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ABSTRACT

Decentralization and Political Institutions*

Does fiscal decentralization result in more efficient governance and higher economic growth? This Paper empirically tests the hypothesis posed by theoretical literature that the effect of economic decentralization depends on features of the political institutions. Using data from 95 countries for the last 25 years, we show that the effect of decentralization on economic growth, quality of government, and public goods provision strongly depends on the following two aspects of political centralization: 1) weakness/strength of the party system (measured by fractionalization of parliament and age of main parties); and 2) subordination (whether local- and province-level executives are appointed or elected). We find solid support for Riker's theory (1964). Strong parties in developing and transition countries significantly improve the results of fiscal decentralization for economic growth, quality of government, and public goods provision. In addition, subordination of local authorities to higher-level governments improves the effect of decentralization on growth and government quality, while its effect on public goods provision depends on the particular type of public good considered.

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1. Introduction

Modern economic literature has little doubt that decentralization affects the quality of the government, economic growth, and efficiency of public goods provision. The effect of decentralization depends on political and economic incentives of local public officials. Economic incentives that help to align politicians' private interests with public goals are provided by such mechanisms as interjurisdictional competition (Tiebout, 1956; Qian and Roland, 1998; Maskin, Qian, and Xu, 1999) and fiscal autonomy (Jin et al., 1999; Qian and Weingast, 1997; and Zhuravskaya, 2000). Political incentives, i.e., local governments' accountability, are provided by political institutions which ensure that careers of local politicians depend on whether they pursue efficient policies. In the absence of accountability, strong economic incentives at the local level may result in corruption, provincial protectionism, and capture by vested interests (Tanzi, 1996; Sonin, 2003).

Even though accountability of local public officials is necessary to prevent inefficient local policies in a decentralized economy, there is little agreement in the literature about what institutions can affectively ensure accountability.¹ On the one hand, theory predicts that democratic elections with free access to information and a developed civil society may provide local governments with sufficient political incentives to guarantee efficient decentralization. This argument is based on the view that local governments are more accountable compared to the central governments (Seabright, 1996; Persson and Tabellini, 2000). On the other hand, democratic mechanisms fail in

¹ See Bardhan (2002) for an excellent survey of the literature.

many developing and transition countries, leading to corruption and capture of the local governments. In this case, strong administrative control of local by central authorities is important for efficient economic decentralization (Blanchard and Shleifer, 2000). This reasoning requires lower probability of capture at the national compared to the local level.² Ricker (1964) pointed out that the structure of party system is also extremely important for the effectiveness of local governments. He argued that strength of national party systems is more important in disciplining local politicians than administrative or constitutional arrangements. Thus, decentralization may have the opposite results in countries with different sources of local governments' accountability.

This paper sheds light on this debate by evaluating the effects of fiscal decentralization on the quality of government, public goods provision, and economic growth, taking into account the structure of political institutions. In particular, we analyze how the level of political centralization changes the results of fiscal decentralization. Previous empirical literature on the effects of decentralization produced mixed results.³ This can be partly explained by the fact that it overlooked the importance of political institutions.

Using data from 95 countries for the last 25 years, we show that the effect of decentralization on economic growth, quality of government, and public goods provision

² Bardhan and Mookherjee (1999) studied determinants of capture in different levels of government.

³ Fisman and Gatti (2002) and de Mello and Barenstein (2001) found negative effect of decentralization on corruption; Treisman (2000) reported no relationship. Zhang and Zou (1998) reported negative effect of decentralization on provincial growth in China. Jin et al. (1999) showed that this relationship is positive once one filters out cyclical effects. Lin and Liu (2000) confirmed this result. Akai and Sakata (2002) reported positive effect of decentralization on growth of US states in early 1990s. Xie et al. (1999) showed no long-term relationship between these variables in the US for 50 years. Woller and Phillips (1998) found no link between decentralization and growth in developing countries. In contrast, Davoodi and Zou (1998) reported negative, marginally significant, relationship in developing countries and no effect in developed countries. Robalino et al. (2001) found negative cross-country relationship between decentralization and infant mortality. Zhuravskaya (2000) reported positive effect of marginal decentralization on healthcare and education outcomes in Russian municipalities.

strongly depends on the following two aspects of political centralization: 1) strength of the party system (measured by fractionalization of the parliament and age of main parties) and 2) administrative subordination (whether local and province-level politicians are appointed or elected). We find solid support for Riker's theory in developing and transition countries: strong party systems substantially improve the results of fiscal decentralization for economic growth, quality of government, and public goods provision. In developed countries, strong parties have the opposite effect: increased age of main parties reduces efficiency of decentralization; whereas the parliament fractionalization does not matter. We also find some evidence that subordination of local authorities to higher-level governments improves the effect of decentralization on growth (both in developing and developed countries) and government quality (in developing countries). The effect of subordination on public goods provision depends on particular type of public good considered.

The remainder of the paper is organized as follows. Section 2 presents hypotheses backed by theoretical discussion of the determinants of the effect of fiscal decentralization. Section 3 describes the data. Section 4 describes the methodology of the empirical analysis. In section 5, we present the results. In section 6, we summarize and discuss our empirical findings. Our conclusions follow in section 7.

2. Hypotheses

The theoretical argument first made by Riker (1964), that party systems - the strength of national parties and the relationship between the national and subnational parties - are important determinants of political incentives of the local governments, is

behind our first hypotheses. Riker argued that the strong party system is a more important source of political accountability than any administrative and constitutional arrangements. In the case of strong political parties, the career of politicians in the local government depends on their party's political and financial support to get reelected, as well as on the possibility of promotion to the national government. Parties, in turn, are interested in extending their control over competent local politicians, so that their policies become associated with the party, and therefore, increase the number of party supporters. Thus, strong parties provide political incentives for local politicians to conduct efficient policies.⁴ It is important to note that strong party systems provide political incentives for local governments irrespective of whether they are appointed or elected. Even when local politicians do not need support during elections, career concerns play an important role (Maskin, Qian, and Xu, 1999).

The best available measures of the strength of party systems are the fractionalization of parliament and the average age of main parties. The assumption behind the first measure is that high fractionalization of the parliament means that there are many small weak parties, while low fractionalization indicates that the parliament consists of a small number of strong parties.⁵ The assumption behind the second measure is that older parties are stronger than younger ones.

To the best of our knowledge there is little comparative analysis of the strength of party systems, thus, it is hard to check whether the fractionalization of parliament and the

⁴ This effect, however, may be attenuated by the weak link between national and regional parties (of which Canada is an example, Uslaner (2000)) when national parties do not have much influence over regional politicians and are not able to provide strong political incentives. Unfortunately, the data available do not allow us to take into account the relationship between national and regional parties.

⁵ The extreme case is a single party (e.g., Chinese Communist Party).

average age of main parties serve as good measures of party-system strength across countries. Literature, however, provides some estimates of over-time changes in the strength of parties in several countries. For these countries, we are able to check whether the reported changes in the strength of party systems are reflected in behavior of our measures. For example, Mexico and Peru in 1990's experienced a decline in the strength of their parties. A large number of independent candidates and candidates from recently formed new parties were elected as mayors, governors and legislators (Camp, 1998; Carrion, 1998). Our data shows a significant increase in the fractionalization of parliament and a significant decrease in the average age of main parties in both countries at that time. Thus, in these cases our measures adequately captured the change in party strength. Nonetheless, both of these measures are highly imperfect and do not reflect several important features of party systems that affect their strength.⁶

These considerations allow us to formulate the following testable hypothesis of Riker's theory.

Hypothesis 1: High fractionalization of parliament and young age of main parties reduce the efficiency of decentralization affecting economic growth, quality of government, and public goods provision.

An excessively strong party system can, however, be an indication of low political competition. In this case a few parties (in the extreme case, only one party) dominate elections and constituencies can no longer influence the election outcome. Therefore, accountability of local governments is undermined and, as a result, efficiency of fiscal

⁶ Columbia, for example, has relatively low level of fractionalization and the highest average age of parties in the world. Under our assumptions this indicates a very strong party system. In reality, Columbia has one of the weakest party systems, since parties do not have control over their own party label which allows existence of different lists with the same party label. This is, however, a unique phenomenon to Colombia and neighboring Ecuador (Roland, 2000).

decentralization is reduced in a system with excessively strong parties. Diaz-Cayeros et al. (2003) argue that Mexico between 1930s and early 1990s provides an example of inefficiently small political competition. These considerations allow us to formulate an alternative hypothesis.

Hypothesis 1a: Low fractionalization of parliament and old age of main parties reduce the efficiency of decentralization.

Blanchard and Shleifer (2000) built a model to illustrate that the results of economic decentralization depend on the level of political centralization. According to their definition of political centralization, in countries where local executives are appointed, the level of political centralization is higher than in countries where they are elected. They assumed that the central government has higher incentives to promote economic growth than local governments, as the latter is more likely to be captured. Under this assumption, the stronger the central governments' administrative control of the local officials, the stronger the political incentives of the local governments. This allows us to formulate the following testable hypothesis:

Hypothesis 2: The effect of decentralization on economic growth, quality of government, and public goods provision is worse in the case of elected provincial and municipal executives compared to the case when they are appointed.

If, however, the assumption that the central government has more incentives to promote economic growth is relaxed, the effect of decentralization on economic growth can be reversed. This happens when accountability to the local constituency is a more efficient way to provide the right political incentives compared to the direct subordination

to the higher level government (Seabright, 1996 and de Figueiredo and Weingast, 2002). This allows us to formulate an alternative hypothesis.

Hypothesis 2a: The effect of decentralization on economic growth, quality of government, and public goods provision is better in the case of elected provincial and municipal executives compared to the case when they are appointed.

Other proxies of the strength of party systems that we use to check the robustness of our results are the fractionalizations of governing and opposition parties.⁷

3. Data

For our analysis we use data on political institutions, fiscal decentralization, government performance, economic growth, outcomes of public goods provision, and various control variables for up to 95 countries for the years 1975-2000. Not all the variables are available for all countries and all years: some regressions cover as few as 35 countries. The definitions and the sources of all variables are given in Table A1 in appendix. Summary statistics and correlations between the variables are also presented in appendix (Tables A2 and A3).

As measures of fiscal decentralization we use the share of subnational revenues and expenditures in total government revenues and expenditures. The data come from the IMF's *Government Finance Statistics*. These measures are the most commonly used in the empirical literature on the effects of fiscal decentralization. Although they are highly imperfect and do not reflect important information on the distribution of the decision-making authority between the levels of government, they provide an important

⁷ The fractionalization of opposition parties is less reliable, because in the case of a single party it takes a value of zero, even though this is not a case of a weak party system.

source of information about the relative level of countries' fiscal decentralization.⁸ The share of subnational expenditures is a better measure of fiscal decentralization “on average,” while the subnational revenue share of is a better measure of “marginal” fiscal decentralization because in many countries marginal retention rates do not change and are equal to the average share of revenues.⁹

Political variables were taken from the World Bank's *Database on Political Institutions*. To describe the administrative side of political centralization in a country we use dummy variables that tell whether municipal and state/provincial executives are elected or appointed. To characterize the party system we use measures of fractionalization of parliament (the probability that two members of parliament picked at random from parliament belong to different parties), fractionalization of governing and opposition parties (the probability that two MPs picked at random from governing and opposition parties, respectively, belong to different parties), and the age of main parties (the average age of the two main governmental parties and the main opposition party).

As measures of the quality of government we use an index of corruption by Transparency International and the World Bank indices of control over corruption, quality of governance, regulatory quality, and rule-of-law. To measure the quality of public goods provision we use data on the pupil-to-teacher ratio, illiteracy rate, infant

⁸ An important shortcoming of these data is that they do not distinguish between state and municipal expenditures and revenues, because the breakdown of subnational revenues onto state and municipal is available only for a very limited number of countries.

⁹ “Marginal” fiscal decentralization is based on the fraction of additional revenues collected in a local jurisdiction that goes to the local budget, while “average” fiscal decentralization is based on the overall fraction of revenues collected in a local jurisdiction that goes to the local budget.

mortality, and DPT immunization level from *World Development Indicators* by the World Bank.¹⁰ To measure economic growth we take changes in GDP per capita PPP.

4. Methodology

We use standard growth-regressions methodology (Barro and Sala-i-Martin, 1995; Barro, 2000; Sala-i-Martin, 1997; Mauro, 1995) and the methodology for regressions of the quality of government (La Porta et al., 1999 and Treisman, 2000) and add explanatory variables that describe the level of fiscal decentralization, political institutions and - in our focus - their interaction term.

To analyze the influence of political institutions on the effect of fiscal decentralization on indices of corruption and governance quality we use the following cross-section regression model:

$$Y_i = \alpha_1 + \alpha_2 Polit_i + \alpha_3 Decentr_i + \alpha_4 Polit_i Decentr_i + \alpha_5 Control_i + \varepsilon_i \quad (1)$$

where Y_i is an index of corruption and governance quality for country i in year 2000 or 2001, $Polit_i$ denotes the variable that describes political institutions in country i (average for the period 1995-2000), $Decentr_i$ denotes the variable measuring fiscal decentralization in country i (average for the period 1995-2000), and $Control_i$ is the set of control variables that includes logarithm of GDP per capita PPP in 1995, logarithm of population in 1995, share of Protestants, ethnolinguistic fractionalization, latitude, legal origin, democratic traditions by the year 1995, and current level of democracy in the year 1995.

¹⁰ We considered and rejected enrollment in schools as another possible measure of the quality of education because of its nonlinear relation to the level of education in the country: for countries with high quality of education, it takes values around 100%, while for countries with lower level of education it takes values significantly lower or higher than 100%. School enrollment takes values above 100% when adults go to school.

In these regressions we weight observations by the inverse of the standard errors of indices of corruption and governance quality, which are provided along with the indices.

To analyze the influence of political institutions on the effect of fiscal decentralization on economic growth and measures of outcomes of public goods provision we take two alternative approaches: we study long-run changes with cross-country regressions and short-run changes with panel-data regressions. First, we use the same regression model (1) in which Y_i stands for the logarithm of change in GDP per capita PPP between 2000 and 1975 or average measure of public goods for years 1975-2000 in country i , $Polit_i$ denotes the variable that describes political institutions in country i (average for the period 1975-2000), $Decentr_i$ denotes the variable measuring fiscal decentralization in country i (average for the period 1975-2000), and $Control_i$ is the set of control variables. Regressions with measures of public goods as dependent variables include the same control variables as in the regressions for indices of governance quality. For the regression for economic growth we add the level of fixed investments, openness of the economy (measured as the share of exports and imports in GDP filtered for size of country and population), and logarithm of fertility as control variables. All of these control variables were measured in the year 1975 or the year closest to it. We did not include measures of human development (public goods provision outcomes) or corruption as control variables in these regressions because, otherwise, we would have blocked possible channels of influence of fiscal decentralization on economic growth. In this set of cross-country regressions we weighted by the number of non-missing observations in the interaction term. In addition to OLS specification (1), we

estimate 2SLS specification that uses the area of countries as an instrument for fiscal decentralization.

As influence of political institutions on the effect of fiscal decentralization might differ depending on whether we compare countries or different periods of time in one country, we also used panel regressions with fixed effects to control for country-specific influences:

$$Y_{it} = \alpha_i + \beta_1 Polit_{it} + \beta_2 Decentr_{it} + \beta_3 Polit_{it} Decentr_{it} + \beta_4 Control_{it} + \rho_t d_t + \varepsilon_{it} \quad (2)$$

where Y_{it} is a measure of an outcome of public goods provision in country i and year t (the only set of dependent variables for which we have time-series observations).¹¹ $Polit_{it}$ and $Decentr_{it}$ denote variables that describe political institutions and fiscal decentralization respectively in country i and year t , d_t is a year dummy, α_i is a country-specific fixed effect. $Control_{it}$ is the set of control variables that includes PPP GDP per capita for the previous year, logarithm of fertility, democratic traditions and current level of democracy. To control for possible endogeneity we instrument democratic traditions; current level of democracy; and variables for political institutions, fiscal decentralization, and their interaction term with their lagged values.

Influence of political institutions on the results of fiscal decentralization, as well as the quality of our data, might be different for developing and transition countries on the one hand, and developed countries on the other hand. Therefore, we estimate regression models (1) and (2) for subsamples of the members of the Developing Assistance Committee of OECD and all other countries separately. In all the regressions

¹¹ We do not have enough data to run panel regressions for the GDP growth, since it requires at least five-years averaging.

we have excluded observations for socialist countries before the beginning of transition, as political processes and institutions in these countries seem to have different nature.

5. Results

Fractionalization of parliament

Table 1 presents the cross-section results for developing and transition countries. In this subsample, fractionalization of parliament hampers the effect of decentralization on most indices of government quality.¹² The effect of decentralization on the government quality indices changes significantly with growing fractionalization. A 10% increase in decentralization, at the level of fractionalization lower than the mean by half of the standard deviation, leads to an increase in indices of government quality by approximately 5% of their standard deviations. In contrast, at the level of fractionalization higher than the mean by half of the standard deviation, it leads to a decrease in the indices by approximately 20% of their standard deviations. At the mean level of fractionalization, a 10% increase in decentralization decreases the indices of government quality by approximately 10% of their standard deviations.¹³ Sixty to eighty percent of developing countries (depending on the measure) have higher parliament fractionalization than needed for decentralization to have a positive effect on quality of government.

Fractionalization also hampers the effect of decentralization on immunization, infant mortality, illiteracy, and economic growth in cross-country regressions for

¹² Here and henceforth, the results for revenue and expenditures decentralization are similar unless stated otherwise.

¹³ Government effectiveness index is an exception. The effect of increased share of subnational revenues on the government effectiveness index is positive, but very close to zero.

developing and transition countries. A 10% increase in decentralization at the level of fractionalization lower than the mean by half of the standard deviation leads to an increase in economic growth by 9%, in infant mortality by 10%, in immunization by 2 percentage points, and in the illiteracy level by a very small amount. In contrast, at the level of fractionalization higher than the mean by half of the standard deviation, it leads to a decrease in economic growth by 5% and immunization by 1 percentage point, and an increase in infant mortality by 17% and illiteracy by 3 percentage points. Almost 80% of developing countries have parliament fractionalization that is above the threshold which makes the effect of decentralization negative. Panel regressions for developing countries do not contain any significant results.¹⁴

To check whether the strength of the party system provides political incentives even in case of appointed executives, we ran the same regressions for the subsample of developing and transition countries with appointed state executives.¹⁵ Cross-section results for regulatory quality, rule of law, immunization, infant mortality, illiteracy, and economic growth, as well as the results of panel regressions for immunization remain significant. All other results become insignificant, while preserving the sign.

Results for developed countries are presented in Table 2. The only significant result in cross-country regressions is that fractionalization hampers the effect of decentralization on immunization. A 10% increase in decentralization at the level of fractionalization lower than the mean by half of the standard deviation leads to an increase in immunization by 10 percentage points, while at the level of fractionalization

¹⁴ At the mean level of fractionalization, an increase in decentralization by 10% increases immunization by 1 percentage point, but also increases illiteracy by 2 percentage points, infant mortality by 15%, and decreases economic growth by 1%.

¹⁵ Subsample of countries with appointed municipal executives and analogous subsamples for developed countries do not have sufficient number of observations.

higher than the mean by the same amount it leads to an increase in immunization by only 1 percentage point. At the mean level of fractionalization, a 10% increase in decentralization leads to an increase in immunization by 5 percentage points. The threshold level of parliament fractionalization above which the effect of decentralization on immunization becomes negative is such that 60% of developed countries have fractionalization above the threshold.

All cross-section results described above are robust to using fractionalizations of governing and opposition parties as alternative measures of fractionalization.

The only statistically significant result in the panel regressions for developed countries is that fractionalization improves the short-run effect of decentralization on immunization level. The results of auxiliary regressions show that the effects of fractionalizations of governing and opposition parties have the opposite signs in this subsample.¹⁶

Age of main parties

Table 3 presents results for the subsample of developing and transition countries. Age of main parties improves the effect of decentralization on indices of government effectiveness, regulatory quality, and rule of law. A 10% increase in decentralization at the age of parties lower than the mean by half of its standard deviation leads to a decrease in government quality indices of approximately 20% of their standard deviations, while at the age of parties higher than the mean by the same amount it leads to a 10% of SDs

¹⁶ Fractionalization of opposition parties improves the effect of decentralization on immunization and infant mortality, while fractionalization of governing parties reduces the effect of decentralization on infant mortality and the pupil-to-teacher ratio in panel regressions for developed countries.

increase in the indices. At the mean age of parties, the effect of decentralization is close to zero. The threshold level of party age above which decentralization has a positive effect on indices of government quality is such that 40% to 65% of developing countries have parties younger than this level. Party age also improves the effect of decentralization on immunization and economic growth in the cross-section regressions. A 10% increase in decentralization at the age of main parties lower than the mean by half of the standard deviation leads to an increase in immunization by one percentage point and decrease in economic growth by 4%. The same size increase in decentralization at the age of main parties higher than the mean by half of the standard deviation leads to an increase in immunization by three percentage points and increase in economic growth of 8% to 15% (depending on the measure of decentralization). A half of developing countries have party age above the threshold which makes decentralization beneficial for growth.¹⁷

Results of the panel regressions indicate that the age of parties also improves the short run effect of decentralization on immunization, infant mortality, and pupil-to-teacher ratio in developing countries.

Regressions on the subsample of developing countries with appointed state executives confirmed robustness of the results about economic growth and immunization.¹⁸

¹⁷ At the mean age of parties, a 10% increase in decentralization increases immunization by 2 percentage points and long-term growth by 5%. An additional ten years for the main parties at the mean level of decentralization increase immunization by one percentage point and economic growth by 1%-4%.

¹⁸ All other results lost statistical significance. In panel regressions and cross-country regressions for the outcomes of public goods provision the results preserved their sign, while the results for government quality became very small in magnitude and in two out of three cases changed their sign.

Table 4 presents results for developed countries: The age of main parties has the effect opposite to one in developing countries. Older parties hamper the effect of decentralization on most government quality indices. At the average level of party age, increasing expenditure decentralization has almost no effect. At the age of parties lower than the mean by half of the standard deviation, a 10% increase in decentralization leads to an increase in the government quality indices of approximately 10% of their standard deviations on average. In contrast, at the age of parties higher than the mean by half of the standard deviation, it leads to a 20% of SDs decrease in the indices on average. To date 90% of developed countries have party age sufficiently young for revenue decentralization not to have negative effect on the quality of government; for expenditure decentralization this share is 50%.

In addition, cross-country regressions for developed countries show that party age hampers the effect of decentralization on infant mortality and economic growth. A 10% increase in expenditure decentralization at the age of parties lower than the mean by half of the standard deviation decreases infant mortality by 13% and increases economic growth by 8%. At the age of parties higher than the mean by the same amount, it decreases infant mortality only by 6% and has no effect on economic growth. A 10% increase in expenditure decentralization at the mean age of parties decreases infant mortality by 10% and increases long term economic growth by 3%. The magnitude of the effect of party age on changes in revenue decentralization is approximately twice as high. The threshold level of party age above which decentralization has a negative effect on public goods and growth is such that 80% of developed countries fall below the

threshold. The only significant result in panel regressions for developed countries is that party age hampers the effect revenue decentralization on immunization level.

State executives appointed/elected

Table 5 presents results of the effect of elections of state executives in developing and transition countries. The effect of decentralization on the indices of government effectiveness, regulatory quality, control over corruption, and rule of law is negative and significant in the case of elected state executives, while it is positive insignificant in the case of appointed executives. The quality of government is higher in countries with elected state executives if their subnational expenditure share is below 15%. This leaves about a half of developing countries below this threshold.¹⁹ There are no significant results for public goods or growth in cross-country regressions.

Panel regressions for developing countries show that decentralization has negative effect on the quality of basic education in the case of appointed state executives; while in the case of elected executives estimated coefficients are insignificant and small in magnitude with a statistically significant difference in slopes. The threshold level of subnational expenditure share above which the quality of basic education is better for elected state executives compared to appointed is about 30%; only 15% of developing countries satisfy this condition. The threshold for the effect on the level of immunization is 40% with less than 10% of developing countries being above it.

Table 6 presents results for developed countries. Elections of state executives do not affect decentralization outcomes in quality of government. The effect of

¹⁹ A 10% increase in decentralization in the case of elected state executives decreases these indices by approximately one third of their standard deviations. A comparison of the quality of government for elected and appointed state executives at the mean value of decentralization shows that, in the case of elected executives, the indices are lower by one third of their standard deviations.

decentralization on alleviation of infant mortality in the case of appointed state executives is significantly positive, while in the case of elected executives the effect is insignificant and very close to zero, with a statistically significant difference in slopes. The effect of decentralization on economic growth is significantly stronger in the case of appointed state executives.²⁰ Infant mortality is better in the case of elected state executives when decentralization is below 27%, leaving a half of the countries below the threshold. Growth is higher in countries with elected state officials if decentralization does not exceed 33%, leaving more than two thirds of the countries below the threshold.

Panel regressions show that in developed countries the effect of decentralization on immunization level and infant mortality is positive and insignificant in the case of appointed state executives and negative and statistically significant in the case of elected executives. The effect of decentralization on the pupil-to-teacher ratio is negative and significant in the case of appointed state executives and positive and insignificant in the case of appointed.

Municipal executives appointed/elected

Cross-section results for the subsample of developing and transition countries are presented in Table 7. The effect of fiscal decentralization on infant mortality is negative for both elected and appointed municipal executives with significant difference in slopes. In the case of elected municipal executives, the effect is large and statistically significant, while in the case of appointed executives, it is close to zero and insignificant. Elections of municipal officials also worsen the effect of decentralization on economic growth: it is

²⁰ In the case of appointed state executives, a 10% increase in subnational revenue share leads to a 16% decrease in infant mortality and 12% increase in growth. Overall, countries with elected state executives have 3% higher infant mortality and a 13% higher growth rate at the mean value of decentralization.

positive and insignificant in the case of appointed executives and negative and insignificant in the case of elected executives, with significant difference between slopes.²¹ Infant mortality is lower and growth is higher in countries with elected (compared to appointed) municipal executives when expenditure decentralization is below 23%, leaving more than two thirds of developing countries below the threshold.

In the panel regressions subordination of municipal officials makes a difference only for the effect of decentralization on the pupil-to-teacher ratio. Decentralization has no effect in the case of elected executives, but has a very strong significant negative effect on the pupil-to-teacher ratio in the case of appointed municipal executives: a 1% increase in subnational expenditure share increases pupil-to-teacher ratio by 26%.²²

The results for developed countries are presented in Table 8. The only two statistically significant results in the cross-section regressions are for the rule of law and infant mortality. In the case of elected municipal executives, the effect of decentralization on the rule-of-law index is positive, very close to zero, and insignificant. In the case of appointed executives, it is negative, much larger in absolute value, but also insignificant. The difference between slopes of these effects is statistically significant. The level of the rule of law is higher in countries with elected municipal executives when revenue decentralization is above 29%, leaving more than a half of the developed countries below the threshold level.²³ Infant mortality gives the opposite results. The effect of decentralization on infant mortality in cross-section of developed countries is

²¹ With elected municipal executives, a 10% increase in decentralization leads to a 20% rise in infant mortality and a 7% fall in growth. At the mean level of decentralization, infant mortality and economic growth are higher by 10% and 15%, respectively, when there are municipal elections.

²² Insufficient time variation in whether municipal executives are elected or appointed makes comparisons of the overall effect of this variable on public goods provision in a panel regression meaningless.

²³ The overall effect of municipal elections on the rule of law (at decentralization mean) is negative: the index is half of the standard deviation lower in the case of elected municipal executives.

positive significant in the case of appointed executives, and insignificant and very close to zero in the case of elected executives, with significant difference in slopes. The threshold level of decentralization above which infant mortality is lower with elected municipal executives is 21%, leaving more than a half of the developed countries above the threshold.

Panel regressions for developed countries show that the effect of revenue decentralization on the pupil-to-teacher ratio and infant mortality is significantly negative in the case of appointed municipal executives, while it is insignificant and close to zero in the case of elected executives. The difference in slopes is significant in both cases.

Figures 1 to 8 illustrate some of our empirical results. They present plots of the residual values from regression of the dependent variables on other characteristics as a function either of the interaction term of decentralization with measures of the strength of party system or of decentralization separately for elected and appointed executives.

5.1. Sensitivity analysis and check for endogeneity bias

To check sensitivity of the results for presence of influential observations in cross-country regressions, we estimated the same model using robust regressions and excluding China - the most influential observation in cross-section regressions. The results of the robust regressions in most cases are the same as of the baseline regressions. Several results become insignificant while preserving the sign of the coefficients. Few results - insignificant in baseline setting - become significant. All of these results are in line with the pattern found in baseline estimation. The effect of excluding China is

similar. Some of results lose significance, while preserving sign. Remaining significant results are consistent with the pattern found in baseline regressions.

The results of panel regressions also were tested for presence of influential observations. By and large, exclusion of any single country does not lead to significant changes in the magnitude of estimated coefficients and leaves them inside initial confidence intervals. In cases when exclusion of one country makes coefficients insignificant the loss of significance can be attributed to fall in the number of observations and not to presence of influential observations.

In few cases, however, the exclusion of one country drove estimates of coefficients of the main variables of interest out of initial confidence intervals. The effect of revenue decentralization on pupil to teacher ratio in case of elected executives becomes insignificant and changes the sign after exclusion of Sweden for the developed countries and Iran or Argentina for the developing countries.²⁴ Exclusion of Israel makes insignificant the result that decentralization is less harmful in case of elected state executives for illiteracy level. These changes in the results about the effect of decentralization on education depending on subordination of state executives can not be attributed just to the reduction in the number of observations and these results are to be treated with extreme caution.

The results are robust to the choice of specification. Addition of the following control variables: initial GDP per capita squared, federation dummy (Treisman, 2000), regional dummies for Central Europe, former Soviet Union, Asia, Africa, Middle East,

²⁴ The result that expenditure decentralization has better effect on pupil to teacher ratio in case of elected state executives can not be made insignificant by exclusion of any single country.

and Latin America in cross-section regressions and logarithm of population in panel regressions, does not significantly change our results.

In the analysis above we treated decentralization as exogenous to growth and quality of government. In the long run, however, it may not be a good assumption. To correct for possible endogeneity of fiscal decentralization in cross-country regressions we re-estimated them using the area of countries as an instrument.²⁵ For the most part, the results for developing and transition countries remained significant and coefficients preserved their signs. The magnitude of most coefficients increased considerably (2-3 times on average).²⁶ In the regressions for the subsample of developed countries only the results about negative influence of party age on the effect of decentralization on infant mortality and economic growth remain significant with the same magnitude. Other results for developed countries lose significance with varying effect on the size of coefficients due to substantial increase in noise because of the poor quality of the instrument. The Hausman test rejects the hypothesis that coefficients are significantly different with and without instrument in all regressions for developed countries. Therefore, the results of instrumented regressions suggest that 1) in developing countries there may be an endogeneity bias that attenuates coefficients towards zero and 2) results for developed countries are unbiased. To make the results for the two subsamples comparable, we report uninstrumented regression results as the baseline.

²⁵ Other studies (Fisman and Gatti, 2002; de Mello and Barenstein, 2001) used country legal origin as an instrument. It is not an appropriate choice of instrument in our case because legal origin can affect our dependent variables not through fiscal decentralization but other channels (La Porta et al., 1999).

²⁶ The only coefficients that decrease in the magnitude are of interaction term of revenue decentralization and measures of party strength in regression for economic growth. These coefficients also preserve their sign.

Overall, sensitivity analysis suggests that our results are generally stable.²⁷

6. Summary and discussion of empirical results

The results for developing countries strongly support Hypothesis 1, as high fractionalization of parliament and small age of main parties worsen the effect of fiscal decentralization on economic growth, government quality, and public goods provision. Strong parties prove to be important in creating career concerns that provide necessary incentives even for appointed state executives in developing countries. In developed countries, the effect of fractionalization of parliament is weak, while the effect of party age is the opposite to the one in developing countries, supporting Hypothesis 1a. Thus, in weak institutional environment, relatively strong party system provides the necessary level of political centralization needed for effective decentralization. In developed countries, political institutions are already strong and further increase in party strength has adverse effect of decreasing political competition. This, in turn, weakens incentives of local governments and, as a result, has negative effect on efficiency of decentralization.

The effect of subordination of local officials on efficiency of fiscal decentralization is not as straightforward. In developing countries, the quality-of-government and economic growth objectives in decentralization prescribe appointed state executives because local elected officials pursue regional protectionist policies that

²⁷ There are several potential problems with our empirical methodology. First, as in all cross-country studies, there is a possibility of omission of some important variables. It is encouraging, however, that panel regressions with country fixed effects generally produce results consistent with cross-section analysis. Second, we were unable to rule out potential endogeneity of political variables in cross-country regressions. Finally, it is possible that fractionalization of parliament and average age of main parties capture some other features of political institutions and not the strength of political parties.

increase chances of reelection, harming the economic development of country as a whole. The same result holds for growth in developed countries. These results support hypothesis 2.

The effect of fiscal decentralization on provision of public health in developed countries (both in the short and the long run) is better in the case of appointed local executives, supporting Hypothesis 2.²⁸ In contrast, effect of decentralization on education in developed countries is better in the short run when local executives are elected, strongly supporting Hypothesis 2a. Results for public goods in developing countries are much weaker. But even in this subsample we find that effect of decentralization on education is better in the case of elected executives, also supporting Hypothesis 2a.

These results suggest that local constituencies have more information about the quality of primary education provided by local authorities. Thus, elections seem to be better way of holding local executives accountable for their actions in this area. When, however, one considers overall quality of government and economic performance at the province level, the higher-level authorities seem to have better ways to discipline executives than does the local constituency. The latter is also true concerning provision of basic public health in developed countries, as decentralization has better results when state and municipal authorities are appointed.

7. Conclusions

Our key finding is that political institutions - in particular, political centralization - play an important role in determining the results of fiscal decentralization. In line with the

²⁸ The exception is the positive short run effect municipal elected officials on results of revenue decentralization in infant mortality for developed countries.

theory of Riker (1964) we find that strong national party system is a more effective way of securing political centralization needed for efficient decentralization compared to constitutional and administrative arrangements that make local executives directly subordinate to higher-level authorities (Blanchard and Shleifer, 2000). Subordination to higher-level authorities or accountability to a local constituency alone is insufficient to provide the necessary incentives. This is because provision of some public goods (e.g., education) is better monitored democratically by local constituencies and other public goods (e.g., healthcare) is better monitored administratively by higher-level officials. Thus, making local authorities accountable only to higher-level authorities or only to the local constituency improves their performance in some tasks at expense of other (Holmstrom and Milgrom, 1991). In addition, local constituencies tend to support harmful regional protectionist policies, while higher-level authorities may be unable to match preferences across jurisdictions (Hayek, 1948; Oates, 1972) or not willing to do so because of capture (Bardhan and Mookherjee, 1999). In contrast, strong national parties help to provide elected local officials with efficient political incentives because their chances of getting reelected depend both on support of the national party and the satisfaction of local constituency. In addition, strong party systems provide career concerns that help to improve performance of subnational executives even when they are appointed. This suggests that strong parties are the necessary prerequisite of the efficient decentralization.

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Table 1. Cross-country regressions. Fractionalization. Subsample of developing and transition countries.

	Government Quality											Public Goods and Growth+N28											
	Transparency International index for 2001	Transparency International index for 2000	Government Effectiveness Index	Regulation Quality Index	Control over Corruption Index	Rule of Law index	Transparency International index for 2001	Transparency International index for 2000	Government Effectiveness Index	Regulation Quality Index	Control over Corruption Index	Rule of Law index	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	
Subnational expenditure share	0.087	0.081	0.030	0.031	0.030	0.028							0.509	-0.005	0.221	0.003	0.016						
	[2.25]**	[2.38]**	[3.15]**	[2.52]**	[2.33]**	[2.28]**							[3.33]**	[0.63]	[0.81]	[0.73]	[1.64]						
CROSSTERM: Subnational expenditure share & Fractionalization of parliament	-0.154	-0.146	-0.062	-0.066	-0.061	-0.067							-1.112	-0.029	-1.005	-0.005	-0.036						
	[1.68]	[1.61]	[3.20]**	[3.37]**	[2.29]**	[3.21]**							[3.50]**	[1.99]*	[2.03]**	[0.72]	[1.96]*						
Subnational revenue share							0.085	0.075	0.031	0.031	0.027	0.033						0.462	0.0003	0.187	0.002	0.025	
							[2.24]**	[2.45]**	[2.74]**	[3.24]**	[2.49]**	[2.67]**						[3.05]**	[0.04]	[0.53]	[0.33]	[2.94]**	
CROSSTERM: Subnational revenue share & Fractionalization of parliament							-0.165	-0.157	-0.054	-0.068	-0.062	-0.072						-1.155	-0.028	-0.700	-0.009	-0.062	
							[1.72]	[1.79]**	[2.34]**	[3.55]**	[2.20]**	[3.30]**						[3.72]**	[1.92]**	[1.17]	[1.01]	[4.26]**	
Fractionalization of parliament	5.673	5.451	1.188	1.902	1.799	1.694	5.230	5.047	0.695	1.717	1.592	1.625	12.625	0.829	7.635	0.313	0.491	11.238	0.900	7.773	0.350	1.040	
	[1.37]	[1.41]	[1.23]	[2.24]**	[1.71]**	[1.82]**	[1.40]	[1.56]	[0.69]	[2.24]**	[1.55]	[1.75]**	[1.26]	[2.59]**	[0.56]	[1.99]**	[1.15]	[1.09]	[2.93]**	[0.58]	[2.13]**	[3.45]**	
Logarithm (GDP per capita)	1.224	1.028	0.520	0.185	0.457	0.380	1.195	1.084	0.521	0.152	0.425	0.349	3.340	0.331	14.753	0.096	-0.617	2.412	0.268	13.017	0.098	-0.510	
	[5.99]**	[3.84]**	[4.59]**	[1.15]	[4.09]**	[2.87]**	[5.92]**	[4.48]**	[4.24]**	[0.96]	[3.41]**	[2.76]**	[1.53]	[5.25]**	[4.44]**	[2.59]**	[6.57]**	[1.05]	[4.06]**	[3.90]**	[2.58]**	[6.58]**	
Logarithm (Population)	-0.059	-0.104	0.009	-0.046	-0.026	0.006	-0.053	-0.070	-0.032	-0.060	-0.027	-0.028	-2.349	0.042	2.303	-0.035	0.052	-2.639	-0.008	0.895	-0.016	0.079	
	[0.25]	[0.45]	[0.14]	[0.53]	[0.35]	[0.09]	[0.29]	[0.38]	[0.54]	[0.81]	[0.44]	[0.43]	[2.17]**	[0.99]	[1.33]	[1.34]	[1.20]	[2.25]**	[0.17]	[0.53]	[0.62]	[1.83]**	
Share of protestant	0.025	0.026	0.009	0.019	0.010	0.003	0.021	0.007	0.017	0.008	0.000	0.000	-0.105	-0.004	0.180	-0.004	0.006	-0.153	-0.004	0.128	-0.005	0.000	
	[2.14]**	[2.26]**	[1.35]	[3.06]**	[2.28]**	[0.55]	[1.61]	[1.60]	[1.07]	[2.74]**	[1.46]	[0.02]	[0.89]	[0.66]	[0.60]	[2.10]**	[1.57]	[1.45]	[0.78]	[0.42]	[2.63]**	[0.05]	
Ethnolinguistic fractionalization	-0.356	0.069	0.314	-0.511	-0.059	0.457	-0.132	0.460	0.230	-0.504	-0.012	0.440	-13.815	0.126	4.588	0.113	-0.581	-12.795	0.086	2.611	0.212	-0.400	
	[0.26]	[0.06]	[0.70]	[0.91]	[0.15]	[1.17]	[0.10]	[0.37]	[0.46]	[0.91]	[0.03]	[1.03]	[1.77]**	[0.49]	[0.47]	[0.72]	[2.42]**	[1.61]	[0.37]	[0.27]	[1.32]	[1.55]	
Latitude	0.868	-0.296	0.281	-1.318	0.003	0.231	1.915	0.743	0.357	-0.969	0.491	0.653	30.120	1.376	27.240	0.485	1.365	36.599	1.032	12.421	0.768	1.755	
	[0.36]	[0.10]	[0.40]	[1.66]	[0.00]	[0.27]	[0.62]	[0.25]	[0.34]	[1.12]	[0.41]	[0.68]	[1.46]	[2.18]**	[1.04]	[1.82]**	[2.68]**	[1.97]**	[1.63]	[0.52]	[3.04]**	[3.12]**	
English legal origin	0.932	-0.069	-0.166	0.126	-0.418	-0.690	0.000	0.000	0.000	0.319	0.000	-0.153	12.762	-0.199	8.709	0.330	-0.143	-2.411	-1.190	-31.609	0.161	-0.535	
	[0.88]	[0.07]	[0.53]	[0.36]	[1.26]	[2.42]**	[.]	[.]	[.]	[1.08]	[.]	[0.60]	[1.73]**	[0.53]	[0.61]	[3.09]**	[0.67]	[0.36]	[6.41]**	[3.89]**	[1.24]	[2.78]**	
Socialist Legal origin	0.420	0.498	-0.106	0.023	0.040	-0.255	-0.851	0.436	-0.149	0.000	0.268	0.000	20.135	0.418	25.391	0.619	-1.826	6.039	-0.491	-7.895	0.423	-2.172	
	[0.50]	[0.58]	[0.49]	[0.10]	[0.15]	[1.15]	[0.92]	[0.49]	[0.42]	[.]	[0.70]	[.]	[2.86]**	[1.00]	[1.53]	[5.58]**	[8.01]**	[1.35]	[2.64]**	[0.98]	[3.71]**	[12.41]**	
French legal origin	1.126	0.777	0.042	0.434	-0.019	-0.463	0.164	0.895	0.092	0.528	0.340	-0.015	10.081	0.037	20.259	0.260	0.034	-4.338	-0.936	-18.522	0.114	-0.370	
	[1.63]	[1.26]	[0.16]	[1.60]	[0.07]	[2.14]**	[0.19]	[1.02]	[0.41]	[1.87]**	[1.30]	[0.05]	[1.36]	[0.10]	[1.47]	[3.50]**	[0.21]	[0.93]	[5.86]**	[2.30]**	[1.03]	[2.17]**	
Democratic traditions	0.188	0.213	0.050	-0.006	0.109	0.067	0.169	0.201	0.035	-0.021	0.100	0.052	0.327	0.064	1.679	0.018	0.030	0.507	0.065	2.018	0.018	0.026	
	[2.02]**	[2.17]**	[1.68]	[0.14]	[3.00]**	[1.78]**	[2.01]**	[2.34]**	[1.27]	[0.55]	[2.94]**	[1.62]	[0.35]	[2.34]**	[1.22]	[1.01]	[1.00]	[0.56]	[2.08]**	[1.39]	[1.06]	[1.11]	
Current level of democracy	-0.047	-0.018	0.043	0.064	0.032	0.072	-0.052	-0.028	0.039	0.058	0.027	0.065	0.383	0.025	0.779	0.012	0.026	0.368	0.016	0.201	0.014	0.007	
	[0.83]	[0.37]	[1.67]	[1.45]	[1.38]	[2.93]**	[0.93]	[0.60]	[1.49]	[1.38]	[1.17]	[2.52]**	[0.54]	[1.11]	[0.75]	[0.82]	[0.87]	[0.51]	[0.67]	[0.18]	[0.91]	[0.27]	
Fixed investments																		0.013				0.004	
																		[1.68]**				[0.48]	
Openness																		0.003				0.001	
																		[1.43]				[0.38]	
Logarithm (Fertility)																		-1.194				-1.025	
																		[5.29]**				[5.33]**	
Observations	36	32	41	41	41	41	34	31	39	39	39	39	73	73	67	73	73	73	73	67	73	73	73
R-squared	0.79	0.71	0.77	0.66	0.78	0.76	0.8	0.73	0.74	0.65	0.77	0.75	0.77	0.84	0.73	0.81	0.88	0.76	0.84	0.69	0.82	0.88	0.88

Robust t-statistics in parenthesis

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; ± Panel regressions do not yield any significant results

Table 2. Cross-country and panel regressions. Fractionalization. Subsample of developed countries.

	Public Goods and Growth (Cross section)±							Public Goods (Panel)					
	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	Immunization	Negative of Logarithm (Infant Mortality)
Subnational expenditure share	1.685	0.001	0.020	0.006					-2.996	-0.006	-0.031		
	[2.78]**	[0.07]	[0.60]	[0.31]					[2.24]**	[0.76]	[0.90]		
CROSSTERM: Subnational expenditure share & Fractionalization of parliament	-2.934	0.004	-0.026	-0.003					3.547	0.005	0.025		
	[2.90]**	[0.18]	[0.52]	[0.12]					[1.86]*	[0.46]	[0.56]		
Subnational revenue share					1.937	-0.004	0.024	-0.006				-2.749	0.000
					[2.70]**	[0.29]	[0.63]	[0.25]				[2.39]**	[0.01]
CROSSTERM: Subnational revenue share & Fractionalization of parliament					-3.449	0.006	-0.027	0.016				2.741	0.005
					[3.09]**	[0.27]	[0.48]	[0.42]				[1.59]	[0.44]
Fractionalization of parliament	46.685	0.706	0.052	0.006	39.157	0.803	0.085	-0.432	-107.038	-0.008	-2.104	-58.634	0.109
	[1.33]	[0.81]	[0.03]	[0.00]	[1.30]	[0.93]	[0.05]	[0.30]	[1.75]*	[0.02]	[1.05]	[1.38]	[0.37]
Logarithm (GDP per capita)	-4.939	0.063	-0.315	-0.856	-4.269	0.060	-0.316	-0.842	72.985	0.253	-0.099	68.195	0.241
	[1.07]	[0.91]	[1.16]	[5.87]**	[0.95]	[0.89]	[1.20]	[5.68]**	[3.78]**	[2.59]**	[0.23]	[4.14]**	[2.45]**
Democratic traditions	-0.560	0.018	0.051	0.031	-1.120	0.018	0.053	0.037	-15.716	0.105	0.009	-15.754	0.090
	[0.44]	[0.62]	[1.04]	[1.46]	[0.86]	[0.57]	[1.10]	[1.47]	[4.50]**	[4.08]**	[0.09]	[4.53]**	[3.44]**
Current level of democracy	-9.997	-0.146	0.268	-0.042	-13.004	-0.135	0.273	-0.018	-6.982	0.035	-0.006	1.152	0.013
	[1.43]	[2.11]**	[1.03]	[0.35]	[1.96]*	[1.85]**	[0.98]	[0.13]	[0.87]	[0.79]	[0.03]	[0.16]	[0.27]
Logarithm (Fertility)				0.360				0.486	-38.116	-0.146	-1.021	-34.799	-0.146
				[0.99]				[1.22]	[3.37]**	[1.96]*	[3.52]**	[3.16]**	[1.96]**
Logarithm (Population)	-0.773	-0.003	0.043	0.052	-1.363	0.010	0.035	0.084					
	[0.49]	[0.12]	[0.50]	[0.73]	[0.81]	[0.50]	[0.39]	[1.24]					
Share of protestant	0.285	0.002	0.001	-0.001	0.259	0.002	0.001	0.000					
	[3.15]**	[1.75]	[0.34]	[0.29]	[2.93]**	[1.80]	[0.28]	[0.19]					
Ethnolinguistic fractionalization	52.576	0.133	0.112	-0.146	58.744	0.189	-0.016	-0.202					
	[4.59]**	[0.46]	[0.28]	[0.51]	[3.87]**	[0.47]	[0.03]	[0.56]					
Latitude	-11.190	0.588	-0.679	-0.281	-9.871	0.609	-0.752	-0.231					
	[0.60]	[1.18]	[0.88]	[0.45]	[0.44]	[1.16]	[0.94]	[0.44]					
English legal origin	-31.179	0.022	-0.773	-0.213	-34.481	0.012	-0.705	-0.209					
	[3.43]**	[0.17]	[2.04]*	[0.91]	[3.51]**	[0.07]	[1.69]	[0.81]					
French legal origin	-16.791	-0.050	-0.312	-0.132	-24.447	-0.103	-0.228	-0.088					
	[1.17]	[0.33]	[0.65]	[0.49]	[1.79]	[0.48]	[0.45]	[0.30]					
Fixed investments				0.015				0.018					
				[0.92]				[1.00]					
Openness				0.008				0.010					
				[2.34]*				[2.48]**					
Annual dummies									Y	Y	Y	Y	Y
Observations	22	22	21	22	22	22	21	22	210	379	165	210	380
Number of countries									21	22	20	21	22
R-squared	0.84	0.87	0.54	0.93	0.84	0.86	0.55	0.93					

t-statistics in parenthesis for cross-country regressions; z-statistics in parenthesis for panel regressions.

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; ± There are no significant results in cross section regressions for measures of the quality of governm

Table 5. Cross-country and panel regressions. State executives elected/appointed. Subsample of developing and transition countries.

	Quality of Government (Cross section)												Public Goods (Panel)±								
	Transparency International index for 2001	Transparency International index for 2000	Government Effectiveness Index	Regulation Quality index	Control over Corruption index	Rule of Law index	Transparency International index for 2001	Transparency International index for 2000	Government Effectiveness Index	Regulation Quality index	Control over Corruption index	Rule of Law index	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	
Subnational expenditure share (Effect for appointed state executives)	0.034 [1.12]	0.019 [0.63]	0.016 [1.61]	0.011 [0.95]	0.010 [1.09]	0.006 [0.60]							-1.029 [1.46]	0.001 [0.26]	-0.085 [1.74]*	-0.809 [2.74]***					
CROSSTERM: Subnational expenditure share & Elected state executives (Difference in effects)	-0.059 [1.26]	-0.045 [1.31]	-0.041 [4.31]***	-0.044 [3.37]***	-0.032 [2.68]**	-0.032 [2.48]**							2.068 [2.50]**	-0.005 [0.66]	0.146 [2.21]**	0.996 [2.94]***					
Subnational revenue share (Effect for appointed state executives)							0.045 [1.30]	0.029 [1.19]	0.013 [1.41]	0.009 [0.74]	0.009 [1.05]	-0.0001 [0.01]					-0.378 [0.38]	-0.005 [0.90]	-0.199 [2.66]***	-0.998 [1.70]*	
CROSSTERM: Subnational revenue share & Elected state executives (Difference in effects)							-0.097 [1.13]	-0.079 [1.62]	-0.031 [1.82]*	-0.035 [1.78]*	-0.039 [2.09]**	-0.014 [0.69]					0.564 [0.63]	0.003 [0.63]	0.127 [2.25]**	1.360 [3.38]***	
Elected state executives	0.304 [0.38]	0.277 [0.30]	0.646 [2.53]**	0.842 [2.47]**	0.462 [1.70]	0.416 [1.30]	0.644 [0.61]	0.647 [0.74]	0.220 [0.75]	0.384 [1.14]	0.357 [1.41]	-0.121 [0.34]	-83.985 [3.69]***	-0.040 [0.17]	-3.915 [1.95]*	-32.168 [3.23]***	-30.881 [1.98]**	-0.264 [2.16]**	-1.538 [1.27]	-29.287 [3.85]***	
Logarithm (GDP per capita)	1.919 [2.17]**	1.348 [3.89]***	0.634 [6.36]***	0.436 [3.31]**	0.522 [6.65]***	0.537 [4.28]***	2.129 [2.04]**	1.427 [3.45]***	0.636 [4.17]***	0.451 [2.81]***	0.569 [4.44]***	0.503 [3.56]***	-4.803 [0.52]	0.236 [2.04]**	5.544 [5.76]***	-3.004 [0.73]	-4.411 [0.45]	0.275 [2.26]**	5.827 [5.54]***	-6.190 [1.49]	
Democratic traditions	0.155 [1.37]	0.235 [2.28]**	0.024 [0.80]	-0.050 [1.66]	0.111 [5.05]***	0.036 [1.09]	0.154 [1.27]	0.224 [2.37]**	0.034 [1.25]	-0.041 [1.14]	0.115 [4.81]***	0.046 [1.24]	-11.126 [3.26]***	0.060 [1.32]	-2.667 [7.64]***	0.352 [0.27]	-8.377 [1.40]	0.086 [1.55]	-1.784 [3.13]***	-2.339 [0.74]	
Current level of democracy	-0.067 [0.85]	-0.025 [0.39]	0.009 [0.37]	0.068 [2.05]*	0.004 [0.19]	0.048 [1.81]*	-0.050 [0.55]	-0.011 [0.17]	0.005 [0.18]	0.062 [1.75]*	0.0002 [0.01]	0.040 [1.41]	0.962 [1.58]	-0.018 [1.97]**	0.136 [1.93]*	-0.276 [1.13]	0.405 [0.54]	-0.016 [1.75]*	0.033 [0.43]	-0.416 [0.96]	
Logarithm (Fertility)													-53.714 [3.91]***	0.695 [4.36]***	-10.493 [8.12]***	3.736 [0.60]	-63.980 [3.39]***	0.797 [4.42]***	-9.161 [5.51]***	2.221 [0.20]	
Logarithm (Population)	-0.113 [0.39]	-0.225 [1.05]	-0.023 [0.38]	-0.072 [1.07]	-0.059 [1.04]	-0.030 [0.49]	-0.087 [0.42]	-0.230 [1.44]	-0.023 [0.43]	-0.075 [1.15]	-0.044 [0.88]	-0.028 [0.45]									
Share of protestant	0.024 [1.86]*	0.027 [2.41]**	0.016 [4.17]***	0.021 [3.84]***	0.014 [4.07]***	0.008 [1.95]**	0.021 [1.39]	0.022 [1.56]	0.013 [2.49]**	0.018 [1.56]	0.011 [2.42]**	0.006 [2.46]**									
Ethnolinguistic fractionalization	-0.707 [0.37]	-0.853 [0.67]	-0.521 [1.30]	-0.857 [1.85]*	-0.645 [1.78]*	-0.271 [0.65]	-0.487 [0.26]	-0.969 [0.91]	-0.505 [1.18]	-0.844 [1.76]*	-0.575 [1.55]	-0.282 [0.65]									
Latitude	1.064 [0.31]	-0.261 [0.08]	-0.212 [0.27]	-1.735 [1.79]*	0.130 [0.11]	-0.191 [0.20]	1.417 [0.42]	-0.195 [0.07]	-0.081 [0.08]	-1.449 [1.30]	0.572 [0.44]	0.033 [0.03]									
English legal origin	1.191 [1.14]	0.470 [0.45]	0.347 [1.59]	0.622 [2.46]**	-0.060 [0.28]	-0.142 [0.54]			0.304 [1.28]		-0.047 [0.16]	-0.001 [0.00]									
Socialist legal origin	0.355 [0.34]	0.555 [0.62]	-0.080 [0.35]	0.133 [0.54]	-0.038 [0.13]	-0.213 [0.86]	-0.707 [0.64]	0.035 [0.03]		-0.406 [0.64]											
French legal origin	1.697 [2.04]*	1.339 [1.61]	0.510 [2.56]**	0.841 [3.69]***	0.305 [1.32]	-0.061 [0.26]	0.913 [0.59]	1.099 [0.92]	0.536 [1.24]	0.320 [1.15]	0.493 [0.91]	0.075 [0.16]									
Annual dummies													Y	Y	Y	Y	Y	Y	Y	Y	
Observations	31	28	39	39	39	39	29	27	37	37	37	37	237	184	280	151	230	176	267	143	
Number of countries													36	37	34	26	35	36	33	25	
R-squared	0.75	0.7	0.74	0.7	0.79	0.72	0.77	0.73	0.68	0.65	0.78	0.66									
Subnational expenditure share in adjacent regressions (Effect for elected state executives)	-0.025 [0.54]	-0.025 [0.60]	-0.025 [2.99]***	-0.033 [2.98]***	-0.022 [1.89]*	-0.026 [2.34]**							1.038 [2.50]**	-0.003 [0.62]	0.061 [1.43]	0.187 [1.36]					
Subnational revenue share in adjacent regressions (Effect for elected state executives)							-0.053 [0.80]	-0.049 [1.06]	-0.018 [1.27]	-0.026 [1.99]**	-0.030 [1.75]*	-0.014 [0.84]					0.186 [0.30]	-0.002 [0.36]	-0.072 [1.20]	0.362 [0.86]	

Robust t-statistics in parenthesis in cross-section regressions, z-statistics in parenthesis in panel regressions

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; ± There are no significant results in cross section regressions for public goods or growth

Table 6. Cross-country and panel regressions. State Executives elected/appointed. Subsample of developed countries.

	Public goods and Growth (Cross-section)±								Public Goods (Panel)					
	Immunization	Negative of Logarithm (Infant Mortality)	Negative or Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative or Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)
Subnational expenditure share (Effect for appointed state executives)	-0.190 [0.53]	0.021 [3.95]***	0.010 [0.71]	0.009 [0.97]					0.705 [1.01]	0.005 [1.11]	-0.071 [2.66]***			
CROSSTERM: Subnational expenditure share & Elected state executives (Difference in effects)	0.100 [0.27]	-0.016 [3.51]***	-0.007 [0.52]	-0.007 [0.98]					-2.010 [2.35]**	-0.014 [2.56]**	0.082 [2.50]**			
Subnational revenue share (Effect for appointed state executives)					-0.373 [0.83]	0.017 [1.93]*	0.021 [0.86]	0.015 [1.89]				-0.650 [0.68]	0.007 [1.46]	-0.113 [2.09]**
CROSSTERM: Subnational revenue share & Elected state executives (Difference in effects)					0.269 [0.65]	-0.016 [2.19]*	-0.013 [0.66]	-0.012 [2.45]**				-0.672 [0.62]	-0.009 [1.63]	0.080 [1.65]*
Elected state executives	-19.132 [1.86]*	0.431 [2.65]**	0.017 [0.05]	0.325 [1.22]	-21.869 [2.26]**	0.342 [1.74]	0.097 [0.22]	0.402 [2.26]**	-0.059 [0.01]	0.233 [2.66]***	0.000 [.]	-17.692 [1.98]**	0.129 [1.81]*	0.000 [.]
Logarithm (GDP per capita)	1.341 [0.18]	0.106 [1.37]	-0.190 [0.74]	-0.886 [5.00]***	1.052 [0.13]	0.081 [0.88]	-0.181 [0.71]	-0.895 [6.29]***	87.780 [3.59]***	-0.033 [0.31]	-0.018 [0.04]	77.859 [3.46]***	-0.017 [0.16]	-0.675 [1.47]
Democratic traditions	-1.340 [1.47]	0.024 [1.43]	0.036 [0.86]	0.022 [1.26]	-1.530 [1.86]*	0.034 [1.75]	0.049 [1.28]	0.028 [1.91]	-22.455 [6.08]***	0.149 [5.44]***	-0.002 [0.02]	-21.393 [5.68]***	0.128 [4.63]***	-0.064 [0.62]
Current level of democracy	0.899 [0.13]	-0.257 [3.05]**	0.270 [1.23]	-0.228 [1.45]	0.929 [0.13]	-0.171 [1.46]	0.282 [1.05]	-0.249 [2.01]*	-0.620 [0.08]	0.038 [0.89]	-0.180 [0.93]	-1.015 [0.14]	-0.027 [0.62]	0.232 [1.24]
Logarithm (Fertility)				0.186 [0.52]				0.168 [0.55]	-47.619 [4.72]***	-0.244 [3.40]***	-0.519 [1.61]	-41.706 [4.05]***	-0.225 [3.04]***	-0.624 [2.11]**
Logarithm (Population)	1.064 [0.77]	-0.044 [1.82]	0.041 [0.58]	0.020 [0.29]	1.097 [0.78]	-0.017 [0.61]	0.027 [0.29]	0.030 [0.65]						
Share of protestant	0.153 [0.93]	0.001 [0.78]	-0.001 [0.13]	0.000 [0.08]	0.155 [1.00]	0.002 [1.11]	0.000 [0.10]	0.001 [0.24]						
Ethnolinguistic fractionalization	49.920 [3.99]***	0.105 [0.61]	0.072 [0.17]	-0.198 [0.87]	51.266 [3.79]***	0.197 [0.70]	-0.129 [0.27]	-0.255 [1.09]						
Latitude	-6.571 [0.39]	0.444 [0.97]	-0.840 [0.92]	-0.307 [0.52]	-5.120 [0.29]	0.555 [0.90]	-1.001 [1.15]	-0.412 [0.71]						
English legal origin	-15.615 [1.11]	-0.075 [0.66]	-0.556 [2.34]**	-0.178 [0.89]	-16.568 [1.14]	-0.118 [0.91]	-0.456 [1.89]*	-0.156 [0.86]						
French legal origin	-17.387 [1.04]	0.095 [0.73]	-0.304 [0.74]	-0.066 [0.29]	-20.480 [1.16]	0.106 [0.67]	-0.036 [0.08]	0.021 [0.11]						
Fixed investments				0.009 [0.53]				0.011 [0.59]						
Openness				0.009 [3.35]**				0.009 [5.31]***						
Annual dummies									Y	Y	Y	Y	Y	Y
Observations	22	22	21	22	22	22	21	22	184	351	145	184	352	145
Number of countries									17	18	16	17	18	16
R-squared	0.83	0.93	0.52	0.95	0.83	0.89	0.55	0.96						
Subnational expenditure share in adjacent regressions (Effect for elected state executives)	-0.089 [0.62]	0.005 [1.31]	0.003 [0.40]	0.002 [0.42]					-1.306 [2.44]**	-0.009 [2.93]***	0.012 [0.97]			
Subnational revenue share in adjacent regressions (Effect for elected state executives)					-0.104 [0.62]	0.001 [0.26]	0.008 [0.74]	0.003 [0.42]				-1.322 [2.97]***	-0.002 [0.68]	-0.032 [1.39]

Robust t-statistics in parenthesis in cross-section regressions, z-statistics in parenthesis in panel regressions

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; ± There are no significant results in cross section regressions with measures of quality of government

Table 7. Cross-country and panel regressions. Municipal executives appointed/elected. Subsample of developing and transition countries.

	Public Goods and Growth (Cross section)±										Public Goods (Panel)							
	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)	Immunization	Negative of Logarithm (Infant Mortality)	Negative of illiteracy	Negative of Logarithm (Pupil to Teacher Ratio)
Subnational expenditure share (Effect for appointed municipal executives)	0.052 [0.27]	-0.005 [0.57]	-0.080 [0.19]	-0.001 [0.30]	0.007 [1.06]						-0.509 [0.08]	0.004 [0.18]	0.894 [0.87]	-6.937 [3.34]***				
CROSSTERM: Subnational expenditure share & Elected municipal executives (Difference in effects)	-0.175 [0.88]	-0.017 [1.77]*	0.064 [0.15]	0.001 [0.14]	-0.013 [1.43]						0.803 [0.13]	-0.004 [0.17]	-0.864 [0.83]	6.952 [3.35]***				
Subnational revenue share (Effect for appointed municipal executives)						-0.060 [0.35]	-0.005 [0.58]	-0.400 [0.91]	-0.002 [0.46]	0.013 [1.56]					66.901 [0.16]	-0.002 [0.27]	1.329 [0.65]	-4.153 [3.59]***
CROSSTERM: Subnational revenue share & Elected municipal executives (Difference in effects)						-0.091 [0.49]	-0.011 [1.30]	0.461 [0.96]	0.000 [0.05]	-0.020 [2.14]**					-67.418 [0.16]	0.008 [0.87]	-1.436 [0.70]	4.329 [3.64]***
Elected municipal executives	2.470 [0.49]	0.450 [1.93]*	-1.654 [0.19]	0.003 [0.03]	0.219 [0.82]	-1.987 [0.32]	0.305 [1.23]	-4.705 [0.47]	-0.003 [0.02]	0.424 [1.84]*	-32.146 [0.17]	0.179 [0.24]	27.336 [0.86]	-214.484 [3.30]***	1732.927 [0.16]	-0.091 [0.32]	37.155 [0.72]	.
Logarithm (GDP per capita)	0.185 [0.09]	0.344 [3.50]***	15.291 [3.93]***	0.089 [1.78]**	-0.671 [4.87]***	-0.169 [0.08]	0.349 [3.39]***	12.707 [2.91]***	0.081 [1.60]	-0.608 [4.40]***	22.701 [3.24]***	0.284 [4.72]***	1.502 [1.83]*	0.337 [0.15]	37.769 [0.37]	0.267 [4.76]***	1.810 [2.13]**	-0.880 [0.40]
Democratic traditions	0.442 [0.43]	0.077 [2.49]**	2.096 [1.53]	0.030 [1.33]	0.056 [1.46]	0.634 [0.61]	0.083 [2.58]**	1.845 [1.40]	0.032 [1.37]	0.039 [1.27]	1.112 [0.39]	0.096 [3.60]***	-2.283 [6.88]***	1.163 [0.86]	3.870 [0.21]	0.077 [2.78]***	-2.075 [5.74]***	-0.054 [0.04]
Current level of democracy	-0.098 [0.14]	0.008 [0.29]	-0.167 [0.17]	0.010 [0.65]	0.045 [1.55]	0.137 [0.20]	0.002 [0.08]	0.121 [0.13]	0.012 [0.73]	0.028 [1.01]	0.021 [0.03]	-0.024 [2.39]**	-0.163 [1.59]	-0.215 [0.95]	0.376 [0.12]	-0.018 [2.03]**	-0.196 [1.88]*	-0.170 [0.64]
Logarithm (Fertility)					-0.858 [2.82]***					-0.896 [3.41]***	-43.837 [3.06]**	0.677 [5.49]***	-11.221 [7.24]***	-19.425 [4.83]***	-7.996 [0.03]	0.627 [5.06]**	-9.573 [4.99]***	-20.954 [4.94]***
Logarithm (Population)	-2.245 [1.66]	0.003 [0.07]	-0.235 [0.12]	-0.032 [1.25]	0.059 [1.10]	-2.201 [1.58]	-0.039 [0.78]	-0.998 [0.51]	-0.027 [0.99]	0.076 [1.35]								
Share of protestant	-0.014 [0.11]	-0.009 [1.61]	-0.053 [0.22]	-0.004 [1.90]*	0.001 [0.21]	-0.056 [0.48]	-0.011 [1.94]*	-0.216 [0.91]	-0.004 [1.70]*	-0.002 [0.46]								
Ethnolinguistic fractionalization	-9.029 [1.22]	-0.026 [0.09]	-3.776 [0.32]	0.176 [1.04]	-0.636 [2.13]**	-8.754 [1.11]	-0.060 [0.20]	5.546 [0.52]	0.204 [1.10]	-0.673 [2.07]**								
Latitude	22.229 [1.28]	1.418 [1.84]*	-0.556 [0.02]	0.548 [1.71]*	1.662 [2.47]**	23.775 [1.36]	1.110 [1.45]	-4.835 [0.22]	0.633 [1.92]*	1.515 [2.16]**								
English legal origin	15.214 [1.80]*	-0.258 [0.81]	15.067 [1.00]	0.249 [2.02]**	-0.303 [1.21]	-7.625 [1.01]	-1.120 [5.02]***	-34.672 [2.98]***	0.033 [0.22]	-0.487 [2.13]**								
Socialist legal origin	32.575 [3.40]***	0.189 [0.44]	30.825 [1.61]	0.666 [4.26]***	-1.649 [5.34]***	11.816 [1.75]*	-0.676 [2.28]**	-13.029 [1.28]	0.457 [3.00]***	-2.037 [8.07]***								
French legal origin	19.055 [2.29]**	-0.166 [0.48]	18.252 [1.20]	0.274 [2.73]***	-0.119 [0.66]	-3.300 [0.47]	-1.103 [4.51]***	-31.444 [3.07]***	0.072 [0.47]	-0.373 [1.41]								
Fixed investments					0.014 [1.64]					0.015 [1.92]*								
Openness					0.005 [1.70]*					0.005 [1.65]								
Annual dummies											Y	Y	Y	Y	Y	Y	Y	Y
Observations	70	70	63	70	70	69	69	62	69	69	321	268	400	214	325	268	400	214
Number of countries											49	49	46	41	50	50	47	42
R-squared	0.66	0.82	0.73	0.75	0.84	0.64	0.82	0.71	0.74	0.85								
Subnational expenditure share in adjacent regressions (Effect for elected municipal executives)	-0.123 [0.84]	-0.021 [3.38]***	-0.016 [0.08]	-0.001 [0.28]	-0.006 [0.93]						0.293 [0.82]	0.0002 [0.07]	0.030 [0.71]	0.0149 [0.15]				
Subnational revenue share in adjacent regressions (Effect for elected municipal executives)						-0.151 [0.95]	-0.016 [2.50]**	0.061 [0.34]	-0.002 [0.82]	-0.007 [1.21]					-0.518 [0.14]	0.005 [1.39]	-0.108 [1.64]	0.176 [0.82]

Robust t-statistics in parenthesis in cross-section regressions, z-statistics in parenthesis in panel regressions

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; ± There are no significant results in cross section regressions with measures of quality of government

Table 8. Cross-country regressions. Municipal executives elected/appointed. Subsample of developed countries.

	Quality of Government (Cross section) \pm		Public goods and Growth (Cross section)							Public Goods (Panel)						
	Rule of Law index	Rule of Law index	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	GDP growth	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)	Immunization	Negative of Logarithm (Infant Mortality)	Negative of Logarithm (Pupil to Teacher Ratio)
Subnational expenditure share (Effect for appointed municipal executives)	-0.007 [0.31]		0.268 [0.67]	0.016 [2.94]**	0.001 [0.05]	-0.004 [0.62]					1.283 [1.20]	0.0004 [0.06]	-0.173 [3.67]***			
CROSSTERM: Subnational expenditure share & Elected municipal execut-s (Difference in effects)	0.009 [0.42]		-0.493 [1.47]	-0.011 [2.96]**	-0.008 [0.57]	0.007 [0.86]					-2.255 [2.09]**	-0.004 [0.61]	0.179 [3.69]***			
Subnational revenue share (Effect for appointed municipal executives)		-0.026 [1.88]					0.069 [0.16]	0.012 [1.81]	0.020 [0.78]	-0.004 [0.78]				-2.460 [2.24]**	-0.015 [1.82]*	-0.274 [4.05]***
CROSSTERM: Subnational revenue share & Elected municipal execut-s (Difference in effects)		0.027 [1.91]*					-0.235 [0.71]	-0.011 [2.95]**	-0.020 [1.67]	0.009 [1.38]				1.864 [1.52]	0.019 [2.07]**	0.265 [3.92]***
Elected municipal executives	-0.470 [0.78]	-0.804 [1.97]**	0.952 [0.13]	0.232 [2.94]**	0.210 [1.17]	0.123 [1.52]	-5.547 [0.60]	0.216 [2.97]**	0.303 [1.71]	0.141 [2.06]*
Logarithm (GDP per capita)	-0.303 [1.05]	-0.352 [1.36]	-2.883 [0.36]	0.074 [0.62]	-0.548 [1.43]	-0.997 [10.29]***	-1.662 [0.19]	0.053 [0.41]	-0.404 [1.04]	-1.021 [11.47]***	72.979 [3.17]***	-0.057 [0.52]	0.643 [1.23]	61.496 [3.15]***	-0.035 [0.32]	-0.535 [1.31]
Democratic traditions	0.014 [0.28]	-0.010 [0.52]	-1.744 [1.33]	0.034 [1.21]	0.046 [1.00]	0.040 [8.43]***	-1.944 [1.30]	0.041 [1.38]	0.050 [1.16]	0.045 [12.23]***	-17.448 [5.50]***	0.104 [4.53]***	0.065 [0.59]	-17.959 [5.23]***	0.086 [3.69]***	-0.035 [0.40]
Current level of democracy	-0.271 [1.28]	-0.372 [6.71]***	-11.965 [2.20]*	-0.150 [4.36]***	0.184 [1.37]	-0.011 [0.39]	-10.824 [1.52]	-0.087 [1.48]	0.158 [1.20]	0.004 [0.22]	-11.450 [1.54]	0.006 [0.15]	0.141 [0.87]	-3.818 [0.54]	-0.025 [0.57]	0.079 [0.52]
Logarithm (Fertility)						0.570 [3.24]**	0.640 [4.58]***				-39.608 [4.04]***	-0.304 [4.46]***	-0.302 [0.95]	-39.777 [3.82]***	-0.307 [4.51]***	-0.801 [3.30]***
Logarithm (Population)	-0.050 [2.35]*	-0.028 [1.08]	0.752 [0.28]	-0.032 [0.85]	0.162 [1.36]	0.025 [0.25]	0.451 [0.18]	-0.008 [0.23]	0.093 [0.70]	0.023 [0.36]						
Share of protestant	0.001 [0.50]	0.001 [0.54]	0.276 [1.72]	0.002 [0.89]	0.002 [0.52]	0.001 [0.61]	0.286 [1.62]	0.002 [1.03]	0.002 [0.50]	0.001 [0.72]						
Ethnolinguistic fractionalization	0.448 [4.66]***	0.346 [1.82]	51.440 [3.55]***	0.132 [0.47]	0.306 [0.58]	0.130 [0.97]	51.792 [3.02]**	0.238 [0.62]	0.137 [0.19]	0.070 [0.85]						
Latitude	-0.278 [1.10]	-0.264 [1.80]	2.462 [0.11]	0.535 [1.11]	-0.515 [0.51]	0.006 [0.02]	6.301 [0.28]	0.610 [1.03]	-0.803 [0.84]	0.055 [0.24]						
English legal origin	-0.150 [1.05]	-0.178 [1.39]	-17.037 [1.09]	-0.110 [0.69]	-0.784 [2.14]**	-0.396 [3.30]**	-15.740 [0.93]	-0.166 [0.95]	-0.632 [1.53]	-0.395 [3.56]**						
French legal origin	-0.651 [1.66]	-0.881 [4.21]***	-16.105 [0.88]	0.056 [0.36]	-0.651 [1.29]	-0.093 [0.47]	-14.631 [0.68]	0.032 [0.14]	-0.304 [0.42]	-0.054 [0.41]						
Fixed investments						-0.031 [0.61]				-0.036 [0.99]						
Openness						0.004 [1.35]				0.003 [1.53]						
Annual dummies											Y	Y	Y	Y	Y	Y
Observations	20	20	21	21	20	21	21	21	20	21	193	364	147	193	365	147
Number of countries											18	19	17	18	19	17
R-squared	0.87	0.92	0.81	0.89	0.63	0.99	0.78	0.87	0.66	0.99						
Subnational expenditure share in adjacent regressions (Effect for elected municipal executives)	0.002 [0.60]		-0.225 [0.90]	0.005 [1.10]	-0.007 [0.68]	0.003 [0.92]					-0.972 [2.15]**	-0.004 [1.47]	0.006 [0.65]			
Subnational revenue share in adjacent regressions (Effect for elected municipal executives)		0.001 [0.48]					-0.166 [0.69]	0.001 [0.11]	0.000 [0.01]	0.005 [1.81]				-0.596 [1.32]	0.003 [1.10]	-0.009 [0.41]

Robust t-statistics in parenthesis in cross-section regressions, z-statistics in parenthesis in panel regressions

*** - significant at 1% level; ** - significant at 5% level; * - significant at 10% level; \pm There are no other significant results in cross section regressions with measures of quality of government

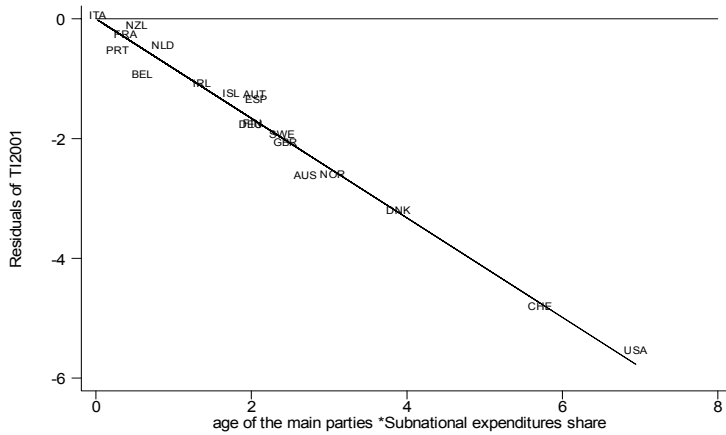


Figure 1. Party age and effect of decentralization on Transparency International index of corruption (2001) in developed countries

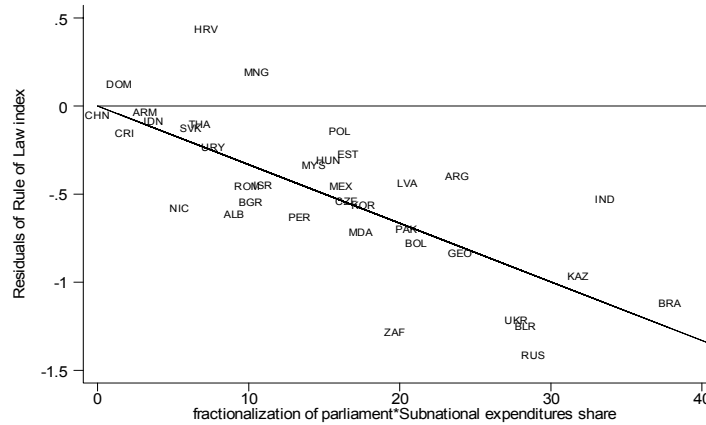


Figure 3. Fractionalization of parliament and effect of decentralization on the rule of law index in developing and transition countries

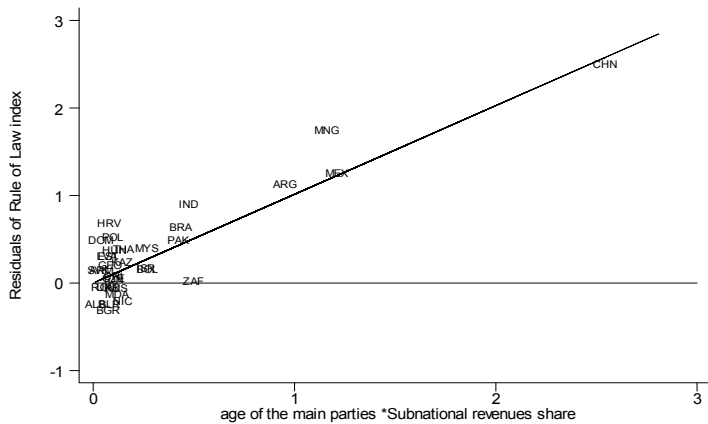


Figure 2. Party age and effect of decentralization on the rule of law index in developing and transition countries

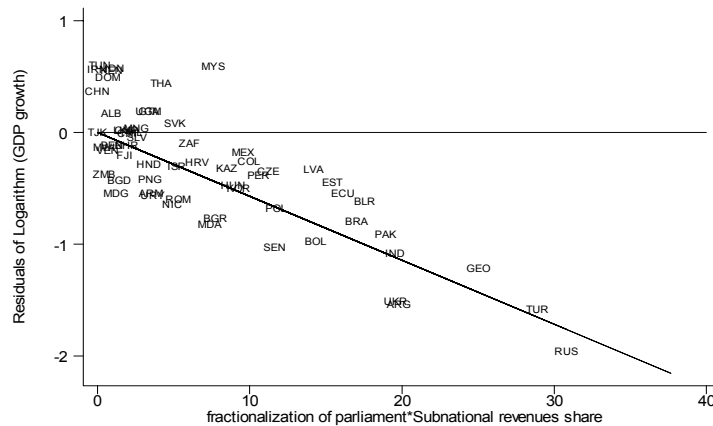


Figure 4. Fractionalization of parliament and effect of decentralization on GDP growth in developing and transition countries

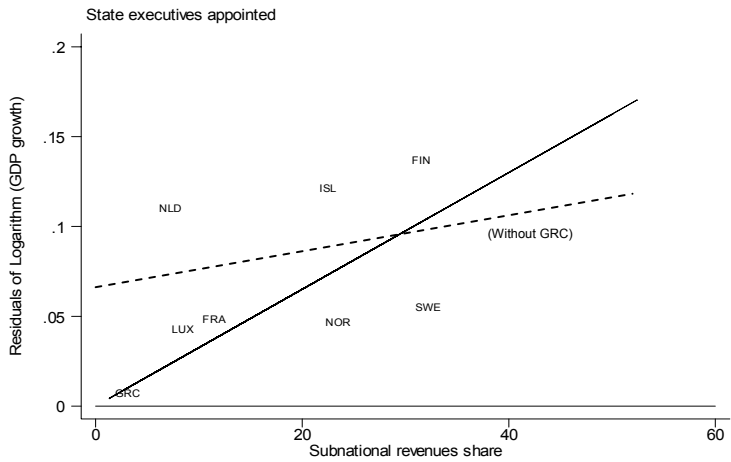
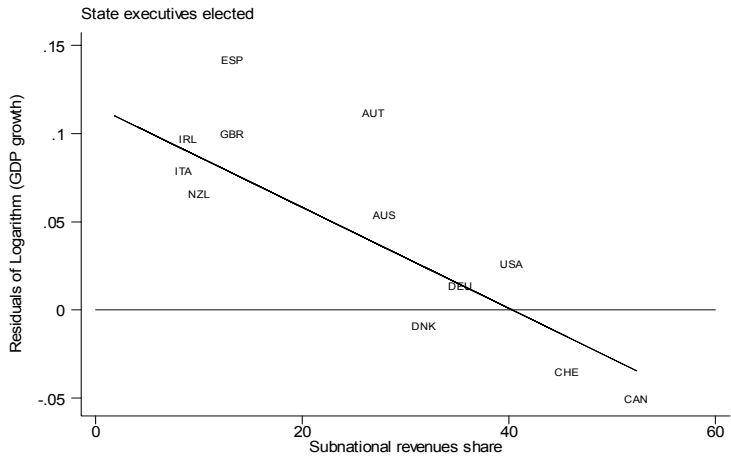


Figure 5. State executives elected/appointed and effect of decentralization on GDP growth in developed countries

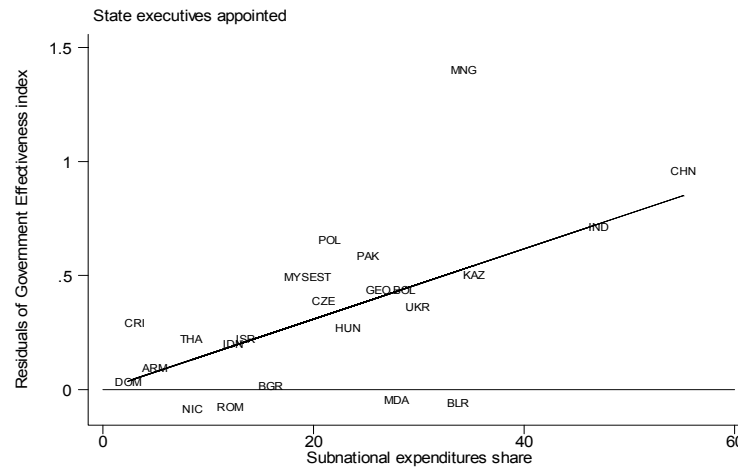
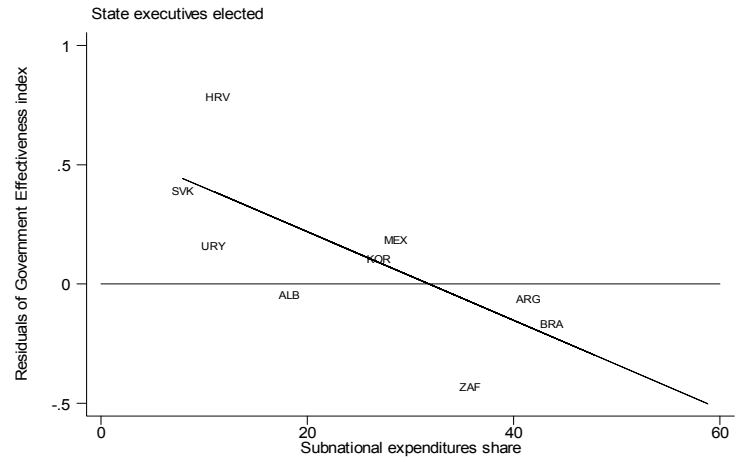


Figure 6. State executives elected/appointed and effect of decentralization on the government effectiveness index in developing and transition countries

APPENDIX

Table A1. Description of the variables.

Variable	Description
Subnational expenditure share	Share of expenditures of all subnational governments (net of transfers to other levels of government) in total expenditures of consolidated central budget measured in percents. Scale from 0 to 100. <i>Source: Database on Fiscal Indicatorsⁱ, by the World Bank, based on IMF's Government Finance Statistics. Data from Government Finance Statistics 2001 was added. For Armenia, Korea, and Pakistan data were added using information from national statistical offices.</i>
Subnational revenue share	Share of revenues of all subnational governments in total revenues of consolidated central budget measured in percents. Scale from 0 to 100. <i>Source: Database on Fiscal Indicators, by the World Bank, based on IMF's Government Finance Statistics. Data from Government Finance Statistics 2001 was added. For Armenia, Korea, and Pakistan data were added using information from national statistical offices.</i>
Fractionalization of parliament	The probability that two members of parliament picked at random from the legislature will be of different parties. Missing if there is no parliament, if there are no parties in the legislature and if any government or opposition party seats are missing. Scale from 0 to 1. <i>Source: Database on Political Institutions, Version 3, World Bank.</i>
Fractionalization of government parties	The probability that two members of parliament picked at random from among the government parties will be of different parties. Missing if there is no parliament, if there are any government parties where seats are unknown or if there are no parties in the legislature. Scale from 0 to 1. <i>Source: Database on Political Institutions, Version 3, World Bank.</i>
Fractionalization of opposition parties	The probability that two members of parliament picked at random from among the opposition parties will be of different parties. Missing if there is no parliament, if there are any opposition parties where seats are unknown or if there are no parties in the legislature. Scale from 0 to 1. <i>Source: Database on Political Institutions, Version 3, World Bank.</i>
Party age	This is the average of the ages of the first government party, second government party, and 1st opposition party, or the subset of these for which age of party is known. <i>Source: Database on Political Institutions, Version 3, World Bank.</i>
Elected municipal executives	Equals one if local executive is locally elected. Equals zero otherwise. No information, or no evidence of municipal governments, is recorded as missing. If one source has information on a specific period, and the other has no information on a different period, we do not extrapolate from one source to another - no information is always recorded as missing. If there are multiple levels of sub-national government, we consider the lowest level as the "municipal" level. <i>Source: Database on Political Institutions, Version 3, World Bank, updated using Nickson (1995) and various other sources.</i>
Elected state/province executives	Equals one if state/province executive is locally elected. Equals zero otherwise. If there are multiple levels of sub-national government, we consider the highest level as the "state/province" level. Indirectly elected state/province governments, where directly elected municipal bodies elect the state/province level, are not considered locally elected. Indirectly elected state/province governments elected by directly elected state/province bodies are considered locally elected. <i>Source: Database on Political Institutions, Version 3, World Bank, updated using Nickson (1995) and various other sources.</i>

Continued.

ⁱ Database can be found at <http://www1.worldbank.org/publicsector/decentralization/dataondecen.htm>.

Table A1. Continued.

Variable	Description
Control over corruption	A governance indicator that reflects the statistical compilation of perceptions of corruption, conventionally defined as the exercise of public power for private gain, of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. <i>Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).</i> ⁱⁱ
Government effectiveness	A governance indicator that reflects the statistical compilation of perceptions of the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures and the credibility of government's commitment to policies of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. <i>Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).</i>
Regulation quality	A governance indicator that reflects the statistical compilation of perceptions of the incidence of market-unfriendly policies such as price controls or inadequate bank supervision, as well as perception of the burdens imposed by excessive regulation in areas such as foreign trade and business development of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. <i>Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).</i>
Rule of law	A governance indicator that reflects the statistical compilation of perceptions of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts of a large number of survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks during 2000 and 2001. Units range from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. <i>Source: Kaufmann, Kraay, and Zoido-Lobaton (2002).</i>
Corruption indices	The Transparency International Corruption Perceptions Indexes for years 2000 and 2001 respectively. Scale from 0 to 10, with higher values corresponding to better governance outcomes. <i>Source: Transparency International</i> ⁱⁱⁱ
Immunization	Immunization, DPT (% of children under 12 months). Child immunization measures the rate of vaccination coverage of children under one year of age. A child is considered adequately immunized against diphtheria, pertussis (or whooping cough), and tetanus (DPT) after receiving three doses of vaccine. Scale from 0 to 100. <i>Source: World Development Indicators 2001, by the World Bank</i>
Infant mortality	Infant mortality rate is the number of infants dying before reaching one year of age, per 1000 live births in a given year. <i>Source: World Development Indicators 2001, by the World Bank</i>
Illiteracy	Adult illiteracy rate is the percentage of people aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life. Scale from 0 to 100. <i>Source: World Development Indicators 2001, by the World Bank</i>
Pupil to teacher ratio	Primary school pupil-teacher ratio is the number of pupils enrolled in primary school divided by the number of primary school teachers (regardless of their teaching assignment). <i>Source: World Development Indicators 2001, by the World Bank</i>

Continued.

ⁱⁱ Paper can be found at <http://www.worldbank.org/wbi/governance/pdf/govmatters2.pdf>.

ⁱⁱⁱ Indices can be found at <http://www.gwdg.de/~uwvw/>.

Table A1. Continued.

Variable	Description
Fixed investments	Gross fixed capital formation (% of GDP). Gross fixed capital formation (gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. <i>Source: World Development Indicators 2001, by the World Bank</i>
GDP per capita, PPP	GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars. <i>Source: World Development Indicators 2001, by the World Bank</i>
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship-except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. <i>Source: World Development Indicators 2001, by the World Bank</i>
Openness	Error term from the linear regression of the share of export and import in GDP (measured in percent) on the area and population of the country. <i>Source: Constructed based on data from World Development Indicators 2001, by the World Bank</i>
Fertility	Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates <i>Source: World Development Indicators 2001, by the World Bank</i>
Current level of democracy	Index of democracy. Scale from 0 to 10 with higher values corresponding to more democratic outcomes. <i>Source: Polity IV Dataset.</i>
Democratic traditions	Average index of democracy for the last 50 years. Scale from 0 to 10 with higher values corresponding to more democratic outcomes. <i>Source: constructed based on data from Polity IV Dataset.</i>
Ethnolinguistic fractionalization	Index of ethnolinguistic fractionalization for the year 1985. Its value ranges from 0 to 1. <i>Source: Roeder, P. G. (2001).^{iv}</i>
Share of protestants	Identifies the percentage of the population of each country that belonged to the Protestant religion in 1980. Scales from 0 to 100. <i>Source: La Porta et al. (1999).</i>
Latitude	The absolute latitude of the country, scaled to take values between 0 and 1. <i>Source: La Porta et al. (1999).</i>
Legal origin	Identifies the legal origin of the company law or commercial code of the country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; (5) Socialist/Communist laws. <i>Source: La Porta et al. (1999).</i>

^{iv} Philip Roeder, G. (2001). "Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985," February 16. The index can be found at <http://weber.ucsd.edu/~proeder/elf.htm>.

Table A2. Summary statistics for the measures of fiscal decentralization, political institutions, and dependent variables (average values for counties are summarized)

Variable	Number of observations	Mean	Standard deviation	Min	Max
Subsample of developing and transition countries					
Share of subnational expenditures	83	17.74	14.94	1.74	68.31
Share of subnational revenues	84	15.08	14.23	1.07	66.96
Municipal executives elected	124	0.51	0.46	0	1
State executives elected	141	0.17	0.34	0	1
Fractionalization of governing parties	155	0.39	0.30	0	1
Fractionalization of parliament	155	0.18	0.24	0	1
Fractionalization of opposition parties	121	0.48	0.26	0	1
Average age of main parties	142	0.02	0.02	0	0.15
Level of DPT immunization	178	68.60	19.94	14.18	99.75
Negative of logarithm of infant mortality	180	-3.66	0.82	-5.19	-1.95
Negative of illiteracy level	135	-31.44	24.52	-89.38	-0.20
Negative of logarithm of pupil to teacher ratio	167	-3.32	0.39	-4.21	-2.26
Transparency International index of corruption for the year 2001	68	3.72	1.64	0.40	9.50
Transparency International index of corruption for the year 2000	67	3.68	1.56	1.20	9.10
Index of government effectiveness	137	-0.25	0.77	-2.34	2.16
Index of regulation quality	146	-0.16	0.82	-2.95	1.82
Index of control over corruption	138	-0.27	0.70	-1.47	2.13
Index of rule of law	147	-0.23	0.76	-2.17	1.85
Subsample of developed countries					
Share of subnational expenditures	22	28.70	14.51	4.06	57.68
Share of subnational revenues	22	21.17	14.41	3.11	52.36
Municipal executives elected	22	0.82	0.39	0	1
State executives elected	23	0.59	0.49	0	1
Fractionalization of governing parties	23	0.67	0.10	0.48	0.83
Fractionalization of parliament	23	0.29	0.24	0	0.74
Fractionalization of opposition parties	23	0.46	0.21	0.003	0.85
Average age of main parties	23	0.06	0.03	0.01	0.14
Level of DPT immunization	23	83.88	12.87	46.44	99.00
Negative of logarithm of infant mortality	23	-2.14	0.26	-2.78	-1.74
Negative of logarithm of pupil to teacher ratio	22	-2.75	0.34	-3.27	-1.91
Transparency International index of corruption for the year 2001	23	7.87	1.39	4.20	9.90
Transparency International index of corruption for the year 2000	23	7.89	1.51	4.60	10.00
Index of government effectiveness	23	1.47	0.38	0.65	1.93
Index of regulation quality	23	1.05	0.29	0.58	1.50
Index of control over corruption	23	1.61	0.48	0.63	2.25
Index of rule of law	23	1.52	0.36	0.62	1.91

Table A3. Correlation coefficients of the indicators of .developing and transition countries (for average values for counties)

	Share of subnational expenditures	Share of subnational revenues	Municipal executives elected	State executives elected	Fractionalization of parliament	Fractionalization of governing parties	Fractionalization of opposition parties
Subsample of developing and transition countries							
Share of subnational revenues	0.956 ^a						
Municipal executives elected	-0.052	-0.178					
State executives elected	-0.016	-0.107	0.434 ^a				
Fractionalization of parliament	-0.045	-0.057	0.174 ^c	0.014			
Fractionalization of governing parties	-0.050	-0.055	0.029	-0.061	0.773 ^a		
Fractionalization of opposition parties	0.142	0.163	0.093	0.016	0.216 ^b	0.180 ^b	
Average age of main parties	0.007	-0.038	-0.018	0.082	-0.183 ^b	-0.193 ^b	-0.236 ^b
Subsample of developed countries							
Share of subnational revenues	0.943 ^a						
Municipal executives elected	0.339	0.334					
State executives elected	0.417 ^c	0.352	0.550 ^a				
Fractionalization of parliament	0.085	0.006	-0.206	-0.408 ^c			
Fractionalization of governing parties	0.112	0.074	-0.194	-0.364 ^c	0.899 ^a		
Fractionalization of opposition parties	0.075	0.024	-0.163	-0.348	0.842 ^a	0.607 ^a	
Average age of main parties	0.709 ^a	0.705 ^a	0.319	0.418 ^b	-0.162	-0.104	-0.138

a- significant at 1% level; b- significant at 5% level; c- significant at 10% level