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## Fiscal decentralization and poverty in South Africa: evidence from panel data analysis

### Abstract

This paper examines the dynamic relationship between fiscal decentralization and poverty in South Africa within a panel data framework. The data used covers the period from 2005 to 2011 for the eight metropolitan municipalities making a total of 56 observations. We use real household consumption expenditure per capita as a proxy for poverty and the ratio of metropolitan expenditure to national government expenditure as fiscal decentralization. The results from a panel VAR estimated with GMM, show a negative short run effect of fiscal decentralization on real household consumption per capita in South Africa. These results have important policy implications.

**Keywords:** fiscal decentralization, municipalities, poverty, consumption expenditure, panel data.

**JEL Classification:** C33, H31, H72, H77.

### Introduction

South Africa is classified as a democratic and middle income country. However, 20 years into democracy, poverty and transformation are identified as being the biggest challenges in the past two decades (e-NCA, 2013). With a national poverty line of R322 per person per month, around 58% of South Africa's population were classified as being poor in 1995 and by the year 2000 this situation had not changed (Ozler, 2007). Poverty is defined generally as pronounced deprivation in well-being World Bank (2001), with characteristics such as low income, voicelessness, powerless, vulnerability and exposure to risk. It could also be defined as the inability of people to meet economic, social and other standards of well-being (OECD, 2001). Hence, poverty goes beyond income and consumption poverty to multidimensional poverty. There was also a slight increase in the headcount index from 0.32 in 1995 to 0.34 in 2000 using the PPP\$2 per day poverty line, with population of some 16 million living on less than PPP\$2 a day. Turning to other forms of poverty, other than the money-metric measures, little progress has been made towards reducing food scarcity in South Africa, especially among children. SAVACG (1994) reported that 9% of children aged 6-71 months were underweight for age, while in 1999, the national food consumption survey reported that 11% of children aged 12-71 months were in this position (Labadarios et al., 2005). Also, according to the 1999 household survey, gender based poverty in South Africa is more concentrated towards women, with female-headed household that is more likely to be poorer than male-headed household. According to most recent report from

UNDP Human Development Report (2013) as reported in Gil-Alana et al. (2013), South Africa's Human Development Index (HDI) value for 2012 is 0.629 – in the medium human development category – positioning the country at 121 out of 187 countries and territories. It has a Gender Inequality Index (GII) value of 0.462, ranking it 90 out of 148 countries in the 2012 index and 13.4% of the population live in multidimensional poverty (i.e. the MPI 'head count'), while an additional 22.2% are vulnerable to multiple deprivations. The intensity of deprivation, that is, the average percentage of deprivation experienced by people living in multidimensional poverty is 42.3%.

Although, there are lots of strategies and policies that have been put forward as solutions to poverty, there is a global call for fiscal decentralization. Fiscal decentralization is viewed as one of the plausible solutions for the alleviation of poverty over the years in most countries and also in South Africa. Many definitions of fiscal decentralization, exists, but a clear precise way would be to define fiscal decentralization as the outsourcing or transfer of the national government's functions to the local or sub-national offices as a way to delegate some of the central government's duties by appointing sub-national officials, and who are in turn subject to directives from the central government. South African government is one of the countries that also adopted the policy of decentralizing its fiscal system through the assignment of its functions, allocating them to each sphere of government. It aims to achieve this with its framework of pro-poor policies. The 1996 constitution established three separate, interdependent and interrelated spheres of government, which are: national, nine provincial and 284 local governments and each sphere is assigned its own powers, functions and responsibilities. The main focus of the national government is the management of the country's affairs, and shares this responsibility of providing public services and goods with the sub-national or provincial governments. Provincial and local

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government share common functions, which consists of exclusive and concurrent competencies. Provincial government however are mandated to deliver most basic services such as education, health and welfare, whereby local government's responsibility is local services and infrastructure such as water, sanitation and electricity.

Basically, fiscal decentralization in South Africa involves the shifting of responsibilities for both revenue raising and expenditure spending to sub-national levels of government. The constitution deals with various aspects of intergovernmental fiscal relations (IGFR), which involves the devolution of revenue and expenditure assignments to sub-national governments and this acts as a force that establishes a closer link between the raising and spending of money. According to the Division of Revenue Act, which allocates national revenues to each of the three spheres of government, the South African intergovernmental fiscal system provides a framework of fiscal arrangement aimed at ensuring that all of the government's responsibilities are met and that socio-economic rights of citizens are enhanced. The IGFR system determines the way in which taxes are allocated and shared among the various levels of government and how these funds are transferred from one level to another.

Few studies have examined the link between fiscal decentralization and poverty empirically for other countries as will be seen in the literature review section. However, the findings are often mixed. Therefore, the main objective of this study is to investigate the impact of fiscal decentralization on poverty in the South African context. The rest of the paper is organized as follows. Section 1 provides literature on how fiscal decentralization and poverty are theoretically related. In other words, the channels through which fiscal decentralization can affect poverty are reviewed. A review of empirical studies regarding the relationship between fiscal decentralization and poverty is also provided. Data is described in section 2. Econometric techniques used are presented in section 3. In section 4 results and discussions are presented, while the final section concludes.

## 1. Literature review

The following discussion will be based on the issue of fiscal decentralization in alleviating poverty from both theoretical and empirical perspective.

**1.1. Theoretical link between fiscal decentralization and poverty.** The design and implementation of the strategies for poverty alleviation could be for a specific purpose or general purposes. Rao (1998) argued that the success of anti-poverty strategy in a multilevel system (i.e. decentralization) comprises of three sets

of measures: providing opportunities to the poor, empowering the poor to take advantage of opportunities and providing protection against vulnerability. These three sets of measures require both direct and indirect anti-poverty interventions. In order for the anti-poverty intervention to be a success, it is crucial to firstly identify the poor and their characteristics, what causes or factors that lead to poverty and once the two elements are known, the specific policy can be designed and implemented to improve living standards, of which requires policies and strategies that accelerate growth. The implementation of these policies should however be cost effective, with institutions that complement the policy stance.

Fiscal decentralization enters into poverty alleviation in a number of ways, for instance, the closer the policy implementers are to the target group, the information costs in identifying the poor and the cost of designing successful policies reduces. Oates (1999) stated, "In an economy with significant inter-community (regional/local) variations in preferences and when there are no significant economies of scale or scope, decentralized provision of public goods and services can enhance efficiency and result in welfare gains". He also argued that inter-governmental competition and the exercise of choice by community votes help in revealing the preferences of such public goods and services. Also importantly, innovation in public goods provision can result due to competition. The specific transfers' policy ensures that the poor get access to specified services that increase their consumption entitlements and also improve their earning capacity. This policy leads to the provision of services to the poor irrespective of whether they are from rich or poor regions. The types of anti-poverty interventions that fall under this specific-purpose transfer in a multi-level fiscal system are: employment policies targeted to the poor, provision of basic education and health and housing facilities to targeted groups.

Poor people are concentrated in poorer regions where they do not have proper access to basic services and infrastructure (physical and social). Therefore, the growth accelerating strategy is to provide transfers in order to reduce these fiscal disabilities of the poor regions so that they can provide improved levels of public services at comparable tax rates. These differences in local abilities or disabilities can be due to certain factors, e.g. differential revenue capacity or variations in the unit cost of public services provision. So it is crucial to correct these inequities by providing general purpose transfers to fiscal localities that are disadvantaged. Such general policy merely ensures disadvantaged fiscal localities are able to provide standards of services comparable to other localities.

The choice is left to the locals whether they provide the required standard of living, but most important is that it improves the poorer regions even though the transfers are not specifically targeted to the poor but they will benefit from the general increase in the region. All in all, general purpose transfers should enable the fiscally disadvantaged sub-national units to provide comparable levels of public services at comparable tax rates. Specific transfers should ensure that specified services, impacting directly on poverty, are provided at the required quantities.

Another strand of literature concerns the importance of political involvement by local residents, emphasising decentralization and poverty in developing countries and showing results of decentralization in some countries and other African countries. The literature illustrates three of the poverty dimensions that might be influenced by policies under decentralization, namely: voiceless, vulnerability and limited access to social services. Decentralization effects on poverty would be much easily observed when there is relationship between two channels, which are political and economic (Jutting et al., 2004). With political or democratic channel, decentralization would offer local community the ability to participate or offer their voices in local-decision making processes, in which they were previously excluded from. The participation of local community would offer them easy and better access to local public services and social security schemes, which would in the process reduce vulnerability and insecurity. Another point in the democratic decentralization is that, in countries that were ethnically divided, decentralization would make it possible for this ethnic group to share power, thereby establishing grounds for political consensus and a stable political system that helps the poor build up their life and begin to invest.

In terms of the economic channel, decentralization is expected to yield positive results towards poverty because it is believed to increase efficiency and better targeting of services. Improved efficiency in the provision of services would directly improve the poor access to education, health, water, sewage and electricity, which are the main concerns related to poverty. This channel clearly shows that decentralization would enable greater responsiveness to local needs. In order to determine the impact of decentralization on poverty, there are two kinds of conditions that must be understood, which are background conditions inherited by the country and the process conditions (Jutting et al., 2004).

Background conditions are made up of four variables: country setting, the capacity of local actors and the culture of accountability, and legal enforcement, social institutions and political power structure. The

process condition of decentralization is also made up of four variables, which are, the ability and willingness to carry out reforms, transparency and participation, elite capture and corruption and policy coherence. Fiscal decentralization is partly justified by appeal to the classic argument of Tiebout (1956) that decentralized provision of public goods allows better fulfilment of diverse individual preferences. This would happen since local governments would choose different levels of public goods provision, and people would move to a jurisdiction whose level fits their preferences. However, many have expressed concern that the conditions justifying Tiebout's argument are not present in many developing countries (Brueckner, 2000; Neyapti, 2004; Kolstad and Fjeldstad, 2006). In the presence of local corruption and tax evasion, which exist in many developing countries, the benefits of fiscal decentralization are limited. By raising public-good costs, corruption cancels out some of the gains from better demand fulfilment. Tax evasion may obstruct the preference-matching mechanism, creating communities where preferences are diverse rather than homogeneous (Brueckner, 2000). Hence, the gains from fiscal decentralization are eliminated. Also the issue of elite capture and how it can lead to a restriction of the level of service delivery has been highlighted as a way corruption may impact on fiscal decentralization (Bardhan and Mookherjee, 2002; Kolstad and Fjeldstad, 2006).

Also, the outcome of decentralization mostly depends, besides the two conditions mentioned above, on their overarching objectives, which can be undertaken by default (where government is forced to decentralise) or by design (of which the process is limited but government will have greater ability to shape the process (Jutting et al., 2004). Government's ability and willingness to carry out reforms under design is dependent on factors like financial resources at the local level, which can be obtained through transfers from central government, by raising own taxes and through donor contributions.

**1.2. Empirical studies.** von Braun and Grote (2002) investigated whether decentralization serves the poor using the human development indicator as a proxy for poverty and three indicators of decentralization, fiscal, administrative and political decentralization. With respect to fiscal decentralization which is of interest in this study, their ordinary least square regression results show that a larger share of sub-national expenditures tends to reduce poverty but with declining effect (shown by the squared term) at the margin. Sepulveda and Martinez-Vazquez (2011) studied the potential effects of fiscal decentralization on poverty and inequality with a

panel of countries which included countries at different stages of development, using both fixed and random effects GLS regression. The regression results display a positive but insignificant influence on poverty with fixed effects, whereas using the random effects, fiscal decentralization has a positive and significant effect towards poverty. Poverty increases by 0.465% for a one percent increase in fiscal decentralization. With regards to income inequality, fiscal decentralization seems to increase income inequality for most countries which are in the first stages of development. The coefficients of fiscal decentralization are positive and statistically significant under both fixed and random effects regression, with inequality increasing by 0.237% and 0.284%. The study by Banwo (2012) analyzed the question of fiscal decentralization and its resultant impact on poverty using data from Nigeria, with the hypothesis that fiscal decentralization is not poverty eroding. The OLS regression results depict that fiscal decentralization of expenditure leads to 0.6% increase in poverty while fiscal decentralization of revenue accounts for a significant 29.5% reduction in poverty.

Gemmell et al. (2012), examined whether the efficiency gains accompanying fiscal decentralization (spending and revenue) generate higher growth or not. Using pooled-mean group regression on 23 OECD countries, the regression results are that spending decentralization is associated with lower economic growth, decreasing GDP growth by 0.550 though statistically insignificant. Revenue decentralization, on the other hand, has been associated with higher growth, increasing growth by 0.341 yet statistically insignificant. The results highlight the need for a closer alignment of these sub-national spending and revenue in OECD countries for growth to be enhanced. Nguyen (2008) examined the relationship between fiscal decentralization and the lowest-quintile average monthly income in Vietnam using a panel data regression. The study observed a negative relationship between fiscal decentralization and poor people's income. Specifically, a 1.0% increase in the sub-provincial share of the total provincial expenditures led to about 0.39% decrease in the lowest-quintile average monthly income, with statistical significance at the 5% level using both statistical and robust model.

Finally, analysis on fiscal decentralization impact in South Africa is quite limited. Elhiraika (2007) examined the impact of fiscal decentralization on service delivery (education and health) by sub-national governments in South Africa, with a random effects as the method of estimation. The results depict that own-source revenue per province increases expenditure on education by 0.10% and it is independent of changes in the share of inter-

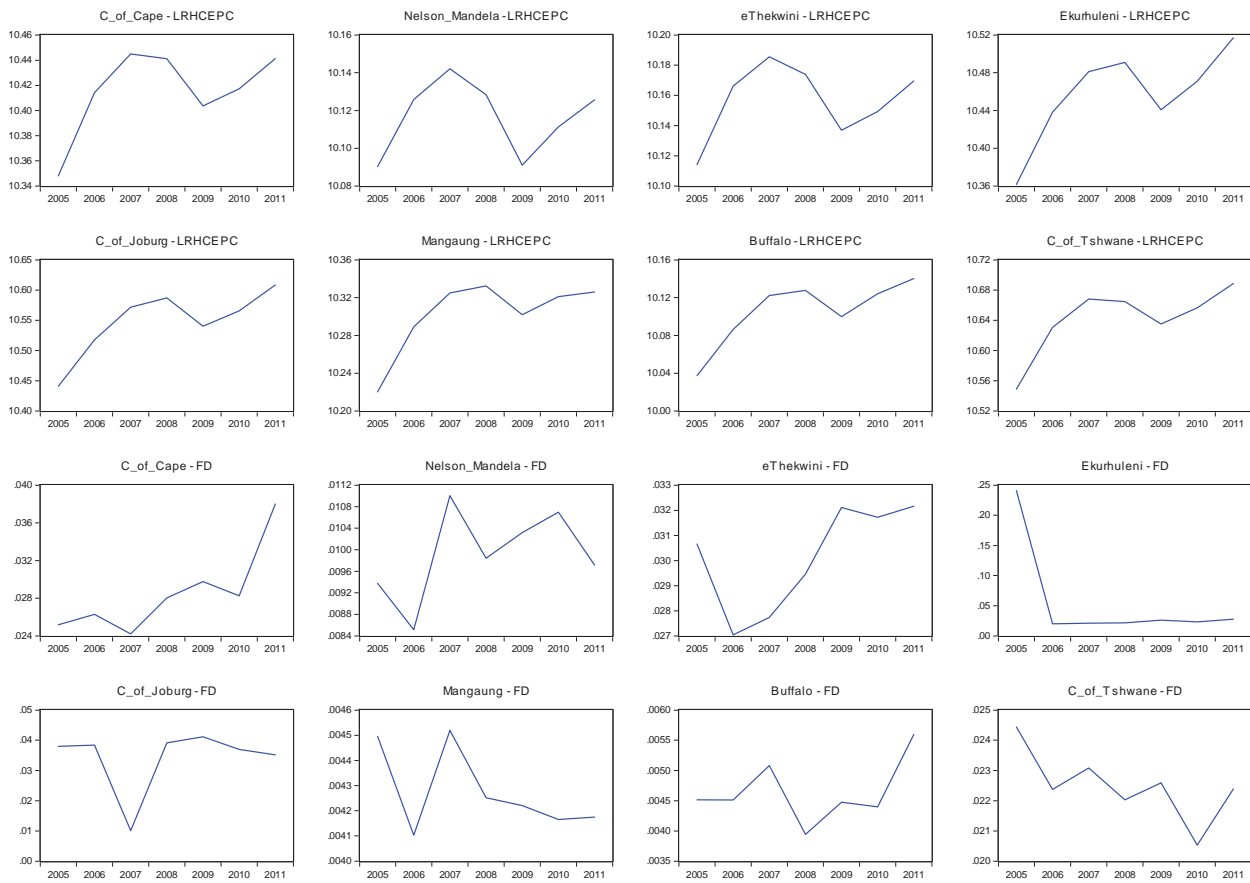
governmental transfers. Own-source revenue per province has a negative impact on health expenditure, for a 1% increase in own-source revenue health expenditure decreases by 0.3%, however, government transfers have the exact opposite effect on health. Using South African provincial and municipalities' level data, Marinkov (2012) studied the impact of aggregate revenue and expenditure assignments on economic growth in the case of South Africa's provinces and municipalities using panel and pooled regression analysis. The results for provinces showed that irrespective of the proxy used (expenditure or revenue decentralization), the sign of fiscal decentralization was negative, with coefficients -1.688 and -1.562 for revenue and expenditure, respectively. This indicates that fiscal decentralization at provincial level does not promote economic growth. The results for the municipalities' fiscal decentralization with revenue as a measure are interesting, showing a positive effect on economic growth, increasing growth by 0.255. With expenditure used as a measure, there is a negative effect on economic growth, decreasing growth by 0.196. Therefore fiscal decentralization of revenue enhances growth at the municipalities level while fiscal decentralization of expenditure seems to deteriorate growth. This current study therefore contributes by considering the impact of fiscal decentralization on poverty in South Africa using a panel VAR thereby accounting for possible endogeneity between the two variables.

## 2. Data

Real household consumption expenditure per capita was used as proxy for poverty given limited panel data on the other aspects of poverty. Household consumption expenditure which covers all purchases made by resident households (home or abroad) to meet their everyday needs, is in constant 2005 South African rands and it is obtained from Quantec Research, South Africa. Data was available from 1995 to 2011 on all eight metropolitan cities namely, City of Cape Town, Nelson Mandela Bay, eThekweni, Ekurhuleni, City of Johannesburg, Mangaung, Buffalo city and City of Tshwane. The population data on these metropolitan municipalities were also sourced from Quantec Research. The ratio of household consumption expenditure to the population value yielded the real household consumption expenditure per capita (*RHCEPC*). Fiscal decentralization, which measures the devolution of government was computed using the national government expenditure and the metropolitan municipalities' expenditure data, both of which were extracted from the National Treasury of South Africa website. Data on national government expenditure covered the period of 1995 until 2012 and data on

the metropolitan expenditure covered the period of 2005 up until 2012. Fiscal decentralization (*FD*) was calculated as the proportion of the two expenditures by dividing each metropolitan municipality's expenditure in each year by the total national government

expenditure in that particular year. To maintain common dates for the available data, estimations were done using data from 2005 to 2011. Time series data on *FD* and the log of *RHCEPC* are plotted and presented in Figure 1.



**Fig. 1. Plots of fiscal decentralization (*FD*) and log of real household consumption expenditure per capita (*RHCEPC*) for all eight metropolitan cities**

### 3. Econometric models

Our analysis is based on a panel data vector autoregressive (panel VAR) model of Love and Zicchino (2006)<sup>1</sup>. The method combines the traditional VAR approach, which treats all the variables in the system as endogenous, with the panel data approach, which allows for unobserved individual heterogeneity. The VAR model is specified as:

$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \dots + \alpha_p y_{it-p} + f_i + \varepsilon_t, \quad (1)$$

where  $y_t$  is a two-variable vector  $\{FD, LRHCEPC\}$ ; *FD* is the financial decentralization, *LRHCEPC* is the log of real household consumption expenditure per capita,  $p$  is the number of lags of the dependent variable. The application of the VAR to panel data requires an imposition of the restriction that the underlying structure is similar for each cross-sectional unit. Since this might be violated in

practice, we follow Love and Zicchino (2006) and allow for “individual heterogeneity” in the levels of the variables by introducing fixed effects, denoted as  $f_i$  in the model. Given that the fixed effects are correlated with the regressors due to lags of the dependent variables, we eliminate the fixed effects using the forward-mean differencing, also known as the ‘Helmert procedure’, since the commonly used mean-differencing procedure would create bias coefficients (Love and Zicchino, 2006). This process eliminates the forward mean, i.e. the mean of all the future observations available for each metropolitan-year. Therefore, the orthogonality between the transformed variables and lagged regressors are preserved, so we can use lagged regressors as instruments and estimate the coefficients by system GMM.

### 4. Results and discussion

We estimate the coefficients of the system in equation (1) after removing the fixed effects. The estimation was done using one lag of the dependent variable given the relative size of our sample. The

<sup>1</sup> We thank Inessa Love for the original version of the PVAR code and Ryan Decker for its revision.

GMM estimates of the panel VAR are presented in Table 1. We also present the graph of the impulse response functions and the 5% error bands generated by Monte Carlo simulation to show the response of each variable to shocks on itself and those of other endogenous variables over time. Figure 2 reports the impulse response functions.

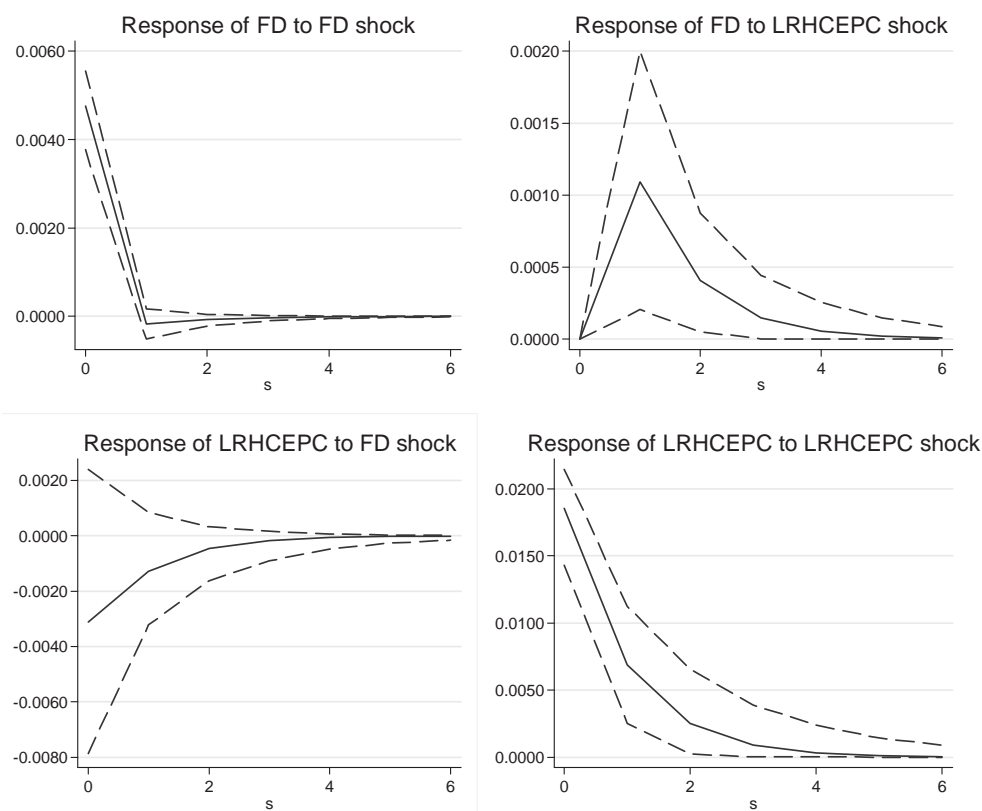
Table 1. GMM estimates of the panel VAR

Response to	Response of			
	$FD(t)$		$LRHCEPC(t)$	
	Coeff.	Std Error	Coeff.	Std. error
$FD(t-1)$	0.002	0.014	-0.026	0.075
$LRHCEPC(t-1)$	0.059*	0.032	0.370**	0.129

Note: \* and \*\* indicate significance at 10% and 1% level, respectively.

As expected, financial decentralization and real household consumption expenditure per capita respond positively to own shock and this is consistent

with their positive coefficients in Table 1. Further, we observe that the response of financial decentralization to a shock in the real household consumption expenditure per capita is positive in both the estimated coefficient and impulse response function and this is significant at 10% in the former though the later shows only marginal significance around the first and second horizon. The effect dies off after five horizons, that is,  $FD$  returned to the equilibrium level after this period. However, the result of interest to this study is the response of real household consumption per capita, a proxy for poverty, to a fiscal decentralization shock. In contrast, we observe a negative though not significant effect of fiscal decentralisation on real household consumption per capita. Also the impulse response function confirmed this finding, showing a negative effect of fiscal decentralisation on real household consumption per capita, with the effect dying off after three horizons.



Note: Errors are 5% on each side (dashed lines) generated by Monte-Carlo with 500 reps. Solid lines are responses to shocks.

Fig. 2. Impulse responses of  $FD$  and  $RHCEPC$

Further, we present the variance decompositions, which show the percent of the variation in one variable that is explained by the shock to another variable, accumulated over time. The variance decomposition is an indication of the magnitude of the total effect. We report the total effect accumulated over 10 years, though the results did not change with long time horizons. The results are presented in Table 2. The results show that  $LRHCEPC$  explains 5.7% of the variation in  $FD$

while  $FD$  explains only 2.8% of the variation in  $LRHCEPC$ . These results are consistent with the GMM coefficients and the impulse responses.

Table 2. Variance decompositions

	$FD$	$LRHCEPC$
$FD$	0.943	0.057
$LRHCEPC$	0.028	0.972

Note: Percent variation in the row (10 periods ahead) explained by column variable.

These results emphasize the need to follow an implementation process that can identify the poor and the characteristics that they share in order for fiscal decentralization to produce any better results and alleviate poverty in South Africa. The types of policies that would help in dealing with these issues are the specific purpose policy, which ensures that specific services are delivered to the poor with different needs, and the general purpose policy, that helps sub-national governments to provide public services at comparable tax rates in turn easing the expenses of communities at large.

With the South African political system growing, positive results of fiscal decentralization on poverty can still emerge. This simply implies that decentralization system must offer the community more ability in order to participate in political activities so that their voices would be heard by taking roles in local decision making, as part of the objectives of the plan. The implementation of fiscal decentralization however must be undertaken generally by design rather than by default. With default, the government is forced to decentralize and no positive result emerge whereas by design, the process is limited but the government will have greater ability to shape the process.

Applicable recommendation to the government would be that, since it was proven empirically that fiscal decentralization reduces household consumption expenditure per capita, which implies that it reduces household welfare and hence increases poverty, the government could reassess its fiscal framework regarding its expenditure strategies. Local based governments and municipalities must be given the opportunity to create their own revenue strategies and rely less on intergovernmental transfer. Local governments can earn revenue from own collection of local business taxes, property taxes, water and electricity charges, etc. There is a contradiction mainly between how revenue is raised and how it is spent. Therefore, for the government to avoid this, issues such as public funds misappropriation, fiscal indiscipline, exclusion and local elite and weak institutional and legal framework should be prevented through sound governance.

## Conclusion

The study examined the dynamic relationship between fiscal decentralization and poverty in South Africa using a panel vector autoregressive regression model estimated with generalized method of moments (GMM). While the share of metropolitan municipalities' expenditure to total national expenditure was used as a proxy for fiscal de-

centralization, real household consumption expenditure per capita was used as a proxy for poverty. The data used spans the period from 2005 to 2011 constrained by the availability of metropolitan municipalities' expenditure. Thus the panel is made up of eight metropolitan municipalities and seven time series making a total of 56 observations. We show results from the GMM estimates, impulse response functions and variance decompositions. The GMM estimate shows that fiscal decentralization has a negative short-run effect on household welfare which implies an increase in poverty. However, the estimate was not significant. Results from the impulse response function which captures the response of real household consumption expenditure per capita to a shock on fiscal decentralization over time also show a negative response whose effect died off after three years. Similarly, the variance decomposition show that fiscal decentralisation accounted for only 2.8% of the variation in real household consumption expenditure per capita. On the other hand, fiscal decentralization responds positively and significantly to real household consumption expenditure per capita. However, our major interest is on the role of fiscal decentralisation in poverty reduction.

Overall, the findings show that fiscal decentralization increases poverty in South Africa, though this must be interpreted with caution given the limited available sample. However, this finding may not be surprising given that the local municipalities may be obtaining funds mainly in the form of intergovernmental transfers that could have been used for reducing poverty, and may as well utilize those funds for other purposes other than poverty reduction. It is also possible that the local municipalities are not as effective and efficient as the national government in implementing policies and program that are pro-poor in nature. Further, corruption could also limit the benefits of fiscal decentralization and hence can partly explain the findings in this study although this is not explicitly modelled. Based on this the South African government needs to reassess its fiscal framework regarding its expenditure strategies to ensure adequate capabilities at the local government level to discharge their expenditure roles in a way that will yield reduction in poverty in South Africa. Future research may look at the causal link between fiscal decentralization and poverty when sufficient data is available or use a bootstrapping methodology in the absence of long time series. Future studies may investigate the extent to which corruption perceptions changes the impact of decentralization.

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