
stconst	states in upper house	51	0.53	0.00	1.00	0.50
locexe	local elections executive	46	2.17	0.00	4.00	2.01
regexe	state elections executive	46	1.57	0.00	4.00	1.97
lowtiernum	administrative units	97	9049	6.00	237333	27414
hightiernum	structural units	122	23.54	3.00	170.00	25.91
subemploy	share of employment	85	39.18	0.00	92.90	20.81
autores	residual authority	115	0.12	0.00	1.00	0.33
autoweak	exclusive legislation	115	0.16	0.00	1.00	0.36
override	competence to override	46	1.65	0.00	4.00	1.99
subveto	right to block legislation	133	0.33	0.00	2.00	0.66
subvetofin	block financial legislation	136	0.23	0.00	2.00	0.55
authoraise	right to set taxes	46	1.87	0.00	4.00	1.42
revshare	autonomous revenues	46	2.00	0.00	4.00	1.26
autoborrow	autonomous borrowing	33	2.26	1.00	4.50	0.85
copartisan	governing party in states	14	0.58	0.14	1.00	0.29
partyage	average age of parties	127	31.23	2.00	149.00	27.74
govfrac	fractionalization of gov.	131	0.28	0.00	0.88	0.29
frac	fractionalization of legisl.	130	0.59	0.00	0.92	0.23

4 Identifying Latent Variables via Factor Analysis

The sheer number of proxies for both fiscal decentralization and federalism shortly surveyed in section 3 makes it difficult to keep a clear head. In order to test whether some latent variables behind the proxies can be identified, we draw on factor analysis. Factor analysis (also called principal component analysis) is an alternative way to create indicators. Factor analysis has the advantage of

supporting the categorization of variables by providing a transparent statistical procedure suggesting weights that the various variables should have within the overall indicator. Synthesizing different variables that are interrelated amongst each other by different levels of correlation into one indicator (or principal component as the term used in the language of factor analysis) thus becomes less discretionary; reliance on simple arithmetic means between the variables making up the indicator is not necessary. Drawing on factor analysis implies an important theoretical conjecture, namely that the correlations between the directly measurable variables can be causally ascribed to latent concepts (in our case various dimensions of fiscal decentralization and/or federalism). Factor analysis thus condenses the information contained in the original variables into latent factors by analyzing the common variation of the variables (in our case it is possible to represent some 70% of the variation in the original variables in seven factors). The values of the factors in the single countries (the factor values) are presented as deviations from the mean which is normalized to 0. Factor analysis allows us to clearly keep our theoretical concepts apart. Within the factors, it is not one single variable which drives the results but a mix of variables. Between the groups, factor analysis has the advantage of zero correlation between the factors.¹¹ The relationship between the original variables and the factors (both in terms of strength as well as direction) is represented by so-called factor loadings; which can, in turn, be interpreted as correlations. Due to the low number of observations, the variable COPARTISAN was excluded from the analysis. The results are thus based on the remaining 25 variables included in table 3.

Here is an overview over the contents of the tables in this section: Table 4 contains the *eigenvalues* and table 5 the factor loadings. On basis of these tables we discuss the factor loadings of the first seven principal components and assign some short labels to them.¹² Table 6 shows the correlations between the seven original variables with the highest loadings on the components as well as the correlations of these seven variables with a dummy variable for federalism which is constructed as the median of the six most frequently used dummies for federalism. Table 7 shows bivariate correlations between the derived components and other country characteristics like possible determinants of federalism, other institutional country characteristics and socio-economic outcome variables.

¹² The two subsequent components not documented in table 5 have an *Eigenvalue* of < 1 and could be interpreted as proxying for “autonomous region” and “number of administrative units”.

Table 4: Principle Component Analysis*

Com- ponent	Original Eigenvalues			Rotated Sum of Squared Loadings		
	Total	% of Var.	Cumulated	Total	% of Var.	Cumulated
1	4.416	22.082	22.082	2.448	12.238	12.238
2	2.147	10.736	32.818	2.198	10.989	23.227
3	1.903	9.515	42.333	2.023	10.117	33.343
4	1.526	7.631	49.964	1.923	9.614	42.957
5	1.477	7.383	57.347	1.879	9.394	52.351
6	1.395	6.974	64.321	1.851	9.253	61.604
7	1.219	6.095	70.416	1.762	8.812	70.416
8	0.995	4.977	75.393			
9	0.889	4.444	79.837			
...						
23	0.022	0.129	99.940			
24	0.006	0.038	99.978			
25	0.004	0.022	100.000			

* Rotation with Varimax and Kaiser-Normalization. The rotation converged after 12 iterations. Factors with Eigenvalue < 1 are neglected.

In table 5, we have highlighted the variable with the highest factor loading on the respective component in bold letters. It is evident that the 25 recognized variables cannot be synthesized into one single component that would reflect most of the common variation of these variables. Furthermore, it is also impossible to boil these variables down to two components which would allow us to separate federalism issues neatly from decentralization issues. Instead, seven major components result.

The first column merges the elements of democracy on the subnational levels (namely whether local and regional governments are elected) with the competence of the center to override decisions of the lower government tiers. It seems that this component does not fit our priors regarding fiscal decentralization or federalism. It could even fit a democratic, but unitary state. We propose to call this factor token executive elections. The second component is primarily composed of the sub-national share of total expenditure and the sub-national revenues out of own resources. This covers one important aspect of fiscal decentralization. We propose

Table 5: Rotated Matrix of Components (Factor Loadings > 0.3)*

Name	Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 5	Comp. 6	Comp. 7
fiscdec1		0.888					
fiscdec2			0.968				
fiscdec3			0.969				
fiscdec4		0.878					
auton							
muni				0.805			
state				0.656			
author				0.562		0.424	
stconst					0.524		
regexe	0.774						
locexe	0.850						
lowtiernum		0.314					
hightiernum	0.331			0.373		-0.366	
subemploy		0.553		0.377			
autores				0.393	0.342	0.481	
autoweak				0.389		0.566	
override	0.804						
subveto					0.911		
subvetofin					0.884		
authoraise	0.425					0.702	
revshare						0.767	
autoborrow						0.638	
partyage				0.568			
govfrac							0.893
frac							0.891

* Principle component analysis with Varimax and Kaiser-Normalization.

to call it “sub-national expenditure”. The third component is closely related to this: it centers around vertical transfers and we propose to call it “fiscal independence”. The fourth component is related to the first one: this one primarily deals with democratic elections on the sub-national levels; it also includes the variable on the age of parties, thus also reflecting local democracy, rather than either fiscal decentralization or federalism as defined above. Remember that we argued in the theoretical section that it is possible to separate federalism from democracy, at least conceptually. Actually, the resulting components re-enforce

this view: components one and four deal with local democracy. Components two and three deal with fiscal issues.

Two of the three remaining components deal with important aspects of federalism as described in section 2. Component five is driven by two constitutional variables, namely the competence of the subnational levels to veto national legislation or to veto national legislation regarding finance issues. We propose to call it “federal veto”. The next component also deals with some core aspects of federalism, namely the question whether the states have some residual autonomy. But in addition, it also reflects some important fiscal aspects that we would expect federations to have. We propose to call it “federal competence”. The seventh, and last component, deals with the composition of parliament. It thus deals, again, with an aspect of democracy, here not on the institutional level but rather on the policy level.

Summing up, we have identified seven components, three of which deal primarily with democracy, (1, 4 and 7), two deal with fiscal decentralization issues (2 and 3) and only two with federalism as defined above.

Table 6: Bivariate correlations of the seven aspects of federalism/decentralization and their correlations with the federalism dummies

Name	locexe	fiscdec1	fiscdec3	muni	subveto	revshare	govfrac
locexe	1						
fiscdec1	0.396* (34)	1					
fiscdec3	0.247 (35)	0.138 (78)	1				
muni	0.356 (27)	0.217 (44)	0.034 (46)	1			
subveto	0.229 (46)	0.299** (85)	0.123 (90)	0.141 (73)	1		
revshare	0.209 (46)	0.384* (34)	-0.016 (35)	0.000 (27)	0.334* (46)	1	
govfrac	0.044 (45)	0.148 (81)	0.034 (86)	-0.027 (74)	0.031 (126)	0.169 (45)	1
federalism dummies [#]	0.284 (46)	0.360** (85)	0.059 (91)	0.129 (77)	0.421** (133)	0.386** (46)	0.132 (131)

*** and * show that the Bravais Pearson correlation is significant on the 1 or 5 percent level respectively. # Mode of six federalism-dummies (as shown in table 2).

If one uses the seven variables with the highest factor loadings on the derived principal components (as representatives of these components) and looks at the resulting bivariate correlations, then one notices that not a single correlation is larger than .4. Although a number of correlations are significant, this indicates that

the seven variables reflect seven dimensions of both federalism and decentralization that are largely independent from each other.

Moreover, table 6 shows that the most frequently used federalism dummies reflect three of the seven dimensions in particular, namely fiscal decentralization, veto powers of subnational units in national legislation and revenue autonomy. The first of these three would conceptually rather belong to decentralization.

Our main conclusion is that more fine-grained indicators of federalism should aim at keeping conceptually different dimensions such as revenue autonomy and constitutional veto powers apart.

Table 7: Bivariate correlations of the seven aspects of decentralisation/federalism with other country characteristics

	locexe	fiscdec 1	fiscdec 3	muni	subveto	revshare	govfrac
Lpop	0,279 (37)	0,506** (71)	0,165 (76)	0,075 (54)	0,425** (91)	0,244 (37)	0,044 (92)
Area	0,178 (13)	-0,018 (29)	-0,315 (28)	0,115 (17)	0,059 (29)	0,075 (13)	0,107 (28)
Ssa	-0,462** (46)	-0,366** (82)	-0,075 (88)	-0,239* (75)	-0,198* (128)	-0,097 (46)	-0,199* (126)
Asia	-0,103 (46)	0,169 (82)	0,120 (88)	-0,037 (75)	-0,013 (128)	0,232 (46)	0,100 (126)
mena	-0,111 (46)	-0,198 (82)	-0,029 (88)	-0,178 (75)	-0,104 (128)	-0,281 (46)	0,086 (126)
Lac	0,271 (46)	-0,092 (82)	0,036 (88)	0,128 (75)	0,301** (128)	0,169 (46)	-0,213* (126)
Oecd	0,377** (46)	0,448** (82)	0,112 (88)	0,367** (75)	0,191* (128)	0,253 (46)	0,140 (126)
protestant	-0,048 (44)	0,356** (76)	-0,043 (80)	0,177 (70)	0,015 (117)	0,133 (44)	0,135 (119)
ethnic	-0,417** (46)	-0,272* (85)	-0,083 (91)	-0,247* (76)	-0,104 (132)	-0,069 (46)	-0,082 (130)
Gini	-0,096 (36)	-0,286* (62)	0,060 (69)	-0,131 (55)	0,020 (96)	0,115 (36)	-0,209* (94)
age	0,190 (37)	0,346** (64)	0,125 (69)	0,403** (46)	0,185 (79)	0,109 (37)	0,126 (80)
polityiv	0,349* (46)	0,315** (85)	0,200 (91)	0,529** (76)	0,205* (133)	0,290 (46)	0,207* (130)
maj	-0,106 (37)	0,078 (64)	-0,013 (69)	0,288 (46)	-0,142 (79)	0,114 (37)	-0,023 (80)
pres	-0,106 (37)	-0,228 (64)	-0,204 (69)	-0,146 (46)	0,272* (79)	0,114 (37)	-0,220 (80)
ji	0,239 (37)	0,316* (58)	0,123 (62)	0,414** (46)	0,146 (79)	0,157 (37)	0,158 (80)
happiness	0,137 (35)	0,071 (63)	0,184 (65)	0,103 (42)	0,240* (77)	0,443** (35)	-0,022 (75)
hdi	0,542** (46)	0,454** (85)	0,177 (91)	0,405** (76)	0,217* (132)	0,137 (46)	0,177* (130)
logyl	0,479** (37)	0,443** (71)	0,243 (76)	0,310* (54)	0,201 (91)	-0,011 (37)	-0,166 (92)
growth	-0,070 (46)	0,103 (85)	0,142 (91)	0,080 (76)	0,095 (132)	0,267 (46)	-0,037 (130)
totexp	0,517** (36)	-0,203 (70)	-0,241* (74)	-0,195 (52)	-0,125 (88)	0,229 (36)	0,011 (90)
govef	-0,243 (36)	-0,353** (71)	-0,118 (76)	-0,137 (52)	-0,026 (90)	-0,006 (36)	0,146 (90)
cpi	-0,199 (37)	-0,407** (71)	-0,065 (76)	-0,166 (54)	-0,036 (91)	-0,102 (37)	-0,170 (92)

‘**’ and ‘*’ show that the Bravais Pearson correlation is significant on the 1 or 5 percent level respectively.

Although attempts to endogenize federalism date back at least to Riker who argued that external threats were instrumental in the founding of federations, it seems fair to say that the determinants of federalism are still largely unclear. Since the central focus of this paper is the analysis of various indicators, we will not attempt to contribute anything here. Nevertheless, it might be interesting to have a look at a number of potentially relevant determinants and their correlations with our seven components. Lines 1-11 in table 7 reflect potential determinants of federalism. The first two refer to the size of a country, the idea being that the larger a country – either in terms of population or area – the more necessary might autonomous subnational government units be. The next four lines simply show whether the seven components are more (or less) frequently observed in various geographic regions. The most striking results are the negative correlations between a number of federalism/decentralization variables in Sub-Saharan Africa. OECD membership is not based on geography but rather on wealth. A number of variables are significantly positively correlated with OECD membership. Fractionalization, be it ethnic, linguistic or religious, is conjectured to be an important determinant of federalism. Empirically, if anything, the opposite seems to be the case as the many negative correlations in the respective lines indicate. Income distribution can also be interpreted as a sort of fractionalization. Here, too, higher values of the Gini-coefficient are negatively correlated with a number of federalism /decentralization variables. Finally, the age of the current regime could be correlated with our variables, if there are fads and fashions, i.e. if the time of choosing basic institutions is a determinant. The number of years a country has been democratic without interruption is indeed correlated with fiscal decentralization and the local election of municipal legislatures and executives.

The overall message is that the degree of both federalism and decentralization seems to be largely independent from the variables just discussed. As already mentioned, a different picture emerges when analyzing the correlation between the level of democracy (line 12 in table 7). In particular our component muni is highly correlated with the observed level of democracy.

In lines 13-15 of table 7, we move on to present a number of correlations between our federalism/decentralization indicators and other institutional aspects. Partial correlations are also very low with the exception of some correlations with de facto judicial independence. In lines 16-22 we show correlations with variables that represent different socio-economic outcomes like government expenditures (totexp), government efficiency (govef), output per worker (logyl) and happiness. The overall message of these correlations is that the bivariate correlations are neither high or low across all seven components looked at but depend on the

specific variables under consideration. But these bivariate correlations should not be overinterpreted: causality can definitely not be inferred from them.

5 Conclusion and Outlook

This paper started with the conjecture that federalism and decentralization are two different concepts that better be kept apart both theoretically and empirically. In order to test whether the most frequently used indicators for both federalism and decentralization can be synthesized into a single latent variable, 25 variables were fed into a principal component analysis. The results show that not even two components are sufficient to capture the various dimensions of the two concepts. Empirically, seven components could be separated which we labeled token executive elections, sub-national expenditure, fiscal independence, sub-national democracy, federal veto, federal competence and composition of parliament.

The data-analysis carried out in this paper therefore shows that we are in need of more adequate and fine-grained indicators for both federalism and decentralization. It would be particularly helpful to have indicators that explicitly make a distinction between *de jure* constitutional rules and their *de facto* implementation. Not only would this enable us to make more sense of the variation in outcomes observed within the group of federally organized states but this could also be used to pursue the question under what conditions *de jure* constitutional rules can be expected to be factually enforced.

As the number of federally organized states is rather small, only around two dozen, it would also be helpful to construct time-series data in order to have more observations.

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Appendix: List of Variables

<p>AGE: Age of democracy defined as $AGE = (2000 - DEM_AGE) / 200$, with values varying between 0 and 1.</p>
<p>AREA: Area in Square kilometres, Banks' Cross-National Time-Series Data Archive</p>
<p>ASIA: Regional dummy variable, equal to 1 if a country is in East Asia, 0 otherwise; source: CIA (2005).</p>
<p>AUTHOR: Dummy variable, equal to one if “Do the state/provinces have authority over taxing, spending, or legislating?” answered in the affirmative, 0 otherwise; source: Beck et al. (2000).</p>
<p>AUTHORAISE: Describes sub-national government’s formal authority to raise their own revenue through taxation – “4” if both sub-national levels have that power, “2” if only one does, “0” otherwise; source: Kearney (1999).</p>
<p>AUTOBORROW: An index constructed following IADB (1997:188) and including the following criteria: (1) ability to borrow, (2) authorization of borrowing, (3) borrowing constraints, (4) limits on the use of debt, (5) subnational government banks, (6) public enterprises; source: Rodden (2002).</p>
<p>AUTON: Dummy variable, equal to one if “Are there contiguous autonomous regions?” answered in the affirmative, 0 otherwise AND if no information available; source: Beck et al. (2000).</p>
<p>AUTORES: Dummy variable coded 1 if the constitution gives subnational legislatures exclusive right to legislate on policy areas not specifically assigned in the constitution, 0 otherwise; source: Treisman (2002).</p>
<p>AUTOWEAK: Dummy variable coded 1 if the constitution reserves exclusive right to legislature on at least one specific policy area to subnational legislatures, or subnational legislatures have residual authority, 0 otherwise; source: Treisman (2002).</p>
<p>COPARTISAN: Defined as the percentage of state governments controlled by the party of the federal chief executive, available for 15 federations on an annual basis from 1978 until 1996; source: Rodden and Wibbels (2002).</p>
<p>CPI: Corruption Perception Index measuring perceptions of abuse of power by public officials. Average over 2000 – 2005. Index values between 0 and 10, lower values meaning lower levels of corruption (recoded from the original version); source: Transparency International and Internet Center for Corruption Research (http://www.icgg.org/).</p>
<p>FISCDEC 1: Sub-National Share of Expenditures (% Total); source: IMF's Government Finance Statistics (GFS), 2002.</p>
<p>FISCDEC 2: Sub-National Grants Share (% Total Sub-National Revenues); source: IMF's Government Finance Statistics (GFS), 2002.</p>
<p>FISCDEC 3: Vertical Imbalance; source: IMF's Government Finance Statistics (GFS), 2002.</p>
<p>FISCDEC 4: Sub-National Own-Source Revenues (% Total Own-Source Revenues); source: IMF's GFS, 2002.</p>
<p>FRAC: The probability that two deputies picked at random from the legislature will be of different parties, source: Beck et al. (2002).</p>
<p>GOVFRAC: The probability that two deputies picked at random from among the government parties will be of different parties.; source: Beck et al. (2002).</p>

GOVEF:

Government effectiveness according to the Governance Indicators of the World Bank. Combines perceptions of the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies into a single indicator. Values between 0 and 10, where lower values signal higher effectiveness; source: Kaufmann et al. (1999).

GROWTH:

GDP Growth per Capita 1993-2000 %, source: Heston et al. 2002.

HAPPINESS:

Happiness according to happiness surveys collected by Veenhoven 2004 and arranged on a 10-0-scale with higher values signal higher happiness.

HUMAN DEVELOPMENT INDEX:

Human Development Index 2003, source: Human Development Reports, hdr.undp.org.

HIGHTIERNUM:

The number of government of highest subnational tier units in the mid 1990s, source: Treisman (2002).

JUDICIAL INDEPENDENCE:

De Facto Judicial Independence on a scale of 0-1, 1=very independent, source: Feld and Voigt 2003.

LAC:

Regional dummy variable, equal to 1 if a country is in Latin America, Central America, or the Caribbean, 0 otherwise; source: CIA (2005).

LOGEXE:

Records whether or not a country's local executives are elected "4" if yes "0" otherwise, source: Kearney (1999).

LOGYL:

Natural logarithm of output per worker, measured in 1988, source: Hall & Jones (1999).

LOWTIERNUM:

The number of government tiers in the mid 1990s. A "tier of government" is exists if a political executive at that tier meets three conditions: (1) funded from public budget, (2) authority to administer a range of public services and (3) territorial jurisdiction; definition includes administrative agents of higher level governments; source: Treisman (2002).

LPOP:

Natural logarithm of total population (in millions); sources: Penn World Tables, Center for International Comparisons at the University of Pennsylvania/ CICUP (2006) and CIA (2005).

MAJ:

Dummy variable for electoral systems, equal to 1 if all the lower house in a country is elected under plurality rule, 0 otherwise. Only legislative elections (lower house) are considered. Macedonia switched during the observation period from MAJ to a mixed system and was coded MAJ = 0.5 and MIXED = 0.5; sources: variable *ELECSYSTEM_TYPE* from Golder (2005) as well as constitutions, electoral rules, election reports and other internet sources.

MENA:

Regional dummy variable, equal to 1 if a country is in the Middle East, 0 otherwise; source: CIA (2005).

MUNI:

0 if neither local executive nor local legislature are locally elected. 1 if the executive is appointed, but the legislature elected. 2 if they are both locally elected; source: Beck et al. (2000).

OECD:

Dummy variable, equal to 1 for all countries that were members of the OECD; source: OECD (2006).

OVERRIDE:

Dummy variable, equal to 1 if the central government has the legal right to override the decisions and policies of lower levels of government without due process, source: Kearney (1999).

PARTYAGE:

Average Age of Parties, source: Beck et al. (2002).

POLITY IV:

Polity IV Dataset, Democracy-Autocracy-Index on a scale 10,-10.

PRES:

Dummy variable for government forms, equal to 1 in presidential regimes, 0 otherwise. Only regimes in which the confidence of the assembly is not necessary for the executive to stay in power (even if an elected president is not chief executive, or if there is no elected president) are included among presidential regimes. Most semipresidential and premier-presidential systems are classified as parliamentary source: constitutions and electoral laws.

PROTESTANT:

Percentage of the population in a country professing the Protestant religion in 1980 (younger states are counted based on their average from 1990 to 1995); source: La Porta (1999) and CIA (2005).

REGEXE:

Registers whether a country's regional executives are elected; "4" if yes, "0" otherwise; source: Kearney (1999).

REVSHARE:

Measures whether a country's central government regularly and unconditionally transfers a portion of national taxes to lower levels of government, "4" if both sub-national levels receive, "2" if one does, "0" otherwise; source: Kearney (1999).

STCONST:

Dummy variable, equal to one if "Are the constituencies of the senators the states/provinces?" answered in the affirmative, 0 otherwise; source: Beck et al. (2000)..

STATE:

Dummy variable, equal to one if "Are there state/province governments locally elected?" answered in the affirmative, 0 otherwise; source: Beck et al. (2000).

SUBEMPLOY:

Non-central government employment as % of total govt employment, calculated from Schiavo Campo et al. 1997.

SSA:

Regional dummy variable, equal to 1 if a country is in Sub Saharian Africa, 0 otherwise; source: CIA (2005).

SUBVETO:

Dummy variable coded 1 if regionally chosen upper house of parliament has constitutional right to block legislation; source: Treisman (2002).

SUBVETOFIN:

Upper house can block financial legislation (on at least some issues) supported by lower house: 0 = not at all (or not bicameral), 1 = can require lower house supermajority or majority of joint session, 2 = can block even against supermajority; source Treisman (2002).

TOTEXP:

Total Government Expenditure as percentage of GDP; source: Heston et al. (2002)..
