Federalism, Decentralization and Macro-Economic Performance in OECD Countries¹

André Kaiser, Niels Ehlert, Annika Hennl and Jan Biela


1. Introduction

Federalism research has recently seen a downright renaissance by putting the question “Does federalism matter?” on centre stage (Kaiser 2004). Findings in this respect are, however, ambiguous so far. Some authors observe a positive influence of federalism on lower inflation rates (Lijphart 1999; Lancaster/Hicks 2000), lower unemployment (Crepaz 1996), or a higher economic growth (Lancaster/Hicks 2000), whereas other researchers do not find any effects of federalism with regard to the macroeconomic performance of political systems (Lane/Ersson 1997; Castles 2000).² In addition to disputed findings and a preference for case studies instead of comparative research, there is next to no theoretical argument in these contributions as to why federalism should or should not have consequences for policy output. Against this background, the history of federalism research has a surprise in store. The question of performance effects of federalism refers back to Ostrom (1973) who turns against Riker’s (1969) claim that federalism (apart from more complicated decision-making) makes no real difference. Ostrom’s argument rests explicitly on findings of the public finance literature (in particular Oates 1972) and the assumption that federal countries can fully exploit the advantages of a decentralized provision of public goods and services. It is therefore rather startling that federalism literature has, for the most part, neglected the dimension of economic decentralization, the more so as there appears to be no alternative basis for the purported performance effects of federalism.³

Moreover, recent studies of Braun (2000) and Keman (2000) show that a distinction between federal (and, so goes the assumption, by nature decentralized) and unitary (and therefore centralized) political systems is much too simple to cover the variances in established democracies with regard to their territorial organisation of state activity. There exist politically federal countries with a high degree of centralization as well as a number of unitary countries that are highly decentralized. These findings point to a principal difference between the “right to decide” (federalism) and the “right to act” (decentralization). Notwithstanding this insight, there is as yet no coherent theoretical basis for the interplay of

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² For a more detailed overview see Benz (2001) or Braun (2002).
³ Instead, theoretical propositions concerning federalism mostly refer to the democratic quality of a system (Lijphart 1999; Bednar/Eskridge/Ferejohn 2001). For arguments regarding performance effects see Treisman (2000) and Gerring/Thacker (2004).
the two dimensions, nor are there any empirical investigations with respect to performance effects.

In response, we initially build on central theoretical arguments of the political science and public finance literatures to develop a consistent explanatory model of the relationships between federalism, decentralization and policy performance. The subsequent sections evaluate the hypotheses that follow using a macro-quantitative analysis of the OECD countries and additionally evaluate from the model the assumption that the hypothesized effects diverge depending on policy area (Benz 1998; 2001). Whereas our findings corroborate the assumed relationships at a macro-level, an in-depth qualitative analysis of the underlying causal mechanisms as well as a closer evaluation as to why the effects differ across policy areas is yet to be done. The final chapter thus sketches a current research project.

2. Theory and Hypotheses

Considering the broad theoretical arsenals of the political science and public finance literatures it is not necessary to develop completely new theoretical arguments with regard to performance effects of federalism and decentralization. Instead, we focus on merging already existing arguments in a consistent explanatory model.

The starting point of our theoretical argument is the conceptual distinction between the „right to decide“ and the „right to act“ (Keman 2000). We thus build on the assumption that federalism and decentralization are two different dimensions of the territorial organization of state activity that exhibit independent as well as interdependent effects.

The basis of the model is the theory of public finance (Musgrave 1959). Following Musgrave’s seminal contribution to public finance research, three interdependent branches of fiscal government can be distinguished, namely a branch responsible for the optimal allocation of resources, a second responsible for guaranteeing an optimal distribution of wealth, and a third which secures general economic stability. Efficiency considerations mainly take place in the allocative branch. Primarily rooted in the provision of public goods and services in accordance with the resource needs of the population, efficiency is thus a concept of economic efficiency. 4

Regarding independent effects of decentralization, Oates’ (1972) decentralization theorem postulates that a decentralized provision of resources is generally more efficient than centralized supply - subject to specific conditions such as scale effects. Accordingly, we can formulate the following basic hypothesis:

H1: Decentralization is a more efficient mode of governance than centralization, and therefore leads to better policy performance.

The rationale behind the decentralization theorem is that policy-makers on the sub-national level are better informed about the local resource needs than policy-makers on the central level. Moreover, an uneven supply of resources on the central level is not always enforceable because it may violate political perceptions of equal treatment (cf. Oates 2004). However, recent public finance literature has increasingly shown that decentralized resource provision is not a superior mode of governance per se, but that additional institutional fac-

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4 Whereas the concept of economic efficiency applies to the spatial mapping of resource needs, preferences and public good provision, data availability limits our quantitative analysis to the evaluation of performance effects.
tors which guarantee fiscal discipline on the part of sub-national governments are necessary. Such budget constraints frustrate incentives for sub-national governments to provide more goods and services for their constituencies by overstretched their financial abilities. Overspending may appear a viable strategy, particularly when the central government is likely to step into the breach, causing the deficit burden to shift to residents of other sub-national entities or to future generations (e.g. Goodspeed 2002). Likewise, the central government may only prevent welfare losses of sub-national overspending if it can credibly put forward a no-bailout strategy. Accordingly, we advance the following qualification of the basic hypothesis:

H2: The effects of decentralization are subject to the hardness of budget constraints in a political system. For a given level of decentralization, harder budget constraints are associated with superior policy performance.

These assumptions can be represented as a game with sequential moves between the central and the sub-national level (cf. Inman 2003). In the first period, a local government (LG) either overspends or does not. The respective strategy moves are denoted as O (overspending) and NO (no overspending). In case the local government chooses NO, the game finishes after the first round. In case it chooses O, the central government (CG) then decides to provide a bailout (B) or to choose a no-bailout strategy (NB). The resulting payoff matrix is given in Table 1.

<table>
<thead>
<tr>
<th>payoffs</th>
<th>(O,B)</th>
<th>(O,NO)</th>
<th>(NO,-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG</td>
<td>( P_{CG}(O,B) )</td>
<td>( P_{CG}(O,NO) )</td>
<td>( P_{CG}(NO,-) )</td>
</tr>
<tr>
<td>LG</td>
<td>( P_{LG}(O,B) )</td>
<td>( P_{LG}(O,NO) )</td>
<td>( P_{LG}(NO,-) )</td>
</tr>
</tbody>
</table>

Table 1: Payoff matrix

The analysis of the game yields three conditions which must be met for decentralization to lead to aggregate inefficiency. Firstly, the central government prefers to bailout the overstretched local government.

(1) \( P_{CG}(O,B) > P_{CG}(O,NO) \).

Secondly, the local government prefers to overspend in the case of a bailout, but would prefer not to overspend if the central government chooses a no-bailout strategy.

(2) \( P_{LG}(O,B) > P_{LG}(NO,-) \geq P_{LG}(O,NO) \).

The fulfilment of these two conditions makes the strategy combination (O, B) the dominant solution of this game. However, this solution only leads to aggregate inefficiencies if

(3) \( P_{CG}(O,B) + P_{LG}(O,B) < P_{CG}(NO,-) + P_{LG}(NO,-) \).

\(^3\) A no-bailout strategy may imply financial as well as distributive costs for the central government.
Therefore, inefficiencies may arise if the costs of overspending for the sub-national government are low and/or if choosing a no-bailout strategy imposes significant costs on the central government. Hence, the effectiveness of hard budget constraints depends on the degree to which they increase the costs of overspending and/or reduce the costs of a no-bailout respectively. Inman (2003) and Rodden et al. (2003) show that this can be achieved principally using two different institutional mechanisms: market institutions such as capital markets and banking systems, as well as hierarchical oversight procedures and legislative restrictions in combination with independent monitoring agencies such as constitutional courts, central banks, and audit courts.

The institutional logic behind these arguments also paves the way for theoretical propositions regarding interaction effects of federalism and decentralization. Rodden et al. (2003) point out that sub-national budget constraints are reflected either by sub-national fiscal autonomy and unequivocal accountability of sub-national governments or by hierarchical regulative authority on the central government’s part. On this basis we establish a relationship between budget constraints and unitarism/federalism, or more exactly, the type of federalism (Rodden 2002). Countries with functioning democratic and economic institutions show the following interaction effects between federalism, decentralization and performance:

H3: Decentralization in unitary countries leads to higher policy performance.

H4: Decentralization in countries that follow the model of dual federalism likewise exhibit higher policy performance.

H5: Decentralization in countries that follow the model of joint federalism show comparatively lower policy performance.

Beyond its descriptive value, however, federalism has an additional independent influence on policy performance. Public finance literature entails the important insight that different arrangements of federalism may coincide with varying performance effects. Yet the respective literature neglects the effects of federalism by solely focusing on the implementation stage of the policy process. However, inefficiencies may not only arise in the course of implementing decisions on resource allocations, they may also occur at the decision-making stage itself. Negotiations between sub-national entities on the allotment of resources correspond to the logic of a prisoners’ dilemma: co-operation of all sub-national governments with the central government yields the most efficient allocation of resources, but any single sub-national government has an incentive to deviate and demand a bigger slice of the pie (Inman 2003). As original decision-making competencies are the very characteristic of federal states, we therefore argue that ceteris paribus an optimal resource allocation is more difficult to achieve in federal countries than in unitary states. This perspective is supported by veto player theory which postulates a greater policy stability of federal countries in comparison to unitary states (Tsebelis 2002). Moreover, game-theoretical considerations also imply that it is rather difficult to reach a welfare-optimizing equilibrium in prisoners’ dilemma situations with n>2 players (Ostrom 1990; Scharpf 1997). Hence, together these theoretical arguments pave the way for the assumption that
H6: Independent from the degree of decentralization, federal countries experience greater policy stability in comparison to unitary states.

Slower decision-making processes, even if they correlate with higher decision-making costs, are not necessarily equal to lower efficiency of a political system. Breton (1987) sees advantages of federalism precisely because policy results are more balanced and cannot be reversed as easily as in unitary states. However, a transaction cost economics approach indicates that slower decision-making of a political system parallels a reduced capacity for reacting to socioeconomic changes. In this respect, Williamson (1991) argues that hierarchical structures are clearly superior when it comes to adapting to such changes, particularly salient in the redistribution of resources according to Scharpf (1992). The increasing worldwide market integration that has taken place since the mid-80s thus assumes an important part in our argument, the more so as the adaptation to the resulting changes of the socioeconomic conditions has been assigned a prominent role on the political agenda in virtually all OECD countries (Pierson 1998). As a corollary, we expect that countries with a greater capacity for reaction have adjusted better to the changing conditions and therefore also exhibit a better performance. Hence, we hypothesize that

H7: Federalism tends to result in lower policy performance.

Hypothesis H7 is only formulated as a weak relationship because an overview of the theoretical argumentation yields a connection between the effects of federalism and additional institutional arrangements. In particular, the hypothesis does not indicate a lower performance in federal countries per se. Instead, federalism tends to go hand in hand with negative effects only if accompanied by further institutional factors.

Taken together, we trace performance effects back to different institutional arrangements of resource allocation. Efficiency gains are chiefly realized by decentralized resource supply. However, these gains are subject to institutional budget restrictions which prevent sub-national governments from misapplying their discretion at implementation stage. Federalism, on the other hand, tends to have a (negative) effect primarily if external changes require the redistribution of resources between the individual governments.

3. Design and research methods

In the second step of our analysis we use a quantitative analysis of the OECD countries to evaluate the hypotheses. This type of design is adequate because it is the only way to control for the numerous factors that reportedly influence policy performance. Owing to the theoretical premises of stable democratic and economic institutions as well as to practical considerations concerning data reliability, we restrict the evaluation to the OECD countries. In turn, this means that our analysis rests on only 20 to 30 cases dependent on data availability. Controlling for numerous factors the analysis is characterized by a classical “small n” situation. As is true for all estimations, we must first make sure the estimation is statistically correct, that is the underlying assumptions for applying the respective statistical procedures are met, or, as the case may be, appropriate adjustments are applied. This can be ensured using tests of the regression assumptions. The principal problem regarding validity is that the central limit theorem as the indispensable assumption for drawing statistical
inference by virtue of the “small n” situation obviously does not apply.⁶ Consequently there remain only two resorts. We can either restrict the analysis to the evaluation of the relationships in the empirical distribution of the OECD countries or increase the number of observations by conducting a panel analysis. Given that these two options adhere to different rationales, we apply both strategies.

**Design of the cross-sectional analysis**

In our cross-sectional analysis we are confronted with a large number of control factors highlighted in the literature, so that we must preselect those factors we wish to incorporate in statistical estimations. We have selected indicators on the basis of statistical selection procedures, employing bivariate and t-test selections as well as stepwise regressions. In doing so we have identified statistically significant models with a good explanatory power, which at first do not incorporate any of the federalism and decentralization indicators. Instead, we have added these indicators to the models only afterwards, as this is the only way of making sure that the relevant combinations of control factors are likely to be accounted for in the models. Due to the non-applicability of the central limit theorem we cannot draw statistical inference from any single model, but we must instead consider the persistence of the federalism and decentralization indicators across the different models. Hence, we infer an effect in case federalism and decentralization turn out to be significant only in the majority of the models.⁷ Furthermore, we have tested all resulting models for outliers.⁸ Finally, we have verified the stability of the models by again adding all bivariately significant indicators.

**Design of the panel analysis**

The feasibility of applying panel analyses as a solution to the “small n” problem in comparative political economy has been debated since Beck and Katz’s article (1995) at the latest. Panel analyses have indeed almost become standard in the discipline (Plümper/Troeger/Manow 2005). The idea behind these procedures is the incorporation of the time dimension, thus allegedly increasing the number of cases by the factor t (with t being the number of time intervals covered by the analysis). Yet panel designs are not without fallacies, and more recently there has been a growing awareness that panel analyses may not have such large potential after all (e.g. Beck 2001; Plümper/Troeger/Manow 2005). Kittel and Winner (2005) point out that although using panel analyses is worth a try, they are not a full replacement for more basic cross-sectional methods. In this light the parallel approach of our study is additionally justified.

As time series data are available only for the macroeconomic variables, the evaluation of performance effects in the course of the panel analysis is confined to the respective indi-

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⁶ The central limit theorem states that the sum of stochastically independent random variables is approximately normally distributed.

⁷ In assessing the models we use the Aikaike information criterion (AIC).

⁸ Mexico and Turkey, as the two countries with the lowest level of development, turn out to be outliers in most of the models. This finding underlines the importance of stable democratic and economic institutions for our analysis. At the same time, this finding also corroborates our decision to restrict the analysis to the OECD countries.
Pretests show that most of the macroeconomic indicators are generally non-stationary and moreover (partly) autocorrelated over time. Consequentially, the focus of the analysis is not concentrated on the effects of federalism and decentralization regarding the absolute level of the dependent variables, but rather on the effects with regard to short-term shifts of these variables (Kittel/Winner 2005). In addition, panel analysis requires the incorporation of time and country dummies (so-called fixed effects) and the models must be corrected for the specific characteristics of the error terms. We have estimated panel models both with and without the lagged dependent variable respectively. As panel data for the size of the public sector are available only for a shorter period of time, we conducted supplementary estimations with and without considering the government size, so that for each of the dependent variables all in all four different models have been estimated.\footnote{Owing to non-availability of time series data, the panel analysis also incorporates fewer control variables.}

Operationalization

Even a brief glance at the literature reveals that there are a number of diverging indicators which capture different aspects of both federalism and decentralization.\footnote{We analyse models for economic growth, unemployment, inflation, and the budget balance. Models for the size of government and for spending on welfare are not analysed due to an insufficient data basis. In all models the independent variables are lagged t-1 periods respectively.} We therefore not specified a single indicator or a combination of indicators in an index, but have instead chosen for both dimensions six different indicators respectively (plus an additional dummy for the federalism type). In the case of federalism, these are a dummy variable (Elazar 1987), indicators of Keman (2000), Lijphart (1999), Treisman (2000), Gerring and Thacker (2004), and an indicator on the basis of Maddex (1998). Regarding decentralization we consider the ratio of sub-national expenditure to total expenditure as well as the respective revenue ratio (average values for 1994-2003 calculated from the Government Finance Statistics yearbooks of the International Monetary Fund [IMF]), three different indicators from Rodden (2002; 2004), and an indicator measuring the ratio of sub-national to total administrative personnel (Schiavo-Campo et al. 1997).

Regarding the control variables, indicators which capture fiscal aspects of a political system are set apart. We incorporate the proportion of new debts to sub-national expenditure (IMF), an index of budget constraints that has been developed by the Inter-American Development Bank (1997), as well as a slightly modified version of the respective data from Rodden (2002) as fiscal indicators.\footnote{Concerning the measurement of federalism and decentralization, see Levin (1991), Baldi (1999), and Rodden (2004).} Furthermore, we use an indicator for the proportion of grants to sub-national revenue (Rodden 2004) as well as sub-national expenditure (IMF), and finally two additional indicators measuring the vertical fiscal imbalance of the political system (again average values for 1994-2003 calculated from the Government Finance Statistics data [IMF]). Further control factors are the population size, the size of the country in terms of area and the population density (all three taken from CIA 2005), age distribution (United Nations 2004), income distribution (UNDP 2004), ethnic (Levinson 1998) as well as religious fragmentation (Encyclopedia Britannica), and the degree of urbanization (United Nations 2001). We also control for the level of development (measured by the Human Development Index [UNDP 2004]), the number of “democratic years” 1900-
2003 (Marshall/Jaggers 2002), the legal culture (La Porta et al. 1999), and the institutional configuration of the political system (Lijphart 1999). As dependent variables we choose macroeconomic performance indicators based on literature. Federalism supposedly has an effect on government size (Cameron 1978; Castles/McKinlay 1979), welfare spending (Kriesi 1994), inflation rates (Lijphart 1999; Lancaster/Hicks 2000), unemployment rates (Crepaz 1996), budget balance (Busch 1995), and economic growth (Lancaster/Hicks 2000). Accordingly, these indicators come from the Main Economic Indicators of the OECD as well as the OECD Economic Outlook data. In analogy to the previous independent indicators, the macroeconomic indicators for the cross-sectional analysis are the average values for the years 1994-2003.

Next to macroeconomic indicators, we have collected indicators for the performance in different policy areas to evaluate the assumption that federalism and decentralization may have divergent effects depending on policy area (Benz 1998; 2001). Before selecting these indicators, however, we must put forward a number of additional considerations. Firstly, in view of the theoretical arguments of Musgrave (1959) and Oates (1972) one can expect efficiency gains only in policy areas with allocative functions. Secondly, Braun (2000) points out that divergent sub-national policy outputs are particularly likely in space-related policy areas as well as such areas which affect sub-national identities. Therefore, we focus on the policy areas of public order and safety, education, recreation and culture, economic policy, infrastructure, and environment, while distinguishing between output and outcome indicators. The output of a political system is related to policy results which can directly be influenced by policy-making, whereas the outcome is also influenced by external factors outside the policy-making realm. An analysis of the relationships between institutional arrangements and policy area performance must therefore focus on output indicators or – if such indicators are unavailable – at least on outcome indicators, for which a close connection with output is highly plausible. Accordingly, we have chosen the number of police officers per 1000 inhabitants (United Nations 2002) in the area of public order and safety, in the area of education the number of teachers (UNESCO 2001) as well as PISA results (OECD 2001), for economic policy an index which captures “the extent to which technical, scientific, and human resources meet the requirements of the economy” (IMD 2005), in the area of environment the compliance with international environmental conventions (Porter et al.), and finally concerning infrastructure the size of road networks (UNECE 2005) as well as three indicators from the Global Entrepreneurship Monitor 2002 regarding regulations, the quality of public funding, and physical infrastructure for start-up enterprises (Sternberg/Bergmann 2003).

4. Findings

Prior to carrying out regression estimations and subsequent to the findings of Braun (2000) and Keman (2000), we first must establish that federalism and decentralization are indeed empirically distinct dimensions of territorial political organization.

In general, the correlation analysis points at a moderate but in no case perfect relationship between federalism and decentralization. The highest correlation of .74 is between the

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13 Macroeconomic indicators are also incorporated as potential influence factors.
14 See table 4 in the appendix for an overview of all indicators.
Keman index of federalism and the Government Finance Statistics indicator of expenditure decentralization. Aside from that, there are only seven correlations with values greater than .60 and even one indicating a negative relationship. The exact relationship between federalism and decentralization thus remains unsettled. However, this was not unexpected, because the various indicators capture different aspects of federalism and decentralization. Yet the correlation analysis does verify the theoretical difference between the two dimensions. Regarding individual countries, for any combination of indicators there are always some countries which do not fit with the assumption that federalism and decentralization, and unitarism and centralization go hand in hand, in particular the unitary Nordic countries with high values of decentralization, so that the assumption of a perfect relationship between federalism and decentralization is rejected.

Results of the cross-sectional analysis

Our cross-sectional analysis basically confirms hypotheses H1 and H7 that we derived in the theoretical part of the study. The expected positive influence of decentralization and the negative influence of federalism are confirmed with respect to economic growth. Regarding other macroeconomic indicators, the expected relationships are foremost supported in the cases of inflation and the budget balance, although the findings for inflation rates must be qualified inasmuch as a stable effect can only be verified for the indicator of personnel decentralization. The analysis confirms no effect regarding unemployment rate and government size. In the area of social policy, however, the findings indicate that decentralization leads to higher spending on welfare, whereas federalism correlates with less spending.

Table 2: Relationships between federalism, decentralization, and performance

<table>
<thead>
<tr>
<th>Performance indicators</th>
<th>Federalism</th>
<th>Decentralization</th>
<th>Federalism type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth</td>
<td>–</td>
<td>+</td>
<td>o</td>
</tr>
<tr>
<td>Unemployment</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Inflation</td>
<td>+</td>
<td>(–)</td>
<td>o</td>
</tr>
<tr>
<td>Government size</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Welfare spending</td>
<td>–</td>
<td>+</td>
<td>o</td>
</tr>
<tr>
<td>Budget balance</td>
<td>o</td>
<td>+</td>
<td>o</td>
</tr>
<tr>
<td>Public order and safety</td>
<td>o</td>
<td>(–)</td>
<td>(+)</td>
</tr>
<tr>
<td>Education</td>
<td>o</td>
<td>o</td>
<td>(–)</td>
</tr>
<tr>
<td>Recreation and culture</td>
<td>o</td>
<td>(α/+ )</td>
<td>o</td>
</tr>
<tr>
<td>Economic policy</td>
<td>o</td>
<td>+</td>
<td>o</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Environment</td>
<td>o</td>
<td>+</td>
<td>o</td>
</tr>
</tbody>
</table>

* signals a significant positive, - a significant negative relationship; o indicates that there is no significant relationship.

The analysis furthermore corroborates the assumption of the literature (Benz 1998; 2001) that the effects of federalism and decentralization differ from policy area to policy.
Our findings point at a positive effect of decentralized resource supply in the areas of economic policy and environment. Moreover, decentralization tends to have positive effects in the area of recreation and culture, albeit these are ambiguous due to instability in some models. The analysis yields no effects with respect to the policy areas of education and infrastructure. Regarding the area of public order and safety, regression models even point to a relationship that runs contrary to the theoretical argumentation. Decentralized countries tend to have fewer police officers per 1000 inhabitants than centralized countries whereas federalism exhibits no persistent effect. However, this finding is confirmed only for some models. In table 2 we summarize the findings of the numerous regression models.

With respect to hypotheses H2 to H5 concerning the influence of institutional budget constraints, the analysis is at first glance not altogether decisive. The respective indicators are significant in several regression models, but we find no persistent and stable effect across the models, leading to no clear confirmation for a definite influence. One explanation may be the relatively low degree of variance of the budget constraint indicators for the OECD countries, or alternatively the small number of available cases for these indicators.\footnote{In assessing the effects of federalism and decentralization one must consider that the distribution of competencies and resources in individual policy areas may be different from the respective overall distribution in the country. Precise statements about the causes of deviating findings in specific policy areas are therefore not possible on the basis of a quantitative analysis.}

In interpreting the results, it is moreover necessary to realize that the budget constraint indicators serve primarily as control factors. Hence, the incorporation of these indicators in the analysis is predominantly relevant for a correct interpretation of the effects of federalism and decentralization, whereas significant effects of the budget constraint indicators themselves are only of secondary importance.

Regarding the federalism type, there is no confirmation for a persistent effect, either. However, the regression models indicate that Germany (as the sole case of joint federalism in the analysis) differs from the remainder of the OECD countries with respect to the number of police officers (positively), the PISA results (negatively), and public funding (positively).

All in all, the empirical relationships between federalism, decentralization, and performance in the case of the macroeconomic variables and also (with qualifications) in the case of policy area performance are mainly compatible with the theoretical propositions. Moreover, the divergent effects of federalism and decentralization in individual policy areas are in line with the respective predications in literature. Results with respect to the institutional budget constraints and the type of federalism are unclear, so that the respective hypotheses are neither confirmed nor rejected.

**Results of the panel analysis**

In taking into account the time dimension, the first insight is a surprising stability of OECD countries with regard to decentralization over time for both revenue and expenditure decentralization. Of the older OECD countries, for which data are available since the 1970s, the only countries that have become more decentralized are Belgium (expenditures), Italy (revenues), and Spain (revenues and expenditures). In these countries, too, the driving forces behind these trends have been sub-national efforts to gain more room for political manoeuvre rather than mere efficiency considerations. On the part of the younger, pre-

\footnote{For both indicators “hbc” and “borrauton” there are only 19 observations respectively.}
dominantly East European OECD member countries we do not find a clear trend towards
decentralization, either, except in Poland and the Slovak Republic. However, as these two
countries start from a rather low level, and the steps towards more decentralization are as
yet not very pronounced, it is too early to really confirm such a trend. Taken together, de-
centralization has as of yet not represented a strategy on the part of the OECD countries in
adapting to increasing market integration, which means that the OECD group – in contrast
to less developed countries – has not participated in the worldwide “wave of deentraliza-
tion” (Rodden et al. 2003).

As there is no intertemporal variation on the federalism dimension (with the exception
of Belgium), the panel analysis cannot yield any results concerning the prediction of hy-
pothesis H6 that federal states only adapt at a slow rate to external changes.17 The results of
the panel estimations should moreover be interpreted only cautiously because the relative
stability of decentralization values increases the sensitivity of the estimations with regard to
small data variations (and possibly data errors).

Nevertheless, the panel estimation findings do indicate that decentralization on the
revenue side positively influences macroeconomic performance, whereas expenditure de-
centralization tends to have a negative influence. To explain this seemingly surprising re-
sult, one must remember that revenue decentralization in the context of federalism research
means that a country behaves like an ideal typical dual system. However, there are unitary
countries, such as Denmark, Finland, Iceland and Sweden that also exhibit a comparatively
high level of revenue decentralization. Measuring decentralization on the expenditure side,
however, is more problematic because it calls for additionally considering the degree to
which sub-national governments are able to dispose of financial resources (Rodden 2004).
In this context, there is no control for the budget constraint indicators in the course of the
panel analysis, as respective time series data have not been available. The indicator for
revenue decentralization is therefore theoretically clearly preferable, whereas the indicator
for expenditure decentralization may be distorted in case of expansive spending on the part
of sub-national governments.18

Importantly, the focus of the analysis does not lie on the level of the dependent vari-
ables, but rather on short-term shifts. The results of the panel estimations therefore com-
plement the findings of the cross-sectional estimations, so that even opposite signs of the
coefficients do not necessarily contradict the respective findings.

Table 3: Panel effects of decentralization on macroeconomic performance

<table>
<thead>
<tr>
<th></th>
<th>without LDV;</th>
<th>without LDV;</th>
<th>with LDV;</th>
<th>with LDV;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dezrev</td>
<td>dezexp</td>
<td>dezrev</td>
<td>dezexp</td>
</tr>
<tr>
<td>Economic Growth</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Unemployment</td>
<td>–</td>
<td>o</td>
<td>–</td>
<td>o</td>
</tr>
<tr>
<td>Inflation</td>
<td>+</td>
<td>o</td>
<td>–</td>
<td>+</td>
</tr>
</tbody>
</table>

17 This follows from the incorporation of dummy variables for the individual countries in the panel models. Use of
dummies is confirmed by tests of significance subsequent to the panel estimations. A separate interpretation of the
federalism indicator is therefore not possible.
18 This proposition is corroborated by the fact that the additional inclusion of an indicator for sub-national debts
heavily influences the coefficients of expenditure decentralization, while this does not influence the coefficients
for revenue decentralization.
In a more detailed perspective, none of the panel models points at an effect of decentralization on economic growth. However, decentralization (on the revenue side) leads to a reduction in unemployment. These two findings are probably the most reliable results with regard to the persistency of the models. The panel results again reflect the inconsistency of the cross-sectional models in the case of the inflation rate. The models that incorporate the size of government, for instance, show a positive effect of decentralization (on both the revenue and expenditure sides); however, when we drop government size from the analysis (which increases the number of observations by approximately 270), the effect of revenue decentralization disappears and the sign of the coefficient for expenditure decentralization is even reversed! With respect to budget balance, there is again a positive effect of revenue decentralization (for the model without government size) and a negative effect of expenditure decentralization. If the lagged budget balance is added to the model, only the positive effect of revenue decentralization remains valid. These results are summarized in table 5.

All in all, decentralization of revenues tends to have a positive effect on macroeconomic performance, whereas the results for expenditure decentralization imply a negative effect. Most notably, the estimated effects of revenue and expenditure decentralization are out of line with each other in almost all panel models. As it is not possible to control for budget restraints in the course of the panel analysis, focussing on the revenue decentralization indicator is clearly preferable in interpreting the findings.

5. Preliminary Conclusions

We have developed a theoretical model on the causal relationships between federalism, decentralization, and performance, which we tested using a quantitative analysis of the OECD countries. The findings show that federalism and decentralization are not only theoretically but also empirically distinct dimensions with regard to the explanation of state activity. Our analysis basically confirms the assumptions of positive effects of decentralization (hypothesis H1) and slightly negative effects of federalism (hypothesis H7) respectively on policy performance. The panel analysis moreover underlines the importance of controlling for subnational budget constraints, and thus points indirectly at a confirmation of the remainder of the hypotheses derived from the theoretical model.

Our analysis yields fresh insight regarding the interplay of institutional arrangements with regard to the territorial organization of politics in individual countries. The analysis also exposes possibly divergent effects of federalism and decentralization in different policy areas, which had been noted by very few scholars (Benz 1998; 2001). In this regard our findings point out that the influence of federalism and decentralization indeed differs from policy area to policy area. However, owing to the “small n” problem and a small degree of variance for many institutional arrangements in the OECD world a quantitative approach is not enough to substantiate valid research findings in the sense of causal explanations. The final section thus locates the findings in relation to a research project that applies a mixed method design.
6. Prospect of qualitative research

Taking both quantitative and qualitative analyses as complementary parts within a mixed design, the results shown above can guide an adequate case selection for subsequent in-depth qualitative analyses. These case studies will principally pursue two goals, being primarily model-testing but also model-building (Lieberman 2005).

First, they shall be model-testing while detecting the causal mechanisms that lie behind the statistically approved relationships. In order to capture these we will focus on further examination of those different institutional logics that form the basis of our model:

1) allocation decisions by national as well as sub-national actors (H1)
2) fiscal discipline of sub-national actors in light of institutional budget constraints as well as their expectations with regard to the probability of a bailout by the central level (H2-H5)
3) the behaviour of sub-national actors in the course of negotiations with regard to the redistribution of resources within a country. (H6-H7)

Since a game-theoretical approach has been proven suitable to model the interactive and strategic context of subnational budget decisions as well as restitutive negotiations, our qualitative analyses will be accessible to an “analytic narratives” approach (Bates et al. 1998). The first step of our analysis will thus be to derive implications about the political actors’ strategic options from the game-theoretical interaction models. We will then test these implications in a detailed narrative of policy processes while paying special attention to the comparison of different policy areas.

The second intention of the qualitative case studies that are about to follow is to advance the theoretical model with regard to the varied impact of federalism and decentralization on policy performance in different policy areas. Building on additional theoretical presumptions we will compare processes of decision-making and implementation in policy areas, within which the statistical analysis of decentralization and federalism exhibited diverging effects. This chapter thus sketches the theoretical as well as methodological framework of a current research project that is inevitably connected to the quantitative findings presented in this paper.

6.1. Causal mechanisms and area-specific policy performance

The derivation of causal mechanisms and thus of implications about the political actors’ strategic options within a given institutional context constitutes the first step of our qualitative analysis. Moreover, area-specific effects of federalism and decentralization have to be explained with reference to the proposed institutional logics. The following evaluation of theoretically deduced causalities will thus separately focus on each logic and its corresponding area-specificity.

Ressource allocation

Referring to the first institutional logic delineated in Oates’ decentralization theorem (see chapter 2) we expect subnational actors to realize their scope for self-determined policy implementation and to effectively make use of it. According to theory,
decentralization thus induces subnational actors to gather detailed knowledge of resource needs, political preferences and the local costs of providing public services in order to adopt their provision of public goods to it. As a consequence we expect to detect a wide variance in implementation decisions that matches the respective preference structures and thus accounts for an efficient mode of governance. Countries, or more precisely policy areas, with a centralized provision of public goods, however, exhibit a more uniform allocation pattern. The theoretical reasoning for this is twofold: On the one hand national actors will face informational deficits regarding regional preferences and are thus simply not able to efficiently differentiate their provision of public goods. On the other hand they will be less inclined to do so since it may violate political perceptions of equal treatment and consequently reduce their payoff.

However, our quantitative findings have pointed out that the influence of decentralization differs from policy area to policy area. With respect to these deviating performance results, additional theoretical arguments highlight that the aforementioned causal mechanisms are subject to certain conditions. The policy areas in our quantitative study were principally selected on the basis of theoretical considerations, so that the predicted positive effects of decentralization should hold for all these allocative policy areas; only, however, as long as a central provision of goods and services is not linked with additional economies of scale (cf. Oates 1972). Economies of scale are rather unlikely in the areas of economic policy and recreation and culture, for which our findings are in accord with the theoretical propositions. In the area of infrastructure, on the other hand, there supposedly are economies of scale which may explain the insignificant performance results in the analysis. Additionally, the positive effects of decentralization may be undermined if subnational actors lack the relevant regulative competencies regarding their implementation decisions. This may be the case if central-level laws are very detailed, leaving minor discretion for divergent implementation. Moreover, subnational expenditures in a given policy area may be highly dependent on conditional grants. The quantitative findings for public order and safety, which run contrary to the theoretical propositions, allow for further propositions. The potential allocative effects in this area may not being very large because allocation is basically restricted to spending on personnel.

Fiscal discipline and hard budget constraints

Referring to the fiscal discipline of sub-national actors and thus the second institutional logic, our model expects subnational expenditure decisions to be dependent on institutional budget constraints as well as the subnational actor’s expectations with regard to the probability of a bailout by the central level. The interactive relationship between subnational budget decision-making and national bailout considerations was depicted as a sequential game (see chapter 2). Decentralization was furthermore thought to interact with both dual-federal and unitary state organization in a way that restricts expansive subnational spending. However, as to yet the causal mechanisms underlying this interaction

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19 Our case studies will necessarily account for the fact that the distribution of competencies and resources in individual policy areas may be different from the respective overall distribution in the country.
20 Economies of scale denote the dependence of the production output on the production factors. Positive economies of scale result, for instance, in bigger planning and production units. In economic theory, most public goods are supposed to correspond with such economies of scale.
21 Next to these area-specific constraints on divergent implementation, general inefficiencies may occur as subnational units with highly limited financial and personnel resources may simply not be able to efficiently make use of their “right to act”.

14
have to be specified. Following Rodden (2002) subnational actors in a dual-federal state are financially as well as electorally accountable for balancing their budget. In terms of the sequential game, electoral accountability of subnational actors certainly raises their costs for overstretching the budget. The same holds true for revenue decentralization since it closely ties the burden of financial costs to the subnational entity itself. Correspondingly, financial accountability on behalf of subnational governments reduces a central government’s financial costs for refusing a bailout. Hierarchic oversight in unitary states may likewise increase a subnational government’s costs of overspending. Decentralization in case of dual-federal respectively unitary state organization is thus causally linked to a tight budget discipline by subnational governments that strategically include the low probability of a central bailout as well as the high financial and electoral costs for overstretching into their budget decision making.

Decision-making in redistributive negotiations

Last but not least our qualitative case studies aim at reconstructing the causal link between federalism and its tendency to diminish policy performance. Depicted as a prisoner’s dilemma (see section 2) we assume redistributive negotiations between subnational units to be especially cumbersome, which leads to aggregate inefficiencies if external pressures on policy change are strong. Political actors that are attentive towards the need for policy adjustment thus constitute the starting point of the causal chain connecting federalism and policy performance. However, since subnational actors in federal states are equipped with an original right to decide, we suppose that they develop individual strategies as to how to adopt to external changes. We will thus see a variety of reform proposals that subnational actors strategically put forth at the stage of decision-making. Since under these conditions a change in the status quo is less likely, reform debates in federal states will ceteris paribus constitute a permanent part of the political agenda. Next to redistributive policies it seems reasonable to expect that federal countries exhibit lower performance as soon as regulative policy-making is concerned. Setting norms and standards, for example in the field of environmental policy, may well provoke serious problems of collective action as individual actors are induced to free-ride. In spite of the perceived need for common standards, defection may thus constitute the dominant strategy for every single actor. Non-regulation and thus aggregate inefficiencies may result.

Referring to area specific effects of federalism, the quantitative findings for the model of joint federalism stimulate further considerations. The German case persistently exhibits higher performance results in the area of public order and safety. Referring to Braun’s (2000) assumption, divergent sub-national policies should occur in space-related policy areas and such areas which affect sub-national identities. Anticipation of public attention towards the policy output in these areas may inflate subnational decision-making. In short, public order and safety policies get great public attention, so that sub-national politicians in federal states might feel induced to signal particular performance by providing additional funds. Using our theoretical starting point, we have focussed on policy motives of political actors. However, these may conflict with office motives that lead actors to deviate from efficient allocation decisions. Education is likewise in the public focus, and resources might

With regard to the bailout-game, differentiation between policy areas is neither necessary nor useful since overstretching the budget by definition refers to all policy areas.
therefore be allocated with a watering pot rather than by efficiency considerations. Hence, we assume deviations from the theoretical propositions to occur foremost in policy areas offering specific incentives for sub-national politicians to give primacy to political goals instead of efficiency principles.

6.2. Method and Case Selection

In order to more closely evaluate the reasoning of our theoretical model, our current research applies an analytic narratives approach to the depicted policy processes and pays special attention to the comparison of different policy areas. The analytic narratives method explicitly aims at the location and exploration of “particular mechanisms that shape the interplay between strategic actors and that thereby generate outcomes” (Bates et al. 1998: 12f.). We will thus analyse political actors’ sets of options as well as their specific choices in a given institutional context. To comprehensively cover the delineated logics we will evaluate policy processes in a federal-centralized country (Austria), a federal-decentralized country (Switzerland), a unitary-centralized country (Ireland), and a unitary-decentralized country (Denmark). Adding Spain (as one of the few countries that exhibit variation over time) to our sample of qualitative case studies will facilitate an additional test upon the reasoning of our model. These countries were selected on basis of the quantitative findings presented in this paper and are average cases with regard to factors that have been found to persistently influence policy performance.

Regarding the selection of policy areas it is useful to focus on areas, where the statistical analyses of decentralization and federalism exhibited diverging effects: economic policy, infrastructure, and public order and safety. The positive effects of decentralization and the negative ones of federalism were corroborated in the area of economic policy. In case of infrastructure we did not discover any persistent effect. In the area of public order and safety decentralized countries exhibited persistently lower policy performances, whereas the influence of federalism was indeterminate.

Building on an extensive literature review that will allow for a closer specification of the causal mechanisms, the data required for qualitative inference will be generated by interviewing policy as well as country experts. As our model assumes policy processes within different institutional settings to possess divergent but single equilibria, the qualitative comparison of the aforementioned countries will finally allow for general conclusions about the causal mechanisms connecting federalism, decentralization and policy performance.

7. Conclusions

Does federalism matter for effective policy-making? Our paper contributes to research that focuses on this question in at least four ways. First, we develop a theoretical model on the causal relationships between federalism, decentralization and macro-economic system

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23 We thus believe that a higher policy performance in the area of public order and safety indicates lower efficiency as long as performance is measured with recourse to output indicators. The slightly negative though insignificant correlation between PISA results and the number of teachers (<0.21) contributes to this assumption.

24 However, joint federalism (with Germany being the sole case in our sample) exhibited a higher policy performance in this area.

25 Based on the concept of subgame perfect equilibria the observed patterns of strategic choices in a given institutional context will thereby constitute general equilibria throughout the policy process.
performance by merging the federalism literature in political science with the public finance literature on fiscal federalism (which, by the way, is a rather misleading denomination for decentralization). We thus bridge the gap between two strands of literature that have coexisted in isolation much too long. Second, the main hypotheses derived from the model are corroborated by a quantitative analyses covering OECD countries: federalism and decentralization are empirically different dimensions of the territorial organization of politics, decentralization has positive effects on policy performance, whereas federalism tends to result in either no or negative performance effects. In addition, we find that these effects differ from policy area to policy area. Whereas we have thus shown that a combined approach of cross-sectional and panel analysis can at least guide quantitative research, even in an area where researchers have so far rejected the application of quantitative methods, our paper, third, paves the way for in-depth qualitative case study analyses as it provides for an adequate case selection. A closer evaluation of the causal mechanisms that may lie behind the approved relationships constitutes the next step in our research agenda. So far, this paper has, fourth, outlined as to how this could be done.

References


### Appendix

**Table 4:** Overview of the indicators

<table>
<thead>
<tr>
<th>indicator</th>
<th>n</th>
<th>min</th>
<th>max</th>
<th>description/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>federalism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>feddummy</td>
<td>30</td>
<td>0 (e.g. Denmark)</td>
<td>1 (e.g. Australia)</td>
<td>1 = federal; 0 = unitary (Elazar 1987)</td>
</tr>
<tr>
<td>fedtype</td>
<td>30</td>
<td>0 (else)</td>
<td>1 (Germany)</td>
<td>1 = Germany; 0 = else (own indicator)</td>
</tr>
<tr>
<td>fedlijjp</td>
<td>23</td>
<td>-1.77 (New Zealand)</td>
<td>2.53 (Germany)</td>
<td>Lijphart’s (1999) federalism indicator</td>
</tr>
<tr>
<td>fedkeman</td>
<td>18</td>
<td>-1.23 (France)</td>
<td>1.72 (Switzerland)</td>
<td>Keman’s (2000) federalism indicator</td>
</tr>
<tr>
<td>fedtreis</td>
<td>29</td>
<td>0 (e.g. Denmark)</td>
<td>1 (e.g. Australia)</td>
<td>index of sub-national autonomy Source: Treisman (2000)</td>
</tr>
<tr>
<td>fedgth</td>
<td>30</td>
<td>1 (e.g. Denmark)</td>
<td>5 (e.g. Denmark)</td>
<td>indicator for federalism/bicameralism Source: Gerring/Thacker (2004)</td>
</tr>
<tr>
<td>fedmadx</td>
<td>30</td>
<td>1 (e.g. Denmark)</td>
<td>3 (e.g. Australia)</td>
<td>federalism indicator based on Maddex (1998) Source: Keman (2000)</td>
</tr>
<tr>
<td>decentralization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dezrev2</td>
<td>19</td>
<td>0.05 (Italy)</td>
<td>0.47 (Canada)</td>
<td>own-source sub-national revenue as share of total sub-national revenue Source: Rodden (2004)</td>
</tr>
<tr>
<td>dezrev3</td>
<td>18</td>
<td>0.004 (Norway)</td>
<td>0.32 (Canada)</td>
<td>ditto; corrected for “rate autonomy” Source: Rodden (2004)</td>
</tr>
<tr>
<td>dezrev4</td>
<td>18</td>
<td>0 (Norway)</td>
<td>0.30 (Canada)</td>
<td>ditto; corrected for “rate and base autonomy” Source: Rodden (2004)</td>
</tr>
<tr>
<td>snadm</td>
<td>26</td>
<td>0.25 (Netherlands)</td>
<td>0.87 (Germany)</td>
<td>sub-national share of government employees Source: Schiavo-Campo et al. (1997)</td>
</tr>
<tr>
<td>dezrev1</td>
<td>27</td>
<td>0.01 (Greece)</td>
<td>0.48 (Canada)</td>
<td>sub-national revenue as share of total revenue Source: Government Finance Statistics</td>
</tr>
<tr>
<td>dezexp</td>
<td>27</td>
<td>0.04 (Greece)</td>
<td>0.58 (Canada)</td>
<td>sub-national expenditure as share of total expenditure Source: Government Finance Statistics</td>
</tr>
<tr>
<td>fiscal control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pcsnborr</td>
<td>27</td>
<td>0.06 (Belgium)</td>
<td>0.32 (New Zealand)</td>
<td>sub-national borrowing share on sub-national expenditure Source: OECD Government Finance Statistics</td>
</tr>
<tr>
<td>hbc</td>
<td>19</td>
<td>1.45 (Denmark)</td>
<td>3.25 (Canada)</td>
<td>index of budget constraints as developed by the Inter-American Development Bank Source: Rodden (2002)</td>
</tr>
<tr>
<td>borrauton</td>
<td>19</td>
<td>1.50 (Denmark)</td>
<td>3.00 (USA)</td>
<td>modified index of budget constraints Source: Rodden (2002); own calculations</td>
</tr>
<tr>
<td>pegrants</td>
<td>19</td>
<td>0.19 (Switzerland)</td>
<td>0.80 (Italy)</td>
<td>share of grants on sub-national revenue Source: Rodden (2004)</td>
</tr>
<tr>
<td>grants</td>
<td>27</td>
<td>0.01 (New)</td>
<td>0.22 (Belgium)</td>
<td>share of grants on sub-national expenditure Source: Government Finance Statistics</td>
</tr>
<tr>
<td>Variable</td>
<td>Code</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>---------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>share of sub-national expenditure not covered by own tax revenue</td>
<td>fimb1</td>
<td>0.27 (Island)</td>
<td>0.97 (Ireland)</td>
<td>Source: Government Finance Statistics</td>
</tr>
<tr>
<td>share of sub-national expenditure not covered by grants</td>
<td>fimb2</td>
<td>0.21 (Ireland)</td>
<td>0.90 (New Zealand)</td>
<td>Source: Government Finance Statistics</td>
</tr>
<tr>
<td>control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>population in 1000 area in sqkm</td>
<td>pop</td>
<td>281 (Island)</td>
<td>279,245 (USA)</td>
<td>Source: CIA World Factbook 2005</td>
</tr>
<tr>
<td>area</td>
<td>area</td>
<td>2,586 (Luxembourg)</td>
<td>9,984,670 (Canada)</td>
<td>Source: CIA World Factbook 2005</td>
</tr>
<tr>
<td>population density per sqkm (popdens=pop/area)</td>
<td>popdens</td>
<td>2.54 (Australia)</td>
<td>473.62 (South Korea)</td>
<td>Source: United Nations (2004)</td>
</tr>
<tr>
<td>Gini index of income inequality</td>
<td>incineq1</td>
<td>24.40 (Hungary)</td>
<td>54.60 (Mexico)</td>
<td>Source: UN Human Development Report 2004</td>
</tr>
<tr>
<td>average income of the richest 10% as a multiple of the average income of the poorest 10%</td>
<td>incineq2</td>
<td>4.50 (Japan)</td>
<td>45.00 (Mexico)</td>
<td>Source: UN Human Development Report 2004</td>
</tr>
<tr>
<td>ethnic fragmentation</td>
<td>ethnic</td>
<td>0.00 (South Korea)</td>
<td>0.67 (Canada)</td>
<td>Source: Levinson (1998; data on ethnicities)</td>
</tr>
<tr>
<td>religious fragmentation</td>
<td>religion</td>
<td>0.00 (Turkey)</td>
<td>0.70 (Un. Kingdom)</td>
<td>Source: Encyclopedia Britannica (1997; data on confessions)</td>
</tr>
<tr>
<td>percentage of urban population</td>
<td>urban</td>
<td>0.58 (Slovakia)</td>
<td>0.97 (Belgium)</td>
<td>Source: United Nations (2001)</td>
</tr>
<tr>
<td>Human Development Index 2002</td>
<td>hdi02</td>
<td>0.75 (Turkey)</td>
<td>0.96 (Norway)</td>
<td>Source: UN Human Development Report 2004</td>
</tr>
<tr>
<td>number of democratic years 1900-2003 (years with value &gt;4 in Polity IV data set; Marshall/Jaggers 2002)</td>
<td>democ</td>
<td>6 (Mexico)</td>
<td>103 (USA)</td>
<td>Source: UN Human Development Report 2004</td>
</tr>
<tr>
<td>majoritarian/consensus democracy</td>
<td>polisys</td>
<td>-1.39 (Un. Kingdom)</td>
<td>1.87 (Switzerland)</td>
<td>Source: Lijphart (1999)</td>
</tr>
<tr>
<td>trade balance (proportion exports/imports)</td>
<td>tradebal</td>
<td>0.71 (Greece)</td>
<td>1.34 (Norway)</td>
<td>Source: OECD Economic Outlook 76 database</td>
</tr>
<tr>
<td>GDP per capita in market prices, purchasing power parity, in US$, 1994</td>
<td>gdpppp94</td>
<td>5,115 (Turkey)</td>
<td>31,625 (Luxembourg)</td>
<td>Source: OECD Main Economic Indicators</td>
</tr>
<tr>
<td>policy area indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---</td>
<td>---</td>
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<td></td>
</tr>
</tbody>
</table>
| growth  | 30 | 0.92 (Mexico) | 1.07 (Ireland) | economic growth  
Source: OECD Main Economic Indicators |
| unemp  | 30 | 3.05 (Luxembourg) | 18.55 (Slovakia) | unemployment  
Source: OECD Main Economic Indicators |
| infl  | 30 | 1.00 (Japan) | 1.69 (Turkey) | inflation  
Source: OECD Main Economic Indicators |
| govsize  | 28 | 24.21 (South Korea) | 61.83 (Sweden) | government size  
Source: OECD Economic Outlook 76 database |
| socexp  | 22 | 0.07 (Belgium) | 0.28 (Denmark) | social expenditure  
Source: OECD Main Economic Indicators/Governm. Finance Statistics |
| budgdef  | 29 | -0.27 (Turkey) | 0.22 (South Korea) | budget balance  
Source: OECD Main Economic Indicators |
| police  | 22 | 1.57 (Finland) | 5.56 (Italy) | number of policemen per 1000 inhabitants  
Source: UN Office on Drugs and Crime (2002) |
| teacher  | 22 | 0.03 (Japan) | 0.08 (Island) | teachers as percentage of working population  
Source: UNESCO (1999) |
| pisa  | 27 | -2.86 (Mexico) | 1.37 (Japan) | mean of points reached in the PISA test 2000  
| librarians  | 23 | 0.01 (Turkey) | 1.15 (Austria) | number of librarians per 1000 inhabitants  
Source: UNESCO (2001) |
| econ1  | 29 | 17.31 (Slovakia) | 100.00 (USA) | degree to which technical, scientific and human resources match the economic needs  
Source: IMD World Competitiveness Yearbook. |
| envimp  | 27 | 3.94 (Mexico) | 6.72 (Finland) | expert survey for compliance with international treaties on environmental protection  
Source: Porter et al. (2001) |
| roads  | 29 | 5,210 (Luxembourg) | 4,180,053 (USA) | roads in km  
Source: UNECE (2005) |
| gem_rtax  | 20 | 1.63 (Belgium) | 4.52 (USA) | GEM index for taxes and regulation; expert survey in the course of the Global Entrepreneurship Monitor (GEM) 2002, for methodological details see Sternberg/Bergmann (2003) |
| gem_psupp  | 20 | 2.15 (Belgium) | 3.43 (Ireland) | GEM index for public funding structures; expert survey in the course of the Global Entrepreneurship Monitor (GEM) 2002, for methodological details see Sternberg/Bergmann (2003) |
| gem_infr  | 20 | 3.00 (Hungary) | 4.79 (Canada) | GEM index for physical infrastructure; expert survey in the course of the Global Entrepreneurship Monitor (GEM) 2002, for methodological details see Sternberg/Bergmann (2003) |