

Case Report

Fiscal Decentralization and Corruption in Emerging and Developing Countries

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Abstract: This study focuses on the relationship between fiscal decentralization and ICRG index of corruption risk in both categories of emerging and developing countries, using a sample of 38 countries for the period 2000-2014. The aim is to focus on expenditure and revenue decentralization giving importance to the effects of subnational revenue mobilization on this correlation as: Tax revenue, Non tax revenue and fiscal imbalances. The study shows a significant and robust correlation between expenditure decentralization and the index of corruption: expenditure decentralization tends to reduce the risk of corruption in these two categories of countries. The impact of Tax Revenue is as important in this relationship as it helps reduce the risk even more. While revenue decentralization and especially non-tax revenue has no significant relationship with the index.

Keywords: Fiscal Decentralization, Corruption, Developing Countries, Emerging Countries

1. Introduction

Since the 1990s, many developing countries have engaged in the process of decentralization and regionalization to give local authorities more autonomy. The aim is to reduce the role of national government in favor of the subnational governments in local economic development programs. Fiscal decentralization is the cornerstone of any successful decentralization as it provides the subnational levels with the necessary resources to face decentralized expenditures.

Many studies aimed at showing the benefits of decentralization and expanding its advantages to different levels. As expressed in Tiebout [34], decentralization leads to a greater variety in public goods which are better adapted to responding to the local population. However, Prud'homme [29] and Tanzi [33] stressed the fact there are numerous imperfections in implementing local service, which might hinder achieving the benefits of decentralization.

According to the theory of fiscal federalism, first and second generation (Oates [25]), the effects of decentralization are classified according to the three branches of public

economics defined by Musgrave [24]: resources allocation, income redistribution and economic stabilization.

The allocating efficiency is justified by the principle of political proximity and competition. The first is based on the approximation of the policy makers and citizens which helps know better the needs and preferences of the population (Hayek [16]), and also stressed the accountability and efficiency of local governments (Seabright [32]). The second is based on the inter-jurisdictional competition that decentralization introduced, leading to the improvement of the goods offer and public services adequacy to the preferences of inhabitants (Tiebout [34] and Oates [26]) and stimulating the search for efficiency by the local governments (Salmon [31]; Besley and Case [9]).

Approximating policy makers and citizens will certainly reduce the informational asymmetries, but this might lead to increasing the risk of corruption, especially in developing countries where control is weak.

However, empirical studies in the field generate controversial results. The first category views that decentralization increase corruption (Treisman [35]; Fan, Lin

and Treisman [14]). The second category thinks that decentralization reduces corruption and makes better the quality of governance (Huther and Shah [17], Bareinstein and Mello [8], Fisman and Gatti [15]). But, those scholars have worked on a sample putting together developed, developing and emerging countries. Our study aims at distinguishing developed countries from developing and emerging ones for the period between 2000 and 2014 with a focus on the results of those two categories.

It postulates that the nature of the relationship between fiscal decentralization and corruption in developing and emerging countries differs from that of developed countries. With reference to the studies which show that the nature of revenue mobilization influences the relationship between decentralization and the quality of governance, we suppose there is also an effect impact on the relationship between fiscal decentralization and corruption.

So, does fiscal decentralization have an effect on corruption in emerging and developing countries? And, what might be the influence of the types of revenue mobilization on this correlation?

2. Literature Review

Potential effects of decentralization are a good allocation of public goods and services and a better efficiency of their production. These effects are the results of two mechanisms namely, proximity and competition.

Proximity between decision makers and citizens generates an informational advantage as shown in Hayek [16] and Oates [26]. Local governments are supposed to hold more information, to a lower cost, on members of their community and hence know more the poorest households, especially than the poverty varies from a jurisdiction to another. Thus, Alderman [3] shows that local policy makers have access to certain information not available to the local authority; hence they target better the poor population.

Moreover, proximity showed encourages the political participation of citizens and the responsibility of policy makers. Therefore, local governors, due to the pressure of citizens, are supposed to achieve a greater efficiency in providing public goods and services. However, this assumption supposes, in case of developing countries, that local democracy is to a good level. This also needs a certain level of literacy and political involvement of citizens, which seems a bit unrealistic in poor countries.

On the other hand, Prud'homme [29] and Bardhan [6] stress that there is the risk of more corruption that decentralization might result in developing countries. Local decision makers are more liable to set up personnel relations which could conduct to more corruption. Tanzi [33] believes that corruption is greater locally as long as it is stimulated by proximity of agents which favors personnel relations: an impetus to corruption. Obstacles in front of corruption are fewer locally as the necessary cooperation between politicians and the administration to carry out that is hindered by the autonomy of these two levels. Moreover, control and pressure

from part of the media are of less importance and do not play the needed role. Decentralization, hence, generates an increase in corruption and possibility the cost of public services.

However, empirical studies demonstrate that there is an increase in corruption in countries with high rate of decentralization and others by demonstrating against improved governance and a weak rate of corruption.

Treisman [35] and Fan, Lin and Treisman [14] by carrying a cross-sectional analysis of 54 and 80 countries, show that decentralized states have higher rates of corruption. Treisman [35] using variables on the basis of surveys of investment risks as well as a binary variable (federal or non-federal) concludes that federal countries are more "corrupt". The author suggests that competition from different autonomous levels of government to extract bribes from the same economic actors is likely to lead to "grazing". He shows preliminary evidence in support of this robust perspective, particularly among developing countries.

Fan, Lin and Treisman [14] use variables on corruption frequency and variables related to decentralization. They conclude that corruption is more common when the number of levels of government and local public employees increases.

There is, however, disagreement as several studies show that fiscal decentralization reduces corruption and improves the quality of governance by empowering local decision makers. Huther and Shah [17], using the index of quality of governance and the share of local public expenditure in total public expenditure show that there is a positive effect of fiscal decentralization on governance. They point to Pearson correlation coefficient of 0.532 between the absence of corruption and the extent of subnational spending, a factor statistically significant. This finding supports the idea that increased decentralization reduces corruption.

Following the same path, Bareinstein and Mello [8] show a positive effect of expenditure decentralization on governance. He then discusses the different revenue mobilization of local governments and indicators as governances are infected with types of revenue mobilization. Governance increases if revenue mobilization are not made up of own sub national governments revenues.

Enikolopov and Zhuravskaya [13] demonstrate that governance indicators will crescendo when decentralization is combined with political parties in power. Hence, fiscal decentralization has a positive effect on the quality of governance and access to education and health care. Political institutions are critical in determining these effects.

Fisman and Gatti [15] used a corruption index and the share of local public expenditure in total public expenditure, which has shown that fiscal decentralization is significantly associated with lower levels of corruption. They demonstrate that a higher degree of decentralization is significantly associated with low corruption measured by ICRG and the indices of RCG, and less confidence indices for IT and GCS. They also conclude that the effectiveness of decentralization in reducing corruption can vary significantly depending on how the decentralization took place. They open the question of how decentralization affects the type of corruption for future research.

Arikan [5] was interested in the issue in a competitive context of decentralization. He uses the index of perceived corruption and decentralization indicators where the level of corruption decreases as the number of jurisdictions compete. But the results are not very robust and suggest the hypothetical relationship between decentralization and corruption.

Altunbas and Thornton [4] support the view that fiscal decentralization has a positive impact on governance by reducing corruption. The authors base their research on variables of fiscal decentralization but also on the variable administrative and political decentralization. Their empirical results argue that a 1 standard deviation increase in fiscal decentralization is associated with a reduction of corruption between 0.33 (Tax Effort decentralization) and 0.54 (wage bill decentralization).

3. Methodology

3.1. Empirical Methodology

It is performed by a cross-country analysis based on the database of the International Monetary Fund (IMF: Government Finance Statistics (GFS)) that centralizes the

$$cor_{k,t} = \beta_0 + \beta_1 FDexp_{k,t} + \beta_2 lngdp_{k,t} + \beta_3 lnpop_{k,t} + \beta_4 LAarea_{k,t} + \beta_5 civlib_{k,t} + \beta_6 imports_{gdp_{k,t}} + \beta_7 expenses_{gdp_{k,t}} + \varepsilon_{k,t} \quad (1)$$

Equation (2) represents the relationship between the index of the risk of corruption and fiscal decentralization of revenue in emerging and developing countries.

$$cor_{k,t} = \beta_0 + \beta_1 FDrev_{k,t} + \beta_2 lngdp_{k,t} + \beta_3 lnpop_{k,t} + \beta_4 LAarea_{k,t} + \beta_5 civlib_{k,t} + \beta_6 imports_{gdp_{k,t}} + \beta_7 expenses_{gdp_{k,t}} + \varepsilon_{k,t} \quad (2)$$

Equation (3) represents the relationship between the index of the risk of corruption and expenditure decentralization variable by integrating varying types of local government revenue mobilization: Tax revenue, Non-tax revenue and the fiscal imbalance.

$$cor_{k,t} = \beta_0 + \beta_1 (FDexp_{k,t} * R) + \beta_2 lngdp_{k,t} + \beta_3 lnpop_{k,t} + \beta_4 LAarea_{k,t} + \beta_5 civlib_{k,t} + \beta_6 imports_{gdp_{k,t}} + \beta_7 expenses_{gdp_{k,t}} + \varepsilon_{k,t} \quad (3)$$

3.3. Indicators

$cor_{k,t}$: ICRG Index of corruption risk is an index that measures the political, economic and financial risk of 140 countries. It gives us an index of 0 (maximum risk) to 6 (least risk). This is the most used in the previous works of economic literature variable. This variable is intended to capture the likelihood that officials will demand illegal payments, and the extent to which illegal payments are expected throughout lower levels of government, ranked by panels of international experts (see Knack and Keefer [18]).

Decentralization variables: Numbers of empirical studies have examined the variables that measure fiscal decentralization and how to calculate it. The share of local public expenditure (revenue) on total public expenditure (revenue) has been widely used as a proxy for the degree of decentralization (Pryor [30]; Oates [26]; Panizza [28]). Oates [25] suggests that, although imperfect, this variable should be a good measure of fiscal decentralization as "the extent of government activity on taxation and expenditure of public funds is certainly a component fundamental importance in determining its influence on resource allocation (Oates [26], p. 197). Furthermore, fiscal decentralization is often cited as an

revenues and expenditures of countries according to government structures (General, Central, State and local Government). However, the local detail is not available for all countries and even less for the developing and emerging ones. This brings us to limit our study to 38 emerging and developing countries for the period between 2000 and 2014.

Our analysis focuses on raising the relation between expenditure decentralization (and subsequently of revenues) and ICRG index among 38 emerging and developing countries. Thereafter, interest in the impact of the types of revenue mobilization (Tax revenue, non-tax revenue and fiscal imbalance) on this correlation.

3.2. Models

To find out the relationship between fiscal decentralization and corruption index there are two functions. The first function is interested in the expenditure decentralization variable and the second to the revenue decentralization variable.

Equation (1) represents the relationship between the index of the risk of corruption and fiscal decentralization of expenditure in emerging and developing countries.

important ingredient for the responsibility and good governance, because the delegation of revenue collection and power expenses corrects fiscal vertical imbalances between different levels of government.

$FDexp_{k,t}$: Expenditure decentralization index is calculated by the local public expenditure on total public expenditure. Government Finance Statistics is used in the numerator are spending level "Local Government" and "State Government" and denominator are spending level General Government (local and State and Central).

$FDrev_{k,t}$: Revenue decentralization index is calculated by the local public revenues on total government revenues.

R : Relating to revenue mobilization indicators. We distinguish Tax Revenue defined as the share of local governments own tax revenues in total subnational revenues, Non Tax revenue is calculated by the share of non-tax revenues in total subnational revenues and Fiscal Imbalance is the transfers and grants from the central government to local governments to fill the gap between local expenditure and revenue.

We use control variables to minimize potential bias for measuring coefficient of fiscal decentralization. These variables are the norm in inter-country empirical literature on corruption.

$\ln gdp_{k,t}$: Logarithm of GDP per Capita reported to the constant value of 2011 dollars in the aim to control the level of economic development. Source: World Bank indicators.

$civlib_{k,t}$: Index of civil liberties to capture the extent to which a free press and free political associations could act as a check on corrupt public sector. First developed by Gastil, it is calculated by Freedom House with a score of 1 (more liberties) to 7 (least freedoms).

$\ln pop_{k,t}$: Total population. Source: World Bank indicators.

$LAarea_{k,t}$: The area of the country is an important variable because larger countries could adopt more decentralized tax systems to better meet the diverse preferences of their citizens. Source: World Bank indicators.

$imports_{gdp_{k,t}}$: Imports as a percentage of Gross Domestic Product (openness of the economy) is a frequently used variable in studies of corruption as an explanatory variable or control as suggested by Ades and Di Tella [1], Fisman and Gatti [15], Arikan [5] and Fan, Lin and Treisman [14]. Leite and Weidmann [21] explain that countries with fewer trade restrictions tend to have less corruption. Source: World Bank indicators.

$expenses_{gdp_{k,t}}$: This variable measures the size of the country through the total expenditure as percentage of GDP. The size of the country is also a major source of potential false correlation. Large countries exploit economies of scale in the provision of public services (Ades and Wacziarg [2]), and therefore have a low ratio of sales outlets of public service per capita, individuals may resort to bribes "to go the front of the queue".

$\epsilon_{k,t}$: Residue of the model, it represents other variables not taken into account in this model.

3.4. Collinearity Test of Variables

Collinearity test of variables of the first (1) and second (2) function confirms our choice of variables since the correlation between the exogenous variables is acceptable which does not injure the reliability of our model. (Tables 1 and 2)

The same as regards the variables related to the introduction of different types of revenue mobilization. This can be seen in tables 3.

Table 1. Collinearity test of the variables for the function (1).

	EXPENSEGDP	CIVLIB	FDEXP	IMPORTSGDP	LANDAREA	LNGDP	LNPOP
EXPENSEGDP	1.000000	0.000121	0.290271	0.318962	0.120433	0.344275	-0.077159
CIVLIB	0.000121	1.000000	0.051905	0.025964	0.186616	-0.006491	0.100519
FDEXP	0.290271	0.051905	1.000000	-0.235966	0.454761	0.325671	0.411749
IMPORTSGDP	0.318962	0.025964	-0.235966	1.000000	-0.385791	0.036427	-0.591008
LANDAREA	0.120433	0.186616	0.454761	-0.385791	1.000000	0.212479	0.469334
LNGDP	0.344275	-0.006491	0.325671	0.036427	0.212479	1.000000	-0.035411
LNPOP	-0.077159	0.100519	0.411749	-0.591008	0.469334	-0.035411	1.000000

Table 2. Collinearity test of the variables for the function (2).

	FDREV	CIVLIB	EXPENSEGDP	LANDAREA	LNGDP	LNPOP	IMPORTSGDP
FDREV	1.000000	-0.001576	0.279352	0.385345	0.267677	0.492418	-0.263158
CIVLIB	-0.001576	1.000000	0.010850	0.182076	-0.024806	0.103766	0.030787
EXPENSEGDP	0.279352	0.010850	1.000000	0.123772	0.354975	-0.080019	0.318559
LANDAREA	0.385345	0.182076	0.123772	1.000000	0.210234	0.471494	-0.385927
LNGDP	0.267677	-0.024806	0.354975	0.210234	1.000000	-0.027788	0.032466
LNPOP	0.492418	0.103766	-0.080019	0.471494	-0.027788	1.000000	-0.594361
IMPORTSGDP	-0.263158	0.030787	0.318559	-0.385927	0.032466	-0.594361	1.000000

Table 3. Collinearity test of the variables for the function (3).

	TAXREV	FDEXP	CIVLIB	EXPENSEGDP	IMPORTSGDP	LNGDP	LANDAREA	LNPOP
TAXREV	1.000000	0.137617	0.312730	0.228581	0.228504	0.221613	0.233961	-0.030452
FDEXP	0.137617	1.000000	0.051905	0.290271	-0.235966	0.325671	0.454761	0.411749
CIVLIB	0.312730	0.051905	1.000000	0.000121	0.025964	-0.006491	0.186616	0.100519
EXPENSEGDP	0.228581	0.290271	0.000121	1.000000	0.318962	0.344275	0.120433	-0.077159
IMPORTSGDP	0.228504	-0.235966	0.025964	0.318962	1.000000	0.036427	-0.385791	-0.591008
LNGDP	0.221613	0.325671	-0.006491	0.344275	0.036427	1.000000	0.212479	-0.035411
LANDAREA	0.233961	0.454761	0.186616	0.120433	-0.385791	0.212479	1.000000	0.469334
LNPOP	-0.030452	0.411749	0.100519	-0.077159	-0.591008	-0.035411	0.469334	1.000000
	NONTAXREV	FDEXP	CIVLIB	EXPENSEGDP	LANDAREA	IMPORTSGDP	LNGDP	LNPOP
NONTAXREV	1.000000	-0.137617	-0.312730	-0.228581	-0.233961	-0.228504	-0.221613	0.030452

	TAXREV	FDEXP	CIVLIB	EXPENSEGDP	IMPORTSGDP	LNGDP	LANDAREA	LNPOP
FDEXP	-0.137617	1.000000	0.051905	0.290271	0.454761	-0.235966	0.325671	0.411749
CIVLIB	-0.312730	0.051905	1.000000	0.000121	0.186616	0.025964	-0.006491	0.100519
EXPENSEGDP	-0.228581	0.290271	0.000121	1.000000	0.120433	0.318962	0.344275	-0.077159
LANDAREA	-0.233961	0.454761	0.186616	0.120433	1.000000	-0.385791	0.212479	0.469334
IMPORTSGDP	-0.228504	-0.235966	0.025964	0.318962	-0.385791	1.000000	0.036427	-0.591008
LNGDP	-0.221613	0.325671	-0.006491	0.344275	0.212479	0.036427	1.000000	-0.035411
LNPOP	0.030452	0.411749	0.100519	-0.077159	0.469334	-0.591008	-0.035411	1.000000
	FIMB	CIVLIB	EXPENSEGDP	FDEXP	IMPORTSGDP	LNGDP	LANDAREA	LNPOP
FIMB	1.000000	-0.192977	-0.174869	0.030739	-0.187190	-0.215040	-0.200895	0.092224
CIVLIB	-0.192977	1.000000	0.000121	0.051905	0.025964	-0.006491	0.186616	0.100519
EXPENSEGDP	-0.174869	0.000121	1.000000	0.290271	0.318962	0.344275	0.120433	-0.077159
FDEXP	0.030739	0.051905	0.290271	1.000000	-0.235966	0.325671	0.454761	0.411749
IMPORTSGDP	-0.187190	0.025964	0.318962	-0.235966	1.000000	0.036427	-0.385791	-0.591008
LNGDP	-0.215040	-0.006491	0.344275	0.325671	0.036427	1.000000	0.212479	-0.035411
LANDAREA	-0.200895	0.186616	0.120433	0.454761	-0.385791	0.212479	1.000000	0.469334
LNPOP	0.092224	0.100519	-0.077159	0.411749	-0.591008	-0.035411	0.469334	1.000000

4. Results and Discussion

4.1. Fiscal Decentralization and the Risk of Corruption

The first analysis of expenditure decentralization index FDEXP and corruption index COOR in emerging and developing countries (function 1) reveals at the first time that our analysis is significant. Table 4 shows that the choice of variables is optimal as well as the existence of a significant relationship between our dependent and independent variables. The residue is not proof with an R2 of 74%. The results show the relevance of our econometric model, hence the need to adopt the above analysis.

After using the Hausman test, the model is the fixed effect one that shows that there's a positive and significant correlation of expenditure decentralization index FDEXP on of the index COOR. Knowing that when the index value improves the risk of corruption decreases, it can be argued that an 1 deviation increase of expenditure decentralization reduces the risk of corruption of 1.21 (Table 4, column (1)).

This echoes the results of Altunbas and Thornton [4] Fisman and Gatti [15], who both studied the impact of decentralization on ICRG corruption index and demonstrate the impact of decentralization on the reduction of corruption risk.

The significant relationship between corruption and the development LNGDP shows that the development of the country affects the corruption index in a negative way. The higher GDP countries have the greater risk of corruption. A 1 deviation of log GDP increases the risk of 0.3.

The correlations between corruption index and civil liberties CIVLIB, the imports as percentage of GDP IMPORTSGDP, the land area LNPOP area and population are not significant and negative. When relationship with expenses as a percentage of GDP is positive, this means reducing the risk.

The correlation between revenue decentralization and

ICRG corruption index (function 2) is also positive but not significant and the model is the fixed effect. When the revenue decentralization index increases then the risk of corruption decreases (Table 4, column (2)). In this analysis the meaningful control variable is logPIB which means that the countries where GDP is significant, corruption risk increases (coefficient 0.3). The other control variables are not significant and negative except the size of government, which is also not significant but positive.

4.2. The Impact of Revenue Mobilization Indicators

We are interested in the impact of different revenue mobilization indicators on the relationship between expenditure decentralization and ICRG corruption index. The hypothesis is concerned that corruption is not only influenced by expenditure decentralization but also by the nature of revenue mobilization (Bareinstein and Mello [8]). Our analysis focuses on Tax Revenue, Non tax Revenue and Fiscal imbalance (function 3).

The results shows that tax revenues combined with the expenditure decentralization FDEXP * TAXREV have significant impact on the value of the risk of corruption. This leads us to conclude that the combined tax revenue decentralization has more influence on reducing the risk of corruption. A 1 deviation increase of the variable "expenditure decentralization * tax revenue" reduces the risk of corruption by 2.32 (Table 4, column (3.1)). The two other types of revenue mobilization are not significantly correlated with the corruption index (Tables 4, column (3.2) and (3.3)).

Bareinstein and Mello [8] in their analysis are interested in the influence of different revenue mobilization combined with expenditure decentralization index on governance. Their results were quite different from our results. The non-tax revenues combined with expenditure decentralization have the greatest effect in improving governance.

Table 4. Fixed Effect Estimation of correlation between fiscal decentralization and risk of corruption ICRG.

Dependant Variable: ICRG index of corruption: Coor					
	1	2	3.1	3.2	3.3
FDexp	1.216711*** -0.482823				
FDrev		0.599639 -0.482167			
FDexp*TAXREV			2.325584*** -0.717171		
FDexp*NONTAXREV				0.282245 -0.617155	
FDexp*FISCALIMBA					0.681212 -0.609618
LNGDP	-0.306986** -0.141859	-0.312294** -0.143747	-0.082061 -0.159205	-0.348489** -0.153592	-0.323592** -0.149076
LNPOP	-0.07209 -0.410503	-0.11163 -0.418126	-0.265808 -0.410343	-0.083729 -0.41863	-0.006912 -0.416469
LANDAREA	-6.86 E -05	-8.30 E -05** (4.39 E -05)	-0.000100** (4.16 E -05)	-9.31 E -05** (4.52 E -05)	-9.10 E -05** (4.3 E -05)
CIVILIB	-0.038189 -0.050819	-0.029818 -0.051464	-0.036949** -0.050283	-0.02327 -0.051051	-0.021009 -0.050931
EXPENSEGDP	0.014293** -0.007429	0.012510* -0.007509	0.014377 -0.007371	0.012746* -0.007479	-0.001085 -0.003322
IMPORTSGDP	-0.002594 -0.003303	-0.001913 -0.003377	-0.004706 -0.003403	-0.001305 -0.003314	
Constant	110.9503*	132.0850**	160.4793***	149.2168**	144.7378**
R-squared	0.749482	0.743039	0.752677	0.744616	0.743171
Adjusted R-squared	0.7146	0.706801	0.71824	0.709057	0.708334
S.E. of regression	0.311739	0.315869	0.309744	0.314751	0.315142
Hannan-Quinn criter	0.815599	0.844804	0.802762	0.834835	0.830654
Durbin-Watson Stat	0.882476	0.86795	0.895365	0.85494	0.829806
Observations	361	361	361	361	361

Table made according to the estimation results of E-Views

Note: White robust standard errors are in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively. The corruption index has been rescaled to take on values between 6 (least corrupt) and 0 (most corrupt).

5. Conclusion

The special characteristic of our study is that it is interested in emerging and developing countries which should, as the literature goes, have increased corruption following decentralization and the use of multivariate controls. According to Prud'homme [29] and Bardhan [6], the risk of corruption is more important following the decentralization in developing countries. Local decision makers can better establish privileged relationships with local interest groups and are also more sensitive to their pressure. Tanzi [33] also believes that corruption is stronger at the local level because it is stimulated by the proximity of agents that promotes personal relationships, more conducive to corruption.

This has not been verified in our study, for the period 2000-2014, which shows that the decentralization of expenditures has a significant reduction effect of corruption risk in emerging and developing countries. This correlation is accelerated if the decentralization of expenditures is combined with local tax revenues. The relationship is not significant for the decentralization of revenue and two sources of revenue

mobilization: non-tax revenues and fiscal imbalance.

The results of our analysis join those of Altunbas and Thornton [4], Arikan [5], Fisman and Gatti [15], Enikolopov and Zhuravskaya [13], Bareinstein and Mello [8], Huther and Shah [17] that demonstrate decentralization plays the lead role in improving governance in general and reducing corruption.

The principle is that the effects of decentralization on the principle of proximity increase the awareness and responsibility of local officials to be more efficient. This encourages them to increase the quality of governance in general and thereby reduce the risk of corruption. Their major concern remains the maximization of the probability of re-election (Persson and Tabellini [27]). Jin et al. [18] further emphasize that the competition between localities generally discourages governments from making interventionist policies and distortions. Inter-territorial competition, therefore, predicted lower levels of corruption in decentralized economies. Indeed, Weingast [37] and Montinola, Yingyi and Weingast [23] argue that fiscal decentralization means that economic agents generate the ability to let the most corrupt areas, which would tend to improve governance. Inman and

Rubinfeld [22] and Mello [11] argue that fiscal decentralization increases social capital and encourage political participation.

The conclusion is that decentralization in emerging and developing countries could generate benefits in the period

2000-2014. Corruption is less and good governance is generally better. This joins Dreher [12] who notes that fiscal decentralization is consistent with improvement in a number of key indicators of governance mainly in low-income countries.

Appendix

Table A1. OLS estimation Results: index of corruption and fiscal decentralization indicators.

The model 1

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 2000 2014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP	0.699808	0.198647	3.522878	0.0005
EXPENSEGDP	0.002051	0.003785	0.541827	0.5883
CIVLIB	-0.048148	0.022451	-2.144540	0.0327
IMPORTSGDP	-0.003694	0.001961	-1.883639	0.0604
LANDAREA	-6.38E-08	1.05E-08	-6.048353	0.0000
LNGDP	0.193831	0.037114	5.222528	0.0000
LNPOP	0.073728	0.027293	2.701321	0.0072
C	-0.672857	0.622866	-1.080260	0.2808
R-squared	0.216044	Mean dependent var		2.096376
Adjusted R-squared	0.200498	S.D. dependent var		0.583530
S.E. of regression	0.521763	Akaike info criterion		1.558703
Sum squared resid	96.09940	Schwarz criterion		1.644884
Log likelihood	-273.3460	Hannan-Quinn criter.		1.592967
F-statistic	13.89722	Durbin-Watson stat		0.273489
Prob (F-statistic)	0.000000			

The model 2

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 357				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDREV	0.852169	0.185177	4.601912	0.0000
CIVLIB	-0.033188	0.022386	-1.482557	0.1391
EXPENSEGDP	-0.000531	0.003782	-0.140474	0.8884
LANDAREA	-6.00E-08	1.02E-08	-5.898287	0.0000
LNGDP	0.207275	0.036447	5.687039	0.0000
LNPOP	0.045239	0.028165	1.606184	0.1091
IMPORTSGDP	-0.003790	0.001926	-1.967862	0.0499
C	-0.342047	0.626954	-0.545570	0.5857
R-squared	0.240494	Mean dependent var		2.103058
Adjusted R-squared	0.225260	S.D. dependent var		0.583346
S.E. of regression	0.513457	Akaike info criterion		1.526853
Sum squared resid	92.00969	Schwarz criterion		1.613749
Log likelihood	-264.5433	Hannan-Quinn criter.		1.561415
F-statistic	15.78701	Durbin-Watson stat		0.287843
Prob (F-statistic)	0.000000			

The model 3.2

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP*NONTAXREV	0.900560	0.295005	3.052692	0.0024
EXPENSEGDP	0.003779	0.003720	1.015731	0.3105
CIVLIB	-0.029386	0.023518	-1.249535	0.2123
LANDAREA	-5.77E-08	1.03E-08	-5.576439	0.0000
LNGDP	0.209677	0.036547	5.737104	0.0000
LNPOP	0.081394	0.027060	3.007898	0.0028
IMPORTSGDP	-0.002606	0.002021	-1.289537	0.1981
C	-1.087070	0.602021	-1.805701	0.0718
R-squared	0.209355	Mean dependent var		2.096376
Adjusted R-squared	0.193676	S.D. dependent var		0.583530
S.E. of regression	0.523984	Akaike info criterion		1.567200
Sum squared resid	96.91943	Schwarz criterion		1.653381
Log likelihood	-274.8797	Hannan-Quinn criter.		1.601464
F-statistic	13.35296	Durbin-Watson stat		0.273536
Prob (F-statistic)	0.000000			

The model 3.3

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP*FIMB	0.675820	0.337576	2.001981	0.0460
IMPORTSGDP	-0.002174	0.001873	-1.160762	0.2465
LANDAREA	-5.24E-08	1.02E-08	-5.111665	0.0000
LNGDP	0.233837	0.034914	6.697429	0.0000
LNPOP	0.090968	0.027252	3.338015	0.0009
CIVLIB	-0.039673	0.023505	-1.687881	0.0923
C	-1.293667	0.601768	-2.149777	0.0322
R-squared	0.193004	Mean dependent var		2.096376
Adjusted R-squared	0.179327	S.D. dependent var		0.583530
S.E. of regression	0.528626	Akaike info criterion		1.582129
Sum squared resid	98.92369	Schwarz criterion		1.657537
Log likelihood	-278.5743	Hannan-Quinn criter.		1.612109
F-statistic	14.11069	Durbin-Watson stat		0.265894
Prob (F-statistic)	0.000000			

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Table A2. Fixed Effects Estimation Results: index of corruption and fiscal decentralization indicators.*The model 1*

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 2000–2014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP	1.216711	0.482823	2.519994	0.0122
EXPENSEGDP	0.014293	0.007429	1.924091	0.0552
CIVLIB	-0.038189	0.050819	-0.751474	0.4529
IMPORTSGDP	-0.002594	0.003303	-0.785365	0.4328
LANDAREA	-6.86E-05	4.37E-05	-1.571156	0.1171
LNGDP	-0.306986	0.141859	-2.164028	0.0312
LNPOP	-0.072090	0.410503	-0.175615	0.8607
C	110.9503	65.86796	1.684436	0.0931
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.749482	Mean dependent var		2.096376
Adjusted R-squared	0.714600	S.D. dependent var		0.583530
S.E. of regression	0.311739	Akaike info criterion		0.622868
Sum squared resid	30.70919	Schwarz criterion		1.107632
Log likelihood	-67.42776	Hannan-Quinn criter.		0.815599
F-statistic	21.48604	Durbin-Watson stat		0.882476
Prob (F-statistic)	0.000000			

The model 2

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 357				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDREV	0.599639	0.482167	1.243635	0.2146
CIVLIB	-0.029818	0.051464	-0.579404	0.5627
EXPENSEGDP	0.012510	0.007509	1.665899	0.0967
IMPORTSGDP	-0.001913	0.003377	-0.566472	0.5715
LANDAREA	-8.30E-05	4.39E-05	-1.890358	0.0596
LNGDP	-0.312294	0.143747	-2.172527	0.0306
LNPOP	-0.111630	0.418126	-0.266978	0.7897
C	132.0850	65.36059	2.020867	0.0441
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.743039	Mean dependent var		2.103058
Adjusted R-squared	0.706801	S.D. dependent var		0.583346
S.E. of regression	0.315869	Akaike info criterion		0.650391
Sum squared resid	31.12927	Schwarz criterion		1.139181
Log likelihood	-71.09476	Hannan-Quinn criter.		0.844804
F-statistic	20.50439	Durbin-Watson stat		0.867950
Prob (F-statistic)	0.000000			

The model 3.1

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP*TAXREV	2.325584	0.717171	3.242718	0.0013
CIVLIB	-0.036949	0.050283	-0.734823	0.4630
EXPENSEGDP	0.014377	0.007371	1.950469	0.0520
IMPORTSGDP	-0.004706	0.003403	-1.383018	0.1676
LANDAREA	-0.000100	4.16E-05	-2.405893	0.0167
LNPOP	-0.265808	0.410343	-0.647770	0.5176
LNGDP	-0.082061	0.159205	-0.515444	0.6066
C	160.4793	62.43354	2.570402	0.0106
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.752677	Mean dependent var		2.096376
Adjusted R-squared	0.718240	S.D. dependent var		0.583530
S.E. of regression	0.309744	Akaike info criterion		0.610031
Sum squared resid	30.31748	Schwarz criterion		1.094794
Log likelihood	-65.11059	Hannan-Quinn criter.		0.802762
F-statistic	21.85643	Durbin-Watson stat		0.895365
Prob (F-statistic)	0.000000			

The model 3.2

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP*NONTAXREV	0.282245	0.617155	0.457332	0.6477
EXPENSEGDP	0.012746	0.007479	1.704290	0.0893
CIVLIB	-0.023270	0.051051	-0.455827	0.6488
LANDAREA	-9.31E-05	4.52E-05	-2.061382	0.0401
LNGDP	-0.348489	0.153592	-2.268928	0.0239
LNPOP	-0.083729	0.418630	-0.200006	0.8416
IMPORTSGDP	-0.001305	0.003314	-0.393888	0.6939
C	149.2168	68.25861	2.186051	0.0295
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.744616	Mean dependent var		2.096376
Adjusted R-squared	0.709057	S.D. dependent var		0.583530
S.E. of regression	0.314751	Akaike info criterion		0.642104
Sum squared resid	31.30560	Schwarz criterion		1.126867
Log likelihood	-70.89971	Hannan-Quinn criter.		0.834835
F-statistic	20.93988	Durbin-Watson stat		0.854940
Prob (F-statistic)	0.000000			

The model 3.3

Dependent Variable: COOR				
Method: Panel Least Squares				
Sample: 20002014				
Periods included: 15				
Cross-sections included: 38				
Total panel (unbalanced) observations: 361				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDEXP*FIMB	0.681212	0.609618	1.117440	0.2647
IMPORTSGDP	-0.001085	0.003322	-0.326482	0.7443
LANDAREA	-9.10E-05	4.38E-05	-2.078296	0.0385
LNGDP	-0.323592	0.149076	-2.170655	0.0307
LNPOP	-0.006912	0.416469	-0.016597	0.9868
CIVLIB	-0.021009	0.050931	-0.412496	0.6803
C	144.7378	65.98388	2.193533	0.0290
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.743171	Mean dependent var		2.096376
Adjusted R-squared	0.708334	S.D. dependent var		0.583530
S.E. of regression	0.315142	Akaike info criterion		0.642206
Sum squared resid	31.48273	Schwarz criterion		1.116196
Log likelihood	-71.91813	Hannan-Quinn criter.		0.830654
F-statistic	21.33224	Durbin-Watson stat		0.829806
Prob (F-statistic)	0.000000			

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