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Macroeconomic Performance**

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Fiscal Federalism and Long-Run Macroeconomic Performance

A Survey of Recent Research

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Abstract. In this paper, we offer both a broad survey of the literature on fiscal federalism and long-run economic performance, and a detailed report of some of our own recent studies in this field. We look at the difference between study types (cross-country versus single-country studies), and at the relevance of the broader institutional framework into which fiscal decentralization is embedded. We also look into structural change and intergovernmental transfers as a detailed mechanism through which federalism may have an impact on aggregate economic performance. It turns out that fiscal decentralization has no robust effect on growth, but the evidence hints at a positive effect on overall productivity, conditional on the broader institutional framework.

JEL-Classification: H70; E63, E65.

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1. INTRODUCTION

Does federalism have an impact on long-term economic performance? On the one hand, it could be argued that competition between jurisdictions in a federation induces them to come up with political innovations in economic policy (Hayek 1948) or that fiscal competition between jurisdictions leads to a market-preserving federalism (Weingast 1995). On the other hand, federalism usually involves a representation of states, cantons or Länder at the federal level in a second chamber of government that slows down political decisions and is thus hostile to economic reforms (Tsebelis 1995). Often, this influence of states at the federal level leads to systems of fiscal equalization that provide for adverse incentives for policymakers at the state level. Federalism apparently has many facets that might affect economic performance.

In recent years, there has been a growing, predominantly empirical literature on this question (see Feld, Schnellenbach and Baskaran 2009 for a survey). The findings are as diverse as the range of arguments from theoretical work; one can find studies praising the positive effects of fiscal decentralization on growth, as well as studies warning that federalism comes with substantial costs in terms of forgone economic performance. In this paper, we review the literature, with a focus on our own recent research. We will show that the impact of fiscal decentralization on growth and productivity depends both on the type of study (e.g. cross-country versus single-country studies), and also on the broader institutional framework. In particular, fiscal decentralization in a system of cooperative federalism works differently than in a system of competitive federalism.

The argument will proceed as follows: In Section 2, we review the theoretical literature on fiscal federalism and economic performance, both using growth

models and using more detailed arguments on why there might be a relationship. In Section 3, we report on single-country studies for Germany (a regime of cooperative federalism) and Switzerland (a regime of competitive federalism), and show that the impact of fiscal decentralization measures differs in both cases. In Section 4, the impact of intergovernmental transfers on structural change is discussed. In the following Section 5, we look into the problems on cross-country studies with a focus on OECD countries. And finally, Section 6 reports some first insights from a meta-analysis which we have conducted for the empirical literature on federalism and growth. Some conclusions follow in Section 7.

2. WHY FEDERALISM MATTERS FOR ECONOMIC PERFORMANCE

2.1. Federalism in models of economic growth. There are by now several models that attempt to integrate fiscal federalism into standard models of economic growth. They naturally start from the traditional Tiebout (1956) model with fiscal competition between jurisdictions leading to efficient provision and financing of public goods. An already classical contribution in that tradition is Brueckner (1999) who builds on a Diamond-OLG model. He assumes two groups of individuals with differing preferences for a publicly provided private good, and he also assumes a frictionless spatial sorting mechanism in the Tiebout tradition. One group of individuals, labelled the young, can save and consume, while the other group, labelled as the old, can only consume. Furthermore, an assumption of weak complementarity between the publicly provided good and private consumption is made. Finally, Brueckner also assumes that in a unitary state, democratic decision-making imposes a compromise in quantitative terms between the group with a high and that with a low preference for the publicly provided good. In a federal state, however, such a compromise is not necessary – after spatial sorting,

each group consumes exactly the level of the publicly provided good that it prefers.

Through weak complementarity, the decision on the publicly provided good matters for the individually optimal level of private consumption and, accordingly, saving. If individuals prefer a larger quantity of the publicly provided good in their old age, then a switch from a unitary regime to a federal regime will lead to higher overall savings, simply because individuals expect to be able to realize higher levels of old-age consumption under fiscal autonomy, relative to the political compromise of the unitary regime. However, if the relative preferences are the other way around and the young desire higher levels of consumption, then overall savings will be less under fiscal autonomy. Brueckner then shows that the capital intensity of the economy in the steady state does indeed depend on the relative preferences of the two groups. Capital intensity, output per unit of labour and accordingly also wages increase in the steady state with a move towards fiscal autonomy, if and only if the preferences for old-age consumption are relatively higher.

The theoretical argument made by Brueckner is striking. However, it would certainly be preferable to have an argument on the growth effects of fiscal federalism that relies on directly observable institutional characteristics alone, and does not require a detour via relative preferences. Davoodi and Zou (1998) follow a rather straightforward approach by using a Cobb-Douglas production function whose exponents are allowed to differ between regions for exogenous reasons. They let central and sub-central public goods enter the model, and show that maximization of output (and accordingly growth) requires a regionally differentiated supply of the sub-central public good. Brueckner (2006) follows a more sophisticated approach and carries the basic set-up of his earlier model over to an endogenous growth model. Here, a decision on investment into human capital at young age that affects the opportunities of income earned at old age is at the focus of the analysis. This structure of the model

ensures that the old always achieve higher incomes and prefer relatively higher levels of consumption. Moving towards a unitary regime would again decrease the public good level for the old and increase it for the young. Since taxes move accordingly, incentives to save and invest in human capital decrease for the young. Given the structure of the model, fiscal autonomy is now unambiguously associated with higher output per unit of labour and (since we now have an endogenous growth model) with higher steady state growth rates.

There are also arguments to be made with regard to the impact of tax competition on capital accumulation. These arguments can go both ways: On the one hand, tax competition is usually associated with a lower overall tax burden on capital relative to unitary regimes. The incentive to save increases with fiscal autonomy in capital taxation, so does capital intensity in the steady state and, in the case of an endogenous growth framework, also the steady state growth rate. Models making this and similar points come for example from Lejour and Verbon (1997) and Hatfield (2006), who shows that this result is even robust to imperfect capital mobility, but that higher growth under fiscal autonomy comes at the expense of under-provision of a local public consumption good. On the other hand, there is also a literature on vertical externalities (see e.g. Boadway and Keen 1996) pointing at the problem that sharing of a tax base by different layers of government may lead to a sub-optimally high tax burden, if the base sharing is uncoordinated or left uncorrected by not using appropriate transfers. Vertical tax competition could, therefore, imply negative growth effects of fiscal federalism. Other mechanisms, such as the opportunity to export taxes to foreign capital owners by setting inefficiently high tax rates (e.g. Huizinga and Nielsen 1997), can have similar effects.

In a recent paper, Köthenbürger and Lockwood (2009) build a model of tax competition that also incorporates a motive for portfolio diversification. With regions being subjected to stochastic idiosyncratic shocks, households have an incentive to invest in regions even if they have higher tax burdens on capital.

Increased capital taxation in one region is then not only associated with the standard positive tax base externality, but also with a negative externality: The overall return on investments, also of foreign households invested in that region, declines. The authors show that with a small number of regions and a large variance of idiosyncratic shocks, the second externality dominates, with adverse effects on individual saving incentives. Carried over into an AK endogenous growth model this leads to the result that fiscal autonomy may be associated with lower growth. Leaving political economy arguments out of consideration, Köthenbürger and Lockwood argue that a centralized regime is to be preferred, since it can always emulate decentralized governments when this would be welfare-enhancing.

2.2. Behind and beyond the growth models. It is a general problem of formal models of economic growth that they rely on very stylized modelling of complicated real-world mechanisms, and that they often focus only on one of many possible mechanisms – this is simply the price to pay for analytical tractability. In this subsection, we will therefore briefly survey some possible connections between federalism and macroeconomic performance that usually are not given careful attention in formal growth models, but in our opinion matter nevertheless.

In a survey of their research, Aghion and Howitt (2006) have forcefully made the argument that the appropriateness of a certain growth policy depends on the specific conditions of the country or region analyzed. This distantly resembles a point made much earlier by Wallace Oates, who states that

“There surely are strong reasons, in principle, to believe that policies formulated for the provision of infrastructure and even human capital that are sensitive to regional or local conditions are likely to be more effective in encouraging economic development than centrally determined policies that ignore these geographical differences.” (quoted from Oates 1993, p. 240)

This short quote hints at two distinct advantages of decentralized political orders: (i) in a unitary regime, a centralized decision-maker might be constrained e.g. by institutional or political forces which restrict him from imposing differentiated policies in different regions, even if this were optimal, and (ii) a centralized decision-maker might not be able to efficiently differentiate policies, because the necessary knowledge on regional conditions is difficult to centralize.

The first point is reinforced in a theoretical study by Madiès and Ventelou (2004), who show in a neoclassical growth model that under reasonable conditions the positive effect from targeted local spending over-compensates a negative effect which stems from an assumed vertical fiscal externality problem. The second point in particular resembles an argument already made by Hayek (1948) and subsequent generations of Austrian economics, who have consistently pointed out the knowledge problem, and the difficulty of centralizing knowledge. Recently, Besley and Coate (2003) have been critical with regard to the first point, arguing that a central government should in general be able to adjust fiscal policy to regional and local idiosyncrasies. While this may be true in a perfect information framework, it does not confront the second part of Oates' argument – the part referring to the problem of central-level ignorance.

Central-level ignorance is not necessarily a result of the characteristics of policy-related knowledge itself. For example, it is not necessary to assume that knowledge on efficient local policies is tacit, and therefore technically difficult to centralize. This would, however, be entirely possible, for example if efficiency of alternative policies depends on regionally heterogeneous informal institutions, traditions or habits. Rather, arguments from political economics suggest that an incumbent government aiming at being re-elected in a nationwide vote may not be too responsive to local preferences and peculiarities. Apart from the problem of responsiveness, a centralized government is also

prone to the problem of pork-barrel politics between regions, as Besley and Coate (2003) show in great detail.

A more fundamental problem is the threat of a Leviathan government that uses its monopoly of coercive power to expropriate rents from citizens and private enterprises. Brennan and Buchanan (1980) have already suggested that fiscal federalism ought to be part of any fiscal constitution aimed at taming a Leviathan, since the pressures exerted by the exit option effectively transform the monopoly of coercive power into a competitive framework. Weingast (1995) has expanded this basic approach into the concept of market-preserving federalism arguing, based on historical evidence, that private property rights are protected by competition between governments. Edwards (2005) starts from a similar approach and argues that federalism is instrumental in solving the time-consistency problem underlying private investments under the threat of expropriation by the government, in his case investments into human capital. Edwards shows that federalism allows governments to commit to low tax rates in the future, thus solving the problem.

In recent years, the Hayekian theme introduced above has also been explored with different approaches. Oates (1999) has coined the term laboratory federalism in order to emphasize the possibility to experiment with policies on the sub-central level. Ideally, the costs of failure would be significantly lower relative to experiments on the central level, while the knowledge about successful political experiments would spread quickly across a federation. If this were indeed the case, then federalism should promote growth by providing a more efficient public sector. Besley and Case (1995) have shown for the United States that border-crossing information on tax policy is indeed used by voters in state-level decisions; at the same time, this does not seem to be the case for other fields of policy. Schnellenbach (2008) emphasizes that rationally ignorant voters will be reluctant to learn from policy experiments

in other jurisdictions, but that even with imperfect appropriation of policy-relevant knowledge, federalism will under most conditions be superior to a unitary regime. The reason is that inertia on the market for policy-related theories can be punctuated by price signals generated by factor mobility. The willingness to experiment with novel policies at all has also been subjected to theoretical scrutiny.

Rose-Ackerman (1980) arrives at particularly pessimistic conclusions. Arguing that the policy-related knowledge generated by decentralized experiments is available at no cost to any free-rider, she expects a tendency of local governments to wait and watch, rather than actively experiment. In addition, Schnellenbach (2007) argues that incumbent governments constrained by political competition will often be reluctant to engage in risky political experimentation. Kotsogiannis and Schwager (2006), however, warn that local governments could even use policy innovations to increase their appropriation of rents, because using innovative policies gives them an information advantage over their citizens. If this is indeed the case, then the free-riding effect introduced by Rose-Ackerman could be overcompensated. Strumpf (2002) argues that even mild heterogeneity between jurisdictions can reduce incentives to free-ride. A prominent example for political innovation in federal systems is the welfare reform in the United States enacted under President Clinton (see Inman and Rubinfeld 1997).

2.3. Some first conclusions. What is to be learned from the theoretical literature reviewed thus far? First of all, as so often, theory suggests various counteracting effects with regard to the relationship between fiscal decentralization and growth. And it does not give a clear-cut prediction on which of the effects will dominate the others. Essentially, the net effect of fiscal federalism

on growth is an empirical issue. In addition to this, our discussion so far suggests that not every author means the same thing when she writes of fiscal federalism. For example, vertical externalities only matter when different layers of government share a common tax base. But on the other hand, an uncompromised system of competitive federalism, which is underlying the approaches of Brennan and Buchanan (1980) or Weingast (1995), is designed to avoid shared tax bases as far as possible. Institutional details matter. This is an important lesson to which we will return below.

3. TWO FEDERALISMS: GERMANY AND SWITZERLAND

Given the inconclusive theoretical results on the relation between federalism and growth, it is necessary to draw on empirical evidence. Theoretical analyses suggest, however, being as precise as possible regarding the mechanisms by which instruments of fiscal federalism affect economic growth. In a first step of the analysis, we thus have a look at Switzerland and Germany, two federations that have chosen to put the emphasis of their forms of fiscal federalism on opposite sides of the spectrum: Switzerland is a federation with an important role of inter-jurisdictional competition, while Germany is proud of its cooperative federalism.

3.1. Competitive federalism in Switzerland. The Swiss federal system is characterized by an exceptionally large degree of sub-central autonomy, both on the cantonal (i.e., state) and on the municipal level. Federal taxing powers are limited to competencies explicitly enumerated in the federal constitution, while the main taxing powers are assigned to the cantons. They have the power to autonomously decide on cantonal tax burdens on the incomes of individuals and corporations, as well as on property (wealth). The local level is allowed to levy surcharges on the cantonal taxes, with the overall degree of municipal autonomy varying substantially between cantons. Overall, this has

led to large differences in fiscal policies across the country and to intensive tax and spending competition between cantons and local jurisdictions. With a taxable income of one million CHF, a married taxpayer with two children faced an (cantonal and local) income tax rate of 23.3 percent in Zurich in 2007, but only 7.7 percent in the municipality of Freienbach in the canton of Schwyz which is just half an hour commuting time away from Zurich. To both tax rates, the federal income tax rate of 13.2 percent must be added. Although such a variation of tax rates is striking; fiscal competition has not led to a convergence in cantonal tax burdens at a low level – a race to the bottom has not occurred.

With these characteristics, Switzerland can be seen as a unique real-world object for the study of competitive federalism, with hardly any other country coming this close to the ideal type. What makes Switzerland particularly interesting in addition to large degrees of sub-central tax autonomy is the large institutional variation on the cantonal level: The degree of local fiscal autonomy follows from cantonal rules, and varies to a large extent between cantons. Moreover, the Swiss cantons are also part of a fiscal equalization system that has only recently been reformed. The old system, which was in force until 2006, exclusively consisted of vertical transfers with a horizontal equalization effect (Feld and Schaltegger 2005). Since 2006, Switzerland's fiscal equalization has moved to a hybrid system of horizontal and vertical transfers.

This institutional variety allows Feld et al. (2006) to study the effects of sub-central fiscal autonomy and, closely related, of intergovernmental grants, on economic performance. The approach follows the pioneering work by Mankiw et al. (1992) in empirically analysing a neoclassical growth model. A Cobb-Douglas production function is estimated, where real GDP is the dependent variable and labour, human capital, physical capital, all in logarithmic terms, different measures of centralization, tax competition, fiscal transfers and a vector of control variables are the independent variables. Labour is measured

as the number of employees per canton, human capital as cantonal spending on education and, due to lacking data on capital stocks, physical capital is captured by cantonal level data on investment spending. Population size is the most important control variable.

Federalism enters the model through different measures: (i) the ratio of local revenue to the sum of local and cantonal revenue, (ii) the ratio of local spending to the sum of local and cantonal spending, (iii) matching grants per capita received by a canton, (iv) federal lump-sum grants per capita and (v) a measure of tax competition, which is measured as the difference between the canton's tax rate in the highest income tax bracket and the average of the corresponding number for the neighbouring cantons. Clearly, the larger this difference is, the higher must be the pressure from tax competition to which a particular canton is exposed at any given point in time. Finally, there is also (vi) a fragmentation measure, constructed as the number of municipalities per capita in a canton. The fragmentation measure ought to pick up possible influences from unexploited economies of scale in public good provision on the local level. Among the control variables, there is the population size of the cantons as well as an urbanization measure to capture possible core-periphery effects as they are known from New Economic Geography.

The estimation is performed with annual data for the 1980 to 1998 period in a pooled cross-section time-series model, first using OLS and then, to cope with underlying endogeneity problems, using two stage least squares (TSLS). The results show that both physical and human capital investment have the expected positive sign and are highly significant (at the 1% level) in all regressions. Labour has the expected positive sign, but is only weakly significant (down to the 10% level) in a TSLS regression. Interestingly, the spending and revenue measures of decentralization have a robust positive sign, but are always statistically insignificant. The same holds for the lump-sum grants. Matching grants, however, have a robust, highly significant negative effect on economic

performance. More importantly, the intensity of tax competition turns out to have a highly significant positive effect. The effect of fragmentation is negative, but insignificant; likewise the urbanization measure is positive but insignificant. While these effects can be observed for the level of real GDP per employee, the growth rate of GDP is not affected by any of the indicators of fiscal federalism.

The insignificance of the measures of cantonal spending and revenue decentralization in the level regressions is clearly not what one would expect from theoretical considerations. But one has to bear in mind that these are very imperfect measures of local autonomy within a canton. The raw number does, for example, not give a reliable indication as to which fraction of local spending is actually the result of autonomous local decision-making. The sign and insignificance of the lump-sum grants probably can be explained by the fact that lump-sum grants in Switzerland simply follow from revenue-sharing arrangements and are thus rather a repayment of tax revenue by the federal government to the cantons. The estimation result for the coefficient on the matching grant variable, on the other hand, clearly hints at negative effects of elements of cooperative federalism on economic performance. Here, it is also important to keep in mind that the TSLS estimation deals with the endogeneity problem following from the fact that relatively more of these grants are channelled towards low-performing cantons. And finally, the result for the tax competition measure suggests that under more intensive tax competition, public funds tend to be used more efficiently.

3.2. Cooperative federalism in Germany. The German type of fiscal federalism is fundamentally different from what we have discussed above for Switzerland. Rather than having extensive provisions for sub-central fiscal autonomy, Germany follows the concept of cooperative federalism. Even with the distinction between cooperative and competitive federalism being usually

fuzzy and pure competitive federalism existing nowhere in the world (see e.g. Shah 2007 as well as Rodden and Rose-Ackerman 1997), a comparison of Germany and Switzerland shows that the institutional approaches are fundamentally different. The data used in the study reported here covers the 1975-2005 period. In 2006 and 2009, there have been reforms of German federalism. These reforms consisted in a cautious disentangling of competencies, and a very modest increase in sub-central autonomy. The overall character of German federalism has, however, not changed. We will therefore here only give a brief summary of the institutional status quo mainly prior to these reforms (see Feld and von Hagen 2007 for details).

According to the Grundgesetz, the Länder have legislative power as long as the Grundgesetz does not assign a legislative competency to the federal government (Article 70 GG). In Art. 71 and 73 GG, a number of policy areas are explicitly reserved to federal legislation. Art. 72 und 74 define policy areas where the so-called concurrent legislation, according to which the Länder only have legislative power if the federal government does not use its legislative power. Put differently, the federal government can acquire legislative competencies under the heading of concurrent legislation whenever it passes a law in a concurrent area. However, the federal government only has jurisdiction in this area if and to the extent that the maintenance of equal living conditions requires it (Art. 72 Abs. 2). The Federalism Reform Act of 2006 facilitates the use of concurrent legislation by excluding several areas from the requirements of the Grundgesetz. The Länder instead obtain the right to deviate from federal law in several areas (e.g., environmental law, university access, and university degrees). Finally the so-called framing legislation (Art. 75) allowed the federal government to decide on a framework of several select policy areas and left only details to decide for the Länder. Prominent examples are the whole legal basis of public employment as well as university education. Framing legislation is abolished by the Federalism Reform Act.

Fiscally most important in this respect, the Länder now have the exclusive responsibility for their civil servants, in particular their salaries and pensions. In addition, there are the joint tasks defined in Art. 91. In fields such as the promotion of regional economic development, cooperation between the federal and the Länder government is explicitly called for. On the other hand, local policies are for a large part left to the municipalities, and Art. 28 of the constitution commits the Länder to provide their municipalities with sufficient means to autonomously deal with these local policies. In addition to all this, the Länder have decided to voluntarily engage in horizontal coordination in the few policy areas where by law they have maintained autonomy, such as education policies.

On the revenue side, there is also no scope for autonomous tax policies on the state level. The most lucrative taxes (personal and corporate income taxes, VAT) are joint taxes. They are legislated on the federal level, and revenue is shared between the federal government, states and municipalities according to pre-defined rules. Even taxes whose revenue flows entirely towards the Länder, such as the inheritance tax, are legislated completely and uniformly on the central level. The Federalism Reform Act of 2006 only assigns tax-rate autonomy for the real estate purchase tax to the Länder, which is however negligible in revenue terms. On the other hand, municipalities are allowed to levy a local business tax and decide on the tax burden autonomously. They therefore have more scope for autonomous tax policies than the states. To a large extent, the Länder execute policies that are either the result of federal legislation, or decided through horizontal coordination between the Länder. On the other hand, however, the Länder governments assemble the second chamber of the German federal government, the Bundesrat. Every piece of federal legislation that affects the Länder has to win a majority in both chambers. Accordingly, Scharpf (1988) speaks of a “joint decision trap”,

where responsibility is nowhere clearly assigned and where often a very broad consensus is necessary to achieve any substantial change of the status quo.

On top of all this, there is also an extensive fiscal equalization scheme. The distribution of VAT is partially skewed in favour of financially weak Länder. In addition to this, horizontal transfers are organized from states with above-average fiscal capacity to those with below-average capacity. Until 2005 additional vertical transfers flew from the central government if the fiscal capacity per capita of a state is still below 99.5 percent of the average after horizontal fiscal equalization. Since, this equalization has been reduced to up to 97.5 percent of average fiscal capacity. In essence, this implies that even state governments responsible for utterly inefficient policies never have to fear substantial fiscal consequences.

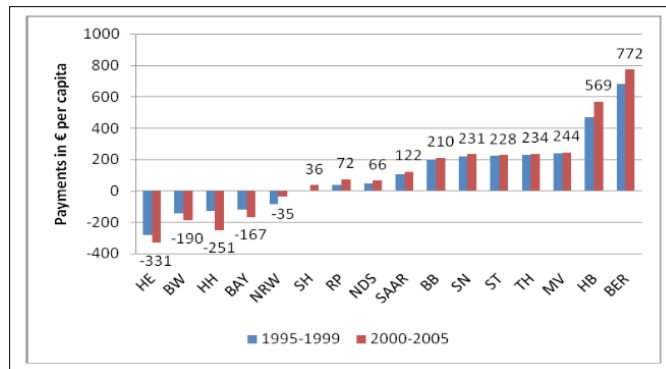


Figure 1: Payments in Germany's horizontal fiscal equalization scheme. Source: Feld et al. 2009.

An overview over the payment structure in the fiscal equalization scheme between the states is given in Figure 1. It shows that few payers with above-average fiscal capacity have been subsidizing many receiving states. From a theoretical perspective, we would expect such a system to ceteris paribus have adverse effects on efficient, but often risky investments into regional

structural policies. When a state cannot deviate substantially from the average fiscal capacity, in neither direction, then public consumption is likely to gain attractiveness relative to the financing of, for example, public inputs to attract businesses whose tax revenue will in any event be to a large extent skimmed through the fiscal equalization scheme. However, if idiosyncratic shocks on the state level are also accounted for, then the risk-sharing effect of an equalization scheme could also have a beneficial effect on long-run growth (see e.g. Buettner 2002). However, given the fact that over time there is a number of usual suspects permanently appearing on the receiving end of the scheme, it is doubtful that the goal of temporary smoothing the effects of short-term shocks is predominant in the German system.

Feld et al. (2009) investigate the effect of transfers on state-level productivity econometrically. They rely on data from 16 Länder for the period between 1975 and 2005. Regressions are run for two dependent variables, namely the level and growth of real GDP per employed person in a state. The explanatory variables are decentralization measures, horizontal and vertical transfers and a vector of control variables. Since the five East German Länder have joined the federation only in 1990, the panel is unbalanced. The model is first estimated using OLS, and due to possible unobserved heterogeneity between the states also with two-way fixed effects. In a second, due to possible endogeneity of the transfer variables, TSLS is employed. As to the selection of instruments, a politico-economic argument is followed, which points out that the transfers received depend crucially on the bargaining position of a sub-central government in the political arena. The three instruments are the population represented by one vote in the Bundestag, the population represented by one vote in the Bundesrat and a dummy variable which is equal to one if the federal and the Land government is from the same party. These instruments are presumed to be sufficiently reliable proxies for the political weight of the states.

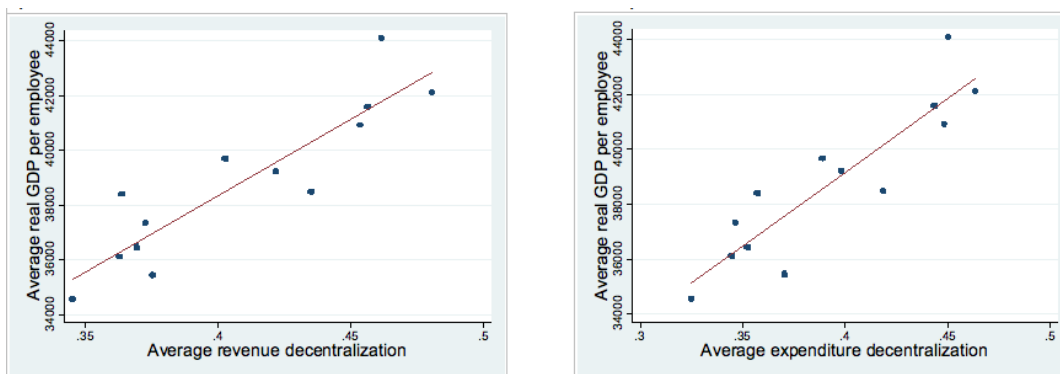


Figure 2: Bivariate correlations between average productivity level and decentralization measures. City states are excluded. *Source:* Feld et al. 2009.

In Figure 2, the bivariate correlations between productivity and decentralization of German Länder are shown. Similarly, but not depicted here, the bivariate correlations between transfers and productivity levels suggest a negative relationship between both. The econometric results, however, are somewhat more complex. For the productivity level as the dependent variable, the coefficient on horizontal transfers has a robust negative sign and is highly significant, mostly at the 1% level. The impact of vertical transfers, on the other hand, is not significantly different from zero at any conventional level. Revenue decentralization has the expected positive sign on productivity, and is consistently highly significant. Expenditure decentralization, on the other hand, has a robust and highly significant negative effect on productivity in the German Länder. For the growth regressions, on the other hand, all coefficients have the theoretically expected signs – positive for decentralization and mostly negative for transfers. None of them, however, is robustly significantly different from zero. In particular in the TSLS regressions, none of these coefficients is significant on any conventional level.

How can the surprising negative effect of expenditure decentralization on productivity be explained? Possibly, and in particular in comparison to the

Swiss case, this a peculiarity of cooperative federalism. Note that in all German Länder, there is also an extensive horizontal equalization scheme between the municipalities. Thus, expenditure decentralization together with a relatively secure fiscal capacity after transfers of the municipalities, may create incentives for reckless spending on the local level, without much regard to the productivity effects. The fact that *ceteris paribus*, revenue decentralization has a positive effect hints at the same explanation: Municipalities compete for businesses who pay the local business tax and who are, in general, relatively mobile. An incentive to spend on productive local public goods thus may come into effect with increased revenue decentralization.

4. SCHUMPETER MEETS THE FISCAL EQUALIZATION SCHEME

In the papers reviewed so far, the focus has been on aggregate effects of fiscal decentralization on economic performance. Little has been said with regard to empirically testing which of the mechanisms discussed in the corresponding theoretical literature might be responsible for any aggregate effects that eventually show up in the data. Schnellenbach, Baskaran and Feld (2009) contribute to this discussion by analyzing the impact of intergovernmental transfers on structural change. The underlying hypothesis is that unhampered structural change is essential for long-run economic growth, while attempts at preserving given economic structures tend to slow down growth. There is by now a substantial body of literature, in particular in the Neo-Schumpeterian mould that corroborates this underlying hypothesis (see e.g. Aghion and Howitt 2006 for a survey). An issue that is barely researched at all so far, however, is the impact of intergovernmental transfers on structural change. In the political sphere, these transfers are usually advertised with two arguments: (i) as an efficient instrument to smooth the effects of temporary idiosyncratic regional shocks, and (ii) if shocks are not temporary, as an instrument that enables regions hit

by adverse shocks to invest into regional structural change and thus accelerate the process of creative destruction in the private sector.

The evidence presented before already raises some doubts regarding the validity of the arguments, but a closer look at the second statement might be useful: Are intergovernmental transfers really used to speed up structural change? We look at the developments of three regions, the Saarland, Lothringen and Luxembourg over a long range of time. The Saarland is a German Land (i.e., state), and as already discussed above, Germany serves as a good proxy for a system of cooperative federalism. Lorraine, on the other hand, is a region in a unitary state. Despite some efforts in France to devolve competencies to lower-tier governments since 1982, France still is characterized by a high degree of centralization of competencies. The scope for autonomous decision-making of lower-tier entities is rather small, even compared with Germany. Luxembourg is used to proxy a region in fierce fiscal competition. It is a small, completely autonomous nation state which cannot rely on any central government transfers. The only exception in general would be transfers from the European level, but here, all three regions are subjected to the same EU framework.

A look back into the 19th and earlier 20th century shows that at first, the industrial history of the three regions is quite different. Luxembourg, for example, has industrialized relatively late, mainly due to technological reasons: The iron ore found in Luxembourg and in bordering Belgian regions had characteristics which made it relatively expensive to process. Only with technological innovations of the late nineteenth century, processing it on a large scale turned to be economically interesting, such that steel and mining industry could develop in Luxembourg. The Saarland, on the other hand, had a flourishing steel and mining industry very early, when its Prussian and Bavarian rulers pressed the exploitation of local coal reserves. Luxembourg, however, pioneered in facilitating an early growth of its (financial) services industry, with market liberalization during the interwar period.

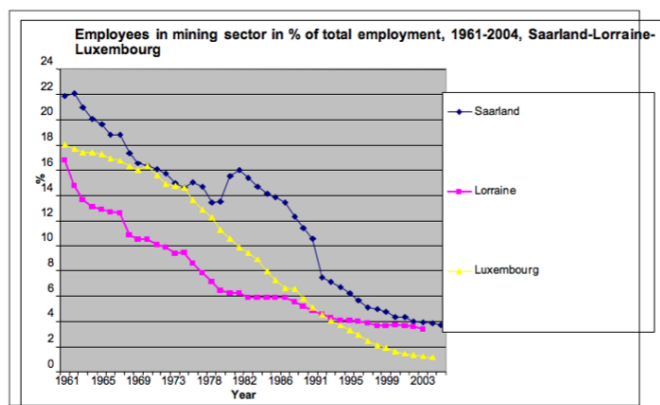


Figure 3: The steel and mining industry in the postwar period *Source: SBF 2009.*

What is striking is that, despite these different developments in earlier periods, the relative weight of the steel and mining industry, measured in terms of employee shares, is very similar in all three regions in the post-war period. We have collected a unique, high-quality data set for these employment shares, which is depicted in Figure 3. Additionally, we also have data on transfers received by the Saarland during this period through the German fiscal equalization scheme. The empirical strategy is the following: We perform a time-series analysis using both ADL- and VAR-models. As the dependent variable, the relative employment shares of the Saarland to both Lorraine and Luxembourg are used. In addition to a set of control variables, the independent variables are transfers and lagged transfers received by the Saarland, and lagged employment shares. In a second set of regressions, the dependent variable is transfers received by the Saarland.

With this exercise, we can infer whether transfers have an impact on the relative employment shares of the Saarland, i.e. whether transfers lead to a relatively faster decline of the ailing steel and mining industry in cooperative federalism than in the other two fiscal regimes. We can also infer if the causality runs the other way around, i.e. if transfers flow only as a response to declining

relative employment shares, which would indicate that in spite of their different political justification, transfers are in fact used for income policies rather than to foster structural change. The results are robust and unambiguous: Transfers, past or present, have no significant effect on relative employment shares, but changes in transfers can to a good extent be explained by changes in past employment shares. These results strongly suggest that transfers are not used to accelerate structural change. Since there is also no significant positive effect, we do however also find no strong structure-preserving effect. It appears that transfers are simply not used for structural policies at all.

5. AN INTERNATIONAL PERSPECTIVE: FEDERALISM AND GROWTH IN THE OECD

After investigating two cases which proxy two different ideal types of federalism, it is now time to take a broader perspective, exploit the institutional variation in an international data set, and look at the relationship between federalism and growth for a larger sample of OECD countries. Given the results above, it is also obvious that a distinction must be made between revenue (expenditure) a sub-federal jurisdiction raises (spends) autonomously and revenue (expenditure) it obtains by horizontal or vertical transfers (it undertakes because of federal mandates). There are, however, important data problems to be dealt with. Rodden (2004) complains about the common procedure used in many studies, namely to use data from the IMF Government Finance Statistics (GFS). These decentralization measures simply consist of the ratio between sub-central and total government spending or revenue. But as the discussion of Switzerland and Germany above has shown, such ratios do not reliably inform us about the true scope for autonomous decision-making on the lower levels of government. And even if data originates from other sources than the GFS, decentralization measures are nevertheless usually constructed by simply taking ratios. More sophisticated data such as those

used by Thornton (2007), where effort is invested into investigating whether sub-central spending is autonomously decided upon or not, is on the other hand available only for smaller sets of countries. In the case of the Thornton data set, it encompasses 19 countries and also does not include variation in time.

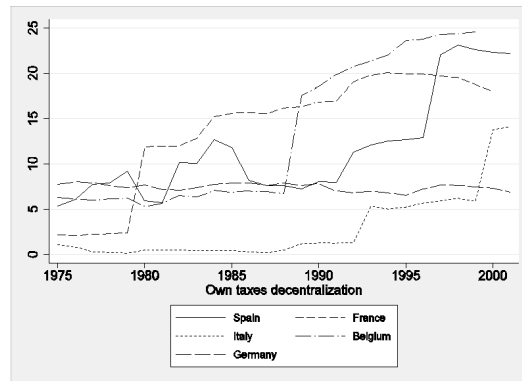


Figure 4: Evolution of Revenue Decentralization I *Source:* Stegarescu 2005.

A notable exemption is the data set assembled by Stegarescu (2005). He presents two different measures: Revenue decentralization I sums up all revenue from taxes for which sub-federal governments determine rates, bases or both and divides this sum by total government tax revenue. Revenue decentralization II sums up revenue from joint taxes, where sub-federal governments have an influence on revenue distribution or other details of the joint tax scheme, and again divides this by total tax revenue. The evolution of both decentralization measures is shown in Figures 4 and 5 for a number of selected countries. It is clearly visible that there is substantial variation over time for some countries, in particular for Belgium, Italy and France in the first measure. For the second measure, there is less variation.

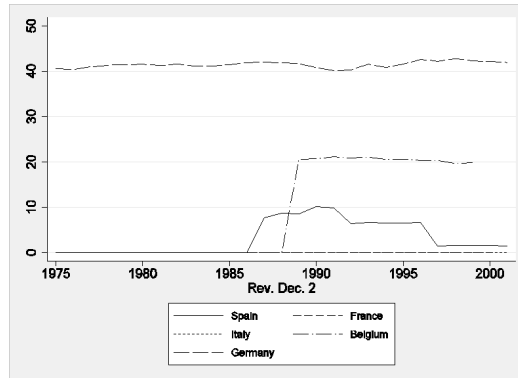


Figure 5: Evolution of Revenue Decentralization II *Source: Stegarescu 2005.*

Feld and Baskaran (2009) specify an econometric model with economic growth as the dependent variable, and decentralization measures and a vector of control variables as independent variables. Using the Stegarescu data set, a panel with yearly data for the period between 1975 and 2001 can be built, including 23 countries. The control variables include initial GDP per capita, the tax to GDP ratio, the enrolment in secondary education, the investment to GDP ratio, population growth, a measure of openness, inflation and a federation dummy. The model is estimated using random and fixed effects models. For the baseline model, RD-I enters with a negative sign and a coefficient significantly different from zero in both the RE and FE models. The baseline model thus suggests that by and large, revenue decentralization appears to have a negative effect on GDP growth in OECD countries. In a second set of regressions, additional control variables are added to the baseline specification, in particular the federation dummy, and it turns out that now the coefficients on RD-I become generally insignificant. The sign for the coefficient on RD-II is generally insignificant. In all further robustness checks, this is confirmed: For the OECD panel, revenue decentralization exhibits no statistically significant effect on economic growth. Interestingly, this is in line with the results reported above for Germany and Switzerland, where decentralization had a significant effect on overall economic performance (productivity) but not on growth.

6. SOME FIRST INSIGHTS FROM A META-ANALYSIS

By now, there is a large and growing empirical literature on the relationship between fiscal federalism or other forms of decentralization and economic growth. Feld, Schnellenbach and Baskaran (2009) give a broad review over these empirical studies, and also perform a quantitative meta-analysis. A first striking insight from reviewing the literature is that the clear majority of single country studies on the issue deals with China. Many of these studies find no or negative effects of decentralization on growth, which probably reflects the phenomenon of state-corroding federalism found by Cai and Treisman (2004). In an institutional environment already suffering from too little democratic accountability, no reliable rule of law and prospering corruption, federalism simply offers easy access to even more aggressive rent-seeking, by any means deemed necessary. A second interesting insight is that more studies have been conducted on the United States, Germany and Switzerland than on all other countries combined. Clearly, large parts of the world are still un- or at least under-researched, at least as far as single-country studies are concerned.

In the meta-analysis, we exploit the fact that most empirical studies report several estimates, using for instance different estimators or different sets of control variables in their robustness checks. Occasionally, the single researcher's choice of one of her estimates as particularly trustworthy is somewhat arbitrary. The meta-analysis thus looks at the pooled maximum, the minimum and the median estimates for the coefficient of fiscal decentralization respectively. The pooled estimate over all studies calculated with the minimum coefficients turns out to have a negative sign, and it is significantly different from zero. The pooled estimate with the maximum coefficients does, on the other hand, produce a positive sign, and the estimated coefficient is also significantly different from zero. The medium estimation produces a barely positive coefficient,

which however is insignificant. If we consider the medium and maximum reported coefficients of the studies as outliers and focus on the median coefficients, federalism thus appears to have no significant effect on growth.

In a series of meta-regressions, we attempt to find robust effects of study characteristics on the t-statistics of the coefficients reported. We find robust evidence for a publication bias, i.e. published studies report higher t-statistics than unpublished working papers, PhD dissertations and master theses. Cross-country studies report lower t-values than single-country studies. Similarly, if a cross-country study focuses exclusively on either developed or developing countries, then the t-statistics are larger than in studies which have both types of countries in their data set. Heterogeneity of the economies studied appears to matter. Keeping in mind at this point the argument made above, that many cross-country studies use rather crude measures of decentralization, this result is probably not too surprising. Quite likely, information is lost more or less necessarily with the move from single-country to cross-country studies, and accordingly the estimation results become fuzzier.

7. CONCLUSIONS

What is to be learned from this survey? First of all, details matter. Decentralization within a system of cooperative federalism does not have the same effects as in a system of competitive federalism. Sub-central fiscal autonomy in developed countries with sophisticated legal and democratic institutions yields different results than in an autocratic cleptocracy. The problem is, however, that institutional details are difficult to include broad cross-country studies taking into account very heterogeneous economies. But as far as single-country studies are concerned, many federations in the world still wait to be thoroughly researched.

Another important point are the channels through which federalism might influence overall economic performance. Many empirical studies focus on the aggregate relationship between decentralization and economic performance, without paying any regard to the relevant mechanisms in detail. We have reported above on a study on structural change, which might be seen as a first step to have a closer look at such details. Many other mechanisms discussed in the theoretical section of this paper do, however, still wait to be analyzed empirically. Studies in this field are surprisingly scarce so far. Materially, we have found some evidence that fiscal decentralization can have a positive effect on economic performance, measured in static terms as output per capita. There is, however, no robust evidence for a positive effect on growth rates, neither positive nor negative. While this is somewhat puzzling from an economic perspective, the policy implications are that federalism at least does not harm long-term economic performance, and may even be beneficial – provided, that the broader institutional framework facilitates the merits of federalism and does not allow it to evolve into a state-corroding federalism.

Given the fact that there are many other benefits of fiscal federalism reported in the literature, such as increased political accountability and the positive welfare effects of the Tiebout mechanism, these results are even encouraging: Federalism allows to realize these positive effects without having to sacrifice economic performance for them. There is no tradeoff between fiscal decentralization and economic performance – again, probably with the exemption of countries that have an inefficient broader institutional framework and that risk into sliding into state corroding federalism.

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