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DEVELOPMENT ECONOMICS | RESEARCH ARTICLE

Are fiscal decentralization and institutional quality poverty abating? Empirical evidence from developing countries

Kumba Digdowniseiso^{1*}

Abstract: Fiscal federalism theorists have long been intrigued by the relationship between fiscal decentralization and poverty. Few people, however, consider cross-country research of similar linkages in developing countries. This research will provide new empirical evidence on the relationship between fiscal decentralization and poverty. It focuses on how the function of institutional quality can explain the relationship between fiscal decentralization and poverty in 53 developing countries from 1990 to 2014. The findings showed that a process-based approach as well as an outcome-based institutional-quality approach could explain the relationship between fiscal decentralization and poverty. In the case of democracy, revenue decentralization was found to be negatively and significantly related to poverty. In the case of, both revenue and expenditure decentralization were negatively and significantly associated with poverty.

Subjects: Development Studies; Regional Development; Economics and Development

Keywords: Fiscal decentralization; institutional quality; poverty; subnational government analysis; developing countries

JEL: E62; H10; H70; I32; R50

1. Introduction

For several decades, decentralization has been a contentious issue. However, economics research has paid scant attention to the impact of fiscal decentralization on poverty. Despite this, some theoretical arguments explain why fiscal decentralization affects poverty. The majority of arguments are based on the first-generation fiscal federalism theory. As a result, subnational governments should abstain from redistributive functions (Oates, 1972). Additionally, only a central government could satisfy the horizontal equity criterion, which allows for inter-individual comparisons of people's welfare without resulting in the so-called "unequal treatment of equals" (Musgrave, 1959). Decentralized redistribution generally resulted in "voting with one's feet" incentives, in which poor households relocated to jurisdictions with more generous redistribution schemes. In comparison, wealthier households can relocate to regions with limited tax and transfer policies (Tiebout, 1956).

ABOUT THE AUTHOR

Kumba Digdowniseiso A researcher who has so much passion for public finance subjects such as decentralization and several metrics of well-being (i.e. subjective and objective). Aside from Public Finance topics, I also focus my research on general cross-cutting issues in public policy such as inequality in education and health, as well as the role of institutional quality.

Fiscal federalism's second generation has contested such assertions. According to Qian and Weingast (1997), the inter-jurisdictional competition included the various welfare provisions established by municipal governments. This technique may be more effective at alleviating poverty than central government-mandated redistribution. Local governments in impoverished regions may gain from less generous welfare provisions by decreasing taxes to attract investment and boost job creation (McKinnon, 1997). Adopting supply-side economics could help narrow household income disparities locally, thereby reducing national poverty.

Moving away from the disputes about the impact of fiscal decentralization on poverty, Figure 1 shows that the 1998–1999 economic crisis significantly increased poverty in developing nations, where it increased by 34% in the year 1999–2000. The 2008–2009 economic crisis, on the other hand, had a minor impact on poverty. These two crises had distinct causes and magnitudes (see, Ee & Xiong, 2008). Additionally, during the 2008–2009 economic crisis, most developing countries benefited from a robust economic base that helped limit the crisis's impact. Between 1990 and 2014, the share of subnational revenue and spending in developing nations climbed considerably. This was followed by a drop in the number of people living in poverty. However, income inequality, as measured by the net Gini coefficient, has continuously increased.

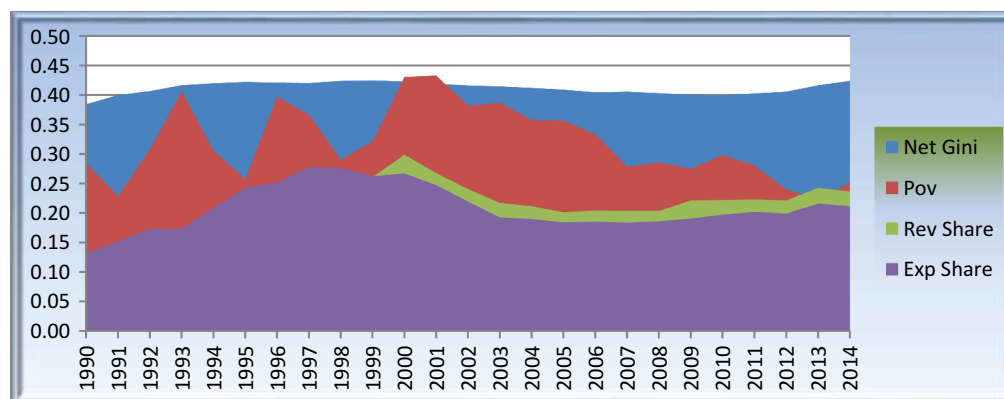
One may argue that the decline in poverty is a result of the improved quality of institutions in developing countries. According to Keefer and Knack (2000), institutional quality is negatively connected with poverty. Using bureaucratic quality as a proxy for institutional quality, low-quality administrative personnel, and institutional constraints may result in more severe administrative decision-making errors. Such action would erode the effectiveness of government decision-making, diminishing property and contractual rights protection. Insecurity regarding property rights would discourage investment, eventually slowing economic growth and increasing poverty.

Likewise, weak institutions can exacerbate poverty. According to Andres and Ramlogan-Dobson (2011), in the event of corruption, the tax burden almost entirely fell on the poor, while the beneficiaries of tax evasion and tax exemptions were most likely to be relatively affluent. Thus, the government should discontinue poverty reduction programs (such as education and health) to expand this wealthy group's benefits. Corruption may also alter the composition of social spending, even while overall funding for social programs remains constant. This course of action will continue to favor the wealthy at the expense of the impoverished. For instance, the government invests more in secondary education than primary education.

Continuing with the impact of institutional quality, fiscal decentralization has been shown to affect poverty experimentally. The conclusions, however, remain equivocal. Rao (2002), Jutting et al. (2004), and Bjornestad (2009) discovered that decentralization had a beneficial effect on poverty in developing nations, depending on the institutional quality. Meanwhile, Sepulveda and

Figure 1. Average poverty, net income Gini, revenue share, and expenditure share in developing countries, 1990–2014.

Source: Author's calculation based on World Development Indicator, Standardized World Income Inequality Database, and Government Financial Statistics



Martinez-Vazquez (2011) discovered a negative and substantial link between fiscal decentralization and indices of poverty. Valaris (2012) discovered a positive and significant correlation between revenue decentralization and poverty in developed countries. However, the reverse impact occurred when expenditure decentralization and vertical inequalities were considered.

This essay contributes in the following ways: To begin, in contrast to Sepulveda and Martinez-Vazquez (2011) analysis, which focuses exclusively on one component of fiscal decentralization (i.e., income or spending), my study will combine both measures of fiscal decentralization. Second, except for Sepulveda and Martinez-Vazquez (2011), several quantitative analyses overlook institutional quality, which Bjornestad (2009) and Agyemang-Duah et al. (2018) asserts is critical for smoothing the poverty reduction agenda. As a result, my research will add a new dimension of analysis to the analysis of emerging countries. Third, following Valaris's (2012) lead, the proposed study would analyze the non-linear link between fiscal decentralization and poverty.

Based on these research gaps, this article examines the relationship between fiscal decentralization and poverty in 53 developing countries from 1990 to 2014. Additionally, in this essay, I want to investigate whether fiscal decentralization is more effective in nations with high institutional quality and analyze the possibility of a non-linear relationship between fiscal decentralization and poverty.

2. Literature review

Several theoretical reviews contend that various circumstances determine the success or failure of decentralization's impact on poverty alleviation. Rao (2002) recommended creating possibilities for the poor, empowering the poor to take advantage of such opportunities, and providing social safety to help the poor deal with the immediate shocks. According to him, identifying the poor and their traits and understanding what causes or conditions led to poverty were vital in the beginning. Once these two factors were identified, the policy incorporated cost-effectiveness principles, and good institutions could be identified and implemented to improve living standards.

Following this rationale, Jutting et al. (2004) took a complete strategy to create successful decentralization, contributing to poverty alleviation. They are divided into two categories: a) the inherited background condition of the country and b) the process condition of decentralization. The former consists of: (i) the country setting, which includes population density, infrastructure state, income level, and regional inequalities; (ii) the capacity of local actors and the culture of accountability and legal enforcement; (iii) the availability of social institutions, which includes indigenous and neighborhood organization tradition, patron-client relationship, and the influence of family ties on politics; and (iv) the political system, which accounts for checks and balances. Meanwhile, four elements appear in the latter: (i) the ability and willingness to carry out reforms, which includes national political commitment, available financial resources at the local level, local human capacity, and donor involvement in policy design; (ii) transparency and participation; (iii) willingness to curb elite capture and corruption; and (iv) policy coherence.

Given the aforementioned requirements, fiscal decentralization improves the efficiency of poverty alleviation programs. According to Oates (1999), in an economy with considerable inter-region variability in public expenditure preferences, decentralized provision of public goods and services could improve efficiency and yield welfare advantages. Meanwhile, Jutting et al. (2004) believed that increased efficiency in service provision could immediately improve poor people's access to education, health, water, sewage, and power, all of which are critical for poverty-related concerns. Aside from this channel, they claimed that delegating power and resources to the local level would allow them to target the poor better. This type of activity assists in cutting costs and facilitates reaching people who are most in need. Furthermore, it would ensure that the lower levels of government provide better responses to the needs of their constituents.

Even though fiscal decentralization has a favorable influence on poverty reduction, there are dangers that the effect could be counterproductive. According to Bjornestad (2009), devolving

policy execution to sub-national governments, whose preferences and objectives for public expenditure may differ from those of the central government, would hinder overall poverty reduction. Furthermore, each local government has distinct administrative and fiscal capabilities, especially those in low-resource areas, increasing their fiscal responsibilities.

Regardless of the merits and cons of fiscal decentralization's impact on poverty, some experts are working on expanding the body of literature. By integrating quantitative and qualitative studies in four developing nations, Von Braun and Grote (2002) published the first most comprehensive and in-depth examination of the consequences of decentralization on poverty. They discovered that sub-national spending had no meaningful effect on poverty reduction in some countries. For example, a highly centralized Egyptian state with extensive subsidy schemes outperformed the rest of the country in terms of health sector performance and the Human Development Index (HDI). In contrast, although constrained budgets prompted several districts to develop new taxes and collect a special levy, Ghana's overall decentralization process was considered a successful means of reducing poverty. Meanwhile, in India, decentralization appears to be having a favorable impact on poverty reduction. However, in China, fiscal decentralization negatively influenced health care delivery to the poor.

Jutting et al. (2004) conducted a detailed qualitative study of eighteen developing countries and three Indian states to examine the impact of decentralization policies on poverty alleviation. Bolivia, the Philippines, and West Bengal India are performing well, while China, South Africa, Mexico, and Ghana are doing well. Others (e.g., Paraguay, Brazil, Nepal, Vietnam, Egypt, Sri Lanka, Ethiopia, Burkina Faso, Guinea, Mozambique, Malawi, Andrah Pradesh India, Madhya Pradesh India) are classified as moderately negative or gloomy performers. They concluded that when the central government committed to decentralization successfully, the decentralization process was more likely to impact poverty. Furthermore, the parties involved had the financial and human resources to participate in decision-making. Simultaneously, checks and balances were put in place at the municipal level to control rent-seeking and corruption.

Sepulveda and Martinez-Vazquez (2011) examined the effects of fiscal decentralization, as measured by the share of subnational expenditures over total government expenditures, on poverty, as measured by the headcount ratio and the poverty gap defined for a poverty line of US \$1.25 (in purchasing power parity), from 1976 to 2000 in 34 developing countries. They discovered that fiscal decentralization was adversely and strongly connected with poverty indicators using instrumental factors such as the natural logarithm of population and trade openness to capture the endogeneity issue on the generalized two-stage least squares model.

Meanwhile, Valaris (2012) examined the effects of fiscal decentralization on poverty incidence, as measured by the poverty gap, in 48 American states from 1980 to 2000, using the ratio of local revenues to combined state and local government revenues, the ratio of local government expenditure to combined state and local government expenditure, and vertical imbalance. He discovered that revenue decentralization was favorably and significantly connected with poverty. However, the effect may be positive or negative when spending decentralization and vertical imbalances are included. There was also evidence of a hump-shaped association between revenue decentralization and poverty rates. He created a U-shaped relationship by explaining the link between vertical imbalance and poverty level.

When it comes to developing country analysis, Llorca-Rodriguez et al. (2017) used data from 20 low and lower-middle income countries between 1980 and 2007 to examine the effects of fiscal decentralization on poverty. Fiscal decentralization is measured by the share of sub-national government expenses over total government expenses related to health, education, housing, and social protection. Meanwhile, poverty is measured by the headcount poverty ratio, based on the percentage of the population living below the poverty line. Using the FGLS technique, they

discovered that decentralizing social protection expenditures increased poverty. However, the opposite effects were observed in health and housing spending.

Accountability and effective regulation may help decrease some institutional flaws like corruption in the system. In a single country analysis, Agyemang-Duah et al. (2018) stated that fiscal decentralization could reduce poverty in Ghana when it is characterized by more financial autonomy of local units and efficient budgetary allocation, priority, accountability, and responsiveness. As a result, they advocated for a more effective, efficient, and transparent institutional and legal structure to facilitate effective fiscal transfer between central and local governments to overcome the multiple flaws connected with fiscal decentralization. Meanwhile, in Pakistan, Hussain et al. (2021) proved that fiscal decentralization significantly impacted poverty eradication. As a result, the government should grant autonomy to Pakistan's provinces, as the central government cannot address and comprehend local issues on its own. Thus, the government must implement a budgetary decentralization policy. This study also proposes that the government should employ a progressive taxation system to maximize revenues while also addressing poverty reduction.

To summarize, a paucity of literature reviews based on cross-country research in developing countries explain the relationship between fiscal decentralization and poverty. To date, Sepulveda and Martinez-Vazquez's (2011) study appears to provide a reasonable baseline for scholars looking to investigate such correlations in developing countries. However, the econometric model only includes one fiscal decentralization measure. Furthermore, the inclusion of trade openness and the natural logarithm of the population as fiscal decentralization instruments is invalid because they may be classified as exogenous variables in the model. Llorca-Rodriguez et al. (2017) and Hussain et al. (2021) have the same challenge as Sepulveda and Martinez-Vazquez in disentangling fiscal decentralization indicators. Furthermore, their decision not to offset the effects of the business cycle on poverty and fiscal decentralization indicators may be considered misleading, given the need to enhance the quality of such statistics (Sepulveda & Martinez-Vazquez, 2011). Based on past empirical findings, this study hypothesizes that fiscal decentralization can be more effective in developing nations with high institutional quality. I also propose that fiscal decentralization and poverty may have a non-linear relationship.

3. Data and methodology

In this section, I propose the relationship between fiscal decentralization and poverty. The head-count poverty ratio measures my dependent variable of poverty. It can be subtracted from the World Bank's Poverty and Equity database, creating an unbalanced panel dataset of developing countries.

The following benchmark model will be used, as follows:

$$Pov_{it} = \alpha_0 + \alpha_1 FD_{it} + \alpha_2 Ins_{it} + \alpha_3 (FD_{it} * Ins_{it}) + \alpha_4 FD_{it}^2 + \alpha_5 X_{it} + u_i + n_{it} \quad (1)$$

From equation 1, the subscripts i denotes the country, t denotes the year. The dependent variable of Pov_{it} is composed over the average of the relevant five periods (1990–1994, 1995–1999; 2000–2004; 2005–2009; 2010–2014). X_{it} is a vector of control variables assumed to have an influence on poverty, and ϵ is the corresponding disturbance term. Both α_1 and α_2 are my main variables of interest, which measure the degree of fiscal decentralization and institution on poverty, respectively. I also include the income group fixed effect (u_i), representing the time-invariant unobservable traits within a certain income group. The Hausman test previously revealed that models employed random effects (RE). As a result, I will combine these with fixed effects based on income category. The inclusion of u_i will, at the very least, address some unobserved preferences of societies in a specific income category, which may simultaneously determine the degrees of poverty and fiscal decentralization.

Most empirical studies evaluate fiscal decentralization as the local portion of overall government expenditure since it symbolizes the authority of local government to decide on the type of expenditure (Davoodi & Zou, 1998). On the other hand, others employ the revenue structure of sub-national governments (Ebel & Yilmaz, 2002) because local governments must be given the right to execute “own-source” taxation, which has significant implications for the success of the fiscal decentralization process. However, it is not easy to establish whether the method is preferable for capturing the fiscal decentralization indicator (Martínez-Vázquez & McNab, 2003). As a result, I will provide the sub-national government revenue to total government revenue and sub-national government expenditure to total government expenditure ratios. These figures will be available in the IMF Government Financial Statistics (GFS) dataset.

I use the ICRG and the Polity IV dataset, which was recast in the quality of the government’s basic dataset (Dahlberg et al., 2016), to mediate the direct and indirect effect of institutional quality on poverty because these are the only accessible indicators for a wide group of nations and a lengthy time-span. In principle, any government must regulate two aspects of its inhabitants (Coppedge et al., 2019). On the input aspect, the government should ensure that public officials are democratically elected and that individuals have access to public authority. On the other hand, the output component refers to how officials and authorities are deployed. According to this concept, the former is directly tied to democracy, whereas the latter represents the quality of government or governance. A democracy index can be calculated using the basic quality of government dataset, with 0 signifying no democracy and 1 indicating full democracy. On the fundamental quality of government dataset, Coppedge et al. (2019) also provided the data for government quality, where 0 denotes the absence of government quality and 1 represents the whole quality of government.

The control variables in vector X_{it} of Equation 1 were chosen based on a literature survey on fiscal decentralization and poverty (see, Table 1). First, the size of the government represents the

Table 1. List of variables

Variable Name	Description	Variable Source
rev	Subnational revenue as a share of total (local, state, and central) government revenue	Own construction based on Government Financial Statistics, IMF
exp	Subnational expenditures as a share of total (local, state, and central) government expenditures	Own construction based on Government Financial Statistics, IMF
dem	Level of Democracy where 0 represents autocracy and 10 represents democracy	The quality of the government’s basic dataset based on the Polity IV project
qog	Quality of government where 0 represent bad government quality and 1 represent good government quality	The quality of the government’s basic dataset based on the ICRG scale
lgdppc	Natural logarithm of the initial level of real GDP per capita	UNESCO Statistical Year Book
popgr	Population growth rate	World Development Indicator, The World Bank
hci	Initial human capital index	Penn World Table, Version 9.0
pov	Headcount poverty index based on a poverty line of US \$1.9	World Development Indicator, The World Bank
dtic	Dummy = 0 if the country is in the low-income group; 1 if the country is in the lower-middle-income group; 2 if the country is in the upper-middle-income group	Own construction

proportion of government spending in GDP. This indicator helps assess the government's ability to carry out its poverty reduction program. Second, per capita GDP, in which higher per capita GDP countries are expected to have a greater capacity to decrease poverty. Third, the human capital index is based on education and return to education, typically associated with higher-paying occupations and lower poverty rates. However, this would be the case only if the impoverished had longer schooling years. Last, the equation uses the demographic variable, which is represented by the population growth rate.

To summarize, the data for government expenditure shares of GDP and GDP per capita are derived from the IMF database based on the 2015 World Economic Outlook, while the human capital index is obtained from Feenstra et al. (2015) using Penn World Table Version 9.0. The population growth rate is based on the basic quality of the government dataset, as determined by Dahlberg et al. (2016).

Moving on to methodology, numerous authors use panel data regression to investigate the relationship between fiscal decentralization and poverty. Annual frequency data with fixed effects are used (e.g., Bojanic, 2018), but perennial average panels can also be constructed to capture the likelihood of long-run effects (e.g., Sacchi & Salotti, 2014; Sepulveda & Martinez-Vazquez, 2011) with country fixed effect and time fixed effect to control for individual-specific and time-invariant characteristics of the analyzed countries. Except for human capital and GDP per capita, where I use the initial level, I utilize average yearly data in panel growth regressions because the advantage of fiscal decentralization is not predicted to affect year-to-year changes in poverty. This operation also decreases measurement error and missing values for the poverty variable I use in this study.

Because the model's equations are classified as panel data analysis, I performed a Hausman specification test on each model to determine whether the fixed-effects method is preferable to the random-effects method. There is also a reverse causality issue that must be addressed. The main point of contention is whether decentralization is the cause of specific outcomes or an outcome of poverty. In general, the direction of causality is dubious at best. In any pure cross-country investigation, the possible endogeneity problem is likely to be a worry. Using instrumental variables (IV) may be the best method. However, such a technique has proven difficult due to the scarcity of time-variant external instruments.

Some scholars consider legal origin as an instrument variable because a country's political and social institutions determine governance outcomes. These institutions may have been passed down from colonial rulers (see, Altunbas & Thornton, 2012; Fisman & Gatti, 2002). However, the pertinence of legal origin as an effective instrument for decentralization may be skewed since, as Enikolopov and Zhuravskaya suggest, the legal origin might also affect other socioeconomic variables chosen as the dependent variable and not through fiscal Enikolopov and Zhuravskaya (2007). Faced with the instrument's difficulty, I deal with the potential problem of endogeneity by using the lagged value of explanatory variables in the case of random effect estimates.

Overall, the data for all countries and periods are somewhat uneven, and the period variable increases consistently by one (see, Table 2). The majority of variation occurs between variants rather than within variations. As a result, I anticipate that Fixed Effect estimators in the typical panel model will be inefficient because they rely on within variation. Regarding the dependent variable, the headcount ratio based on a poverty line of US \$1.9 stays relatively high. Meanwhile, the main variables of interest, the average sub-national revenue and expenditure, are about 21 % and 20 % in 53 developing countries, respectively. Most of the observations are dominated by the Upper-Middle-Income and Lower-Middle-Income groups. From the perspective of institutional quality, all samples in developing countries, on average, produce solid governance indicators. Variables of democracy, dem (5.5), indicate that all developing countries are now in the democratic transition period. However, all samples of developing countries face problems in government quality (0.4).

Table 2. Summary of statistics

Variable	Observation	Mean	Std. Deviation	Min	Max
rev	165	20.97	15.41	0.64	55.34
exp	164	19.86	15.52	0.62	67.89
dem	663	5.51	2.90	0	10
qog	445	0.43	0.12	0.07	0.78
lgdpc	627	7.03	1.10	4.17	9.78
popgr	666	1.70	1.22	-3.77	6.25
hci	475	2.00	0.57	1.03	3.30
pov	394	25.34	24.10	0	94.05
dtinc	680	1.19	0.77	0	2

4. Results

I estimate the regression in Equation 1 in each table using headcount poverty index in 5 (five) periods, as follows: 1990–1994; 1995–1999; 2000–2004; 2005–2009; 2010–2014. Tables 3 and 4 report on the results between poverty, fiscal decentralization indicators, and major institutional quality variables, such as democracy, which reflects a process-based approach, and quality of government, which indicates the outcome-based approach. I use both the Polity2 and ICRG datasets, which provide a more comprehensive dataset for developing countries (see Table 5).

Each table refers to the basic short panel of the econometric methodologies: fixed effect, random effect, and feasible generalized least square (FGLS). Hausman's result in Tables 3 and 4 indicates that the author needs to use a random effect model since several between-variation control variables already control country heterogeneity. The author shed some light on the potential endogeneity between poverty and fiscal decentralization indicators. However, this problem is already tackled by incorporating the average on the dependent variable of poverty and several control variables related (see the model (5) and (10) in each table).

The issue of endogeneity can also be minimized by using the lagged explanatory variables since there is no relevant instrument available (see the model (4) and (9) in each table). To address the homoskedastic and serially correlated issue, I will deploy FGLS with the standard error corrected method to obtain an efficient estimator. Thus, the results from the model (1) and (2) to model (6) and (7) in each table should be ignored. For the sake of initial estimation within the FGLS framework, I also report a basic regression on model (3) and model (8) in each table. However, such a result cannot provide a clear picture of the poverty–fiscal decentralization nexus and how institutional quality plays a significant role in strengthening such nexus.

The association between poverty, fiscal decentralization measures, and democracy as a proxy for process-based institutional quality is shown in Table 3. Revenue decentralization is adversely and significantly tied with poverty, with a one-point increase in revenue sharing will reduce poverty by 0.85 percent, *ceteris paribus*. Such a relationship becomes non-linear, forming a U-shaped curve as revenue decentralization and poverty begin to decline from a high degree of growth in the beginning. After both variables reach a baseline at 21.25 points on the GFS scale, further fiscal decentralization will exacerbate poverty.

Moving on to the magnitude and sign of other control variables, I find no surprises, with most of them pointing in the proper direction. Greater per capita GDP, as expected, contributes to poverty alleviation. Furthermore, increased population expansion contributes to increased poverty by reducing the available income for each individual. Meanwhile, a higher degree of education is related to higher-paying occupations and lower poverty rates. Another critical outcome is that the size of the government is positively and strongly connected with poverty. Although this

Table 3. Regression on fiscal decentralization, poverty, and democracy

Independent Variable	Dependent Variable: Headcount Poverty									
	Fixed Effect (1)	Random Effect (2)	PFGLS (3)	PFGLS (4)	PFGLS (5)	Fixed Effect (6)	Random Effect (7)	PFGLS (8)	PFGLS (9)	PFGLS (10)
rev	-0.52 (0.73)	-0.72 (0.51)	-0.24 (0.17)	-0.67 (0.51)	-0.85* (0.48)					
rev x dem	-0.008 (0.08)	0.006 (0.04)		0.03 (0.03)	0.01 (0.04)					
revsq	0.01 (0.008)	0.01** (0.006)		0.01 (0.007)	0.02*** (0.006)					
exp						0.54 (1.05)	-0.24 (0.59)	-0.08 (0.14)	-0.36 (0.66)	-0.39 (0.56)
exp x dem						-0.05 (0.084)	0.01 (0.04)		0.02 (0.03)	-0.007 (0.04)
expsq						0.002 (0.009)	0.009 (0.007)		0.008 (0.009)	0.01 (0.007)
dem	-1.13 (1.97)	-0.78 (1.44)		-1.12 (1.16)	-0.58 (1.33)	-0.98 (2.16)	-0.54 (1.54)		-0.79 (1.16)	-0.23 (1.37)
gdppc (log)	-5.09** (2.24)	-8.12*** (1.39)		-6.26*** (1.85)	-9.06*** (1.36)	-5.26** (2.25)	-7.88*** (1.46)		-6.12*** (1.98)	-9.00*** (1.46)
gov	25.84** (11.10)	25.20*** (10.23)		35.19** (13.58)	25.87** (12.03)	27.39** (11.04)	24.73** (10.72)		33.94*** (13.92)	24.28** (12.32)
popgr	0.61 (2.15)	4.64*** (1.49)		5.11*** (1.64)	5.65*** (1.53)	1.81 (1.51)	5.00*** (1.45)		5.26*** (1.64)	5.95*** (1.53)
hci	-7.00 (6.94)	-4.98 (3.97)		-8.25** (4.02)	-4.41 (3.76)	-6.88 (6.33)	-6.14* (3.81)		-8.29** (4.31)	-5.34 (3.81)
R-squared	0.50	0.62				0.40	0.60			
Obs	122	122	141	94	122	122	122	141	93	122
No. of countries	45	45	53	43	45	45	45	53	42	45
Hausman test	0.17									

Number of parentheses are robust standard error. The asterisk can be distinguished as follows: *** = significant at 1 percent level; ** = significant at 5 percent level; * = significant at 10 percent level.

phenomenon is beyond the investigation's scope, the outcome should be interpreted with caution. I am assuming the relationship is non-linear (see, Sepulveda & Martinez-Vazquez, 2011).

As democracy alone is insufficient to capture the institutional quality dimension, I add the government quality dimension to study whether the outcome-based of institutional quality has a substantial impact on the poverty–fiscal decentralization relationship (see, Table 4). Both revenue and spending decentralization are found to be adversely and strongly connected with poverty. A further increase in revenue and expenditure share will reduce poverty rates by 1.29 percent and 0.87 percent, respectively. A U-shaped pattern also shows a non-linear relationship between these two variables. The interaction variable between government quality and fiscal decentralization is positive and significant, indicating that a higher degree of governance in executing fiscal decentralization may be appropriate for the poverty alleviation program. On the ICRG scale, the degrees of government quality at which revenue and expenditure decentralization emerge as effective in reducing poverty in developing countries are 0.88 point and 0.62 point, respectively.

Meanwhile, the net impact of government quality on poverty is negative and significant. Such a result is not by coincidence, given that Jutting et al. (2004) emphasize the process of decentralization as a necessity for lowering poverty, along with the underlying conditions inherited by the country. Furthermore, the magnitude and size of other control variables are increasing. Other control variables yield a similar result in terms of the sign with the government quality variable. For example, per capita GDP and education are inversely related to poverty.

As expected, the aggregate politics index and poverty have a significant and inverse relationship. In contrast, population increase can have a beneficial and considerable impact on poverty and a surprising effect on government size. Furthermore, revenue decentralization and poverty have a U-shaped relationship.

5. Discussion

According to the prior explanations in Table 3, my result contradicts the findings of various researchers. In the case of cross-country analysis, fiscal decentralization, for example, is positively and significantly associated with the level of poverty (see, Llorca-Rodriguez et al., 2017; Sepulveda & Martinez-Vazquez, 2011). Furthermore, Valaris (2012) demonstrates a hump-shaped association between revenue decentralization and poverty in the bottom 48 American States in the context of a single-country study.

I also discover a negative but marginal effect between democracy and poverty. Varshney (2005) enters a debate about why the underprivileged in democracies do not significantly impact the adoption of poverty-reduction strategies. As a result, politicians constantly emphasize the “direct technique” of alleviating poverty. In the short run, such a strategy is politically popular. It consists of numerous programs, including income generation for the poor (e.g., labor in exchange for food and microcredit) and asset transfer to the needy (e.g., land reforms). Based on these instances, these programs are visible and can immediately increase the income of the poor.

Varshney (2005) then argues that the superiority of indirect approaches cannot be overlooked by developing the so-called “growth-mediated strategy.” This strategy aims to provide more significant opportunities for the impoverished to increase their long-term income. It is also more resource-efficient, effective, and sustainable in the long run. For example, the use of a labor-intensive strategy, privatization of governmental businesses, and tariff reductions in the export-oriented business. However, in terms of electoral and popular pressures, those policies are working in the opposite direction. The government's incapacity to map the impoverished from many ethnic groups is the second reason any democracy has failed to alleviate poverty. He contends that the impoverished

Table 4. Regression on fiscal decentralization, poverty, and quality of government

Independent Variable	Dependent Variable: Headcount Poverty									
	Fixed Effect (1)	Random Effect (2)	PFGLS (3)	PFGLS (4)	PFGLS (5)	Fixed Effect (6)	Random Effect (7)	PFGLS (8)	PFGLS (9)	PFGLS (10)
rev	-1.75** (0.82)	-1.42*** (0.58)	-0.24 (0.17)	-0.96* (0.54)	-1.29** (0.500)					
rev x qog	1.56** (0.63)	1.57*** (0.50)		1.58*** (0.48)	1.46*** (0.50)					
revsq	0.02* (0.009)	0.01** (0.007)		0.006 (0.007)	0.014** (0.006)					
exp						-1.18 (1.01)	-0.99** (0.47)	-0.08 (0.14)	-0.67 (0.51)	-0.87** (0.43)
exp x qog						1.55*** (0.62)	1.52*** (0.43)		1.47*** (0.42)	1.40*** (0.45)
expsq						0.01 (0.01)	0.009 (0.06)		0.002 (0.007)	0.008 (0.005)
qog	-44.87*** (16.87)	-44.77*** (12.19)		-34.41*** (14.47)	-41.67*** (13.36)	-44.36** (20.51)	-45.20*** (12.67)		-31.99*** (11.92)	-42.15*** (13.46)
gdppc (log)	-4.86** (2.21)	-7.17*** (1.32)		-6.05*** (1.79)	-7.86*** (1.29)	-4.96** (2.21)	-7.22*** (1.40)		-5.89*** (1.84)	-7.98*** (1.37)
gov	17.57 (13.94)	15.35 (13.47)		29.70*** (11.91)	14.40 (14.47)	26.54* (13.64)	21.27 (16.16)		32.66*** (12.94)	17.39 (17.06)
popgr	1.75 (1.90)	5.03*** (1.44)		5.72*** (1.54)	5.94*** (1.47)	3.27** (1.67)	5.97*** (1.33)		6.14*** (1.52)	6.60*** (1.45)
hci	-10.46 (7.76)	-7.97** (3.68)		-6.50 (4.51)	-6.40* (3.40)	-12.56 (8.59)	-8.56** (4.20)		-5.86 (4.76)	-6.91* (3.88)
R-squared	0.52	0.65				0.60	0.65			
Obs	114	114	141	88	114	114	114	141	87	114
No. of countries	41	41	53	39	41	41	41	53	38	41
Hausman test	0.2256		0.5775							

Number of parentheses are robust standard error. The asterisk can be distinguished as follows: *** = significant at 1 percent level; ** = significant at 5 percent level; * = significant at 10 percent level.

Table 5. List of developing countries

No	Country	Region	Income Group	No	Country	Region	Income Group
1	Afghanistan	South Asia	Low income	28	Honduras	Latin America & Caribbean	Lower middle income
2	Albania	Europe & Central Asia	Upper middle income	29	India	South Asia	Lower middle income
3	Algeria	Middle East & North Africa	Upper middle income	30	Indonesia	East Asia & Pacific	Lower middle income
4	Angola	Sub-Saharan Africa	Lower middle income	31	Jordan	Middle East & North Africa	Upper middle income
5	Argentina	Latin America & Caribbean	Upper middle income	31	Kazakhstan	Europe & Central Asia	Upper middle income
6	Armenia	Europe & Central Asia	Lower middle income	33	Kyrgyz Republic	Europe & Central Asia	Lower middle income
7	Bangladesh	South Asia	Lower middle income	34	Lebanon	Middle East & North Africa	Upper middle income
8	Belarus	Europe & Central Asia	Upper middle income	35	Malaysia	East Asia & Pacific	Upper middle income
9	Bolivia	Latin America & Caribbean	Lower middle income	36	Morocco	Middle East & North Africa	Lower middle income
10	Brazil	Latin America & Caribbean	Upper middle income	37	Nigeria	Sub-Saharan Africa	Lower middle income
11	Bulgaria	Europe & Central Asia	Upper middle income	38	Pakistan	South Asia	Lower middle income
12	Cameroon	Sub-Saharan Africa	Lower middle income	39	Paraguay	Latin America & Caribbean	Upper middle income
13	China	East Asia & Pacific	Upper middle income	40	Peru	Latin America & Caribbean	Upper middle income
14	Colombia	Latin America & Caribbean	Upper middle income	41	Philippines	East Asia & Pacific	Lower middle income
15	Costa Rica	Latin America & Caribbean	Upper middle income	42	Romania	Europe & Central Asia	Upper middle income

(Continued)

Table 5. (Continued)

No	Country	Region	Income Group	No	Country	Region	Income Group
16	Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	43	Senegal	Sub-Saharan Africa	Low income
17	Cuba	Latin America & Caribbean	Upper middle income	44	South Africa	Sub-Saharan Africa	Upper middle income
18	Dominica	Latin America & Caribbean	Upper middle income	45	Sri Lanka	South Asia	Lower middle income
19	Dominican Republic	Latin America & Caribbean	Upper middle income	46	Sudan	Sub-Saharan Africa	Lower middle income
20	Ecuador	Latin America & Caribbean	Upper middle income	47	Tajikistan	Europe & Central Asia	Lower middle income
21	Egypt, Arab Rep.	Middle East & North Africa	Lower middle income	48	Tanzania	Sub-Saharan Africa	Low income
22	El Salvador	Latin America & Caribbean	Lower middle income	49	Thailand	East Asia & Pacific	Upper middle income
23	Ethiopia	Sub-Saharan Africa	Low income	50	Tunisia	Middle East & North Africa	Lower middle income
24	Georgia	Europe & Central Asia	Upper middle income	51	Turkey	Europe & Central Asia	Upper middle income
25	Ghana	Sub-Saharan Africa	Lower middle income	52	Turkmenistan	Europe & Central Asia	Upper middle income
26	Guatemala	Latin America & Caribbean	Lower middle income	53	Ukraine	Europe & Central Asia	Lower middle income
27	Guinea	Sub-Saharan Africa	Low income				

are more easily mobilized as members of ethnic groups than as members of economic classes. Despite having a significant population in some developing countries, they rarely receive affirmative action for economic empowerment. As a result, they cannot cope with the demand in democracies. If done appropriately, such action can raise their voices and result in reasonable policy response.

I have previously investigated the fiscal decentralization—poverty relationship with various democratic proxies such as executive restraint and democratic accountability. Fiscal decentralization was found to be negatively and significantly connected with poverty in this study. Furthermore, revenue decentralization and poverty had a U-shaped association. However, only the former produced a comparable outcome with democracy (polity).

In Table 4, as government quality comprises numerous dimensions, the author attempted to do a separate regression for each variable that constitutes government quality, namely corruption, bureaucratic quality, and the rule of law. In the case of the corruption variable, the combined effect of revenue decentralization and corruption on poverty was negative and significant. In addition, revenue decentralization and poverty had a U-shaped association. I discovered that revenue decentralization was negatively and strongly connected with poverty in the case of bureaucratic quality and government stability. In the context of non-linearity, such a variable formed a U-shaped curve. Furthermore, bureaucratic quality was revealed to be a negative and substantial factor in the poverty equation. I discovered comparable outcomes with other components of the government quality index when it came to the rule of law.

Overall, my findings align with earlier cross-national research that linked poverty institutions. For example, Tebaldi and Mohan (2010) and Perera and Lee (2013) find that emerging countries with poor corruption, legal systems, and inefficient bureaucracy have higher poverty rates. The former employs a sample of 53 developing and developed countries, while the latter includes nine Asian developing countries. According to the initial findings, corruption harms poverty. While one may argue that the sign of a relationship can be either positive or negative, such a link can be further explored through the economic growth channel. Bardhan (1997) highlights the “grease the wheels” idea, which holds that bribery can boost bureaucratic efficiency by reducing red tape. This may lessen the barriers to growth, hence reducing poverty.

6. Conclusion

In this research, I provide a novelty in the relationship between fiscal decentralization and poverty in 53 developing countries over the period 1990–2014. I also investigate how a process-based and an outcome-based institutional quality play a significant role in shaping such nexus. I use different econometric techniques with the standard error corrected method to obtain an efficient estimator.

The significant findings of the empirical investigation demonstrate that the fiscal decentralization–poverty nexus can be clearly explained by a process-based approach and an outcome-based approach of institutional quality. Revenue decentralization is negatively and significantly tied with poverty in democracy. The nexus can become non-linear, forming a U-shape. Both revenue and spending decentralization are adversely and significantly associated with poverty in terms of government quality. There is also non-linearity, which generates a U-shaped relationship between revenue decentralization and poverty.

In this study, numerous surprising findings were discovered, such as that government size is positively and significantly connected with poverty. Although such findings provide an intriguing assessment and discussion, they are beyond the scope of the study and must be investigated further. The study’s limitations necessitate further research on the various types of decentralization and poverty. Furthermore, fiscal decentralization has fallen short of expectations regarding democracy’s inability to build the expenditure share—poverty link. I will leave that argument to other researchers to investigate further.

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