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Fiscal Federalism, Decentralization and Economic Growth: A Meta-Analysis

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Abstract:

The theoretical literature on fiscal federalism has identified several channels through which government decentralization could affect economic growth. Much of the literature focuses on the efficiency aspects of a decentralized provision of public services, but decentralization may also increase growth by raising the ability of the political system to innovate and carry out reforms. In contrast, some authors argue that decentralization increases corruption and government inefficiency, and thus may diminish growth. Given this theoretical ambiguity, several studies have attempted to identify the effect of decentralization on economic growth empirically over the last two decades. We review and conduct a meta-analysis of this empirical literature. Based on our analysis, we point out open questions and discuss possible ways to answer them.

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1. Introduction

Building on various theoretical contributions, an empirical literature analyzing the effect of fiscal decentralization on economic growth has emerged since the 1990s. The relevant studies vary as to whether they use cross-sectional, time-series, or panel data, as to whether they rely on cross-country or single-country samples, and they vary in estimation methods, decentralization measures, and sample composition.

Given the size and heterogeneity of the empirical literature, it is useful to review the individual studies and summarize their main findings. Conducting a comprehensive search, we identify 31 published and unpublished studies on the effect of fiscal decentralization on economic growth. Each of these studies estimates several models, resulting in over 400 individual estimates. While we first review these studies in a traditional manner, our main aim is to analyze these estimates quantitatively. Specifically, the main contribution of this paper is to offer a meta-analysis of the empirical findings on fiscal decentralization and economic growth.

A meta-analysis is a useful methodology in our context as it is difficult to obtain clear-cut conclusions with only a traditional survey of empirical literature: the individual studies vary substantially in their characteristics and correspondingly in the findings they report. By conducting a meta-analysis, however, we can identify how the idiosyncratic characteristics of a particular study relate to its findings. The meta-analysis approach thus addresses model uncertainty with regard to each individual estimate. In addition, it can also serve as a partial response to the methodological critique of empirical research on fiscal decentralization by Rodden (2004) as it helps to clarify the quantitative effects of different decentralization measures and estimation techniques. Finally, as meta-analytical techniques are rarely used in economics, we also aim at contributing to the further establishment of this methodology (Stanley 2001, 2008).

The next section briefly discusses the various theoretical arguments as to why fiscal decentralization may affect economic growth. We then provide a short traditional survey of the empirical studies in *Section 3*. We review this literature more systematically and quantitatively in *Section 4*. In *Section 5*, we report the results of meta-regressions and discuss how the idiosyncratic characteristics of a given study are related to its specific findings. Finally, *Section 6* provides a discussion of the results and some conclusions.

2. How Could Fiscal Federalism Affect Economic Growth? Theoretical Approaches

Within the framework of the Solow-Swan model (Solow 1956, Swan 1956), fiscal federalism may be associated with a different level of efficiency in governance than unitary systems, leading to a different value of Solow's *A*, the level of technology. A regime change towards federalism would then be associated with temporarily different growth rates, and eventually different levels of income, but not with persistent growth differences. The same holds for a possible difference in the savings rate between federal and unitary states.

Only if a theoretical link between, on the one hand, the growth rate of the technology level and, on the other hand, the level of government decentralization exists, decentralization would be expected to have a persistent impact on economic growth in this framework. There are indeed some contributions making this case. For example, from a Schumpeterian perspective, processes of creative destruction (Aghion and Howitt 2006; Caballero 2007) may be more efficiently managed in federal systems (Feld et al 2012). From a politico-economic perspective, federalism may preserve the efficient properties of market economies from the threat of overregulation and rent-seeking (Weingast 1995).

Using an OLG model, Brueckner (1999) argues that sorting of different types of individuals along the lines of Tiebout (1956) implies that in a federal system, each type receives its idiosyncratic, utility-maximizing level of a publicly provided good. If young individuals preferred less of the public good than old ones, and if private and public consumption were weak complements, the switch to federalism would lead to more savings of young individuals and higher growth. The effect would be temporary and restricted to the transition to a new steady-state capital stock. In a subsequent paper, Brueckner (2006) shows that permanent effects are possible by transferring the basic argument to an endogenous growth model.

Another argument stems from core-periphery models of regional economics. Regions that manage to attract centers of productive activity benefit from a relatively faster accumulation of physical capital due to agglomeration forces (Baldwin and Martin 2004). Such agglomeration forces themselves may be at least partially influenced by regional policies. An example is the importance of specific human capital (Camagni 1995) whose presence can be influenced by education and other policies. In an important paper that links a standard notion of fiscal competition with agglomeration effects, Justman et al. (2002) show that regional politicians have an incentive to differentiate the supplies of public infrastructure in different regions in

order to alleviate the pressures of fiscal competition. As a result, these regions will also attract different types of private capital. Justman et al. thus offer a politico-economic rationale for the endogenous emergence of regional heterogeneity, but the overall effect of fiscal competition on growth is ambiguous. The presence of strong agglomeration effects implies that peripheral regions that are eager to develop have little other policy alternatives than to attract businesses with a fiscal policy that is tailored to their specific conditions (Brakman et al. 2002). However, transfers from a rich to a poor region will have temporary effects at best in a new economic geography model (Brakman et al. 2006).

The general point that catering to the specific conditions of heterogeneous regions may accelerate growth has been incorporated into growth models by Davoodi and Zou (1998) and Xie et al. (1999) as well as Cerniglia and Longaretti (2013) with regard to education policy. Importantly, in the model used by Xie et al. (1999), a regime-change from a relatively inefficient unitary regime to a relatively efficient federal system would be associated with permanently higher growth rates for the more efficient regime, which, as seen above, is in contrast to the predictions of the Solow-Swan model.

Taking a political economics perspective additionally helps to identify possible causal mechanisms that run from decentralization to growth. In particular, it can be shown that the effects of decentralization depend on the broader institutional framework and its quality (Enikolopov and Zhuravskaya 2007). For example, Oates (1972) has already pointed out that efficiency requires fiscal equivalence. Without fiscal equivalence, fiscal externalities can lead to problems. Devereux and Mansoorian (1992) analyze an endogenous growth model with two countries whose decisions on tax levels produce fiscal externalities. Coordination of fiscal policies improves welfare in their model, but not necessarily growth, because the decentralized equilibrium may be characterized by low public consumption and high public investment. It is therefore not possible to derive clear-cut predictions regarding growth effects of uncoordinated, decentralized policy from this model (see also Koethenburger and Lockwood 2011).

In a different two-country endogenous growth model with imperfectly mobile capital, Lejour and Verbon (1997) show that uncoordinated source taxes on capital returns may actually imply too much redistribution. The reason is a growth externality: If one country levies a tax, it reduces investment at home, but by depleting the equilibrium return to capital in the entire economic union, also in the other region. Contrary to conventional wisdom, efficient coordi-

nation would then lead to lower public consumption and lower tax rates compared to an uncoordinated equilibrium.

Edwards (2005) models a time-inconsistency problem in a neoclassical growth model where human capital investment drives growth. A unitary government cannot commit to low tax rates in the future, such that the unitary state is characterized by high taxes, low human capital and low growth. Local governments, however, are exposed to the threat of emigration of fiscally expropriated factors. The exit option helps to solve the time-inconsistency problem, inducing a decentralized equilibrium with low taxes, high investment and high growth rates.

There is another politico-economic avenue via which federalism may have an impact on growth, namely that of fostering political innovation. Oates (1990, 1999) has hinted at the fact that federalism may be useful in this respect, by speaking of "laboratory federalism" – a system in which many, parallel small-scale experiments can be undertaken at the sub-central level. Relatedly, Besley and Case (1995) and Salmon (1987) have argued for the relevance of yardstick competition as a mechanism allowing voters to assess the competence of their own representatives by comparing their policies with political results in neighboring jurisdictions.

The argument on political innovation is not uncontested. Rose-Ackerman (1980) argued that information resulting from political experiments is a pure public good, implying free-riding incentives. Kotsogiannis and Schwager (2006) hold that self-interested representatives can even use policy innovations to increase their scope for extracting rents from office, because voters are uncertain about what could have been achieved with a different policy. As far as free-riding is concerned, Strumpf (2002) shows that the argument depends on the degree of heterogeneity between regions. As soon as regions become sufficiently heterogeneous, the learning externality loses relevance and free-riding ceases to matter.

In light of these theoretical arguments, we can state that sign and magnitude of the effect of fiscal decentralization on growth are ambiguous. Different plausible transmission channels have been identified, but it is also likely that the relative importance of these channels is contingent on other factors, such as the level of development of the countries observed or the quality of their other political institutions. It will therefore be of interest to analyze whether the empirically observed effects depend systematically on the empirical methodology, the kind of countries that are present in the sample, or the way decentralization is measured.

3. The Results of Previous Empirical Work

The empirical studies on fiscal decentralization and economic growth can be largely distinguished by whether they use cross-country and single country samples. We discuss these two strands of the literature in turn. Given the number of studies, we do not review each explicitly, but provide a comprehensive list in Tables 1 to 3.

3.1 Cross-Country Studies

The majority of cross country studies interprets fiscal federalism as decentralized organization of government activities and measures decentralization by the fraction of sub-federal spending (revenue) from total public spending (revenue) using the IMF's Government Finance Statistics (GFS). This approach is problematic as theoretical analyses presume autonomy of sub-federal decision-making on provision and financing of public goods, while spending decentralization might simply indicate the extent of administrative federalism with states, provinces or cantons providing public services according to federal mandates and financed by the federal government (Treisman 2002, Rodden 2004, Stegarescu 2005). As long as fiscal transfers from other jurisdictions (or proxies for autonomy) are not controlled for, the estimates for spending decentralization may thus be biased.

Given the measurement problems, the authors of the early cross-country studies on the impact of federalism on economic growth unsurprisingly end up with ambiguous results (see Table 1). Davoodi and Zou (1998), for instance, find a weakly significant negative correlation between decentralization and the average growth rate of GDP per capita for a sample of 46 countries and the period from 1970 to 1989. This effect is not significant for the sub-sample of developed countries. The negative effect for the sub-sample of developing countries is robust, though only weakly significant. According to these estimates, an additional decentralization of functions by 10 percent reduces the growth of real GDP per capita in developing countries by 0.7 – 0.8 percentage points. Woller and Philipps (1998) do not report a robust relation between economic growth and decentralization either, using a sample with a lower number of developing countries and a shorter period. They also analyze, in addition to the five-year-averages of growth, the annual growth rates in a panel. Both studies use fixed-effects models. In contrast to Davoodi and Zou (1998), Woller and Philipps (1998) consider a common time trend. Iimi (2005) uses more recent data for 51 countries, average growth between 1997 and 2001, and applies an instrumental variables approach. Spending decentralization turns out to

be highly significant such that a 10 percent higher decentralization of spending increases growth of real GDP per capita by 0.6 percentage points.

Table 1 about here.

In subsequent cross-country studies, the focus of the analysis shifts to revenue decentralization. While earlier studies have not been interested in exactly measuring the extent of actual tax autonomy of sub-federal jurisdictions, the collection of data according to the OECD (1999) methodology, in particular by Stegarescu (2005), allows for capturing to what extent sub-federal jurisdictions determine the tax rates or bases of the tax revenue collected. Thornton (2007) uses the measure originally constructed by the OECD (1999). These data are only available for 19 countries such that he analyzes a cross-section of average GDP growth between 1980 and 2000. This in turn implies that the results, which indicate that there is no robust relation between fiscal decentralization and economic growth, might be distorted due to unobserved heterogeneity and/or small-sample biases. Bodman (2011), however, corroborates these findings using the Stegarescu annual data and reports that tax decentralization has no robust significant effect on economic growth for 18 OECD countries and a yearly panel between 1981 and 1998.

These findings are contested by subsequent studies, but with contradictory results. Feld (2008) and Baskaran and Feld (2013) also use the new annual data provided by Stegarescu (2005). They find that subnational tax autonomy has a moderately, but relatively robust negative effect on real GDP growth per capita in a panel of 23 OECD countries between 1975 and 2008. Gemmel et al. (2013) use almost the same annual panel data set, i.e., 23 OECD countries between 1972 and 2005, particularly focusing on the Stegarescu data of revenue autonomy. Overall, their study is sophisticated as they estimate pooled mean group regressions and instrumental variables regressions with 3rd and 4th lagged values as instruments. According to their results spending decentralization tends to reduce economic growth, while a decentralization of revenue on which sub-federal governments autonomously decide significantly increases growth. These contradicting results may not be surprising given the different methodologies used. Asatryan and Feld (2015) follow a Bayesian Model Averaging (BMA) approach, which tests the robustness of the tax autonomy effect on economic growth, using the Stegarescu data and controlling for spending decentralization, by allowing any subset of up to 25 potential growth determinants to enter the regressions. Overall, more than 33 million different models are estimated by this approach. The initial negative effect of tax autonomy on GDP

growth is not robust to the inclusion of fixed effects, to the use of 5-year-averages and to influential observations, in particular Switzerland.

3.2 Single-Country Studies

The empirical results concerning the impact of decentralization on economic growth for individual countries at first sight are no less ambiguous. Asking which type of internal arrangement of a country favors regional development, analyses have been conducted for China, the Ukraine, India, Russia (Table 2), and the U.S., Spain, Switzerland and Germany (Table 3).

Zhang and Zou (1998, 2001), for example, report a significantly negative effect of expenditure decentralization on economic growth in 28 (29) Chinese provinces, using annual data between 1987 and 1993. Jin, Qian and Weingast (2005), however, find a weakly significant positive effect of expenditure decentralization on economic growth of almost the same sample of Chinese provinces over time. The most important difference between the studies – aside relatively small differences in the explanatory variables – is that Zhang and Zou (1998, 2001) do not use time dummies. Consequently, the common positive and negative economic shocks in China are inadequately controlled for as compared to Jin, Qian and Weingast (2005). Qiao, Martinez-Vazquez and Xu (2008) report similarly positive growth results for expenditure decentralization even without any fixed effects. Lin and Liu (2000) corroborate the result of a positive impact of decentralization on economic growth in Chinese provinces for the period 1970 to 1993 also for the revenue side. Moreover, a higher responsibility for public budgets at the provincial level is associated with increased economic growth. These authors, too, use time dummies in addition to cross-section fixed effects. Jin and Zou (2005) present evidence that a higher divergence between local expenditure and revenue increases growth.

The relevance for the estimates of using time dummies points to the strong economic dynamics in China. Structural variables cannot exclusively cover the sometimes enormously high Chinese growth rates, such that dummy variables for the individual years are necessary for specifying the model. The fact that Zhang and Zou neglect them must be interpreted as a misspecification of the model. Thus, for China, decentralization of government activity has rather a positive impact on economic growth. This assessment is corroborated by the time series analysis by Feltenstein and Iwata (2005).

Table 2 about here.

Much the same holds for individual developed countries. Exploring American economic development between 1790 and 1840, Wallis (1999) argues that fiscal federalism was an important institutional precondition that fostered economic growth of the U.S. In a time-series analysis for the U.S. general government from 1951 to 1992, Xie, Zou and Davoodi (1999) claim that the U.S. find themselves in a decentralization equilibrium because differences in decentralization at the state level or at the local level do not have statistically significant effects on real GDP growth. Akai and Sakata (2002), however, offer evidence to the contrary for U.S. states. Taking into account additional explanatory variables and various indicators for the degree of fiscal federalism, they underline the positive influence on economic growth. If expenditure decentralization increases by 10 percent, then the growth of GDP per capita increases by 1.6 – 3.2 percentage points. However, decentralization on the revenue side and indicators for fiscal autonomy of sub-national levels, measured by the share of own revenue in total revenue, do not have any significant impact.

Table 3 about here.

Stansel (2005) develops a different approach by testing the impact of local fragmentation on growth of local real per capita money income. Similarly, Hatfield and Kosec (2013) report evidence that a doubling of the number of county governments in a metropolitan area increases the average annual growth rate of earnings per employee by 17 percent in the period from 1969 to 2006. These studies are related to the fragmentation argument by Brennan and Buchanan (1980) according to which a higher fragmentation of a polity into different jurisdictions increases the intensity of inter-jurisdictional competition and thus restricts Leviathan governments. Indeed, Hatfield and Kosec (2013) interpret their findings as the result of inter-jurisdictional competition.

Feld, Schnellenbach and Baskaran (2012) study structural change in Germany. They proxy for structural change by the declining share of relative employment in steel and mining industries in the regions of Saarland (in Germany), Lorraine (in France) and Luxembourg. In a time series analysis from 1961 to 2004, they report a (Granger-) causal link from employment shares in declining industries to intergovernmental transfers, but not vice versa. It thus appears that transfers from the fiscal equalization system do not promote structural change, but respond to the declining relative employment share in old industries (Feld and Schnellenbach 2011).

4. Quantitative Literature Review

In the next two sections, we discuss the literature on decentralization and economic growth more systematically by conducting a quantitative literature review. For this, we have constructed a database consisting of information on altogether 449 empirical models estimated in the 31 studies listed in Tables 1 to 3. Our goal has been to include all empirical studies that have been conducted until 2013, identifying relevant studies by using both academic databases and google searches. The database encompasses both published papers and the latest unpublished working paper versions.[1]

4.1. Descriptive Statistics on Studies

The literature on fiscal federalism and economic growth is heterogeneous along many dimensions. We coded the characteristics of the studies included in our database with dummy and continuous variables. There are some generalizations involved when classifying individual studies with their idiosyncratic characteristics into somewhat general groups. E.g., while all studies classified as using cross-country data have multiple countries in the sample, they vary along many other dimensions. The major advantage of a meta-analysis compared to traditional reviews is that the independent effect of each study characteristic can be explicitly retrieved.

With this advantage of meta-analyses in mind, we describe in the following the broad characteristics of the 31 studies in our database quantitatively.

First, both single country and cross-country studies have been conducted on decentralization and growth. Each of the two groups of studies can be further subdivided according to whether they consider developed or developing countries, or, in the case of cross-section studies, both. Within the subgroup of single country studies, a further differentiation according to individual countries is possible.

Table 4 about here.

1. We do not include working paper versions of published studies. Please do not simply count the number of rows in Table 2 as Zhang and Zou (2001) is one single study that uses two different samples. Some studies mentioned in the text are not included in the meta-analysis. This is partly due to dependent variables that are not directly related to economic growth, as in the case of Feld, Schnellenbach and Baskaran (2012) or Hatfield and Kosec (2013). In other cases, we do not include papers which suffer from obvious endogeneity problems like Berthold, Drews and Thode (2001) or Berthold and Fricke (2007). Given the countries and years covered, Bodman (2011) "encompasses" Thornton's (2007) study.

Overall, 16 single and 15 cross-country studies make up our database. Table 4 provides cross-tabulations of single- and cross-country studies against studies on developed and developing countries. Out of the 15 cross-country studies, three are exclusively on countries from the developing world, seven are exclusively on countries from the developed world, and five consider countries from the developing and the developed world at the same time. Out of the 18 single-country studies, eleven cover developing and seven developed countries.

There are twelve studies (three cross-country and nine single-country), which exclusively focus on developing countries. The majority of these studies (seven) are single-country studies for China. One of these studies, Zhang and Zou (2001), provides separate analyses for China and India. This is the reason why in Tables 2 and 3, the number of rows sum up to 17. On the other hand, there are 14 studies exclusively focusing on developed countries. Overall, it appears that single country studies are primarily conducted with developing countries, while cross-country studies tend to focus on developed countries.

4.2. Summary Statistics on Estimated Models

In each of the 31 studies, a varying number of models are estimated. These regressions result altogether in 449 point estimates of the effect of decentralization on economic growth. Since we will focus on these point estimates in the meta-regressions, we provide separate summary statistics for them.

Figure 1 about here.

The majority of studies in our database, 21, are journal articles, five are unpublished (discussion papers, working papers, etc.), two are master's or PhD theses, and one is a book chapter. According to Figure 1, most of the estimates, around 85%, in our sample thus derive from journal articles. These models, having passed peer review, should satisfy some minimum quality standards. Around 9% are obtained from unpublished manuscripts and discussion papers, while all other publication types together contribute around 6% to the sample. Given the large number of estimates published in journal articles the effects of publication bias usually reported in meta-studies should be limited (Stanley 2005, Feld and Heckemeyer 2011).

Figure 2 about here.

The point estimates can be further differentiated by the particular models specified. Figure 2 provides information as to whether the dependent variable and the decentralization variable

have been specified in level or log form. This figure shows that the majority of point estimates originate from models specified in the level-level form, other specifications are quite rare, and not a single model was estimated with a specification that facilitates an interpretation of the effect of fiscal decentralization on growth as elasticity, i.e., with a log-log specification.

In Figure 3, we collect information on the type of data used. The majority of estimates use panel data. However, there are also a significant number of estimates deriving from cross-section models. Time-series models, on the other hand, are rare.

Figure 3 about here.

According to Table 5, almost half of the point estimates are from models where only fixed effects for cross-section units are included. A small share of the estimates, around 2.5%, derive from models with only time fixed-effects. About 25% of all estimated models include both cross-section and time effects. About 16% of models consider nonlinearities, notably interaction and quadratic terms. However, none use both simultaneously, i.e., about 14% of the models use quadratic terms and about 2% exclusively interaction effects.

Table 5 about here.

Several measures of decentralization have been used in the literature, for instance expenditure and revenue shares, the divergence between central and sub-national government spending or revenue, and measures that capture the tax autonomy of sub-national governments. Figure 4 provides information on the relative frequency of these measures. The expenditure share of sub-national governments or closely related measures is used as the decentralization variable in about 44% of models and revenue decentralization is used in about 22% of models. The OECD measure (OECD, 1999) that takes the extent of subnational tax autonomy into account is used in 5% of the models, and each of the remaining measures, except the (weighted) average of expenditure and revenue decentralization, is used in 5%-10% of all estimated models.

Figure 4 about here.

The distribution of the estimated coefficients is depicted in Figure 5. Since the estimated coefficient is a measure with a dimension, the spread originating simply due to the use of particular units can be substantial. We found that the minimum value of the estimated coefficients in our database is -3623 while the maximum is +5391. In order to maintain some informative

content in the histogram, we have excluded extreme outliers, and included all coefficients with an absolute value of less than 10. Moreover, we have not used coefficient estimates from non-linear models as they do not result in a single relevant estimate (most studies operating with non-linear terms also do not provide estimates at some characteristic values, for example the sample average). We have also excluded one estimate from Zhang and Zou (2001) because it had inconsistent signs for the coefficient and the corresponding t-statistic. Thus, only 367 of the 449 observations are used for this histogram.

Figure 5 about here.

Figure 6 presents a histogram on the t-statistics or, respectively, the z-statistics, depending on what is reported in the original studies. (Note that we use in the following the term t-statistic to describe both t- and asymptotic z-statistics.) This histogram does not exclude outliers. The number of observations is only 376, i.e., less than the full sample of 449 observations. This is again due to the fact that non-linear models do not result in one single relevant estimate and because most authors do not provide separate t-statistics at some characteristic value. Nor do they provide the variance-covariance matrix of the estimated coefficients, so that we cannot calculate the t-statistics on our own at such characteristic values. As in the histogram for the estimated coefficients, we find that the t-statistic histogram is centered around zero.

Figure 6 about here.

Figure 7 about here.

In Figure 7, we provide a histogram on the number of control variables other than the constant, country or time fixed effects. On average, a model has about 7 to 8 controls. However, the dataset also contains estimates from bivariate regressions and from models with a more extensive list of control variables. In Figure 8, we depict a histogram on the number of observations showing that a large number of models have been estimated with less than 100 observations. On average, a study has about 250 observations. There are also models with more than 1000 observations.

Figure 8 about here.

5. Meta-Regressions

5.1. The Meta-Regression Model

In this section, we study how the idiosyncratic characteristics of an empirical model determine the magnitude and the sign of the estimated effects. That is, we explore how the choice of a particular measure of decentralization, a particular set of countries, or a particular specification affects the estimated effects. The most widely used technique for explaining heterogeneous findings across models is meta-regressions.[2] The applicability of the meta-regression approach in the current context relies on the premise that individual studies estimate models whose specification roughly resembles the following equation:

$$Y = X\phi + \gamma DEC + \nu \quad , \tag{1}$$

where Y is a measure of economic growth, X a vector of control variables including a constant, DEC a measure of decentralization, and ν an error term that either conforms to the assumptions of the classical regression model or can be transformed appropriately. By fitting the model to the data by some technique, for example OLS, an estimate of the true effect of decentralization on economic growth, $\hat{\gamma}$, is obtained. This framework suggests that a meta-regression model can explain diverse findings in the original regressions. Consequently, a meta-regression model for our sample of studies could be specified as follows:

$$\hat{\gamma}_{ij} = a + Z_{ij}\beta + \varepsilon_{ij} \qquad \text{(i=1,…35; j=1,…,L)} \quad , \tag{2}$$

where $\hat{\gamma}_{ij}$ is the estimated coefficient j in study i, Z_{ij} a vector of variables which describe the characteristics of the particular model that resulted in the estimate $\hat{\gamma}_{ij}$, and ε_{ij} the meta-regression error term.

A problem with using the plain coefficients is that different studies use different units in the variables through which they operationalize decentralization and growth. The estimated coefficients are not dimensionless and therefore not directly comparable across studies without some standardization. Therefore, we use the variability of the estimate as a scaling parameter,

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2. We do not include an extensive discussion of the methods used in meta-analyses. For a general discussion see Stanley (2001, 2005, 2008), Wooldridge (2002) and Feld and Heckemeyer (2011). Applications in economics include Rose and Stanley (2005), Dominicis et al. (2006), Feld and Heckemeyer (2011), Feld, Heckemeyer and Overesch (2013).

i.e., instead of the plain coefficient in model (2) the t-statistic is used as the dependent variable in our meta-regressions. The t-statistic is a dimensionless measure that can be compared across different models. We are aware of the fact that the t-statistic itself is not a perfect measure. For example, it is sensitive to the number of observations used in the original regression. Nevertheless, a division of the coefficient with its standard error is the most straightforward strategy to ensure that the dependent variable is independent of scaling. Moreover, the statistical significance of an estimated coefficient relies on the t-statistic, and if there is publication bias in favor of significant estimates, we should expect that researchers care about the t-statistics rather than about the coefficients as such.

We specify our meta-regression model therefore as:

$$(3) \qquad t_j = \frac{\hat{\gamma}_j}{sd_j} = \alpha + Z_j\beta + \eta_j \qquad (j=1,\ldots L).$$

The control variables (i.e., the characteristics of the original models) that we include in our meta-regression models are listed in Table 6.

Table 6 about here.

5.2. Results

Ideally, we should rely only on results from fixed effects models to establish how the t-statistics change with varying model characteristics within a given study. However, a number of study characteristics cannot be included in fixed effects models because they do not vary within studies, such as the publication status or the type of countries (developed vs. developing) included in the sample. Therefore, in addition to fixed effects (FE) models, we estimate pooled OLS and random effects (RE) models. In Table 7, pooled OLS estimates are denoted as OLS1 and OLS2, random effects estimates as RE1 and RE2 and fixed effects estimates as FE1 and FE2. Hypothesis tests are always based on heteroscedasticity robust standard errors. Standard errors are additionally clustered at the study level in the pooled OLS models.

Table 7 about here.

The results reported in Table 7 confirm that several study characteristics significantly influence the t-statistics. First, estimates based on models using subnational expenditures as share of total expenditures, subnational revenues as share of total revenues or the OECD tax auton-

omy measure as proxies for decentralization find larger (more positive) t-statistics than those based on remaining proxies for decentralization, which are treated as the baseline (however, the coefficient for the OECD measures is not significant). The group of proxies that represent the baseline comprises several different non-standard decentralization measures.[3] Unlike the standard proxies mentioned above, the remaining proxies are thus not a well-defined category. One reasonable interpretation of our meta-regressions is thus that their baseline is the average effect of the non-standard proxies. The decentralization proxies that are explicitly stated can then be interpreted as the effect net of the average effect of all non-standard proxies.

Second, models using (time or country) fixed effects report significantly smaller t-statistics. Interestingly, the *Observations* variable is insignificant. Generally, it is likely that the number of observations used for a model has a significant effect on the t-statistic because, ceteris paribus, standard errors should decrease as the size of the sample increases. However, recall that we use the raw t-statistics as dependent variables (and not the absolute value), and thus any increase in precision may on average cancel out if both negative and positive coefficients "benefit" equally from the increase in precision.[4]

Third, models using a level-log specification display higher t-statistics than models using the linear-linear one; the estimated coefficient is significantly positive in the FE specifications. We also find that models in which the extent of political freedom is controlled for display higher t-statistics. In addition, the results suggest that controlling for total government revenues or expenditures as share of GDP leads to significantly smaller t-statistics. The estimated models that use data from a single country tend to produce higher t-statistics. However, this conclusion relies on the results in the pooled OLS and random effects models, as the single-country dummy cannot be included in the fixed effects models.

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3. These are, e.g., divergence between expenditure and revenue decentralization, the weighted average of expenditure and revenue decentralization or non-OECD tax autonomy measures of own-source revenues.

4. To explore this issue further, we have also estimated models where we relate the absolute value of the t-statistics to the number of observations. Our results suggest that the absolute value of the t-statistics increases with the number of observations in the fixed effects meta-regressions (the estimated coefficient is insignificant but the p-values are reasonably small – less than p=25%), i.e., within individual studies, but not in the OLS and random effects models. It is plausible that the number of observations should be related to the absolute value of the t-statistics within a given study. It remains, however, an open question why there is no relationship across studies. One possibility may be publication bias, i.e., authors may be more likely to publish studies that include estimates of significant effects, irrespective of the size of the sample.

Any attempt to account for the possible endogeneity of fiscal decentralization, typically by means of an instrumental variables (IV) strategy, tends to increase the estimated t-statistic, but the coefficient estimate for *control for endogeneity* variable in the meta-regression is only significant in model OLS2. Finally, it seems to matter which country is studied. In particular, models using data from China, Germany or Switzerland find smaller t-statistics than studies for Russia, India, Spain, and Ukraine (which comprise the base group). For China, this even holds when we include study fixed effects. However, only Zhang and Zou (2001) displays within-study variation for this dummy.

One drawback of the previous regressions is that published and unpublished studies are analyzed together as it is possible that the impact of some study characteristics varies between published and unpublished studies. For example, editors who are ideologically biased toward centralization may accept studies that find a more positive t-statistic more readily (Stanley 2005, Feld and Heckemeyer 2011). If this holds, then researchers have an incentive to report only those models that are in line with such biases, and papers that have been published have (apart from obvious quality differences) different characteristics than unpublished papers.

Table 8 about here.

To explore whether our results are affected by such considerations, we re-estimate equation 3 separately for published and unpublished studies. Note that some control variables cannot be included in each of the two sets of regressions because there is sometimes no variation within the subsamples. Most obviously, the *Published* dummy has to be dropped since both subsamples cannot, by definition, vary in this variable. In addition, we also found that there is no or only little variation within the unpublished-subsample for the *Level-log specification*, *Log-level specification*, *Freedom*, *Governance*, and the country dummy variables.

The results for the published- and unpublished-subsamples are reported in Table 8. They suggest that the relation between study characteristics and estimated t-statistics differs somewhat between published and unpublished studies. The effect of including cross-section fixed effects, for example, tends to be negative within the group of published studies, but significantly positive within the group of unpublished studies. Second, using the OECD measure of decentralization leads to significantly higher t-statistics within the class of unpublished studies but not within the class of published studies. Third, the number of control variables is positively related to the t-statistic for unpublished studies while being insignificant in the group of

published studies. Also controlling for endogeneity has significantly different effects on the t-statistics in the group of published versus unpublished studies. While this modeling choice has either no or a slightly positive effect on the estimated t-statistics in the group of published studies, it has a significantly negative effect in the group of unpublished studies. Such diverging results between published and unpublished studies suggest that there are significant differences between these two groups. This might on the one hand indicate that the publication process is indeed effective in distinguishing between high-quality and low-quality studies. On the other hand, they might also suggest the presence of publication bias.

Finally, we explore in Table 9 whether study characteristics are equally important for the sign of the estimated coefficients as for the t-statistics. We thus estimate the baseline models after replacing the t-statistic with a dummy for whether the estimated coefficient is positive as dependent variable in the meta-regression. Given that results ostensibly differ according to whether a study is published or not, we again differentiate between published and unpublished studies. We observe, first, that as before results differ to some extent between published and unpublished studies. Moreover, results are not much different qualitatively. For example, using the OECD measure for decentralization increases the probability of finding a positive effect significantly among the unpublished studies, even though we also observe a positive coefficient in the FE model for published studies. Including cross-section fixed effects tends to decrease the likelihood of estimating a positive coefficient among published studies, while being neutral among unpublished studies. Thus, while there are some differences compared to the models where t-statistics are the dependent variables, using a dummy for positive coefficients produces qualitatively roughly similar results.

Table 9 about here.

Overall, our meta-analysis leads to three conclusions. First, the choice of the variable with which decentralization is measured is important for the sign and significance of the estimate. Using traditional expenditure and revenue decentralization measures leads to larger t-statistics and thus to more significant results than other measures of fiscal decentralization. The effect of the OECD style measure, which takes into account subnational tax autonomy, has diverging effects in published and unpublished studies. It tends to be insignificant in the published-subsample and increases t-statistics in the unpublished-subsample. Related to this observation, the second conclusion that follows from our results is that the impact of study characteristics varies to some extent between the groups of published and unpublished studies. In par-

ticular, including fixed effects tends to lead to negative coefficients within the group of published studies, but positive ones within the group of unpublished studies. Finally, our results also suggest that the inclusion or omission of certain control variables significantly influences the estimates. In particular, the inclusion of a variable measuring political freedom and controlling for either total government revenues or expenditures leads to significantly smaller t-statistics.

6. Discussion of the Results and Concluding Remarks

Our review of theoretical and empirical studies on fiscal decentralization and economic growth and the meta-analysis of the estimated effects provide interesting insights into the empirical literature and partial explanations for the sometimes widely diverging results. For example, single country studies tend to find a positive effect of decentralization on growth. This may be because they are able to analyze the impact of decentralization within a common institutional framework, whereas cross-country studies may have more difficulties in isolating the effect of decentralization from other institutional determinants of economic growth. In general, our meta-regressions show that the idiosyncratic characteristics of the original empirical models and the sample used to estimate them affect the results significantly.

Our results also suggest that future empirical research on the relationship between decentralization and economic growth needs to improve on the empirical specifications. According to our meta-regressions, the sign and significance of the estimates varies according to the choice of control variables. It is therefore imperative to devote additional theoretical effort in establishing the transmission channels through which decentralization may affect economic growth. This will allow empirical researchers to identify more appropriate specifications for their models. Furthermore, the importance of including fixed effects must be discussed as well. Finally, our meta-regressions show that the particular choice of the empirical measure for decentralization has a large effect on the t-statistic. Therefore, no final agreement can be reached regarding the impact of decentralization on economic growth without a consensus as to how to measure decentralization in the first place.

References

Aghion, P. and P. Howitt (2006), Appropriate Growth Policy: A Unifying Framework, *Journal of the European Economic Association* 4, 269 – 314.

Akai, N. and M. Sakata (2002), Fiscal Decentralization Contributes to Economic Growth: Evidence from State-Level Cross-Section Data for the United States, *Journal of Urban Economics* 52, 93 – 108.

Akai, N., Y. Nishimura and M. Sakata (2007), Complementarity, Fiscal Decentralization, and Economic Growth, *Economics of Governance* 8, 339 – 362.

Asatryan, Z. and L.P. Feld (2015), Revisiting the Link between Growth and Federalism: A Bayesian Model Averaging Approach, *Journal of Comparative Economics* 43, 772 – 781.

Baldwin, R.E. and P. Martin (2004), Agglomeration and Regional Growth, in: J.V. Henderson and J.F. Thisse (eds.), *Handbook of Regional and Urban Economics, Vol. 4*, Elsevier, Amsterdam, 2671 – 2711.

Baskaran, T. and L.P. Feld (2013), Fiscal Decentralization and Economic Growth in the OECD Countries: Is There a Relationship?, *Public Finance Review* 41, 421 – 445.

Behnisch, A., T. Büttner and D. Stegarescu (2002), Public Sector Centralization and Productivity Growth: Reviewing the German Experience, ZEW Discussion Paper No. 02-03, Mannheim.

Berthold, N. and H. Fricke (2007), Volkswirtschaftliche Auswirkungen der finanziellen Ausgleichssysteme in Deutschland, Discussion Paper No. 93, University of Würzburg.

Berthold, N., S. Drews and E. Thode (2001), Die föderale Ordnung in Deutschland – Motor oder Bremse des wirtschaftlichen Wachstums?, Discussion Paper No. 42, University of Würzburg.

Besley, T. and A.C. Case (1995), Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition, *American Economic Review* 85, 25 – 45.

Bodman, P. (2011), Fiscal Decentralization and Economic Growth in the OECD, *Applied Economics* 43, 3021 – 3035.

Brakman, S., H. Garretsen and C. Van Marrewijk (2002), Locational Competition and Agglomeration: The Role of Government Spending, CESifo Working Paper No. 775, Munich, September 2002.

Brakman, S., H. Garretsen and C. Van Marrewijk (2006), Agglomeration and Aid, CESifo Working Paper No. 1750, Munich, June 2006.

Brennan, G. and J.M. Buchanan (1980), *The Power to Tax*, Cambridge University Press, Cambridge.

Brueckner, J.K. (1999), Fiscal Federalism and Capital Accumulation, *Journal of Public Economic Theory* 1, 205 – 224.

Brueckner, J.K. (2006), Fiscal Federalism and Economic Growth, *Journal of Public Economics* 90, 2107 – 2120.

Caballero, R.J. (2007), *Specificity and the Macroeconomics of Restructuring*, MIT Press, Cambridge (Mass.).

Camagni, R.P. (1995), The Concept of Innovative Milieu and its Relevance for Public Policies in European Lagging Regions, *Papers in Regional Science* 74, 317 – 340.

Cerniglia, F. and R. Longaretti (2013), Federalism, Education-Related Public Good and Growth when Agents are Heterogeneous, *Journal of Economics* 109, 271 – 301.

Davoodi, H. and H. Zou (1998), Fiscal Decentralization and Economic Growth: A Cross-Country Study, *Journal of Urban Economics* 43, 244 – 257.

Devereux, M.B. and A. Mansoorian (1992), International Fiscal Policy Coordination and Economic Growth, *International Economic Review* 33, 249 – 268.

Desai, R.M., L.M. Freinkman, and I. Goldberg (2005), Fiscal Federalism in Rentier Regions: Evidence from Russia, *Journal of Comparative Economics* 33, 814 – 834.

Dominicis, L., R.J.G.M. Florax and H.L.F. de Groot (2008), A Meta-Analysis on the Relationship between Income Inequality and Economic Growth, *Scottish Journal of Political Economy* 55, 654 – 682.

Ebel, R.D. and S. Yilmaz (2002), On the Measurement and Impact of Fiscal Decentralization, Unpublished Manuscript, World Bank, Washington.

Edwards, R.A. (2005), The Structure of Authority, Federalism, Commitment and Economic Growth, *Economic Theory* 25, 629 – 648.

Eller, M. (2004), The Determinants of Fiscal Decentralization and its Determinants on Economic Growth: Empirical Evidence from a Panel of OECD Countries, Diploma Thesis.

Enikolopov, R. and E. Zhuravskaya (2007), Decentralization and Political Institutions, *Journal of Public Economics* 91, 2261 – 2290.

Feld, L.P. (2008), Fiscal Federalism and Economic Growth in OECD Countries, in: A. Bergh and R. Höijer (eds.), *Institutional Competition*, Edward Elgar, Cheltenham, 202 – 229.

Feld, L.P. and J.H. Heckemeyer (2011), FDI and Taxation: A Meta-Study, *Journal of Economic Surveys* 25, 233 – 275.

Feld, L.P. and J. Schnellenbach (2011), Fiscal Federalism and Long-Run Macroeconomic Performance: A Survey of Recent Research, *Environment and Planning C: Government and Policy* 29, 224 – 243.

Feld, L.P., J.H. Heckemeyer and Michael Overesch (2013), Capital Structure Choice and Company Taxation: A Meta-Study, *Journal of Banking & Finance* 37, 2850 – 2866.

Feld, L.P., G. Kirchgässner and C.A. Schaltegger (2004), Fiscal Federalism and Economic Performance: Evidence from Swiss Cantons, Unpublished Manuscript, Philipps-University Marburg.

Feld, L.P., G. Kirchgässner and C.A. Schaltegger (2005), Fiskalischer Föderalismus und wirtschaftliche Entwicklung: Evidenz für die Schweizer Kantone, *Jahrbuch für Regionalwissenschaft/Review of Regional Research* 25, 3 – 25.

Feld, L.P., J. Schnellenbach and T. Baskaran (2012), Creative Destruction and Fiscal Institutions: A Long-Run Case Study of Three Regions, *Journal of Evolutionary Economics* 22, 563 – 583.

Feltenstein, A. and S. Iwata (2005), Decentralization and Macroeconomic Performance in China: Regional Autonomy Has Its Costs, *Journal of Development Economics* 76, 481 – 501.

Gemmell, N., Kneller, R. and I. Sanz (2013), Fiscal Decentralization and Economic Growth in OECD Countries: Spending versus Revenue Decentralization, *Economic Inquiry* 51, 1915 – 1931.

Gil-Serrate, R. and J. López-Laborda (2006), Revenue Decentralization and Economic Growth in the Spanish Autonomous Communities, Unpublished Manuscript, University of Zaragoza.

Hatfield, J.W. and K. Kosec (2013), Federal Competition and Economic Growth, *Journal of Public Economics* 97, 144 – 159.

Iimi, A. (2005), Decentralization and Economic Growth Revisited: An Empirical Note, *Journal of Urban Economics* 57, 449 – 461.

Jin, J. and H. Zou (2005), Fiscal Decentralization, Revenue and Expenditure Assignments, and Growth in China, *Journal of Asian Economics* 16, 1047 – 1064.

Jin, H., Y. Qian and B.R. Weingast (2005), Regional Decentralization and Fiscal Incentives: Federalism, Chinese Style, *Journal of Public Economics* 89, 1719 – 1742.

Justman, M., J.-F. Thisse and T. van Ypersele (2002), Taking the Bite Out of Fiscal Competition, *Journal of Urban Economics* 52, 294 – 315.

Koethenbuerger, M. and B. Lockwood (2011), Does Tax Competition Really Promote Growth?, *Journal of Economic Dynamics & Control* 34, 191 – 206.

Kotsogiannis, C. and R. Schwager (2006), Political Uncertainty and Policy Innovation, *Journal of Public Economic Theory* 8, 779 – 805.

Lejour, A.M. and H.A.A. Verbon (1997), Tax Competition and Redistribution in a Two-Country Endogenous-Growth Model, *International Tax and Public Finance* 4, 485 – 497.

Lin, J.Y. and Z. Liu (2000), Fiscal Decentralization and Economic Growth in China, *Economic Development and Cultural Change* 49, 1 – 23.

Martinez-Vazquez, J. and R.M. McNab (2006), Fiscal Decentralization, Macrostability, and Growth, *Hacienda Pública Española/ Revista de Economía Pública* 179, 25 – 49.

Naumets, I. (2003), Fiscal Decentralization and Local Public Sector Efficiency, Unpublished Dissertation, National University of Kiew.

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

Oates, W.E. (1990), Decentralization of the Public Sector: An Overview, in: R.J. Bennett (ed.), *Decentralization, Local Governments and Markets*, Clarendon Press, Oxford, 43 – 58.

Oates, W.E. (1999), An Essay on Fiscal Federalism, *Journal of Economic Literature* 37, 1120 – 1149.

OECD (1999), *Taxing Power of State and Local Government*, OECD Tax Policy Studies 1, OECD, Paris.

Qiao, B., J. Martinez-Vazquez and Y. Xu (2008), Growth and Equity Tradeoff in Decentralization Policy: China‘s Experience, *Journal of Development Economics* 86, 112 – 128.

Rodden, J. (2004), Comparative Federalism and Decentralization: On Meaning and Measurement, *Comparative Politics* 36, 481 – 500.

Rodriguez-Pose, A. and A. Kroijer (2009), Fiscal Decentralization and Economic Growth in Central and Eastern Europe, *Growth and Change* 40, 387 – 417.

Rodriguez-Pose, A. and R. Ezcurra (2010), Is Fiscal Decentralization Harmful for Economic Growth? Evidence from the OECD countries, *Journal of Economic Geography,* 1 – 25.

Rose, K. and T.D. Stanley (2005), A Meta-Analysis of the Effect of Common Currencies on International Trade, *Journal of Economic Surveys* 19, 347 – 365.

Rose-Ackerman, S. (1980), Risk-Taking and Reelection: Does Federalism Promote Innovation?, *Journal of Legal Studies* 9, 593 – 616.

Salmon, P. (1987), Decentralization as an Incentive Scheme, *Oxford Review of Economic Policy* 3 (2), 24 – 43.

Solow, R.M. (1956), A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics* 70, 65 – 94.

Stanley, T.D. (2001), Wheat from Chaff: Meta-Analysis as Quantitative Literature Review, *Journal of Economic Perspectives* 15, 131 – 150.

Stanley, T.D. (2005), Beyond Publication Bias, *Journal of Economic Surveys* 19, 309 – 345.

Stanley, T.D. (2008), Meta-Regression Methods for Detecting and Estimating Empirical Effects in the Presence of Publication Selection, *Oxford Bulletin of Economics and Statistics* 70, 103 – 127.

Stansel, D. (2005), Local Decentralization and Local Economic Growth: A Cross-Sectional Examination of US Metropolitan Areas, *Journal of Urban Economics* 57, 55 – 72.

Stegarescu, D. (2005), Public Sector Decentralization. Measurement Concepts and Recent International Trends, *Fiscal Studies* 26, 301 – 333.

Strumpf, K.S. (2002), Does Government Decentralization Increase Policy Innovation?, *Journal of Public Economic Theory* 4, 207 – 241.

Swan, T.W. (1956), Economic Growth and Capital Accumulation, *Economic Record* 32, 344 – 361.

Thießen, U. (2003), Fiscal Federalism in Western European and Selected Other Countries: Centralization or Decentralization? What Is Better for Economic Growth, Unpublished Manuscript, DIW Berlin.

Thießen, U. (2003a), Fiscal Decentralization and Economic Growth in High Income OECD Countries, *Fiscal Studies* 24, 237 – 274.

Thornton, J. (2007), Fiscal Decentralization and Economic Growth Reconsidered, *Journal of Urban Economics* 61, 64 – 70.

Tiebout, C.M. (1956), A Pure Theory of Local Expenditures, *Journal of Political Economy* 64, 416 – 424.

Treisman, D. (2002), Defining and Measuring Decentralization: A Global Perspective, Unpublished Manuscript, UCLA.

Wallis, J.J. (1999), Early American Federalism and Economic Development, 1790-1840, in: A. Panagariya, P. Portnoy and R. Schwab (eds.), *Environmental and Public Economics: Essays in Honor of Wallace E. Oates*, Cheltenham, 283 – 309.

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

Woller, G.M. and K. Phillips (1998), Fiscal Decentralization and LDC Economic Growth: An Empirical Investigation, *Journal of Development Studies,* 34, 139 –148.

Wooldridge, J. M. (2002), *Econometric Analysis of Cross-Section and Panel Data*, MIT Press, Cambridge.

Xie, D., H. Zou and H. Davoodi (1999), Fiscal Decentralization and Economic Growth in the United States, *Journal of Urban Economics* 45, 228 – 239.

Yilmaz, S. (2000), The Impact of Fiscal Decentralization on Macroeconomic Performance, in: National Tax Association (ed.), *Proceedings of the 92nd Annual Conference on Taxation 1999*, Washington, D.C, 251 – 260.

Zhang, T. and H. Zou (1998), Fiscal Decentralization, Public Spending, and Economic Growth, *Journal of Public Economics* 67, 221 – 240.

Zhang, T. and H. Zou (2001), The Growth Impact of Intersectoral and Intergovernmental Allocation of Public Expenditure: With Applications to China and India, *China Economic Review* 12, 58 – 81.

Appendix: Tables and Figures

Table 1: Empirical studies on the influence of fiscal decentralization or federalism on economic growth in cross-country studies

Study	Countries	Period	Method	Main results
Davoodi and Zou (1998)	46 Developing and Developed Countries	1970-1989 five and ten year averages	Fixed Effects Model, Time Dummies, Unbalanced Panel	10% higher decentralization of spending reduces growth of real GDP per capita in developing countries by 0.7-0.8%-points (10% significance level). (−)
Woller and Philipps (1998)	23 Developing Countries	1974-1991 three and five year averages and annual data	Fixed Effects Model, OLS	No robust significant effect of the decentralization of spending or revenue on growth of real GDP per capita. (+/−)
Yilmaz (2000)	17 Unitary States, 13 Federal Countries, Newly Industrialized Countries and Developed Countries	1971-1990 annual data	Fixed Effects Models, Time Dummies, GLS	Decentralization of expenditures at the local level increases growth of real GDP per capita in unitary states more than in federal countries. Decentralization at the regional level is not significant. (+)
Ebel and Yilmaz (2002)	6 Transition Countries	1997-1999	Bivariate OLS	Decentralization is in general positively related to economic growth. (+)
Thießen (2003)	21 Developed Countries	Cross-section of the averages of 1973-1998	OLS	Decentralization of spending by 10% increases growth of real GDP per capita by 0.15%-points (5% significance level), quadratic term is significantly negative. (+)
Thießen (2003a)	26 Developed Countries	Panel data 1981-1995	GLS	Decentralization of spending by 10% increases growth of real GDP per capita by 0.12%-points (5% significance level). (+)
Eller (2004)	22 OECD Countries	1972-1996, annual and four year averages	Fixed Effects, Time Dummies	Decentralization is positively related to economic growth. (+)
Iimi (2005)	51 Developing and Developed Countries	Cross-section of the average of 1997 to 2001	OLS, IV	10% higher decentralization of spending increases growth of real GDP per capita by 0.6%-points (1% significance level). (+)
Martinez-Vazquez and McNab (2006)	66 Developing and Developed Countries	Panel data 1972-2003	OLS, IV, PCSE	Negative "direct" effect of fiscal decentralization on economic growth in developed countries, but positive in developing countries. (+/−)
Enikolopov and Zhuravskaya (2007)	75 Developing and Transition Countries	Cross-section of the averages 1975-2000	OLS, 2SLS	10% higher decentralization of revenue reduces growth of real GDP per capita in "young" developing countries by 0.14%-points (5% significance level), but positive in "older" ones. (+/−)

Table 1 (cont.):

Study	Countries	Period	Method	Main results
Rodriguez-Pose and Kroijer (2009)	16 Central and Eastern European countries	Panel data 1990–2004	Fixed Effects regressions	Expenditure decentralization has a negative effect on growth, revenue decentralization has initially a negative effect which becomes positive over time. (+/−)
Rodriguez-Pose and Ezcurra (2010)	21 OECD countries	Panel data 1990-2005	OLS	Negative effect of fiscal decentralization on economic growth. (−)
Bodman (2011)	18 OECD Countries	Cross-section of 1996 and Panel data 1981-1998	OLS	No significant effect of revenue or spending decentralization on economic growth. (+/−)
Baskaran and Feld (2013)	23 OECD Countries	Panel data 1975-2008	OLS and Fixed Effects regressions	Negative relationship between revenue decentralization and economic growth. (−)
Gemmell, Kneller and Sanz (2013)	23 OECD Countries	Panel data 1972-2005	Pooled Mean Group and IV regressions	Spending decentralization decreases growth, revenue decentralization increases growth. (+/−)

Source: Own compilation.

Table 2: Empirical studies on the influence of fiscal decentralization or federalism on economic growth in China, Russia, Ukraine and India

Study	Countries	Period	Method	Main results
Zhang and Zou (1998)	28 Chinese Provinces	1987-1993 Annual Data	Fxed Effect Models without Time Dummies	Decentralization of expenditure to the provinces reduces growth of real GDP per capita (−)
Lin and Liu (2000)	28 Chinese Provinces	1970-1993 Annual Data	Fixed Effect Models, Time Dummies	Revenue decentralization by 10% increases growth of real GDP per capita by 2.7%-points (5% significance level) (+)
Zhang and Zou (2001), Sample 1	29 Chinese Provinces	1987-1993, annual data	OLS, Fixed Effects	Decentralization reduces economic growth (−)
Feltenstein and Iwata (2005)	Central Level in China	1952-1996	VAR with Time-series data	Fiscal decentralization has adverse implications for macroeconomic stability but tends to increase growth (+)
Jin and Zou (2005)	30 Chinese Provinces	1979-1999	Fixed Effects with Corrected Standard Errors	Divergence between local expenditures and revenue (i.e. centralization) increases growth (+)
Jin, Qian and Weingast (2005)	29 Chinese Provinces	1982-1992 Annual Data	Fixed Effect Models, Time Dummies	Expenditure decentralization by 10% increases growth of real GDP per capita by 1.6%-points (10% significance level) (+)
Qiao, Martinez Vazquez and Yu (2008)	28 Chinese Provinces	1985-1998	2SLS with Pooled Data	Expenditure decentralization increases growth of nominal GDP per capita significantly (5% significance level) (+)
Zhang and Zou (2001), Sample 2	16 Indian States	1970-1994	OLS	Decentralization increases economic growth (+)
Desai, Freinkman and Goldberg (2005)	80 Russian Regions	1996-1999	OLS with panel corrected standard errors, TSLS	Decentralization has a positive but non-linear effect on growth (+)
Naumets (2003)	24 Ukrainian Oblasts and Autonomous Republic of Crimea	1998-2000	Fixed-Effects and Random Effects Models	Not robust negative impact of own revenue decentralization on growth of real gross value added (−)

Source: Own compilation.

Table 3: Empirical studies on the influence of fiscal decentralization or federalism on economic growth in the U.S., Germany, Spain and Switzerland

Study	Countries	Period	Method	Main results
Xie, Zou and Davoodi (1999)	Central Level in the USA	1951-1992	Time Series Analysis, OLS	No significant impact of expenditure decentralization on growth of real GDP per capita
Akai and Sakata (2002)	50 US States	1992-1996, Cross-Section of Average Growth Rates, Panel with Annual Data	OLS and Fixed Effects Model, Time Dummies	Expenditure decentralization by 10% increases growth of GDP per capita by 1.6-3.2%-points (robust 10% significance levels) (+)
Stansel (2005)	314 US Metropolitan Areas	1960-1990	Robust OLS	Higher fragmentation is associated with significantly higher growth in (log) real per capita money income (+)
Akai, Nishimura, and Sakata (2007)	50 US States	1992-1997	Maximum Likelihood Method	Hump-shaped relationship between decentralization and economic growth
Behnisch, Büttner and Stegarescu (2002)	Central Level in Germany	1950-1990	Time Series Analysis	Increase of federal share of expenditure in total expenditure has positive effect on German productivity growth (−)
Gil-Serrate and Lopez-Laborda (2006)	17 Spanish Autonomous Communities	1984-1995	Fixed and Random Effects, Time trend	Revenue decentralization has a positive effect on growth (+)
Feld, Kirchgässner, and Schaltegger (2004, 2005)	26 Swiss Cantons	1980-1998	OLS, 2SLS	Tax autonomy and tax competition are not harmful for economic growth (+)

Source: Own compilation.

Table 4: Cross-Tabulations of Study Type (Single- or Cross-Country) and Study Subject (Developed, Developing or Both Types of Countries)

	Cross-country		
(only) Developing	*No*	*Yes*	*Total*
No	7	12	19
Yes	9	3	12
Total	16	15	31
(only) Developed	*No*	*Yes*	*Total*
No	9	8	17
Yes	7	7	14
Total	16	15	31
Both	*No*	*Yes*	*Total*
No	0	10	10
Yes	0	5	5
Total		15	15

Source: Own calculation.

Table 5: Cross Tabulations Regarding the Use of Fixed Cross-Section and Time-Effects as well as of Nonlinear Terms (in %)

	Fixed Effects		
Time Effects	*No*	*Yes*	*Total*
No	47.66	2.45	50.11
Yes	20.49	29.40	49.89
Total	68.15	31.85	
	Interaction		
Quadratic	No	*Yes*	*Total*
No	83.74	2.23	85.97
Yes	14.03		14.038
Total	97.78	2.23	100

Source: Own calculation.

Table 6: Explanatory Variables in the Meta-Regressions

Variable	*Definition*	*Variable*	*Definition*
OECD measure	OECD decentralization measure (OECD 1999)	Expenditure decentralization	Dummy variable = 1 if expenditure based measure of decentralization
Revenue decentralization	Dummy variable = 1 if revenues based measure of decentralization	Revenues to GDP ratio	Dummy variable = 1 if measure for total public sector revenues (scaled by GDP) included as control variable
Expenditures to GDP ratio	Dummy variable = 1 if Measure for public sector expenditures (scaled by GDP) included as control variable	Observations	Number of Observations
Number of controls	Number of control variables	Control for endogeneity	Dummy variable =1 if model attempts to control in some way for endogeneity of fiscal decentralization (typically by means of instrumental variables)
Panel data study	Dummy variable = 1 if panel data is used in the regressions	Fixed effects specification	Dummy variable = 1 if cross-section fixed effects included
Time dummies	Dummy variable = 1 if time fixed effects included	Level-log specification	Dummy variable = 1 if level-log model
Log-level specification	Dummy variable = 1 if log-level model	Year	Year of publication of manuscript
Published	Dummy variable = 1 if paper is published as journal article or as in book contribution	Single-country study	Dummy variable=1 for single country study
Developing-country study	Dummy variable=1 if developing country (-ies) only	Freedom	Dummy variable = 1 if measure of political freedom included as control variable
Governance	Dummy variable = 1 if measure for democratic tradition or absence of armed conflict included as control variable	China	Dummy variable = 1 if data from China is used in the regressions (single country study at the subnational level)
USA	Dummy variable = 1 if data from the USA is used in the regressions (single country study at the subnational level)	Switzerland	Dummy variable = 1 if data from Switzerland is used in the regressions (single country study at the subnational level)
Germany	Dummy variable = 1 if data from Germany is used in the regressions (single country study at the subnational level)		

Table 7: Meta-Regressions of t-Statistics from the Full Sample of Studies from the Literature

	OLS1	OLS2	RE1	RE2	FE1	FE2
	b/se	b/se	b/se	b/se	b/se	b/se
OECD measure	2.174	3.344	4.907	5.262	6.743	6.710
	(3.671)	(3.741)	(3.691)	(3.785)	(4.013)	(4.025)
Expenditure	1.540	2.648*	2.982*	3.558**	4.618*	4.587*
decentralization	(1.164)	(1.334)	(1.688)	(1.802)	(2.505)	(2.502)
Revenue	2.706**	3.974**	4.397**	5.010**	6.241**	6.222**
decentralization	(1.154)	(1.438)	(1.754)	(1.950)	(2.710)	(2.709)
Revenues to	-1.930***	-2.566***	-2.522***	-2.845***	-1.935***	-0.509
GDP ratio	(0.608)	(0.761)	(0.672)	(0.843)	(0.356)	(0.453)
Expenditures to	-2.493***	-2.446**	-2.144**	-1.861**	-1.512	-0.838
GDP ratio	(0.865)	(0.895)	(0.901)	(0.839)	(0.889)	(0.581)
Observations	-0.000	0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Number of	-0.133	-0.136	0.003	-0.050	0.080	0.043
controls	(0.093)	(0.087)	(0.075)	(0.065)	(0.065)	(0.064)
Control for	1.642	1.990*	0.596	0.973	0.485	0.505
endogeneity	(1.008)	(1.087)	(0.685)	(0.725)	(0.614)	(0.613)
Panel data	0.240	0.202	0.547	0.249	2.080**	1.483
study	(0.841)	(0.950)	(0.863)	(0.987)	(0.979)	(1.114)
Fixed effects	-1.318*	-1.513	-1.049	-1.161	-1.682**	-0.819
specification	(0.766)	(0.915)	(0.751)	(0.875)	(0.807)	(0.626)
Time dummies	1.102	1.323	0.515	0.838	-2.658***	-2.990***
	(0.789)	(0.955)	(1.008)	(0.977)	(0.715)	(0.805)
Level-log	1.126	0.763	1.052*	0.821	0.175***	0.187***
specification	(0.666)	(0.950)	(0.631)	(0.802)	(0.018)	(0.019)
Log-level	0.995	1.532	1.885	2.345		
specification	(1.160)	(1.264)	(1.585)	(1.498)		
Year	-0.079	-0.101	-0.163	-0.162*		
	(0.088)	(0.082)	(0.114)	(0.089)		
Published	0.982	0.362	0.506	-0.281		
	(0.780)	(1.061)	(1.038)	(1.313)		
Single-country	1.663***	3.527***	2.220**	4.355***		
study	(0.577)	(1.199)	(0.980)	(1.184)		
Developing	0.510	-0.387	1.004	-0.429		
countries	(0.761)	(1.140)	(1.113)	(1.173)		
Freedom	2.462**	1.946*	2.483**	1.830*		
	(1.105)	(1.001)	(1.025)	(0.999)		
Governance	-0.013	-0.094	0.991	0.845		
	(1.142)	(1.264)	(1.192)	(1.300)		
China		-0.239		-0.080		-3.188***
		(0.885)		(1.106)		(0.649)
USA		-1.819		-2.404**		
		(1.311)		(1.139)		
Switzerland		-6.147***		-6.553**		
		(2.091)		(2.581)		
Germany		-4.050**		-5.724***		
		(1.954)		(1.837)		
N	376	376	376	376	376	376
Studies			28	28	28	28
R2	0.115	0.133			0.114	0.117
RMS error	3.257	3.225	3.043	3.065	2.890	2.884

Note: The dependent variable is the set of t-statistics associated with the point estimates of decentralization variables from various models estimated in the literature, as specified in eqs. (1)-(3). We discard several observations because of non-linear terms so that no single t-statistic can be used. The estimation results of the pooled OLS models are reported in the second and third column, those of the Random Effects (RE) models in columns four and five and those of the Fixed Effects (FE) models in columns six and seven. Heteroscedasticity robust standard errors reported in parentheses, standard errors in the pooled OLS models are clustered at the study level. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) level. Models FE1 and FE2 provide estimates for the China dummy because one article, Zhang and Zou (2001), provides separate estimates with a sample from China and India.

Table 8: Meta-Regressions of t-Statistics from Published and Unpublished Studies

	OLS1	RE1	FE1	OLS2	RE2	FE2
	b/se	b/se	b/se	b/se	b/se	b/se
	Published studies			Unpublished studies		
OECD measure	-1.074	0.454	0.904	19.684***	19.684***	20.151***
	(2.604)	(2.411)	(2.486)	(0.679)	(0.679)	(0.000)
Expenditure	0.406	0.348	0.478	6.382**	6.382***	6.804**
decentralization	(0.545)	(0.647)	(0.592)	(2.435)	(2.435)	(2.256)
Revenue	2.001***	2.047***	2.285***	4.830**	4.830**	6.463**
decentralization	(0.624)	(0.529)	(0.528)	(1.949)	(1.949)	(2.123)
Revenues to	-1.784***	-2.394***	-2.412***	-1.261	-1.261	1.480***
GDP ratio	(0.466)	(0.452)	(0.346)	(1.541)	(1.541)	(0.096)
Expenditures to	-2.589***	-1.076**	-0.489			
GDP ratio	(0.864)	(0.465)	(0.486)			
Observations	0.000	-0.000	-0.000	-0.003	-0.003	0.006***
	(0.001)	(0.000)	(0.000)	(0.005)	(0.005)	(0.001)
Number of	-0.082	0.023	0.065	0.839***	0.839***	0.435
controls	(0.074)	(0.050)	(0.071)	(0.190)	(0.190)	(0.295)
Control for	2.110*	1.015	0.829	-2.784**	-2.784***	-1.085
endogeneity	(1.108)	(0.723)	(0.687)	(1.046)	(1.046)	(0.859)
Panel data	-0.529	-0.018	1.226	6.244**	6.244**	3.473***
study	(0.764)	(0.931)	(0.934)	(2.526)	(2.526)	(0.754)
Fixed effects	-1.762***	-1.233*	-1.372	1.176	1.176	0.724***
specification	(0.577)	(0.742)	(0.927)	(1.132)	(1.132)	(0.049)
Time dummies	1.540***	0.563	-2.180***			
	(0.525)	(0.874)	(0.596)			
Level-log	1.034*	0.708	0.185***			
specification	(0.583)	(0.543)	(0.019)			
Log-level	-0.430	-0.600				
specification	(0.551)	(1.019)				
Year	-0.033	-0.130*		-1.237*	-1.237**	
	(0.053)	(0.076)		(0.544)	(0.544)	
Single-country	1.445***	1.765***		2.309*	2.309**	
study	(0.444)	(0.622)		(0.954)	(0.954)	
Developing	0.504	0.057		-0.969	-0.969	
countries	(0.490)	(0.617)		(0.944)	(0.944)	
Freedom	2.589***	1.750**				
	(0.756)	(0.853)				
Governance	-0.312	0.980				
	(0.812)	(0.836)				
N	325	325	325	51	51	51
Studies		21	21		7	7
R2	0.194		0.064	0.379		0.389
RMS error	2.730	2.579	2.511	4.278	4.278	4.065

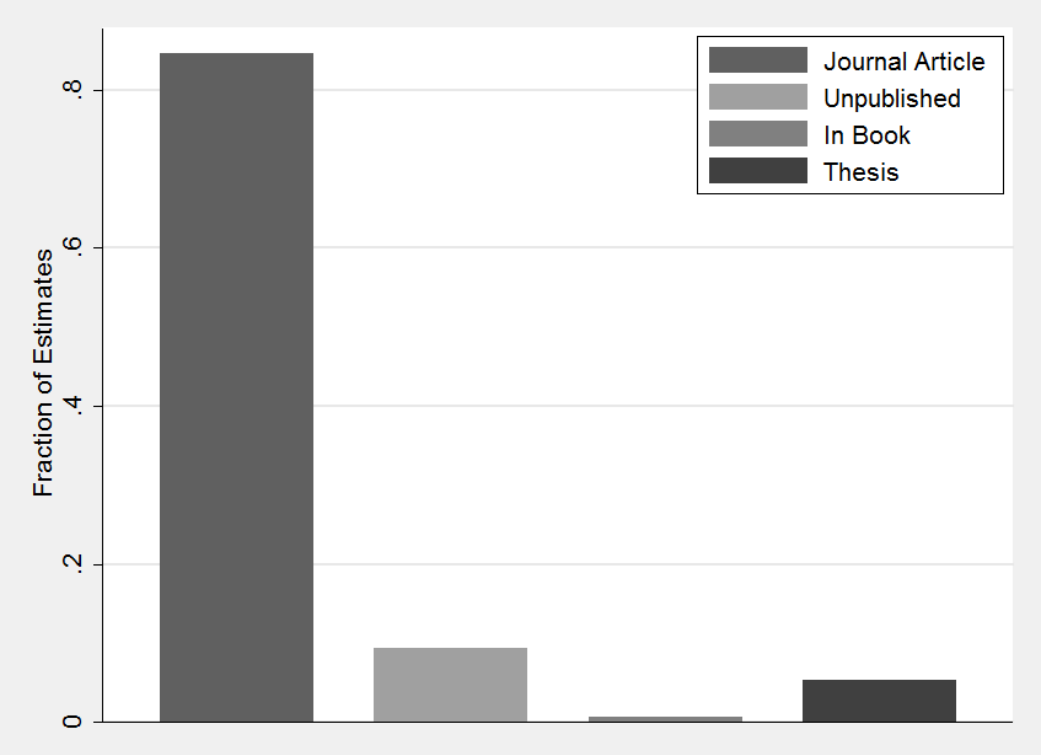
Note: The dependent variable is the set of t-statistics associated with the point estimates of decentralization variables from various models estimated in the literature, as specified in eqs. (1)-(3). We discard several observations as the original studies use non-linear terms so that no single t-statistic can be used in the regression (usually, no hypothesis tests are presented at characteristic values such as the sample average). The estimation results of the pooled OLS models are reported in the second and fifth column, those of the Random Effects (RE) models in columns three and six and those of the Fixed Effects (FE) models in columns four and seven. Heteroscedasticity robust standard errors are reported in parentheses, standard errors in the pooled OLS models are clustered at the study level. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) level. Some variables are dropped in in the regressions with this restricted sample (compared to the sample used to produce the results in Table 8) because of multicollinearity.

Table 9: Meta-Regressions of Positive Coefficient Estimates from Published and Unpublished Studies

	OLS1	RE1	FE1	OLS2	RE2	FE2
	b/se	b/se	b/se	b/se	b/se	b/se
	Published studies			Unpublished studies		
OECD measure	0.176	0.450	0.597**	0.715	0.715*	0.333***
	(0.196)	(0.279)	(0.284)	(0.416)	(0.416)	(0.000)
Expenditure	0.160	0.290	0.417**	0.572	0.572	0.789**
decentralization	(0.131)	(0.207)	(0.165)	(0.421)	(0.421)	(0.292)
Revenue	0.385***	0.528***	0.672***	0.514	0.514	0.777**
decentralization	(0.130)	(0.194)	(0.163)	(0.419)	(0.419)	(0.292)
Revenues to	-0.347***	-0.454***	-0.472***	-0.582	-0.582	0.865***
GDP ratio	(0.069)	(0.087)	(0.103)	(0.595)	(0.595)	(0.204)
Expenditures to	-0.510***	-0.240***	-0.170			
GDP ratio	(0.123)	(0.080)	(0.125)			
Observations	0.000	0.000	0.000	-0.001	-0.001	0.004***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)
Number of	-0.003	0.016	0.025	0.045	0.045	0.015
controls	(0.013)	(0.014)	(0.018)	(0.055)	(0.055)	(0.013)
Control for	0.283**	0.128**	0.102*	0.222	0.222	-0.043
endogeneity	(0.105)	(0.061)	(0.053)	(0.356)	(0.356)	(0.039)
Panel data	-0.136	-0.174	-0.021	0.943*	0.943**	-0.549**
study	(0.192)	(0.261)	(0.318)	(0.436)	(0.436)	(0.207)
Fixed effects	-0.352***	-0.147	-0.104	0.411	0.411	-0.002
specification	(0.101)	(0.179)	(0.249)	(0.563)	(0.563)	(0.002)
Time dummies	0.367***	0.136	-0.532***			
	(0.098)	(0.193)	(0.174)			
Level-log	0.215**	0.128	-0.006			
specification	(0.102)	(0.125)	(0.006)			
Log-level	-0.212	-0.252				
specification	(0.180)	(0.296)				
Year	0.004	-0.004		-0.152	-0.152	
	(0.010)	(0.014)		(0.226)	(0.226)	
Single-country	0.355***	0.481***		0.158	0.158	
study	(0.082)	(0.151)		(0.772)	(0.772)	
Developing	0.148*	0.104		-0.498	-0.498	
countries	(0.083)	(0.142)		(0.483)	(0.483)	
Freedom	0.559***	0.316				
	(0.151)	(0.197)				
Governance	-0.383**	-0.170				
	(0.144)	(0.203)				
N	325	325	325	51	51	51
Studies		21	21		7	7
R2	0.310		0.097	0.346		0.471
RMS error	0.415	0.392	0.378	0.399	0.399	0.250

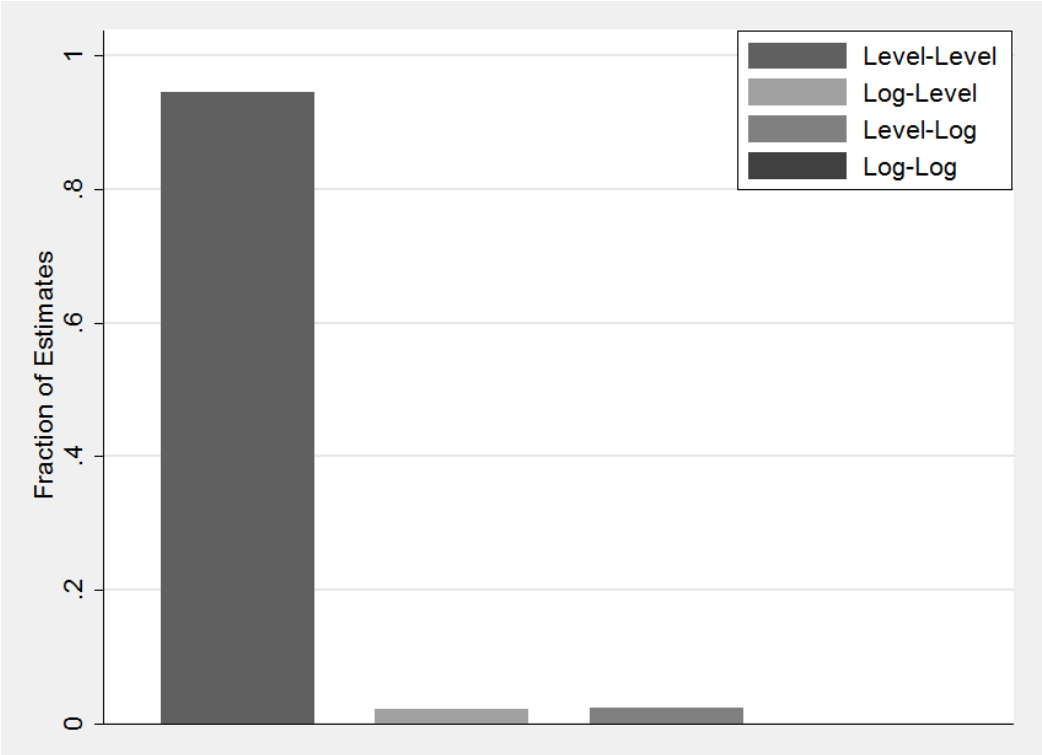
Note: The dependent variable is a dummy for whether the estimated coefficient from a given model is positive or negative. We discard several observations as the original studies use non-linear terms so that no single t-statistic can be used in the regression (usually, no hypothesis tests are presented at characteristic values such as the sample average). The estimation results of the pooled OLS models are reported in the second and fifth column, those of the Random Effects (RE) models in columns three and six and those of the Fixed Effects (FE) models in columns four and seven. Heteroscedasticity robust standard errors are reported in parentheses. Standard errors in the pooled OLS models are clustered at the study level. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***) level. Some variables are dropped in in the regressions with this restricted sample (compared to the sample used to produce the results in Table 8) because of multicollinearity.

Figure 1: Publication Status of Models



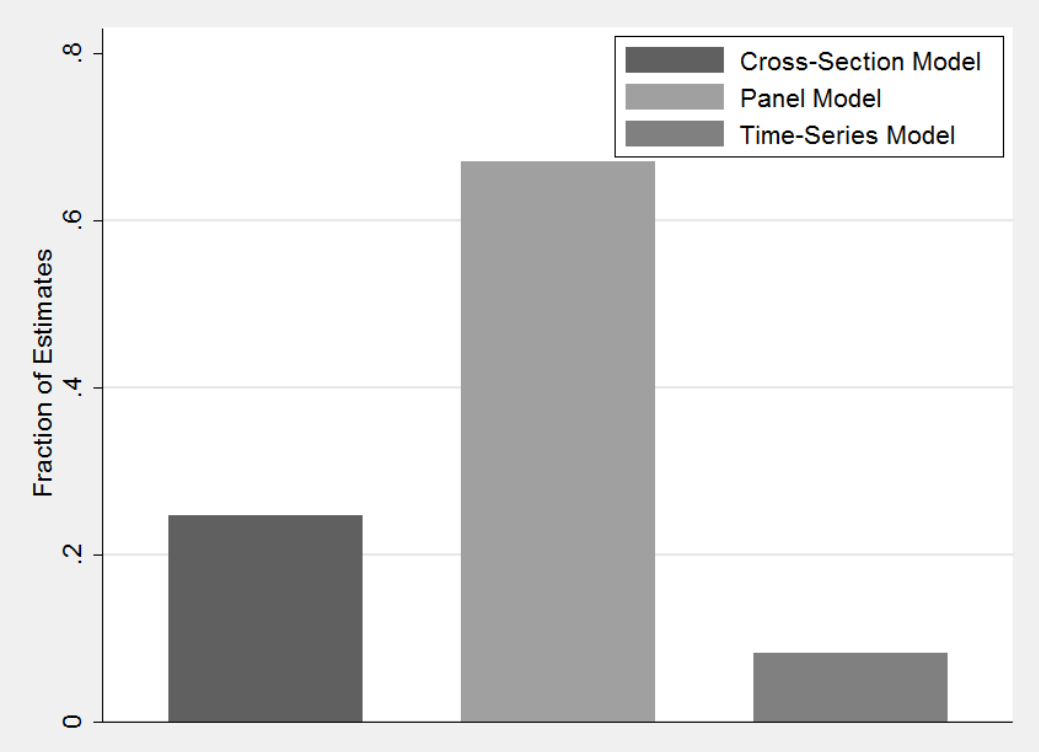
Note: this figure presents the distribution of coefficient estimates in our database according to publication status. Source: Own calculation.

Figure 2: Model Specification



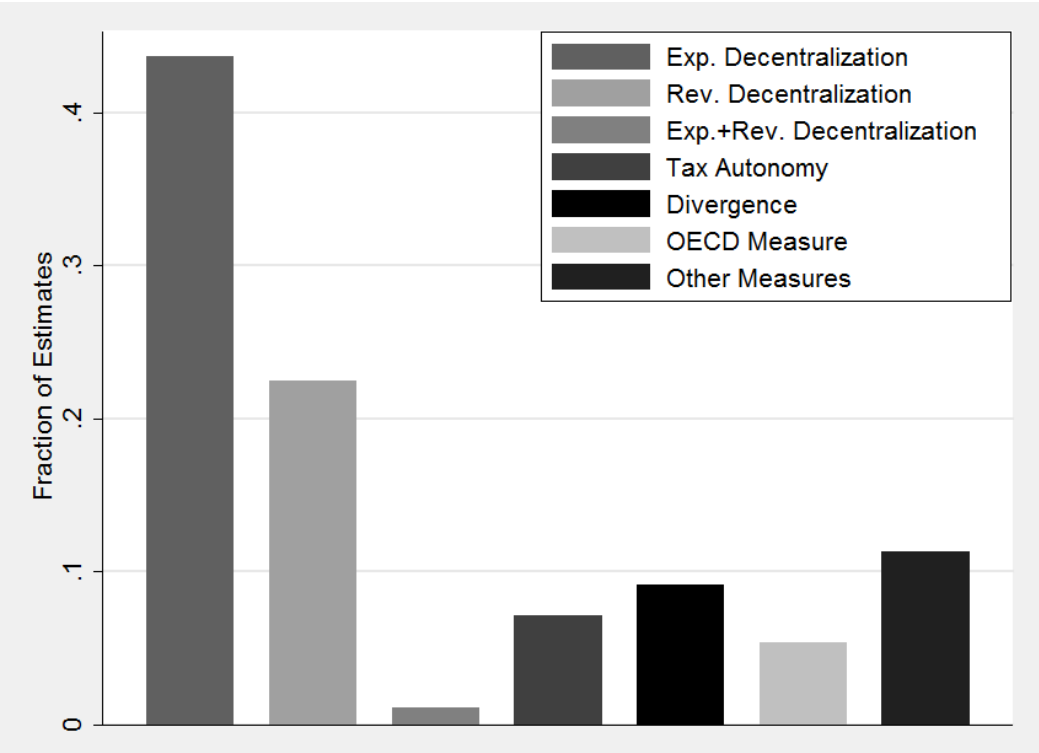
Note: this figure presents the distribution of coefficient estimates in our database according to transformations of the dependent variables and the proxy for decentralization. Source: Own calculation.

Figure 3: Type of Data



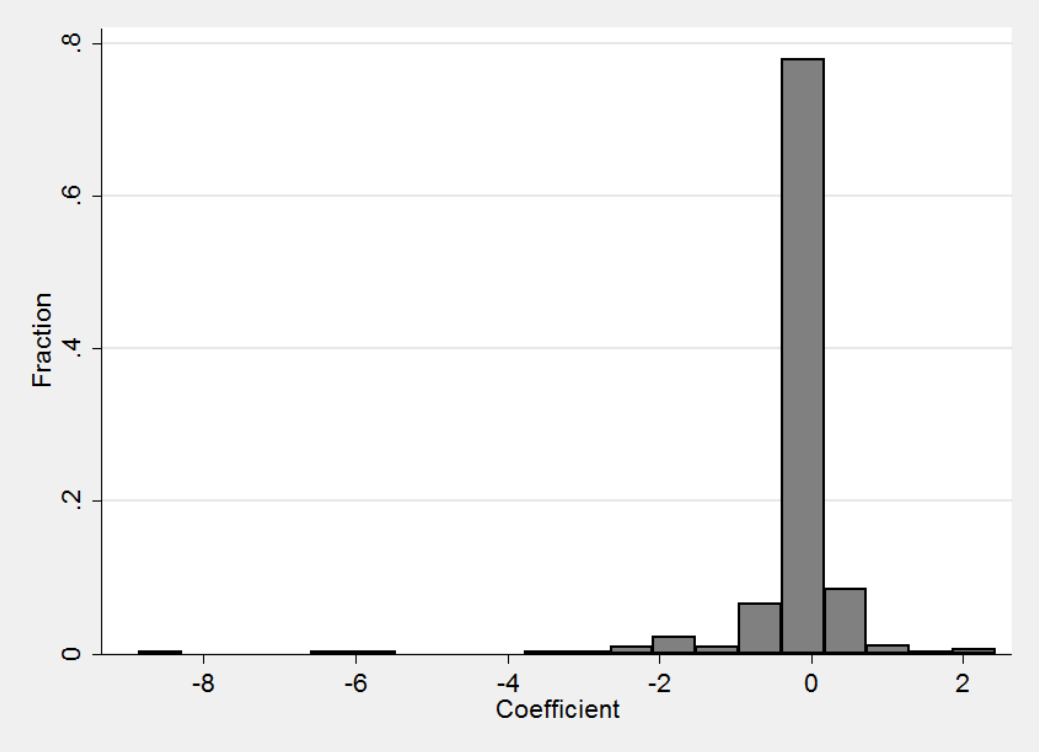
Note: this figure presents the distribution of coefficient estimates in our database according to the type of data used in the original regression (cross-section, panel, time-series). Source: Own calculation.

Figure 4: Decentralization Measure



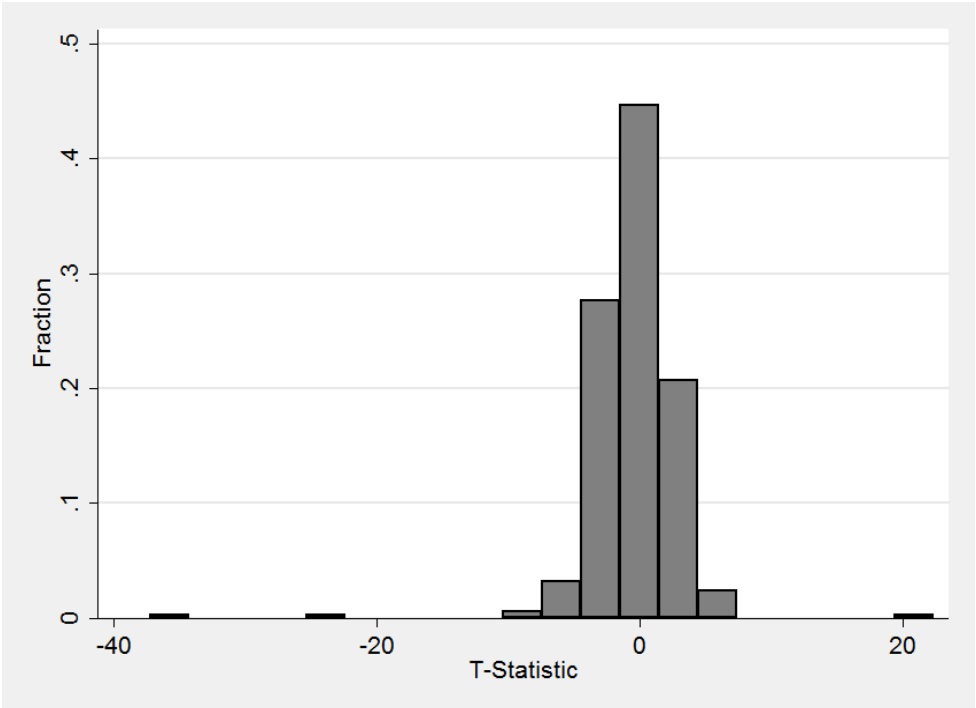
Note: this figure presents the distribution of coefficient estimates in our database according to the decentralization measure used in the original regression. Source: Own calculation.

Figure 5: Estimated Coefficients



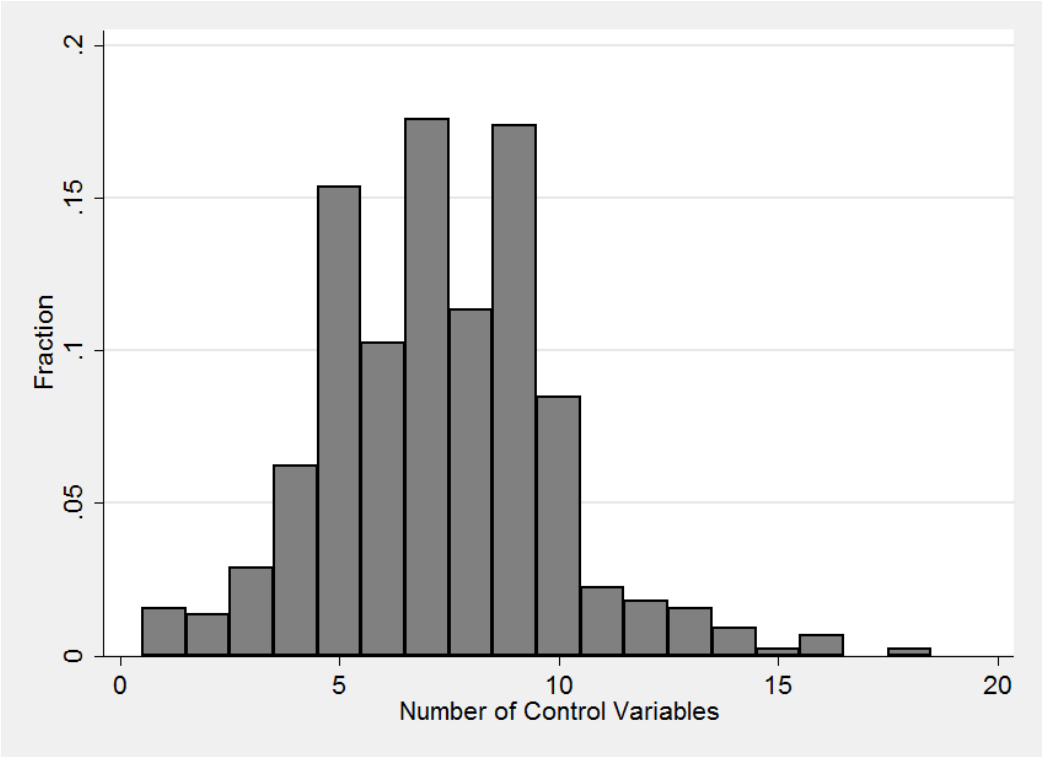
Note: this figure presents the distribution of the coefficient estimates for the decentralization measure. We drop very large and very small estimates (above an absolute value of 10) for presentational purposes. For further details, see the main text. Source: Own calculation.

Figure 6: Estimated t-Statistics



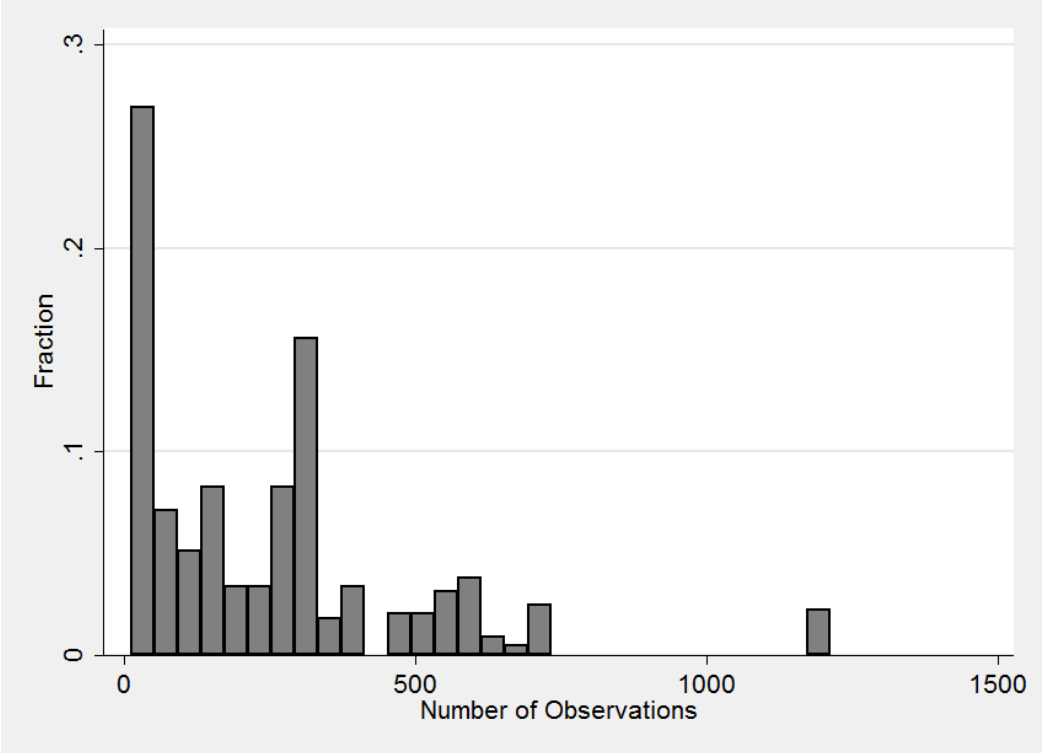
Note: this figure presents the distribution of the t-statistics estimated for the decentralization measure. For further details, see the main text. Source: Own calculation.

Figure 7: Number of control variables



Note: this figure presents the distribution of number of control variables in the models included in our database. Source: Own calculation.

Figure 8: Number of observations



Note: this figure presents the distribution of number of observations in the models included in our database. Source: Own calculation.

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