Fiscal Decentralization and Regional Disparities: The Importance of Good Governance

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Abstract.

In this paper we consider how government quality mediates the relationship between fiscal decentralization and regional disparities. Previous work has argued that fiscal decentralization has the potential to reduce income difference across regions but that this potential may not be realized because of governance problems associated with sub-national authorities. Our empirical evidence based on a sample of 24 OECD countries over the period 1984 to 2006 lends a measure of support to this idea. We find that fiscal decentralization promotes regional convergence in high government quality settings but, worryingly, it leads to wider regional disparities in countries with poor governance. Because most poor countries are plagued with governance problems, this would caution against fiscal decentralization with a view to reducing regional disparities in these countries.

Key words: fiscal decentralization, regional disparities, government quality

JEL classification: D73, H71, H73

1. Introduction

Whether fiscal decentralization increases or reduces regional disparities is an important question which has engaged scholars over the years. Conceptually, assigning sub-central government a greater degree of fiscal capacity can promote regional convergence because of the expectation that lower levels of government will react more efficiently to local needs either because they can provide better informed and tailor made policies or because they strive to preserve or increase their tax base in the fact of competition from other regions. On the other hand, fiscal decentralization may also widen regional disparities either because it reduces the redistributive capacity or response of the central government or because relatively wealthier regions will tend to out-compete poorer ones in the race for fiscal resources.

Another reason why fiscal decentralization may not contribute towards regional convergence, and one that we will explore in this article, is government quality. Institutional quality has been identified as an important factor explaining economic development at the country level (Acemoglu et al, 2005; Rodrik et al, 2004), and there is a growing appreciation that it also plays an important role in explaining regional development (Rodríguez-Pose, 2010; Tabellini, 2010). In the context of the link between decentralization and regional disparities, it has been argued that fiscal decentralization may aggravate problems of corruption and administrative capacity which, in turn, may reduce or eliminate the convergence-inducing effects of fiscal decentralization.

The importance of government quality for the link between decentralization and regional convergence has also been suggested by empirical work based on both countries case studies and cross-country analysis. The empirical evidence to date reports an opposite relationship between fiscal decentralization and regional disparities in rich

and poor countries. Thus, while decentralization tends to increase disparities in developing countries, it reduces them in high income ones. Because high income countries generally enjoy better governance, and considering the governance problems which may be associated with fiscal decentralization, this has led scholars to propose, but nor pursue empirically, the idea that the differential impact of decentralization in rich and poor countries is largely due to difference in the quality of government in each setting. In light of this, in this empirical paper we deal with the mediating role of government quality on the relationship between fiscal decentralization and regional disparities. We hypothesize that the governance problems attributed to decentralization are likely to be aggravated in countries with worse governance or, conversely, are likely to be mitigated in high government quality environments. Our empirical results based on an unbalanced panel of 24 OECD countries over the period 1984 to 2006 supports our expectations. We find that fiscal decentralization promotes regional convergence in countries with high quality institutions, while in countries with poor governance decentralization tends to widen regional disparities.

The article is structured as follows. In section 2 we review those theoretical and empirical contributions which have explored how fiscal decentralization may affect regional disparities. In section 3 we extensively describe how we measure the key variables employed in the empirical analysis. In section 4 we explain our empirical methodology which includes a discussion of our choice of control variables, the estimators used and how we deal with the potential presence of reverse causality. Having done so, we then present our main empirical findings and some robustness checks in sections 5 and 6 respectively, before concluding the article with the main findings and policy implications in section 7.

2. Fiscal Decentralization and Regional Disparities: Theory and Evidence

From a theoretical perspective, there are several reasons why the decentralization of fiscal resources can contribute to regional convergence. Fiscal decentralization may reduce regional disparities because it implies better informed and more specific policies. In particular, lower level governments will tend to have more information about what people need and, moreover, can more easily adjust policies to local preferences (Oates, 1972). This should lead to policies which are more effective in encouraging regional economic development and, ultimately, should help reduce regional disparities (Oates, 1993). Fiscal decentralization may also mitigate regional disparities because of it can set in place a more competitive environment. Thus, to the extent that fiscal decentralization can promote inter-jurisdictional competition for fiscal resources, it can provide a restraint on inefficient local government and, consequently, can promote regional convergence (Brennan and Buchanan, 1980; Weingast, 1995; McKinnon, 1997; Qian and Weingast, 1997). Relatedly, voters can use the performance of each jurisdiction as a benchmark and this should further increase the efficiency in local public good supply (Salmon, 1987; Breton, 1996).

Alternatively, there are several ways in which fiscal decentralization can widen regional disparities. Most obviously, because fiscal decentralization means taking resources away from the central government, it weakens the scope of inter-regional redistribution which may be aimed towards regional convergence (Prud'homme, 1995). Relatedly, decentralization may increase the capacity of wealthier regions to resist net outflows of resources in the context of territorial redistribution thereby increasing disparities (Rodríguez-Pose and Ezcurra, 2010). Moreover, in decentralized contexts where the scope for redistribution by the central government is more limited, richer regions with a larger tax-base can finance local public goods at a lower tax rates (or

finance more public goods with similar rates), something which may lead them to attract resources away from poor regions thereby increasing regional disparities (Prud'homme 1995; Keen and Marchand, 1997; Oates, 1999).

Another important argument, and one that will focus on in this paper, is that fiscal decentralization may worsen governance problems of sub-central governments thereby reducing or eliminating the expected benefits of decentralization (Martinez-Vazquez and McNab, 2003). Specifically, problems of corruption and administrative quality may worsen when assigning more resources to lower levels of government, because of the intimacy and frequency of interaction and greater discretion on the part of local governments, because national office being more prestigious and powerful it will be more intensely monitored and will tend to attract more qualified people, or because sub-national level interest groups find it easier to overcome free-rider problems (Prud'homme, 1995; Bardhan and Mookherjee, 2000; Bardhan, 2002). Moreover, governments in regions where immobile factors are more numerous than mobiles ones, or regions that are uncompetitive for some structural reason, may give up on business friendly policies and dedicate themselves to predation instead (Rodden and Rose-Ackerman, 1997; Cai and Treisman, 2005).

Empirical work to date on the impact of fiscal decentralization on regional disparities can be divided into single country case studies of both developed and developing countries and cross-country studies mostly focused on developed countries or which include both developed and developing countries (see, also Lessman, 2012). In the context of country case studies, fiscal decentralization has increased regional disparities in China (Kanbur and Zhang, 2005; Qiao et al, 2008), the Philippines (Silva, 2005) and Colombia (Bonet, 2006), while it has reduced disparities in the USA (Akai and Hosio, 2009) and Italy (Calamai, 2009). Decentralization has also reduced

disparities in a sample of European Union (Ezcurra and Pasucal, 2008) and OECD countries (Gil et al, 2004; Lessmann, 2009). Finally, in more heterogeneous cross-country analyses, fiscal decentralization has been found to increase regional disparities in poorer countries while in richer countries it is either neutral or it tends to reduce regional disparities (Rodríguez-Pose and Ezcurra, 2010; Lessmann, 2012). Therefore, the empirical evidence suggests that fiscal decentralization contributes towards regional convergence in high income countries while it tends to increase disparities in poor countries.

The differential effect of fiscal decentralization in rich and poor countries has been partly attributed by some scholars to differences in institutional constraints. For example, Rodríguez-Pose and Ezcurra (2010) state that: "… while many of the assumptions that link decentralization to greater territorial inequality may be valid for poorer countries with high existing territorial disparities and weak institutions, this may not be the case in richer, more equal, and more institutionally developed environments." (p. 624). Lessmann (2012) is more forceful when he points to the expectation of "different effects of decentralization on regional inequality in developing or emerging economies in contrast to highly developed countries. The reason is that the efficiency enhancing effects, which may contribute to regional convergence, are more likely to occur in highly developed countries, due to a better institutional environment." (p.1382)[1].

Despite of the potentially crucial impact of institutional quality on the relationship between fiscal decentralization and regional disparities, this relationship has not been

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[1] Some of the country case studies have also pointed to the crucial role played by institutions. Bonet (2006) identifies the lack of institutional capacity at sub-national levels as one reason why fiscal decentralization may have widened regional disparities in Colombia. Calamai (2009) explains that fiscal decentralization in Italy led to convergence in those less advantaged regions with better social capital which he argues is a proxy of institutional performance or quality.

explored directly in empirical work. This is our objective in this study. In particular we will examine the extent to which cross-country differences in government quality mediate how fiscal decentralization affects regional disparities. In light of the literature reviewed, we would expect that in countries with poorer government quality the efficiency gains from decentralization will tend to be overshadowed by the potential costs. Or, in other words, the governance problems identified by previous literature which may occur in decentralized settings are likely to emerge more forcefully in countries with poor quality institutions[2].

3. Measuring the Key Variables

In this section we review the indicators employed to measure regional disparities, fiscal decentralization and government quality. We construct an unbalanced panel of 24 OECD countries over the period 1984 to 2006, basing our selection of countries and time period on the availability, frequency and quality of the data corresponding to these indicators[3].

In order to measure regional disparities within countries, we use the population-weighted coefficient of variation (PW-CV), which is a measure typically used in the literature focused on regional disparities that is independent of the scale, population size, number of regions considered and satisfies the Pigou-Dalton principle (Cowell, 1995)[4]. Specifically, the PW-CV is the population-weighted standard deviation of GDP per capita level within a country, divided by the country's GDP per capital level:

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[2] Our approach here is in line with work which has considered how institutional quality affects how the European Union structural funds impact on GDP growth or FDI flows across member states (Beugelsdijk and Eijffinger, 2005; Ederveen et al, 2006; Katsaitis and Doulos, 2009).

[3] See appendix 1 for the list of countries included, appendix 2 for the sources of all the data employed and appendix 3 for the summary statistics.

[4] See Ezcurra and Pascual (2008), Lessmann (2009), Rodríguez-Pose and Ezcurra (2010) and Williamson (1965).

$$\text{PW-CV} = \frac{1}{\bar{y}}\left[\sum_{i=1}^{n} p_i(\bar{y}-y_i)^2\right]^{1/2}$$

where $\bar{y}$ is the average country GDP per capita, y_i and p_i are the GDP per capita and population share of the region respectively, and n is the number of regions[5]. The PW-CV basically disparities between a country`s regions, taking into consideration their relative population weights. It ranges between 0 (equality) and 1 (maximum disparities). According to this indicator, regional disparities are especially high in Mexico while they are lowest in the Netherlands and Australia. On the other hand, the evolution through time seems to be very stable, except for eastern European countries where it has increased markedly over the time frame under examination (see Appendix 1).

To measure government quality we rely on a source which has been widely used in work exploring the causes and consequences of institutional quality. Specifically we rely on the International Country Risk Guide (ICRG) database as developed by the Political Risk Services Group to assess the political, economic and financial risks across countries[6]. The ICRG is based on the perceptions of a worldwide network of experts on a range of country-specific variables, including corruption, rule of law and bureaucratic quality across state institutions and jurisdictions (whether at the local, regional or central levels). Corruption refers to the demand for bribes by political and administrative bodies as well as patronage, nepotism, job reservation, 'favors-for-favors', etc. The variable law and order assesses the strength and impartiality of the legal system as well as popular observance of the law. Bureaucratic quality refers to the

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[5] All European regions are defined at the NUTS 2 level, except for Belgium, Germany, Netherlands and the UK which are so at the NUTS 1 level. Australian regions are defined as states and territories; USA and Mexican regions are states, in Canada they are provinces and territories and in New Zealand they are the North and South Islands.

[6] See, for example, Mauro (1995); La Porta et al, 1999; Adsera et al, 2003; Ederveen et al, 2006 and Bähr, 2008.

strength, expertise, autonomy and recruitment and training mechanism of the civil service. Because the first two dimensions are measured on a scale from 0 to 6 while the last one does so from 0 to 4, we normalize each dimension between 0 and 1. The quality of government indicator used here is obtained by summing up these normalized values and thus, ranges from 0 to 3 where a higher number implies higher government quality. Using an aggregate indicator accounts for the possibility that each individual index may suffer a degree of measurement error (Mauro, 1995). In our sample, government quality is low in Mexico and in Eastern and Southern Europe and high in the remaining countries.

The inter-jurisdictional competition literature emphasizes the importance of tying local expenditures to local revenues for the proper functioning of competition since vertical transfers may create incentives for local officials to ignore competitive pressures for better management (Jin et al, 2005; Qian and Weingast, 1997; Qian and Rolands, 1998; Oates, 1999; Zhuravskaya, 2000). With this in mind, we measure fiscal decentralization as subnational revenue (as a percentage of consolidated general government revenue) after subtracting from state and local revenues grants from other governments and based on the OECD General Government Accounts (see also, Kyriacou and Roca, 2011; 2012). The most fiscally decentralized countries in our data set are the federations of Canada, Switzerland and the US while the least decentralized are the unitary states of Portugal and Greece. As was the case of our regional disparities measure, revenue decentralization is quite stable through the time analyzed, with the exception of Spain (where decentralization has increased significantly) and Norway (where it has fallen).

4. Empirical Methodology

In line with our stated objective to consider how, if at all, government quality mediates the relationship between fiscal decentralization and regional disparities we estimate the following empirical model:

$$Regional\ Disparities_{it} = \alpha + \beta_1\,FD_{it} + \beta_2 GQ_{it} + \beta_3 FD_{it}*GQ_{it} + \beta_4\,X_{it} + \varepsilon_{it} \qquad (1)$$

where i refers to countries, t to years, α is a constant, FD is fiscal decentralization, GQ is government quality, X_{it} is a vector of control variables and ε_{it} is the error term. Given our discussion in section two we would expect β3<0, or in other words, that fiscal decentralization should reduce regional disparities in countries with better government quality[7].

Our vector of control variables contains real GDP per capita, public and private investment, current public spending, the degree of openness of the economy, human capital endowments, the presence of transition economies in our country sample and an indicator reflecting the presence of territorially segregated ethnic groups. Our choice of control variables is guided by the need to account for factors which may affect the relationship between fiscal decentralization and government quality on the one hand and regional disparities on the other and, consequently, whose omission might bias the estimated relationships between these three variables.

Thus, richer countries tend to have better government quality since economic development makes better quality institutions more affordable (Islam and Montenegro, 2002), and will tend to create a demand for better government (La Porta, et al. 1999), perhaps because of income's positive effect on education, literacy and depersonalized

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[7] For details on the mechanics and interpretation of interaction models see Brambor et al (2006).

relationships (Treisman, 2000). Wealthier countries are also likely to have a greater scope for redistributive policies aimed at reducing regional disparities (Lessmann, 2009). Several authors have, moreover, reported empirical evidence indicating that wealthier countries tend to be more decentralized perhaps because decentralization is a normal good (Panizza, 1999; Arzaghi and Henderson, 2005).

We further control for the size of the public sector since countries with larger state sectors may be better endowed to address regional inequalities (Rodríguez-Pose and Ezcurra, 2010). A bigger public sector implies greater corruption due to the greater possibility for rents (Tanzi 1998). Or it could be that governments that are better endowed may perform better (Montinola and Jackman, 2002). We employ two indicators which, taken together, reflect public sector size. First, current public spending as a share of real GDP and second, public investment as a percentage of GDP, especially since this has typically been aimed towards improving the productive capacity of less developed regions. In this sense, we also control for private investment since numerous empirical studies have shown that it has a positive and significant influence on growth performance (see, Voitchovsky, 2005 and Lin, et al, 2009 among others).

Regional disparities are likely to be affected due to growing globalization. Rodríguez-Pose and Gill (2006) present a range of theoretical arguments from both the New Economic Geography and the Heckscher-Ohlin framework for why increasing trade or economic integration may either reduce or increase regional disparities. The empirical evidence is suggestive of a positive relationship between these variables (Giannetti, 2002; Petrakos et al, 2005; Rodríguez-Pose, 2012). Moreover, countries which are more integrated into the world economy may have better governments basically because they are subject to stronger competitive pressures (Ades and Di Tella,

1999; Ezcurra, 2012). Lastly, to the extent that it increases the economic viability of smaller polities, globalization may generate secessionist pressures within countries and, consequently, open the way towards more decentralization (Alesina and Spolaore, 2003).

Another factor which may influence the relationship between fiscal decentralization, government quality and regional disparities are human capital endowments. Human capital is a significant factor explaining economic growth at the national level (Mankiw et al, 1992). Typically, human capital has been measured by way of quantitative indicators of education. For our purposes here, to control for the impact of human capital on regional disparities, we ideally need a measure of the former which accounts for regional differences in human capital endowments across countries. In the absence of such a measure, we turn to Barro and Lee (2001) who provide an indicator defined as the average years of schooling of the population aged 25 and over.

We further control for whether a country was a member of the Soviet Union. La Porta et al. (1999) have argued that a country's legal tradition is an indicator of the power of the state relative to property owners, with common law systems tilting the balance in favor of the latter and socialist law systems favoring the former to the detriment of efficient government. Moreover, the transition from socialism to capitalism may have increased regional disparities because it seems to have benefited capital cities and major urban areas while harming agricultural and manufacturing regions (Petrakos, 2001; Rodríguez-Pose and Ezcurra, 2010).

The relationship between government quality, fiscal decentralization and regional inequalities may also be influenced by ethnic segregation. Alesina et al. (1999) have shown that ethnic heterogeneity reduces agreement over public policies something which eventually, reduces public good provision. It could be that ethnically segregated

societies have greater difficulties in agreeing on inter-territorial redistribution, something which is likely to increase regional disparities (see also, Kyriacou and Roca, 2012). More ethnically segregated countries are also more likely to be more decentralized ones because of stronger demands for self-government from ethnically distinct regions (Panizza, 1999; Alesina and Spolaore, 2003; Arzaghi and Henderson, 2005). We measure ethnic segregation by way of Alesina and Zhuravskaya (2011): they propose a continuous variable which ranges from a value of 1, if a country's regions are inhabited by different ethnic groups (and therefore each region is fully homogeneous), and a value of 0 if each region has the same ethnic composition as the country as a whole[8].

We employ a Feasible General Least Squares (FGLS) estimator. We use period SUR weights (Seemingly Unrelated Regression) that corrects for both period heteroskedasticity and serial correlation within a given cross-section (Parks, 1967). Neither fixed nor random effects models are appropriate. Fixed effects models rely exclusively on the time variation within each cross-section unit, something which is limited in two of our key variables namely, regional inequality and, especially, fiscal decentralization (see appendix 3) . On the other hand, using random effects would imply that our sample is a random one from a large population, something which obviously is not the case since our cross-section units are a group of OECD countries (Hsiao, 2003).

One further methodological issue is the presence of reverse causality. This can emerge in several ways in our study and, to the extent that it does, it can bias the estimated impact of our key explanatory variables. First, it could be the case that in countries with more significant regional disparities, there could be pressure towards

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[8] This indicator is, in fact, a squared coefficient of variation and it gives higher weight to the deviation of group composition from the national average in more populous regions than in less populous ones.

greater centralization with a view towards strengthening the redistributive capacity of the central government, or alternatively, more decentralization if this is perceived to contribute towards regional convergence (Lessman, 2012). Second, significant regional disparities may also lead to redistributive conflicts over the territorial distribution of resources which may crowd out policies aiming towards better or more efficient government at both central and sub-central levels (Kyriacou and Roca, 2013).

To deal with reverse causality we take several approaches. First, we apply an instrumental variables technique based on two stage FGLS employing lagged values of our endogenous variables as instruments (see also, Lessman, 2009 and Rodríguez Pose and Ezcurra, 2010). Second, we use a system GMM estimator suggested by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator is particularly useful in our context since it preserves the information which comes from the cross-country dimension of the data – information that is lost when employing first difference GMM. By adding the original equation in levels (with lagged first-differences as instruments) to a system of equations that also include equations in first differences (with lagged levels as instruments), the system GMM estimator makes use of the cross section dimension of the data and has the added advantage of controlling for country specific effects[9].

5. Results

We present our main regression results in table 1. The first three columns represent estimates based on annual data while the last three employ four year averages in an effort to reduce short-run fluctuations and therefore the influence of the business cycle,

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[9] The first difference GMM estimator (Arellano and Bond, 1991) exploits the within variation in the data and, as such, is not appropriate when variables are highly persistent as it is the case for our measure of fiscal decentralization. For the use of system GMM estimators in similar settings, see Voitchovsky (2005) and Castell-Climent (2010).

allowing us to focus on the structural relationship (see also, Lessman, 2009; 2012). Reassuringly, the impact of our control variables on regional disparities is mostly in line with previous empirical work. Wealthier countries tend to have lower regional disparities as we measure them in this paper. We also find that public investment reduces regional disparities in line with the expectation that governments may aim such investment towards the reduction of such disparities. On the other hand, openness is always associated with greater regional disparities, as found in previous empirical work. Moreover, human capital tends to increase regional disparities, possibly because increases in human capital are concentrated in more advanced regions. The positive impact of the transition economy dummy variable is in line with previous work which has reported growing regional disparities during the transition process. The positive coefficient of ethnic segregation also confirms the expectation that in societies with territorially separated ethnic groups it may be more difficult to adopt policies aimed at reducing regional disparities. Both current public spending and private investment tend to reduce regional disparities but these results, especially in the case of the former, are not always statistically significant.

Table 1 about here

We now turn to the estimated impact of our key variables namely, fiscal decentralization, government quality and, especially, their combined effect. Our results suggest that fiscal decentralization tends to reduce regional disparities but this relationship is statistically significant with annual data (column 1) but not so with four year averages (column 4). When we introduce institutional quality in the empirical model (columns 2 and 5) we find it to be negatively related with regional disparities at

the 1 per cent level, suggesting that better quality governments may be more effective in promoting regional convergence. Interestingly, the inclusion of government quality significantly reduces the point estimate of fiscal decentralization raising the possibility that previous estimates of the impact of fiscal decentralization on regional disparities without regards to the quality of government may suffer a degree of omitted variable bias. The role of institutional quality becomes clearer when it is interacted with fiscal decentralization (columns 3 and 6). Recall, that we posit that governance problems related to fiscal decentralization are likely to be worse in countries with poorer government quality, potentially overshadowing the efficiency gains expected from decentralization in relation to regional convergence. This expectation is supported by the fact that the interaction term between fiscal decentralization is always negative and statistically significant.

Table 2 about here

Table 2 presents our regression results when dealing with reverse causality. The first three columns apply two stage FGLS using one and four year lagged values of fiscal decentralization and government quality as instruments as well as instrumenting with the initial value of these variables in those regressions employing four year averages. The last three columns apply System GMM and employ the same instruments[10]. The results overwhelmingly confirm those reported in table 1. Fiscal decentralization has a positive and significant impact on regional convergence in the presence of government quality. In general our estimates show that fiscal decentralization will reduce regional disparities in

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[10] The results are maintained when taking two or three period lags. The use of longer lags reduces any correlation between the instrument and the disturbances but it can also, potentially, weaken our instruments (Murray, 2006). The strength of longer lags is confirmed by the first stage regressions. Moreover, regarding the estimates using system GMM, the Sargan and Hansen tests detect no problems regarding instrument validity.

high government quality countries: the cut-off value of government quality which changes the sign of the impact of fiscal decentralization on regional disparities in our regressions ranges from 2.4 and 2.6[11].

Figure 1 about here

In an effort to facilitate the interpretation of the mediating role of government quality on the relationship between fiscal decentralization and regional disparities, figure 1 reports the marginal effect of fiscal decentralization on regional inequality against the quality of government taking 95 % confidence intervals (based on column 4 of table 2). It shows that as government quality deteriorates below 2.4 according to the ICRG measure, the marginal effect of fiscal decentralization on disparities is positive and increasing, pointing to the possibility that governance problems associated with fiscal decentralization tend to eliminate the expected efficiency benefits to the detriment of regional convergence. The marginal effect becomes negative above this value suggesting that the efficiency benefits of fiscal decentralization are more likely to emerge in high quality institutional environments. In our sample of 24 OECD countries over a 22 year period starting in 1984 this is always the case for Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the UK and the US. Alternatively, in the Mediterranean and Eastern European countries in our sample, and especially in Mexico, fiscal decentralization is likely to increase regional disparities.

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[11] The cut-off value is obtained by differentiating the regressions containing the interaction term with respect to fiscal decentralization.

6. Robustness Analysis

In this section we examine the statistical robustness of our findings. First, in order to fathom whether the results are being driven by one particular country in our sample, we repeat our regressions after removing each of the 24 countries one at a time for the whole sample. The results are stable, indicating that no single country is driving them, and confirm the importance of institutional quality when estimating the impact of fiscal decentralization on regional disparities[12].

An additional issue concerns that empirical evidence that suggests the differential impact of fiscal decentralization in rich and poor countries (Rodríguez-Pose and Ezcurra, 2010 and Lessman, 2012). These contributions find that fiscal decentralization tends to increase regional disparities in poor countries while in wealthy ones it either reduces disparities or it has not effect. And because wealthier countries tend to have better quality institutions, these scholars make the untested claim that an important factor driving their results is probably institutional quality, something which is confirmed by our empirical evidence. But it could be that their results are driven by other factors which are closely related to income but unrelated to government quality. In an effort to account for the possibility that the differential impact of fiscal decentralization on disparities in rich and poor countries may be driven by other factors beyond institutional quality, we now add in our regressions an interaction term between fiscal decentralization and GDP per capita.

Table 3 about here

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[12] These and other results mentioned in the paper but not shown are, of course, available upon request.

The results in table 3 tend to support the suggestion that institutional quality is driving differences of the effect of fiscal decentralization in rich versus poor countries. In columns 1 and 5 of the table we report the regression results when no direct measure of institutional quality is considered. Then, in columns 2 and 6 we explore how the impact of fiscal decentralization is conditioned by GDP per capita and find, in line with previous results, that the interaction terms are negative and statistically significant suggesting the relevance of income when explaining the effects of fiscal decentralization on regional disparities. The results change considerably when we, moreover, control for government quality: the conditional effect of decentralization vis-à-vis GDP is no longer significant when we employ annual data (column 3), and it is barely significant when we use four year averages (column 7). This result is reinforced when we, additionally, control for the conditional effect of fiscal decentralization vis-à-vis government quality. While this latter effect is negative and statistically significant at either the 1 or 5 per cent levels, the interaction term between fiscal decentralization and GDP per capita is no longer statistically robust (see columns 4 and 8). These results reinforce the important influence of institutional quality on the relationship between fiscal decentralization and regional disparities[13].

7. Conclusion

In this paper we have examined the extent to which institutional quality influences the impact of fiscal decentralization on regional disparities. While there is an expectation

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[13] The fact that our sample size is limited to middle and high income countries probably reduces the robustness of the interaction term (between fiscal decentralization and GDP per capita) in our estimates. On the other hand, this term is still statistically significant at the 10% level, which reflects a degree of variation in income levels across countries in our sample (from as low as US$6,769 in Mexico in 1984 to US$49,747 in Norway in 2006). We suspect that widening the sample to include more developing countries will tend to increase the statistical robustness of the interaction in the absence of government quality. On the other hand, a wider sample is also likely to increase the variance of the government quality indicator so it is not clear if our findings here will change.

that fiscal decentralization may contribute towards the reduction of regional disparities because it empowers better-informed sub-central governments and foments inter-jurisdictional competition, the danger also exists that convergence may not materialize because of governance problems at lower levels of government. Previous empirical work has reported that fiscal decentralization tends to increaser disparities in poor countries while it tends to reduce them in richer ones. Because richer countries tend to have better quality governments, this has led some authors to suggest that the differences in government quality are driving the differential effect of decentralization in each setting.

Our empirical results confirm this intuition. At one, more general, level we find that controlling for institutional quality reduces the economic impact of fiscal decentralization on regional disparities, something which raises the possibility that previous empirical work which does not account for government quality may be plagued by omitted variable bias. At a more specific level, we find that fiscal decentralization will tend to widen regional disparities in countries with poor institutional quality, while decentralization reduces disparities in countries with high quality institutions. These results are robust to the introduction of a range of important covariates whose absence would otherwise bias our estimates. Moreover, our findings are maintained when we explicitly deal with the possibility of reverse causality.

From a policy perspective, our results have a clear implication. While countries may decentralize for any number of reasons, including the need to accommodate cultural diversity, to the extent that the driving force behind decentralization is the objective of regional convergence then caution is in order. Those countries, mostly high developed ones, which are endowed with good quality institutions, are more able to harness the potential benefits from fiscal decentralization to the benefit of regional

development. Alternatively, in those mostly developing countries which are plagued by poor governance, bestowing sub-national governments greater fiscal capacity is likely to widen income differences between better off and worse off regions.

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Appendix 1. List of Countries

Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Mexico, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, and United States.

Appendix 2. Data Sources

Variable	Source	Comments
Regional disparities indicators	Cambridge Econometrics and national statistics (courtesy of A. Rodríguez-Pose)	Time varying (annual)
Fiscal decentralization	OECD General Government Accounts (courtesy of I. Sanz)	Time varying (annual)
International Country Risk Guide	Political Risk Services Group	Time varying (annual)
GDP per capita	Penn Tables	Time varying (annual)
Private Investment	World Development Indicators (World Bank)	Time varying (annual)
Current Public Spending	IMF Government Finance Statistics	Time varying (annual)
Public investment	IMF Government Finance Statistics	Time varying (annual)
Trade openness	Penn Tables	Time varying (annual)
Human capital	Barro and Lee (2001)	Time varying (5 year periods)
Transition economies dummy	La Porta et al (1999)	Time invariant

Notes: See main text for the definitions of the variables.

Appendix 3. Summary statistics

		Mean	Standard deviation	Minimum	Maximum	Observations
Regional disparities	Overall	0.2129	0.1009	0.0481	0.6035	N = 418
	Between		0.1230	0.0567	0.5868	n = 24
	Within		0.0252	0.0876	0.3345	T = 17.42
Fiscal Decentralization (FD)	Overall	0.2225	0.1294	0.0321	0.5454	N = 418
	Between		0.1321	0.0348	0.5269	n = 24
	Within		0.0225	0.1446	0.3412	T = 17.42
Government Quality	Overall	2.6292	0.3739	1.4166	3	N = 418
	Between		0.3925	1.5061	2.9938	n = 24
	Within		0.1587	2.0252	3.0802	T = 17.42
Log of GDP per capita	Overall	10.1430	0.3156	9.0617	10.7935	N = 418
	Between		0.3355	9.1576	10.5371	n = 24
	Within		0.1459	9.7033	10.6589	T = 17.42
Private Investment	Overall	0.2113	0.3432	0.1514	0.3574	N= 418
	Between		0.2980	0.1761	0.2878	n = 24
	Within		0.2075	0.1624	0.2888	T = 17.42
Current Public Spending	Overall	0.1959	0.0394	0.0963	0.2880	N= 418
	Between		0.0425	0.1017	0.2688	n = 24
	Within		0.0115	0.1562	0.2370	T = 17.42
Public Investment	Overall	0.0281	0.0084	0.0066	0.0604	N = 418
	Between		0.0070	0.0170	0.0423	n = 24
	Within		0.0052	0.0146	0.0507	T = 17.42
Openness	Overall	0.6456	0.3172	0.1418	1.7732	N = 418
	Between		0.3021	0.2066	1.3489	n = 24
	Within		0.1157	0.2206	1.1901	T = 17.32
Human Capital	Overall	3.1121	1.0886	0.8670	5.0880	N = 418
	Between		1.0482	1.3420	4.8585	n = 24
	Within		0.3713	1.8352	4.0516	T = 17.42
Dummy for transition economies	Overall	0.0694	0.2544	0	1	N = 418
	Between		0.3378	0	1	n = 24
	Within		0	0.0694	0.0694	T = 17.42
Ethnic Segregation	Overall	0.0411	0.0650	0.001	0.244	N = 418
	Between		0.0669	0.001	0.244	n = 24
	Within		0	0.411	0.0411	T = 17.42

Tables and figure to be embedded in the text.

Table 1. Regional disparities, fiscal decentralization and governance

	Annual Data			Four Year Averages		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Log of GDP per capita	-0.116 (0.016)***	-0.115 (0.014)***	-0.123 (0.014)***	-0.153 (0.031)***	-0.150 (0.027)***	-0.156 (0.026)***
Private Investment	-0.103 (0.052)**	-0.116 (0.052)**	-0.097 (0.052)*	-0.001 (0.167)	-0.079 (0.151)	-0.048 (0.145)
Current Public Spending	-0.255 (0.068)***	-0.074 (0.068)	-0.048 (0.069)	-0.273 (0.186)	-0.063 (0.166)	-0.026 (0.163)
Public Investment	-1.034 (0.203)***	-1.095 (0.194)***	-0.946 (0.196)***	-2.258 (0.700)***	-1.655 (0.635)***	-1.522 (0.620)**
Openness	0.048 (0.018)***	0.086 (0.018)***	0.088 (0.019)***	0.110 (0.049)**	0.120 (0.043)***	0.120 (0.043)***
Human Capital	0.028 (0.004)***	0.031 (0.004)***	0.030 (0.004)***	0.031 (0.012)***	0.039 (0.011)***	0.038 (0.010)***
Dummy for transition economies	0.149 (0.018)***	0.096 (0.015)***	0.091 (0.015)***	0.103 (0.039)***	0.063 (0.034)*	0.054 (0.034)
Ethnic Segregation	0.499 (0.069)***	0.473 (0.070)***	0.443 (0.073)***	0.660 (0.169)***	0.552 (0.147)***	0.446 (0.156)***
Fiscal Decentralization (FD)	-0.169 (0.034)***	-0.081 (0.034)**	0.637 (0.188)***	-0.123 (0.089)	-0.056 (0.077)	0.918 (0.434)**
Government Quality		-0.109 (0.007)***	-0.061 (0.015)***		-0.123 (0.018)***	-0.060 (0.033)*
FD * Governm Quality			-0.257 (0.070)***			-0.356 (0.158)**
Adjusted R²	0.61	0.71	0.71	0.50	0.65	0.66
Observations	418	418	418	123	123	123

Standard Errors in parentheses. *, **, *** measures statistical significance at the 10, 5 and 1% levels respectively. All regressions report FGLS using Period SUR weights and include constant (not shown).

Table 2. Regional disparities, revenue decentralization and governance: reverse Causality.

Instrumenting FD and Government Quality with:	TS-FGLS			SYS-GMM		
	Annual	Annual	Four year averages	Annual	Annual	Four year averages
	One-year Lags	Four-year Lags	Initial values	One-year Lags	Four-year Lags	Initial values
	(1)	(2)	(3)	(4)	(5)	(6)
Log of GDP per capita	-0.129	-0.102	-0.150	-0.079	-0.083	-0.091
	(0.020)***	(0.026)***	(0.026)***	(0.004)***	(0.005)***	(0.013)***
Private Investment	-0.090	-0.187	0.048	-0.202	-0.003	-0.151
	(0.058)	(0.073)**	(0.141)	(0.027)***	(0.001)***	(0.070)***
Current Public Spending	0.033	0.262	0.013	0.148	0.176	0.070
	(0.088)	(0.107)**	(0.165)	(0.021)***	(0.021)***	(0.052)
Public Investment	-0.980	-0.712	-1.419	-1.719	-1.015	-1.656
	(0.231)***	(0.266)***	(0.578)**	(0.100)***	(0.108)***	(0.246)***
Openness	0.101	0.123	0.119	0.100	0.112	0.112
	(0.020)***	(0.026)***	(0.042)***	(0.004)***	(0.004)***	(0.011)***
Human Capital	0.030	0.020	0.038	0.007	0.033	0.033
	(0.006)***	(0.006)***	(0.010)***	(0.001)***	(0.001)***	(0.004)***
Dummy for transition economies	0.074	0.071	0.056	0.104	0.109	0.097
	(0.018)***	(0.021)***	(0.033)*	(0.004)***	(0.004)***	(0.010)***
Ethnic Segregation	0.338	0.267	0.448	0.467	0.459	0.417
	(0.089)***	(0.131)***	(0.157)***	(0.014)***	(0.014)***	(0.034)***
Fiscal Decentralization (FD)	1.267	1.472	0.998	0.727	1.007	1.021
	(0.436)***	(0.755)***	(0.505)**	(0.062)***	(0.064)***	(0.188)***
Government Quality	-0.035	-0.087	-0.058	-0.103	-0.092	-0.072
	(0.046)	(0.050)	(0.039)	(0.005)***	(0.005)***	(0.016)***
FD * Government Quality	-0.476	-0.500	-0.392	-0.305	-0.396	-0.408
	(0.163)***	(0.271)***	(0.183)**	(0.022)***	(0.023)***	(0.066)***
Adjusted R²	0.63	0.62	0.69	--	--	--
Sargan test	--	--	--	0.170	0.446	0.246
Hansen test	--	--	--	0.152	0.346	0.652
Observations	401	350	121	401	350	121

Standard Errors in parentheses. *, **, *** measures statistical significance at the 10, 5 and 1% levels respectively.

Regressions (1) to (3) use Period SUR weights. All regressions include constant (not shown).

Table 3. Regional disparities, fiscal decentralization: Governance versus GDP

	Annual Data				Four Year Averages			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Log of GDP per capita	-0.116 (0.016)***	-0.087 (0.024)***	-0.089 (0.022)***	-0.103 (0.022)***	-0.153 (0.031)***	-0.095 (0.048)*	-0.094 (0.044)**	-0.109 (0.043)**
Private Investment	-0.103 (0.052)**	-0.088 (0.052)*	-0.107 (0.053)**	-0.098 (0.052)*	-0.001 (0.167)	0.001 (0.002)	-0.020 (0.154)	-0.001 (0.001)
Current Public Spending	-0.255 (0.068)***	-0.301 (0.070)***	-0.111 (0.069)	-0.071 (0.070)	-0.273 (0.186)	-0.323 (0.187)*	-0.104 (0.168)	-0.059 (0.165)
Public Investment	-1.034 (0.203)***	-1.044 (0.200)***	-1.081 (0.195)***	-0.959 (0.196)***	-2.258 (0.700)***	-2.089 (0.695)***	-1.537 (0.629)**	-1.433 (0.620)**
Openness	0.048 (0.018)***	0.044 (0.017)**	0.082 (0.019)***	0.085 (0.019)***	0.110 (0.049)**	0.107 (0.050)**	0.111 (0.044)**	0.113 (0.044)**
Human Capital	0.028 (0.004)***	0.029 (0.004)***	0.032 (0.004)***	0.031 (0.004)***	0.031 (0.012)***	0.036 (0.012)***	0.042 (0.011)***	0.041 (0.010)***
Dummy for transition economies	0.149 (0.018)***	0.151 (0.019)***	0.101 (0.016)***	0.096 (0.016)***	0.103 (0.039)***	0.105 (0.040)***	0.068 (0.035)*	0.061 (0.034)*
Ethnic Segregation	0.499 (0.069)***	0.486 (0.071)***	0.468 (0.071)***	0.442 (0.073)***	0.660 (0.169)***	0.652 (0.174)***	0.524 (0.150)***	0.436 (0.157)***
Fiscal Decentralization (FD)	-0.169 (0.034)***	1.588 (1.018)	1.505 (0.976)	1.774 (0.968)*	-0.123 (0.089)	3.546 (2.106)*	3.114 (1.891)	3.348 (1.876)*
FD * Log of GDP per capita		-0.171 (0.100)*	-0.154 (0.095)	-0.117 (0.096)		-0.359 (0.206)*	-0.310 (0.184)*	-0.248 (0.184)
Government Quality			-0.106 (0.007)***	-0.064 (0.015)***			-0.122 (0.018)***	-0.065 (0.033)*
FD * Government Quality				-0.233 (0.071)***				-0.317 (0.160)**
Adjusted R²	0.61	0.60	0.70	0.70	0.50	0.51	0.66	0.67
Observations	418	418	418	418	123	123	123	123

Standard Errors in parentheses. *, **, *** measures statistical significance at the 10, 5 and 1% levels respectively. All regressions report FGLS using Period SUR weights and include constant (not shown).
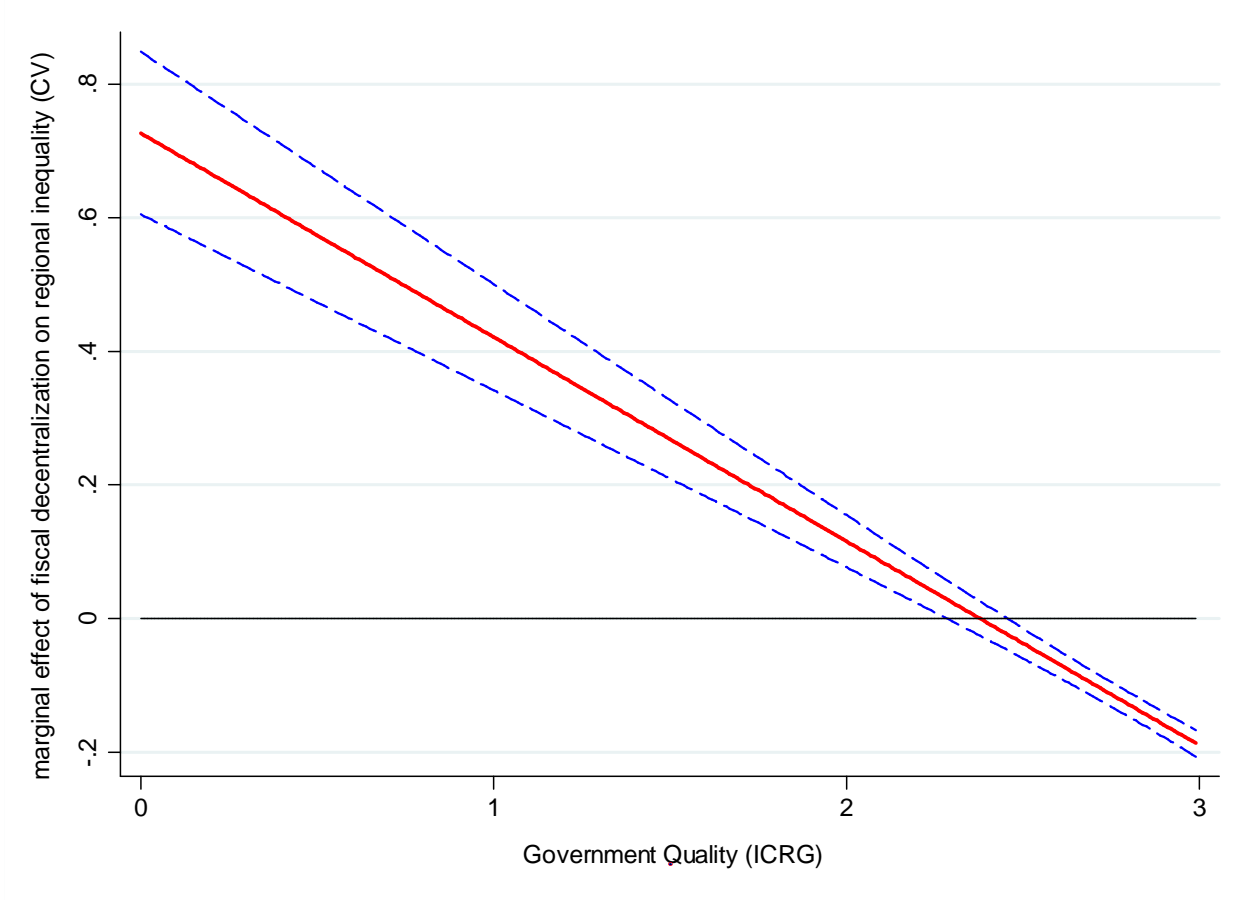
Figure 1. Marginal effect of fiscal decentralization on regional disparities in the presence of government quality