© (2008) Swiss Political Science Review 14(3): 451–81

The Impact of Fiscal Decentralisation on Education and Other Types of Spending

Marius R. Busemeyer
Max Planck Institute for the Study of Societies

Scholars have argued about the impact of fiscal decentralisation on public spending for a long time without coming to any firm theoretical and empirical conclusions. In contrast to earlier studies, this paper looks at the impact of fiscal decentralisation across different types of spending. The conventional wisdom of a "race to the bottom" in taxes and spending as a consequence of fiscal decentralization is juxtaposed to the recent literature on expenditure competition, which posits that expansive local competition results in higher spending in fiscally decentralized countries. We argue that the effects of fiscal decentralization should be seen most clearly for those types of policies which are provisioned mainly on the local/regional level. Empirically, we find a robust and positive association between fiscal decentralization and aggregate levels of education spending. However, when looking at public policies provided at the national level (e.g. pension policies), fiscal decentralisation is associated with lower levels of aggregate spending. The argument is tested empirically by means of cross-sectional regressions as well as a pooled time series analysis of education, pension, social and total public spending in OECD countries from 1980 to 2001.

Keywords: Fiscal Decentralisation • Public Spending • Education Spending • Social Spending • OECD Democracies • Pooled Time Series Analysis.

Introduction[1]

The debate on fiscal decentralisation and its impact on public spending is not new. At least since the early 1970s, scholars have argued about the

[1] I would like to thank Christian Breunig, Rob Franzese, Achim Goerres, Sebastian Karcher, Philip Manow, Wolfgang Streeck and Hendrik Zorn as well as the research group of Wolfgang Streeck and participants of the MPSA Conference 2007 in Chicago for very helpful comments and suggestions. Part of the research for this paper was conducted in the project on "Education Spending in International Comparison", directed by Manfred G. Schmidt. I would like to thank Manfred Schmidt for his support. I thank Thomas Plümper for making available the xtfevd STATA command.

theory underlying this association as well as its empirical implications, but up to now, no consensus on the magnitude and direction of the impact of fiscal decentralisation on spending has emerged (Feld, Kirchgässner and Schaltegger 2005: 5–6). This paper aims to enrich both the theoretical and empirical debates. All the studies of the impact of fiscal decentralisation have focussed on its association with total public spending, thus neglecting the fact that fiscal decentralisation might have different impacts on different types of spending. This article shows empirically that fiscal decentralisation is positively associated with aggregate levels of education spending – a policy type that tends to be located on lower levels of government in most countries. The theoretical reasoning behind this finding is that local communities in a decentralised setting find themselves in strong competition with other localities to attract new residents. The conventional wisdom of the impact of fiscal decentralisation is that this local competition leads to a "race to the bottom" in tax rates and lower provision of public goods. In contrast, the argument of this article is that communities do not compete primarily on tax rates, but on the provision of local public goods. Building new schools, hiring additional teachers and improving local hospitals are visible and tangible means to be utilized by local political actors to attract or retain residents. This local decentralized competition leads to higher spending on regionally provisioned public policies in the aggregate.

The robust and positive association between education spending and decentralization stands in contrast to a literature whose findings on the impact of fiscal decentralization remain largely inconclusive (Oates 2005: 355). Most of the earlier studies report a negative association between fiscal decentralisation and public spending (Ebel and Yilmaz 2004; Grossmann 1989; Grossmann and West 1994; Marlow 1988; Nelson 1987), but others warn of preliminary conclusions and find no robust effect of fiscal decentralisation on spending (Anderson 1998; Kirchgässner 2001; Oates 1985; Zax 1989). One of the few robust findings is that decentralised systems with a high degree of vertical imbalance between delegated spending and revenue authority spend more (Grossmann 1989; Grossmann and West 1994; Jin and Zou 2001; Rodden 2003; Stein 1999). Scholars have also studied the association between fiscal decentralisation and economic growth and development (Davoodi and Zou 1998; Feld, Kirchgässner and Schaltegger 2005), governance (De Mello and Barenstein 2001) and social capital (De Mello 2004), with tentative results at best. Treisman (2000) and Wibbels (2000) show that decentralised systems have a harder time adapting to macroeconomic changes and establishing coherent macroeconomic

policies, whereas Thießen (2004) finds a non-linear relationship between growth and decentralization. Ehlert, Hennl and Kaiser (2008) demonstrate that federalism and decentralization form two distinct dimensions and have different impacts on a number of policy and economic performance indicators.

The remainder of the paper is organised as follows: Before I present my argument in greater detail, a quick recap of the debate on fiscal decentralisation is given (section 2). Section 3 outlines the theoretical argument about local competition, which is tested empirically in the following section (section 4) in a pooled time series analysis of 21 OECD countries from 1980 to 2001. The final section concludes.

Fiscal Decentralisation and Public Spending

The public choice literature on the relationship between fiscal decentralisation and spending is the preferred theoretical point of departure even for political science work in this area (e.g. Rodden 2003). The "competition thesis"[2] is based on the seminal contribution of Brennan and Buchanan (1980), and has also been called the "Leviathan" thesis (Oates 1985; Zax 1989). Here, government is portrayed as a monolithic actor whose interest is revenue maximisation (Brennan and Buchan 1980: 29). To Buchanan, the growth of the public sector in the second half of the 20th century is indicative of a process he calls "politics for profit" (Buchanan 1977: 13), in which politicians expand public spending to maximise their "political income" and increase their chances of re-election. In an ideal democracy, the electoral process should be a sufficient restraint on government, but fiscal constraints can substitute as efficient restraints on the power of government to tax in a less-than-ideal setting (ibid.: 8). Fiscal federalism in a decentralised polity can be seen as "market analogy" (Buchanan 1995: 21, see also Weingast 1995), introducing interstate competition and effectively limiting the power of constituent governments as well as the federal level to raise spending. In sum, the competition thesis expects a negative association between fiscal decentralization and public spending.

The "decentralisation thesis" goes back to Oates (1972) and is more concerned with the connection between the policy maker and the

[2] The terminology "competition thesis" and "decentralisation thesis" is taken from Kirchgässner (2001).

electorate than with interstate relations. The core assertion of the "decentralisation theorem" (as Oates called it) is that it will be more efficient (in terms of overall welfare and Pareto-efficiency) to provide public goods locally and in different quantities than to provide a uniform level of a given public good through a centralised state polity (Oates 1972: 11, 35). Then, in a centralised setting, outcomes will be close to the "overall" median voter's position whereas, in a decentralised setting, outcomes may vary in accordance with the positions of local median voters (Oates 1985: 749), minimising the sum of discrepancies between the policy positions of voters and the actual outcomes. Interestingly, Oates, too, emphasises the analogy between his model and a competitive market (Oates 1972: 127) but, unlike Brennan and Buchanan, he stresses the Tiebout (1956) quality of a decentralised setting, in which the "consumer" of public goods (the voter) is offered a wider range of price/local public good bundles. Consequently, the benefits of decentralisation increase with the degree of heterogeneity found in the voter population. Summing up, according to Oates, the direction of the impact of fiscal decentralisation at the aggregate level of spending remains unclear at the theoretical level because one would have to know "both the distribution of tastes and the location of the populace" (Oates 1985: 749).[3]

A third evolving strand of literature in economics is concerned with "public input competition" or "expenditure competition" (Bénassy-Quéré, Gobalraja and Trannoy 2007; Dhillon, Wooders and Zissimos 2007; Keen and Marchand 1997; Wilson 2005; Wilson and Gordon 2003). So far, this

[3] Since the days of Brennan, Buchanan and Oates, the theory of fiscal decentralisation has made some important advances. More recent models try to integrate the welfare economics and the public choice perspectives of the decentralisation and competition theses. The Oates and Tiebout logic of enhanced closeness of interests of voters and governmental actors is likely to be portrayed as the "good side" of fiscal decentralisation, whereas increased tax competition is expected to lead to an underprovision of public goods (i.e. the "bad side" of decentralisation) (cf. Brueckner 2004: 133–34; Hange and Wellisch 1999; Wellisch 2000: 14–18). More recently, Jonathan Rodden (2003) has argued that the "nature" of fiscal decentralisation is hugely important. When decentralisation of the spending authority is not accompanied by respective decentralisation of the revenue authority, but funded through revenue-sharing and intergovernmental grant schemes, the overall impact on spending is more likely to increase than decrease. What is more, in systems in which decision-making at different levels of government is heavily intertwined, it is hard to establish credible "no bail-out" commitments at the central level in the face of mounting debt on the part of subnational units (Rodden and Eskeland 2003: 440–41). In other words, when fiscal decentralisation entails "vertical imbalances" between the delegation of spending and revenue authority, it is not to be expected that this will result in lower spending.

literature has remained more theoretical than empirical (however, see Brülhart and Jametti 2007 for an application to the example of Switzerland). Its core finding is that it would be premature to assume that fiscal decentralization leads to a "race to the bottom" in public spending. This is because certain types of public "inputs" (local public goods) can serve to attract mobile capital and/or consumer-voters. Hence, the decentralization of fiscal authority to lower levels of government can easily result in a expenditure-based "race to the top", because self-interested bureaucrats, who are responsible for expenditure decisions, have an incentive to out-compete their competitors by oversupplying public goods and to broaden the tax base by attracting more consumer-voters (Wilson and Gordon 2001).

Following the direction of the "expenditure competition" argument, a more general critique of the assumptions underlying the "competition thesis" is in order. The "race to the bottom" argument assumes strong preferences of consumer-voters for lower taxes. Some economic theories implicitly or explicitly (see Kirchgässner 2001 for an example) posit voters care mostly, or even solely, about lower tax rates and/or lower spending. From this perspective, increases in public spending result directly in welfare losses for the private individual, because taxation amounts to "expropriation" and thus limits the individual's discretionary power over her property.

In contrast, it is also possible (and maybe more realistic) to assume that voters face a trade-off between welfare losses due to higher taxation and welfare gains due to the increased provision of public policies. Voters seek to minimise the difference between their demand for a given amount of a public good and the price they have to pay for it in the form of taxes. Thus, voters are not looking for the lowest tax rates, but the best combination of a public good and its tax price, given their intrinsic demand for a certain amount of the public good (Tiebout 1956: 418). But, as Oates (1985) has argued, whether this increase in the diversity of public good provision actually leads to higher overall spending levels is an open question. For Oates, decentralisation leads to a greater variety in the provision of public goods (and is therefore welfare-enhancing), but it may well be that preferences for spending above and below the national (centralised) average "cancel each other out", so that on aggregate there is no discernible effect of decentralisation on spending.

An alternative hypothesis leads to the expectation of higher levels of spending as a result of fiscal decentralization. Following the literature on "expenditure competition", it can be argued that citizen-managers are confronted with a collective good problem. In a decentralized setting with no

higher authority to coordinate taxation and spending decisions, the competition between citizen-managers fuels the local competition in the provision of public policies, because no single citizen-manager can prevent the others from increasing spending. In the Brennan and Buchanan model, this collective good problem leads to an underprovision of public goods because of tax competition. If one posits that citizen-managers use the provision of public policies as a means to attract consumer-voters and not (only) lower tax rates, this leads to an "overprovision" of regionally provisioned public goods, i.e. higher public spending.[4] It is important to note that this logic holds even when the actual mobility of consumer-voters across localities is limited, because citizen-managers will try to prevent the leaving of citizens beforehand.

In sum, we have three competing hypotheses with regard to the relationship between fiscal decentralization and public spending:

- H 1: Fiscal decentralization is negatively associated with aggregate levels of public spending (the "competition thesis").
- H 2: Fiscal decentralization is not systematically associated with aggregate levels of public spending (Oates' "decentralization thesis").
- H 3: Fiscal decentralization is positively associated with aggregate levels of public spending ("expenditure competition").

Why Education Spending?

Why is it important to look at the impact of decentralization across different types of spending? Why should education spending be different from other spending categories? The reasoning behind the choice of education spending is the fact that different types of spending are distributed differently across levels of government. Some policies are provisioned mainly on the regional and/or local level (e.g. education spending), while others are administered by national level policy makers (e.g. pension policy). For the sake of simplicity, we will call the first type regionally provisioned policies (RPPs) and the latter type nationally provisioned policies (NPPs).[5]

[4] At this point, I refrain from discussing the welfare implications of expenditure competition. In my opinion, it is not possible to determine an "efficient" or "wasteful" level of public spending ex ante.

[5] More precisely, nationally provisioned public policies (NPPs) are defined as those spending items or programmes where the spending authority lies with national institutions,

It is reasonable to assume that fiscal decentralization impacts on these two types of policies differently. Competitive pressures (up- or downward) should be strongest for those types of spending on which local policy makers actually have the authority to decide. If citizen-managers engage in expenditure competition, they only have limited choice with regard to the types of expenditures. If we assume that certain types of policies like education *always* tend to be located at lower levels of government (both in decentralized and centralized countries), we can discern the impact of fiscal decentralization by comparing *total levels of spending in that given policy area* across countries with different degrees of decentralization. Thus, if levels of education spending in fiscally decentralized countries are higher than in centralized countries, this could be interpreted as indication of expenditure competition instead of a "race to the bottom".

In contrast, there can be no direct expenditure competition with regard to NPPs like pension or unemployment policies. Even if they wanted to, local policy makers do not have the competencies to either increase or lower spending on these policies. However, fiscal decentralization could have *indirect* effects on the provision of NPPs. Assuming that voters' total willingness to pay taxes has some natural upper limit, tax revenue has to be split across different levels of government. In a decentralised system, the expansive provision of public policies at the local or regional level can effectively attenuate the demand for nationally provided public policies "by reducing the capacity of the federal government to penetrate locally grown social programmes" (Leibfried, Castles and Obinger 2005: 323). In addition, autonomous local governments have slowed down the establishment of fiscal authority at the national level by exerting their "veto power" (Leibfried, Castles and Obinger 2005: 318–19) in the delegation of spending competencies to higher levels of government. The cases of Canada, the USA and Switzerland are picture book examples of this mechanism, and the Canadian Provinces, US States and Swiss Cantons have retained an outstanding degree of fiscal autonomy until today (Rodden 2003: 717). A high degree of centralisation of authority in the hands of the national government, in contrast, facilitates lobbying efforts by interest organisations such as trade unions because they can realise economies of scale, since they do not have to lobby a multiplicity of local governments for spend-

---

whereas regionally provisioned policies (RPPs) can be defined as those spending items or programmes where the spending authority lies with the local or regional level of government.

ing increases, but can concentrate on the national decision-making bodies (Cameron 1978).[6]

In the original Leviathan argument, the two arenas of policy making (horizontal relations between localities and vertical relations across levels of government) were blurred. Fiscal decentralization was expected to lead to lower spending both because of a "race to the bottom" between localities *and* because fiscally autonomous subnational governments were expected to hold federal spending at bay (Buchanan 1995; Weingast 1995). Both arguments point to a negative association between spending and decentralization, therefore the blurring of the two did not seem to matter much. However, if local competition leads to expenditure competition, not a race to the bottom, the effects of fiscal decentralization can be different in the two dimensions, depending on the subnational governments' responsibility for types of spending. In the case of RPPs, local expenditure competition could increase overall spending levels. In contrast, in the case of NPPS, where subnational governments have no spending authority, decentralization can depress overall spending levels, because fiscally autonomous and powerful subnational governments slow down public sector expansion at the national level.

Empirics

Dependent Variable(s)

The most important hypothesis to be tested is whether fiscal decentralization affects levels of education spending. Education spending is chosen as an example of a RPP because it is about the only type of spending that meets two important criteria: first, internationally comparable data are available (from the OECD Education at Glance data base) and, second, it can be assumed that, relative to other types of spending, education spending will be more concentrated on lower levels of government. Without taking into account intervening variables, data for OECD countries from the World Bank Fiscal Decentralisation Indicators Dataset (based on the Government Finance Statistics (GFS) dataset) shows that the share of edu-

[6] The depressing effect of a decentralized polity on public sector expansion is well known in the extensive literature on the impact of state structure (Huber, Ragin and Stephens 1993; Huber and Stephens 2001), veto points (Immergut 1992; Schmidt 2002) and federalism (Leibfried, Castles and Obinger 2005).

cation spending in subnational expenditures (20.8%) is greater than the share of spending on health (13.8%) and social security (14.7%). This ordering remains intact when the general share of subnational spending (of total expenditures) is taken into account.[7]

In addition, it will also be tested whether fiscal decentralisation leads to lower spending on NPPs. Public pension spending (from the OECD Social Expenditure database) is used as the prime example of a NPP, but because of better data availability and comparability to previous studies, total public spending and public social spending will also be looked at.

All spending data is initially defined in percentages of GDP. Note that we are looking at the total amount of spending in a given country in a specific policy area, not subnational expenditures, because we are interested in finding out whether fiscal decentralization has an impact on the *total* aggregate level of spending in a particular policy area. Hence, we are not looking at subnational spending as such, which automatically increases with higher levels of decentralization.

Fisher stationarity tests indicate that non-stationarity is a greater problem for some types of spending (i.e. social spending) than for others (i.e. education spending).[8] Consequently, the model will be tested using a variety of model specifications to ensure the robustness of the findings.

---

[7] The dataset can be found at: http://www1.worldbank.org/publicsector/decentralization/Indicators.xls. Ideally, it would be useful to show that education spending is really confined to the local level in countries with fiscal decentralisation. Unfortunately, there are few data sources that provide internationally comparable data on the distribution of spending across levels of government. From the IMF Government Finance Statistics, it is possible to construct a rough picture of the distribution of types of spending across levels of government (OECD 2003: 146 and http://www1.worldbank.org/publicsector/decentralization/Indicators.xls). Some countries (Canada, the USA, Germany, France, Norway and the UK) fit the expectation (high/low degree of fiscal decentralisation accompanies high/low share of education and health expenditure in total local expenditure), while others (Denmark) do not. However, data availability is very limited and confounding factors blur the picture of the connection between fiscal decentralisation and local education expenditure.

[8] On the basis of Fisher tests for stationarity in panel data (using the xtfisher command in Stata), it was possible to reject the null hypothesis of non-stationarity with a high level of statistical confidence for education spending, but with a lower level of statistical confidence for social spending and total public spending.

Independent Variables

The most important independent variable is, of course, fiscal decentralisation. Much of the empirical discussion in the literature referred to above centres on the measurement of fiscal decentralisation. Early studies use spending shares of subnational governmental units to measure fiscal decentralisation (Rodden 2004: 482). However, this neglects the fact that spending might be mandated by higher levels of government or funded through grants instead of own revenues.[9]

Most international comparisons rely on the Government Finance Statistics (GFS) provided by the IMF. The popularly used share of subnational expenditures in total state expenditures does not account for the aforementioned problems and therefore tends to "overestimate" the degree of decentralisation (Ebel and Yilmaz 2004).[10] The GFS data also provide a category of "own source" revenue, which would allow to differentiate between spending decentralization and genuine fiscal decentralization in terms of revenue autonomy. However, as Rodden (2003: 709) argues, the IMF category of "own source" revenue does not capture the full effect of tax autonomy, because it does not account for revenue-sharing schemes or central regulation of tax rates and bases (Rodden 2003: 709). Others, too, have criticised the sketchiness of the GFS classification of "own source" revenue (Ebel and Yilmaz 2004: 6) and its misclassification of countries (the most well-known example is Belgium, Stegarescu 2004: Fn 46, 15).

The measure of choice for this analysis is given by Stegarescu (2004, 2005), who presents a measure of "own tax revenue" of "sub-central governments" (Stegarescu 2004: 6, 28).[11] To overcome the limitations of pre-

[9] This fact has prompted the development of the "collusion thesis" (Brennan and Buchanan 1980: 185–86; Grossmann 1989; Grosmann and West 1994), according to which the "collusion" of formally separate governmental units from different levels in spending and taxation decisions can neutralise veto potentials and thus the slowing down effect on expenditures.

[10] Even the IMF category of "own source" revenue does not capture the full effect of tax autonomy, because it does not account for revenue-sharing schemes or central regulation of tax rates and bases (Rodden 2003: 709).

[11] This term covers localities in unitary states and regions/states plus localities in federal states: "In the case of federal states where local taxes or regional/local revenue-sharing are determined by regional or state governments, these are classified as autonomous taxes, since we now focus on the degree of fiscal autonomy vis-à-vis the central government. In doing so, local governments are treated as an integral part of the intermediate level of government." (Stegarescu 2004: 7)

vious measures of fiscal decentralization, Stegarescu uses a classification of taxes that takes into account the constitutional allocation of fiscal authority instead of simply relying on spending shares. The specific measure of fiscal decentralization used in the present analysis is the subnational government's own tax revenue (as a share of general government revenue), in which the subnational unit can at least set the tax rate or the tax base autonomously and does not have to share the revenue obtained (Stegarescu's indicator *TDec1*, Stegarescu 2004: 28). The focus of this measure is on the revenue side (ibid.: 5), since it is reasonable to assume that subnational governments with revenue autonomy have spending autonomy as well (which does not hold vice versa). The correlation between the Stegarescu indicator and the common spending-share based GFS indicator is modestly strong (about 0.7), suggesting that both indicators measure similar, but not the same things. This is because simple spending-share based measures tend to overestimate the degree of fiscal decentralization and intergovernmental transfers and the real autonomy of subnational governments as stipulated by constitutional rules are largely not taken into account.[12]

The statistical models presented below also include some control variables.[13] Firstly, the level of economic development of a country (measured by gross national income [GNI] per capita) is included. The expectation is that spending levels will rise with increasing levels of economic development (Wagner's law). Secondly, we control for the demographic demand for spending by including the population share of those aged 65 and above as well as the share of those aged 15 and below. The expectations on the direction of the impact of the demographic variables vary in accordance with the type of spending analysed. For education spending, a higher population share of young people is expected to be positively associated with spending. For pension spending, we expect a positive association between the population share of elderly people and spending, because a greater

[12] In this context it is important to note that fiscal decentralisation is different from political decentralisation (Ehlert, Hennl and Kaiser 2008; Rodden 2004): federal countries do not necessarily have higher degrees of fiscal decentralisation. As Stegarescu (2004: 9–11) and others have shown (Braun 2000), some federal states like Germany and Austria have complex systems of intergovernmental redistribution and thus a low degree of fiscal decentralisation, while some unitarian countries (in particular the Scandinavian countries, but also France and Japan) grant a high degree of autonomy to the local and regional level.

[13] The vast literature on the determinants of spending has identified a large number of potential determinants. To keep the analysis parsimonious and to concentrate on the original contribution of this paper, we abstain from a full discussion of the various theories of the determinants of spending.

share of the elderly in the voting population will increase demand. Thirdly, when analysing different subcategories of public spending, it is important to control for the size of the welfare state and the public sector in general. States with a large public sector will exhibit higher spending levels in different subcategories as well, because of intrinsic cross-country differences in the division of labour between the state and markets in the provision of (semi-)public goods. Fourthly, a measure of the veto player density of political institutions is included. This controls for that part of the restraining impact of the constitutional veto structure that is unrelated to fiscal decentralisation (Leibfried, Castles and Obinger 2005).

Models and Methods

Algebraically, the core model to be tested is

$$Y_{i,t} = \alpha_i + \gamma Y_{i,t-1} + \theta(\text{Fiscal Decentralization}) + \beta X_{i,t} + \varepsilon_{i,t}$$

where $Y_{i,t}$ are different types of public spending; fiscal decentralization – the key independent variable – is given as defined above; $X_{i,t}$ is a matrix of control variables (population share of the young and the old, respectively, total public spending, economic well-being, and the veto index); $Y_{i,t-1}$ is the lagged dependent variable, which is used in some model specifications; $\varepsilon_{i,t}$ is the error term; α_i (the intercept term), γ, θ and β are the parameters to be estimated. The empirical test of the hypotheses outlined in sections two and three employs pooled time series data on 21 OECD countries for the period 1980 to 2001.[14] Sources and definitions of variables as well as some descriptive statistics are provided in the Appendix. As is common in pooled time-series analyses, panel-corrected standard errors (PCSE) are used (Beck and Katz 1995, 1996).

To test the robustness of the findings, different model specifications were employed (all variables are given in levels). First, given that the theoretical expectation are mainly concerned with differences between countries, simple cross-sectional analyses are presented. Second, conventional time-series cross-section (TSCS) model specifications are used. The first is the so-called "de facto Beck-Katz standard" (Beck and Katz 1996; Plümper, Troeger and Manow 2005) and includes a lagged dependent variable

[14] The countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK, US.

(LDV) on the right hand side. Plümper, Troeger and Manow (2005: 342) advise to use an AR(1) process instead of a LDV to correct for serial correlation, because the LDV absorbs a large part of the over time variance without actually explaining it (ibid.: 335). Therefore, I also employ a specification with an AR(1) error correction process. Additionally, I use both a specification with and without country fixed effects. The advantage of using country fixed effects is that unobserved, country-specific effects (like culture) are taken into account. The big disadvantage in the use of country fixed effects is that the impact of variables that are not or hardly changing over time gets absorbed in the country dummies (Kittel and Winner 2005; Plümper, Troeger and Manow 2005).[15] Fiscal decentralization is an example of such a largely time-invariant variable (cf. Stegarescu 2004: 17) so that a model specification with country fixed effects will underestimate its true impact.

Therefore, third, I will rely on more recent and not yet widely established estimation techniques. Plümper and Troeger (2007) propose a vector decomposition procedure that allows the estimation of the impact of time-invariant variables in a fixed-effects setting, that is: the unit fixed effects are decomposed into an unexplained part and a part explained by time-invariant or rarely changing variables (ibid.: 125). The final stage of this procedure then uses the unit effects stripped of the impact of time-invariant variables as well these invariant variables themselves, so that the impact of the latter is not absorbed by country dummies, but unobserved unit effects are still accounted for. The variables "GDP per capita", "veto index", and "fiscal decentralisation" were treated as largely time-invariant variables, because the ratio between the "between" and the "within" variation is larger than 2 (which is suggested as a rule of thumb by Plümper and Troeger). Finally, I employ the Arellano-Bover/Blundell-Bond linear dynamic panel-data general method of moments (GMM) estimator (Arellano and Bond 1991; Blundell and Bond 1998).[16] This estimator has not been used much

[15] On the one hand, the inclusion of country fixed effects depresses the effects of independent variables that are largely time-invariant (for example, political institutions) that tend to be absorbed by the country fixed effects. On the other hand, abstaining from using a fixed-effects specification entails the risk of omitted variable bias and biased conclusions, because variance in the dependent variable (levels of spending) is explained by variance in the independent variables within the period of analysis, although the dependent variable captures differences that existed prior to the period under observation (Plümper, Troeger and Manow 2005: 332).

[16] This is the xtdpdsys command in Stata 10.

in political science, although it offers solutions to common problems like endogeneity. In the present case, national income per capita and social and public spending, respectively, will be treated as endogenous variables.

Findings

Table 1 presents the results of cross-sectional regressions analyses of the impact of fiscal decentralization on education and pension spending in the years 1980 (the start year of our sample) and 1999 (the final year, for which Stegarescu (2004) provides data on decentralization for all 21 OECD countries). Due the limited degrees of freedom, I only include controls for demographic demand, the general size of the welfare state and the level of economic well-being in a given country.[17]

Comparing models 1 and 2 on the one hand with models 3 and 4 on the other, one can see that fiscal decentralization is positively associated with education spending, but negatively associated with pension spending. Thus, we find suggestive evidence for the presence of an expenditure competition mechanism for education spending – a type of expenditure that tends to be located at the lower levels of government. In contrast, we find a constraining impact of decentralization on pension spending, for which the administrative and spending authority is generally located at the national level. The magnitude of the effects are comparable, although the size of the effect drops considerably in the case of education spending for the later period (but not its statistical significance). In 1980, a difference of one standard deviation in fiscal decentralization (about 17.3 percentage points) is associated with an increase in education spending of about 0.9 percentage (about 20% of the OECD average in public education spending in that year (5.6% of GDP).

In 1999, the same difference in fiscal decentralization accounts for an increase in spending of about 0.35 percentage points (with an OECD average of 5.1% of GDP). Furthermore, the level of statistical significance in the case of pension spending is generally lower than in the case of education.

[17] For reasons of space, I am going to comment briefly on the performance of the control variables. Demographic demand tends to be positively associated with the respective spending category as is the general size of the welfare state. The level of economic well-being is positively associated with social spending (in line with Wagner's law), but there is no statistically significant association between well-being and education spending.

Table 1: Cross-sectional regressions on the impact of fiscal decentralization on education and pension spending

	(1)	(2)	(3)	(4)
	Public Education Spending as % of GDP		Public Spending on Pensions as % of GDP	
Year	1980	1999	1980	1999
Fiscal Decentralization	0.052	0.019	-0.046	-0.051
	(5.49)***	(2.34)**	(2.24)**	(1.87)*
Population share of those aged 15 and below	0.249	0.189		
	(3.58)***	(3.91)***		
Population share of those aged 65 and above			0.217	0.782
			(1.13)	(4.66)***
Public social spending as % of GDP	0.203	0.145	0.198	0.202
	(7.83)***	(5.83)***	(3.09)***	(2.72)**
National incomce per capita in 1'000 $	-0.067	-0.036	0.383	0.132
	(0.51)	(0.73)	(2.27)**	(1.28)
Constant	-3.763	-0.930	-3.369	-11.147
	(1.40)	(0.51)	(2.10)*	(3.40)***
Observations	19	21	21	21
R-squared	0.82	0.67	0.72	0.74

Notes: Robust t statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. The number of countries is 19 in the case of education spending in 1980 due to missing data for Denmark and Spain. 1999 was chosen as last year of observation, as this is the last year for which Stegarescu provides data on fiscal decentralization for all 21 OECD countries. To keep the results easily accessible, I refrain from using standardized regression coefficients in the cross-sectional regressions.

Table 2 contains a number of models to assess the impact of fiscal decentralization on education spending in a time-series cross-section (TSCS) framework. The regression coefficients are standardized, so that it is possible to compare the relative impact of the independent variables directly.

Fiscal decentralization is positively associated with levels of education spending across all model specifications. However, when country fixed effects are used (model 2), the coefficient becomes statistically insignificant. This is not surprising, because fiscal decentralization is based on the con-

Table 2: The impact of fiscal decentralization on education spending, 21 OECD countries, 1980 to 2001

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Public education spending as % of GDP				
Specification	PCSE-LDV	PCSE-LDV (FE)	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM
Public education spending (T-1)	0.858	0.748		0.748	0.723
	(26.88)***	(17.41)***		(17.30)***	(19.04)***
Public education spending (T-2)					-0.052
					(1.51)
Fiscal Decentralization	0.046	0.007	0.201	0.096	0.085
	(2.53)**	(0.13)	(4.34)***	(10.20)***	(2.51)**
Population share of those aged 15 and below	0.048	0.042	0.315	0.042	-0.029
	(1.85)*	(0.75)	(2.99)***	(0.77)	(0.54)
Population share of those aged 65 and above	-0.000	-0.047	-0.164	-0.047	-0.099
	(0.00)	(1.15)	(1.56)	(1.21)	(1.87)*
Public social spending as % of GDP	0.098	0.261	0.678	0.261	0.280
	(3.15)***	(3.81)***	(9.99)***	(3.79)***	(6.92)***
National income per capita in 1'000 $	-0.036	-0.103	-0.156	-0.103	-0.086
	(1.16)	(3.25)***	(2.29)**	(2.94)***	(3.68)***
Veto Index	-0.012	0.208	-0.144	-0.032	-0.089
	(0.69)	(1.15)	(2.93)***	(2.26)**	(2.29)**
Constant	-0.042	-0.137	-0.060	-0.080	-0.122
	(1.41)	(1.29)	(0.71)	(4.04)***	(4.86)***
Observations	430	430	432	430	390
Number of countries	21	21	21	21	21
R-squared	0.91	0.93	0.30	0.93	

Notes: z statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. All regression coefficients are standardized. In the FEVD procedure, the veto index and fiscal decentralization are treated as time-invariant variables. In the GMM estimation, social spending and national income per capita are treated as endogenous variables.

stitutional distribution of fiscal authority, which changes very little over time. As a consequence, the impact of fiscal decentralization is absorbed by the country fixed effects. When comparing model 3 with model 1, one can also see that the presence of the lagged dependent variable depresses the size of the fiscal decentralization coefficient (as well as the effects of the other independent variables). The vector decomposition estimation technique (model 4) and the GMM technique (model 5) again exhibit the positive association between decentralization and education spending. In sum, taking into account the well-known problems of fixed effects specifications with time-invariant variables, the positive association seems to hold across a variety of model specifications. The size of the effect is quite large as well. In most specifications, the impact of a change of one standard deviation in fiscal decentralization is larger than the impact of a similar change in demographic demand and the veto index and roughly comparable to the impact of economic well-being.

The control variables generally behave as expected and similar to the simple cross-sectional regressions. Demographic demand (predominantly the population share of those aged 15 and below) is positively associated with education spending as is the general size of the welfare state (the strongest predictor of changes in education spending). Obviously, we are facing a problem of endogeneity in the case of social spending,[18] but nevertheless, it is important to control for the general size of the welfare state as an indicator of the general state-market division in a given country. National income per capita is negatively associated with education spending (disconfirming Wagner's law for the case of education, see Busemeyer 2006, 2007 for further details) as is the veto index. The latter findings can be explained by the fact that a strong constitutional veto structure slows down the expansion of the welfare state and the public sector in general.

Next, in table 3, the association between fiscal decentralization and pension spending as an example of a nationally provisioned policy is assessed. Confirming the suggestive evidence from the cross-sectional regression analyses, we again see a negative association between pension spending and fiscal decentralization. However, as in the cross-sectional regressions, its statistical robustness is not as strong as in the case of education spending. Models 3, 4 and 5 exhibit a statistically significant negative relation between spending and decentralization, but models 1 and 2 show

[18] And we can partly alleviate the problem in the GMM specification by treating social spending as an endogenous variable.

Table 3: The impact of fiscal decentralization on public spending on pensions, 21 OECD countries, 1980 to 2001

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Public spending on pension as a % of GDP				
Model Specification	PCSE-LDV	PCSE-LDV (FE)	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM
Public spending on pension (T-1)	0.970	0.761		0.761	0.916
	(61.53)***	(13.26)***		(12.25)***	(25.26)***
Public spending on pensions (T-2)					-0.085
					(2.39)**
Fiscal Decentralization	-0.004	-0.021	-0.042	-0.035	-0.050
	(0.47)	(0.84)	(1.73)*	(7.68)***	(3.00)***
Population share of those aged 15 and below	-0.034	-0.013	-0.133	-0.013	-0.030
	(1.68)*	(0.42)	(1.67)*	(0.45)	(1.07)
Population share of those aged 65 and above	0.030	0.069	0.308	0.069	0.085
	(1.13)	(1.72)*	(4.05)***	(1.76)*	(2.68)***
Public social spending as % of GDP	0.001	0.202	0.651	0.202	0.114
	(0.03)	(3.69)***	(14.45)***	(3.56)***	(5.52)***
National income per capita in 1'000 $	-0.046	-0.037	-0.105	-0.037	-0.050
	(3.10)***	(2.72)***	(2.38)**	(2.41)**	(3.67)***
Veto Index	0.012	-0.075	0.301	0.072	0.058
	(1.27)	(0.62)	(7.79)***	(10.64)***	(2.40)**
Constant	0.006	-0.125	-0.399	-0.089	-0.068
	(0.59)	(1.22)	(8.12)***	(12.63)***	(4.41)***
Observations	413	413	438	413	392
Number of countries	21	21	21	21	21
R-squared	0.98	0.98	0.61	0.98	

Notes: z statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. All regression coefficients are standardized. In the FEVD procedure, the veto index and fiscal decentralization are treated as time-invariant variables. In the GMM estimation, social spending and national income per capita are treated as endogenous variables.

no significant effects, although model 1 does not include country fixed effects. In addition, the relative size of the impact of fiscal decentralization when compared to the other independent variables is smaller than in the case of education expenditure. Demographic demand (the population share of those aged 65 and above), the general size of the welfare state and the veto index usually contribute more to explaining the variation in pension spending than fiscal decentralization.

Nevertheless, the finding that the direction of the impact of fiscal decentralization on different types of spending varies demonstrates that the literature on decentralization might have missed a part of the story. Apparently, fiscal decentralization has been more effective in setting in motion a local expenditure competition for those types of spending that are located on the lower levels of governments, whereas the restraining impact of decentralization on national level spending is not a strong as assumed or wished for by Brenan, Buchanan and Weingast.

Another piece of interesting and indicative evidence is that, in contrast to the case of education spending, the veto index is positively related to pension spending. One factor in the explanation for this finding might be that autonomous social insurance institutions are regarded as one important element of this veto structure (Schmidt 2002).

Finally, table 4 present regression results that show the impact of fiscal decentralization on total public spending as well as public social spending. This table is included mainly to be able to compare the results of the present analysis with the established literature that has mainly looked at total public spending as a dependent variable. In a certain sense, the present analysis is ironically in line with the inconclusiveness of the empirical literature on fiscal decentralization (Oates 2005; Feld, Kirchgässner and Schaltegger 2005). In all model specifications, fiscal decentralization is positively associated with spending, but only in models 3, 5 and 6 is this relationship statistically significant. Nevertheless, the positive direction of the impact of fiscal decentralization on spending stands in contrast with previous empirical results. Rodden (2003; 2004) found a positive association between decentralization and spending only if decentralization is based on the transfer of *spending*, not revenue autonomy to lower levels of government, because this aggravates the common pool problem and temptations of "collusion" across levels of government (Grossmann 1989). Once Rodden appropriately measures fiscal decentralization in terms of "own source" revenue, he finds indicative evidence for a negative association between decentralization and spending (Rodden 2003: 713; 2004).

Table 4: The impact of fiscal decentralization on total public and public social spending, 20 OECD countries, 1980 to 2001

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Total public spending as % of GDP			Public social spending as % of GDP		
Model specification	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM
Public spending (T-1)		0.868	1.142			
		(19.18)***	(32.34)***			
Public spending (T-2)			-0.315			
			(9.85)***			
Public social spending (T-1)					0.559	0.854
					(10.10)***	(23.03)***
Public social spending (T-2)						-0.206
						(6.99)***
Public spending				0.612	0.308	0.231
				(21.47)***	(10.41)***	(11.75)***
Fiscal Decentralization	0.030	0.043	0.025	0.002	0.023	0.028
	(0.73)	(5.73)***	(1.03)	(0.17)	(2.36)**	(1.73)*
Population share of those aged 15 and below	-0.249	0.070	-0.014	0.052	-0.059	-0.009
	(1.35)	(1.60)	(0.37)	(0.74)	(2.26)**	(0.36)

Table 4 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Total public spending as % of GDP			Public social spending as % of GDP		
Model specification	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM	PCSE (AR1)	FEVD (Plümper and Troeger 2007)	GMM
Population share of those aged 65 and above	0.365	0.114	0.126	0.213	-0.023	0.038
	(2.56)**	(2.38)**	(3.26)***	(3.73)***	(0.92)	(1.57)
National income per capita in 1'000 $	-0.425	-0.116	-0.115	0.153	0.095	0.063
	(2.66)***	(3.85)***	(6.51)***	(3.40)***	(4.53)***	(4.55)***
Veto Index	0.014	0.033	-0.079	0.084	0.033	-0.029
	(0.17)	(4.05)***	(2.44)**	(2.88)***	(5.46)***	(1.53)
Constant	-0.097	0.050	-0.004	0.197	0.086	0.069
	(0.50)	(1.96)*	(0.24)	(5.37)***	(7.31)***	(5.78)***
Observations	419	417	379	419	417	382
Number of countries	20	20	20	20	20	20
R-squared	0.10	0.97		0.61	0.98	

Notes: z statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. All regression coefficients are standardized. In the FEVD procedure, the veto index, national income per capita and fiscal decentralization are treated as time-invariant variables. In the GMM estimation, total public spending (in models 1 to 3) and national income per capita are treated as endogenous variables. The number of countries drops to 20 because of missing data for total public spending for Switzerland.

The present analysis does not support this result. One possible explanation for this finding is that most of the established literature has not taken into account that fiscal decentralization might affect different types of spending differently, depending on the distribution of spending authority across levels of government. If expenditure competition is at work for regionally provisioned policies and a restraining effect for nationally provisioned policies, these two forces pulling in different directions might "cancel each other out" or lead to inconclusive findings, when we look at the total aggregated level of public spending. Another explanation for this discrepancy could be the different measure of fiscal decentralization used in this study. Despite his criticism of the IMF GFS data, Rodden (2003) is obliged to use it because of the lack of alternatives. I believe the Stegarescu indicator of tax revenue autonomy is better able to capture the real delegation of fiscal authority to lower levels of government. The present article has shown that this can have a significant impact on the outcomes of analyses.

Conclusion

This article has tried to bring new perspectives to the discussion on the relationship between fiscal decentralization and public spending. The core argument is that the association between fiscal decentralisation and public spending largely depends on the type of spending in question. Generally speaking, when spending decisions are located closer to the local level, fiscal decentralisation has a positive impact on spending, because of the expansive pressure of local expenditure competition, where communities compete for consumer-voters by offering attractive bundles of public services and goods. Hence, we find a robust and positive association between the level of total public education spending and fiscal decentralization. In contrast, for those types of spending, for which the administrative and spending authorities are located at the national level, competition between localities can have no direct effect, because these localities do not have the competencies to increase or lower spending. Indirect effects, however, may be equally important: in particular, fiscal decentralization and the accompanying power and autonomy of subnational governments has slowed down the expansion of the public sector on the national level. We found some suggestive evidence for a negative association between fiscal decentralization and pension spending as our chosen example for a nationally

provisioned policy. However, the association was not as robust as in the case of education, indicating that the restraining power of decentralization on spending may be less effective than assumed by the proponents of "market-preserving" federalism.

One way to extent the research of this paper would be a closer look at the causal relationship between strong preferences for public education and decentralization. In other words: whether individual preferences for fiscal decentralization themselves are shaped by the type of public policies provided at different levels of governments. It could well be that citizens in systems with an extensive provision of local policies are more willing to delegate more fiscal power to the lower levels of government. Hence, causality might run from decentralization to spending, but also the other way round: from public policy provision to preferences for decentralization.

Another possible extension of the research presented in this paper could try to enhance the understanding of local competition by looking at the dynamics of expenditure competition at the micro level. For example, in the U.S. – a fiscally decentralised country – local magazines and websites like psk12.com[19] provide parents with children in school with a wealth of data on school-related measures (quality, ethnicity of student population, spending, housing prices). Using micro level data, economists have found evidence for a positive impact of public school expenditure on residential choice and interregional mobility (Friedman 1981; Nechyba and Strauss 1998) as well as a positive association between school quality and housing prices (Brasington and Haurin 2006). Thus, at least in the U.S., the competition of localities for new residents on the basis of the quality and quantity of locally provisioned public goods is plausible. Future research should try to extend this type of research design to other OECD countries.

References

Anderson, J. (1998). Fiscal Decentralization and Government Size: An International Test for Leviathan Accounting for Unmeasured Economic Activity. *International Tax and Public Finance* 5(2): 171–86.

Brasington, D. and D. Haurin (2006). Educational Outcomes and House Values: A Test of the Value Added Approach. *Journal of Regional Science* 46(2): 245–68.

[19] http://www.psk12.com/rating/index.php, accessed July 2nd, 2007.

Beck, N. and J. Katz (1995). What to Do (and Not to Do) with Time-Series Cross-Section Data. *American Political Science Review* 89(3): 634–47.

——— (1996). Nuisance vs. Substance: Specifying and Estimating Time-Series-Cross-Section Models. *Political Analysis* 6(1): 1–36.

Bénassy-Quéré, A., Gobalraja, N. and A. Trannoy (2007). Tax and Public Input Competition. *Economic Policy* 22(50): 385–430.

Braun, D. (2000). The Territorial Division of Power in Comparative Public Policy Research: An Assessment. In Braun, D. (ed.), *Public Policy and Federalism*. Aldershot: Ashgate (27–56).

Brennan, G. and J. Buchanan (1980). *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge: Cambridge University Press.

Brülhart, M. and M. Jametti (2007). Does Tax Competition Tame the Leviathan? *Working Paper*, Department of Econometrics and Political Economy, University of Lausanne.

Buchanan, J. (1977). Why Does Government Grow? In Borcherding, T. (ed.), *Budgets and Bureaucrats: The Sources of Government Growth*. Durham: Duke University Press (3–18).

——— (1995). Federalism as an Ideal Political Order and an Objective for Constitutional Reform. *Publius: The Journal of Federalism* 25(2): 19–27.

Busemeyer, M. (2006). Der Kampf um knappe Mittel: Die Bestimmungsfaktoren der öffentlichen, privaten und sektoralen Bildungsausgaben im OECD-Länder-Vergleich. *Politische Vierteljahresschrift* 47(3): 393–418.

——— (2007). Determinants of Public Education Spending in 21 OECD Democracies, 1980–2001. *Journal of European Public Policy* 14(4): 582–610.

Cameron, D. (1978). The Expansion of the Public Economy: A Comparative Analysis. *American Political Science Review* 72(4): 1243–61.

Davoodi, H. and H. Zou (1998). Fiscal Decentralization and Economic Growth: A Cross-Country Study. *Journal of Urban Economics* 43(2): 244–57.

De Mello, L. and M. Barenstein (2001). Fiscal Decentralization and Governance: A Cross-Country Analysis. *IMF Working Paper* WP/01/71, International Monetary Fund, Washington, D.C.

De Mello, L. (2004). Can Fiscal Decentralization Strengthen Social Capital? *Public Finance Review* 32(1): 4–35.

Dhillon, A., Wooders, M. and B. Zissimos (2007). Tax Competition Reconsidered. *Journal of Public Economic Theory* 9(3): 391–423.

Ebel, R. and S. Yilmaz (2004): On the Measurement and Impact of Fiscal Decentralization. Online: http://www.urban.org/url.cfm?ID=411137 [accessed: 15.08.2008].

Edwards, J. and M. Keen (1996). Tax Competition and Leviathan. *European Economic Review* 40(1): 113–34.

Ehlert, N., Hennl, A. and A. Kaiser (2008). Föderalismus, Dezentralisierung und Performanz: Eine makroquantitative Analyse der Leistungsfähigkeit territorialer Politikorganisation in entwickelten Demokratien. *Politische Vierteljahresschrift* 48(2): 243–68.

Feld, L., Kirchgässner, G. and C. Schaltegger (2005). Fiskalischer Föderalismus und wirtschaftliche Entwicklung: Evidenz für die Schweizer Kantone. *Jahrbuch für Regionalwissenschaft* 25(1): 3–25.

Friedman, J. (1981). A Conditional Logit Model of the Role of Local Public Services in Residential Choice. *Urban Studies* 18(3): 347–58.

Grossmann, P. and E. West (1994). Federalism and the Growth of Government Revisited. *Public Choice* 79(1–2): 19–32.

——— (1989). Fiscal Decentralization and Government Size: An Extension. *Public Choice* 62(1): 63–69.

Huber, E., Ragin, C. and J. Stephens (1993). Social Democracy, Christian Democracy, Constitutional Structure, and the Welfare State. *American Journal of Sociology* 99(3): 711–40.

Immergut, E. (1992). *Health Politics: Interests and Institutions in Western Europe*. Cambridge: Cambridge University Press.

Jin, J. and H. Zou (2001). How Does Fiscal Decentralization Affect Aggregate, National, and Subnational Government Size? *Journal of Urban Economics* 52(2): 270–293.

Keen, M. and M. Marchand (1997). Fiscal Competition and The Pattern Of Public Spending. *Journal of Public Economics* 66(1): 33–53.

Kirchgässner, G. (2001). The Effects of Fiscal Institutions on Public Finance: A Survey of the Empirical Evidence. *CESifo Working Paper Series* No. 617 and *University of St. Gallen Discussion Paper* No. 2001-15, University of St. Gallen.

Kittel, B. and H. Winner (2005). How Reliable is Pooled Analysis in Political Economy? The Globalization-Welfare State Nexus Revisited. *European Journal of Political Research* 44(1): 269–93.

Leibfried, S., Castles, F. and H. Obinger (2005). "Old" and "New Politics" in Federal Welfare States. In Obinger, H., Leibfried, S. and F. Castles

(eds.), *Federalism and the Welfare State: New World and European Experiences*. Cambridge: Cambridge University Press (307–55).

Marlow, M. (1988). Fiscal Decentralization and Government Size. *Public Choice* 56(3): 259–69.

Nechyba, T. and R. Strauss (1998). Community Choice and Local Public Services: A Discrete Choice Approach. *Regional Science and Urban Economics* 28(1): 51–73.

Nelson, M. (1987). Searching for Leviathan: Comment and Extension. *American Economic Review* 77(1): 198–204.

Oates, W. (1972). *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.

——— (1985). Searching for Leviathan: An Empirical Study. *American Economic Review* 75(4): 748–57.

——— (2005). Toward A Second-Generation Theory of Fiscal Federalism. *International Tax and Public Finance* 12(4): 349–73.

Plümper, T. and V. Troeger (2007). Efficient Estimation of Time-Invariant and Rarely Changing Variables in Finite Sample Panel Analyses with Unit Fixed Effects. *Political Analysis* 15(2): 124–39.

Plümper, T., Troeger, V. and P. Manow (2005). Panel Data Analysis in Comparative Politics: Linking Method to Theory. *European Journal of Political Research* 44(2): 327–54.

Rodden, J. (2003). Reviving Leviathan: Fiscal Federalism and the Growth of Government. *International Organization* 57(4): 695–729.

——— (2004). Comparative Federalism and Decentralization: On Meaning and Measurement. *Comparative Politics* 36(4): 481–500.

Rodden, J. and G. Eskeland (2003). Lessons and Conclusions. In Rodden, J., Eskeland, G. and J. Litvack (eds.), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*. Cambridge, Mass.: MIT Press (431–65).

Schmidt, M. (2002). The Impact of Political Parties, Constitutional Structures and Veto Players on Public Policy. In Keman, H. (ed.), *Comparative Democratic Politics: A Guide to Contemporary Theory and Research*. London: Sage (166–84).

Stegarescu, D. (2004). Public Sector Decentralization: Measurement Concepts and Recent International Trends. *ZEW Discussion Paper* 04-74, Zentrum für Europäische Wirtschaftsforschung, Mannheim.

——— (2005). Public Sector Decentralisation: Measurement Concepts and Recent International Trends. *Fiscal Studies* 26(3): 301–33.

Stein, E. (1999). Fiscal Decentralization and Government Size in Latin America. *Journal of Applied Economics* 2(2): 357–91.

Thiessen, U. (2004). Fiscal Decentralisation and Economic Growth in High-Income OECD Countries. *Fiscal Studies* 24(3): 237–74.

Tiebout, C. (1956). A Pure Theory of Local Expenditures. *Journal of Political Economy* 64(5): 416–24.

Treisman, D. (2000). Decentralization and Inflation: Commitment, Collective Action, or Continuity? *American Political Science Review* 94(4): 837–57.

Weingast, B. (1995). The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development. *Journal of Law, Economics and Organization* 11(1): 1–31.

Wellisch, D. (2000). *Theory of Public Finance in a Federal State*. Cambridge: Cambridge University Press.

Wibbels, E. (2000). Federalism and the Politics of Macroeconomic Policy and Performance. *American Journal of Political Science* 44(4): 687–702.

Wilson, J. (2005). Welfare-improving Competition for Mobile Capital. *Journal of Urban Economics* 57(1): 1–18.

Wilson, J. and R. Gordon (2003). Expenditure Competition. *Journal of Public Economic Theory* 5(2): 399–417.

World Bank (2004). Measuring Fiscal Decentralization. *Data Note*, August 2004. Online: http://www1.worldbank.org/publicsector/decentralization/Indicators.xls [accessed: 15.08.2008].

Zax, J. (1989). Is There a Leviathan in Your Neighborhood? *American Economic Review* 79(3): 560–67.

Appendix

Table A1: Data Sources and Definitions

Data Sources	Definitions
Public education spending as a % of GDP	Real public educational expenditure as a percentage of real GDP. Source: OECD: Public Educational Expenditure, Costs and Financing: An Analysis of Trends 1970–1988, Paris, 1992, p. 84; OECD: Education at a Glance, Paris, various years
Public social spending as a percentage of GDP	Social expenditures: total public social expenditures as a% of GDP. Source: OECD Health Data 2004.
Public spending on pensions	Public social expenditures for old age (pensions) as a% of GDP. Source: OECD Health Data 2004.
Total public spending	Total public disbursements as a% GDP. Source: OECD Economic Outlook Database.
Fiscal decentralisation	Degree of tax revenue decentralisation (*TDec1*): subnational government's own tax revenue (as a share of general government revenue), in which the subnational unit can at least set the tax rate or the tax base autonomously and does not have to share the revenue obtained. Source: Stegarescu 2004
National income per capita	Gross national income per capita in US dollars, current prices, PPP. Source: OECD Factbook 2006 (www.sourceoecd.com).
Population share of those aged between 5 and 29	Share of those aged below 15 relative to total population. Source: OECD (2007): Health Data, Paris.
Population share of those aged 65 and above	Share of those aged 65 and above relative to total population. Source: OECD (2007): Health Data, Paris.
Veto index	Index of institutional veto players (Schmidt 2000: 352). The index is based on the addition of 10 indicators, which depict the number of the most important countermajoritarian veto players. (1) Consociational democractic structures; (2) federalism; (3) central bank autonomy; (4) Lijphart index of judicial overview; (5) EU membership; (6) expansive protection of minority rights; (7) bicameralism; (8) tradition of coalition governments; (9) autonomous social security institutions, and (10) direct democracy. Because EU membership is part of the index, the index has been updated slightly for those countries that have acceded to the EU in the 1990s.

Table A2: Descriptive Statistics

Country	Public education spending, % of GDP	Public spending on pensions, % of GDP	Total public spending, % of GDP	Public social spending, % of GDP	Share of local/regional expenditure in total expenditure (IMF GFS, Rodden 2004: 483)	Fiscal Decentralization based on revenue autonomy (Stegarescu 2004, 2005)	Veto index (Schmidt 2000: 352)
Australia	4.93	3.53	37.52	14.68	50	20.47	6
Austria	5.71	10.07	54.44	25.61	34	3.50	9
Belgium	5.47	7.09	55.35	25.62	12	14.94	7
Canada	6.45	4.40	46.81	17.84	65	52.42	3
Denmark	6.42	6.69	57.53	29.93	54	32.97	3
Finland	6.05	6.87	51.20	25.82	41	26.48	4
France	5.59	9.40	52.46	26.29	19	16.74	7
Germany	4.31	10.16	47.52	24.82	45	7.36	8
Greece	3.50	9.44	45.92	18.75	.	0.25	3
Ireland	5.34	3.64	45.10	18.97	29	2.73	4
Italy	4.82	9.91	51.07	22.69	23	3.59	7
Japan	4.23	4.57	33.33	11.98	30	34.21	5
Netherlands	5.61	6.73	53.80	27.45	35	4.29	7
New Zealand	5.69	6.40	45.97	19.86	.	6.06	3
Norway	6.36	6.99	49.30	23.77	35	25.10	2
Portugal	4.76	5.12	42.39	14.41	9	1.80	3
Spain	4.46	6.90	41.95	19.03	36	12.56	6
Sweden	6.94	9.13	63.55	31.15	37	42.98	2
Switzerland	5.28	8.05	34.18	19.79	55	56.20	8
UK	4.90	7.15	43.84	22.79	29	8.97	2
US	4.93	5.14	35.83	13.82	53	37.16	6
Mean	5.32	7.02	47.10	21.67	36.3	19.56	

Die Auswirkungen fiskalischer Dezentralisation auf Bildungs- und andere Staatsausgaben

Die Debatte um die Auswirkungen von fiskalischer Dezentralisierung auf öffentliche Ausgaben ist nicht neu, dennoch gibt es wenige gesicherte Befunde. Im Gegensatz zu früheren Studien untersicht der vorliegende Beitrag den Einfluss von fiskalischer Dezentralisierung auf unterschiedliche Ausgabenarten. Der These vom "race to the bottom" bei Steuern und Ausgaben als Folge von Dezentralisierung wird die neuere These des Ausgabenwettbewerbs gegenübergestellt, nach der der Wettbewerb zwischen Lokalitäten expansiv wirken kann und zu insgesamt höheren Ausgaben führt. Vor diesem Hintergrund wird argumentiert, dass die Effekte der Dezentralisierung von fiskalischer Autonomie am klarsten bei den Ausgabenarten hervortreten sollte, die in der Regel auf lokaler oder regionaler Ebene bereitgestellt werden. Empirisch zeigt sich daher auch ein positiver und robuster Zusammenhang zwischen fiskalischer Dezentralisierung und der Gesamthöhe der Bildungsausgaben in einem Land. Im Gegensatz dazu sind Ausgaben für national bereitgestellte Ausgabenarten (wie Rentenausgaben) negativ mit fiskalischer Dezentralisierung assoziiert. Die empirische Analyse verwendet Querschnittsregressionen und gepoolte Zeitserienanalysen von Bildungs-, Renten-, Sozial- und öffentlichen Ausgaben in OECD-Ländern für den Zeitraum 1980 bis 2001.

Les effets de la décentralisation fiscale sur les dépenses en matière d'éducation et autres dépenses publiques

Le discours scientifique s'intéresse depuis longtemps à l'impact de la décentralisation fiscale sur les dépenses publiques sans pour autant offrir des conclusions acquises. Contrairement à des études précédentes, la présente examine l'impact de la décentralisation fiscale sur différents types de dépenses. La thèse de "la course vers le bas" au niveau des impôts et des dépenses publiques, une conséquence de la décentralisation fiscale, est confrontée avec la thèse de la compétition des postes budgétaires, ainsi soulevée dans la littérature plus récente, qui maintient que la concurrence entre les localités peut avoir un effet expansif et donc entraîner une augmentation du niveau des dépenses en général. Dans ce contexte, l'impact de la décentralisation fiscale devrait être le plus visible au niveau des types de dépenses engendrées par des politiques qui sont offertes au niveau régional et local. L'analyse empirique démontre ainsi un lien positif et stable entre la décentralisation fiscale d'un pays et son niveau agrégé des dépenses se rapportant au domaine de l'éducation. En revanche, les dépenses publiques offertes au niveau national (telles que les dépenses relatives aux prestations de pension) sont associées négativement à la décentralisation fiscale. L'analyse empirique emploie la régression transversale et l'analyse de séries temporelles de dépenses publiques en général et de dépenses relatives aux domaines de l'éducation, du système social et du système de pension en particulier, ceci pour les pays de l'OCDE pour la période de 1980 à 2001.

Marius R. Busemeyer is a researcher at the Max Planck Institute for the Study of Societies, Cologne, Germany. His research focuses on comparative education, social and fiscal policies. He has, among others, published in *Journal of European Public Policy*, *West European Politics* and *Politische Vierteljahresschrift*.

Addresse for correspondence: Max Planck Institute for the Study of Societies, Paulstrasse 3, D-50676 Cologne, Germany. Email: busemeyer@mpifg.de.