

Does Fiscal Decentralization Reduce or Exacerbate Multidimensional Poverty? Evidence from Kenyan Subnational Governments

Ezekiel Atetwe¹, Rhenson Obora²

¹Humanities Department, State House School, Nairobi, Kenya

²The Kenya Institute for Public Policy Research and Analysis (KIPPRA), Nairobi, Kenya

Email: atetwee@gmail.com

How to cite this paper: Atetwe, E., & Obora, R. (2026). Does Fiscal Decentralization Reduce or Exacerbate Multidimensional Poverty? Evidence from Kenyan Subnational Governments. *Open Journal of Social Sciences*, 14, 129-171. <https://doi.org/10.4236/jss.2026.143009>

Received: December 21, 2025

Accepted: March 8, 2026

Published: March 11, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This paper empirically analyses whether there is any significant statistical relationship between fiscal decentralisation and multidimensional poverty in Kenya using FE and RE estimations for cross-county panel data from 2006-2019 published by government agencies, United Nation Development Programme (UNDP), Society for International Development and World Bank. The empirical estimations examine the effects of revenue decentralisation, vertical fiscal imbalances, intergovernmental transfers and expenditure decentralisation on multidimensional poverty-proxied alternatively by Headcount Poverty Index, Human Development Index (HDI) and Multidimensional Poverty Index (MPI). Our estimation results reveal that the impact of fiscal decentralisation on multidimensional poverty measures depends on the nature and extent of fiscal decentralisation. On the side of money-metric poverty measures, revenue decentralisation and vertical imbalances reduce poverty headcount at low levels below 61.31 per cent and 53.54 per cent respectively while intergovernmental transfers and expenditure decentralisation were found to increase poverty headcount at low levels below 9.92 per cent and 0.801 per cent respectively beyond which they would reduce poverty headcount. On the side of the non-money metric poverty, revenue decentralisation and vertical imbalance increase Multidimensional Poverty Index (MPI) at low levels below 51.94 per cent and 0.955 per cent respectively while intergovernmental transfers and expenditure decentralisation were found to reduce MPI at low levels below 9.07 per cent and 0.811 per cent respectively beyond which they would increase multidimensional poverty. Additionally, there are differences in the effects of

fiscal decentralization and multidimensional poverty across regions and counties. Our results also show the major role played by the devolution reforms of 2013 in increasing the overall decentralisation that improved multidimensional poverty reduction through pro-poor expenditures.

Keywords

Fiscal Decentralization, Devolution, Multidimensional Poverty, Local Development and Governance, Counties, Kenya

1. Introduction

Does the decentralisation of political and fiscal institutions reduce or exacerbate multidimensional poverty in the Sub-Saharan Africa (SSA) context? This question has recently received attention among researchers and policy makers globally. Over the past years, many countries in SSA have placed a strong responsibility on the strengthening of subnational governments in their development policy agenda. These countries have implemented decentralisation reforms in varying extents due to different political and socio-economic reasons, and with varying outcomes (Smoke, 2014). The central concept for development of subnational governments has been “development and governance from below” with the intention of bringing the government and public goods and services closer to the people (World Bank, 1999; Faguet, 2012), at the same time enhancing public participation in the delivery of these goods and services (Bahl & Bird, 2018).

Devolution of decision making and revenue mobilization responsibilities to subnational governments increases government accountability and responsiveness, resulting in more effective public service delivery (Ingram & Hong, 2008; Lockhart, 2019) due to electoral pressures from local citizens (Bartolucci et al., 2015). Furthermore, the enhancement in the responsiveness and accountability levels brought about because devolution allows the customization of public services to local preferences due to informational advantages, promotes scrutiny by citizens of government expenditures, and encourages innovation through interjurisdictional competition (Hayek, 1945; Oates, 1972, 1977, 1991, 1994, 2005, 2006; Tiebout, 1956; Ingram & Hong, 2008).

These theoretical arguments for devolution can be posited to support the assertion that fiscal decentralization (FD) has positive effects on poverty reduction. Devolution is believed to make the voices of the poor better heard; improve their access to and the quality of public goods and services and reduce their vulnerability (Silas et al., 2018). Since poverty is multiple deprivation from the basic services like education, health and agriculture; then the expenditure on these infrastructure and social sector that respond to local governments are likely to be more effective for well-being of the people. This is the direct linkage between FD and multidimensional poverty reduction. FD can also be an effective weapon for mul-

tidimensional poverty reduction mainly because local governments are assumed to have better information and higher incentives than the central government in priority setting, designing and implementing plans and policies that respond to local needs and preferences (Steiner, 2005). Through an indirect way, FD also affects generation and redistribution of income to the voiceless and vulnerable local poor by their own participation (Webster, 2000; Fuel, 2013). Yao (2007) discusses the economic opportunities for the poor that affect their private income which can be enhanced through decentralisation, for example, enhanced level and quality of economic infrastructure (roads, electricity, agricultural extension services, ports, etc.). However, Bahl & Bird (2018) and Yao (2007) note that these benefits of decentralisation are not automatic as they depend on the certain conditions at the subnational level to capture such benefits.

Bahl & Bird (2018) point out a number of pre-conditions that need to be met to capture the gains from FD for poverty reduction. First, regional and local legislatures need to be accountable to the local population. Second, the chief officers of the local government must be accountable to their legislatures. Third, subnational governments should have some independent taxing powers. Fourth, subnational governments should be responsible for some important services. Lastly, subnational governments should have adequate discretion over the level and composition of expenditures. These conditions have a big impact on poverty reduction in the subnational governments.

Critics have capitalized on the weakness of these conditions in the developing countries to argue the weak link between FD and poverty reduction. For instance, local elite in developing countries may often have direct access to and influence over local officials, and resist sharing power in new decentralization and participation policies (Narayan et al., 2000). Furthermore, if communities or the state cannot influence or control the actions and power of local leadership, then this often leads to investments which benefit elite interests and an under-investment in public goods and services for the poor (McLure, 1995; Keefer & Khemani, 2003; Prud'homme, 1995; Sewell, 1996; Fisman & Gatti, 2002; Bardhan & Mookherjee, 2004; Ahmad & Akif, 2007; Hankla, 2009; Dincer et al., 2009). There is also evidence that in many settings, such as heterogeneous communities and underdeveloped rural economies, the benefits of decentralized social programs are captured by local elite (Galasso & Ravallion, 2005). Yao (2007) further notes that these risks become more eminent when the particular decentralization design deviates from the maxims of local discretion, voice, and accountability. However, these risks can be minimized when certain institutional conditions, such as political freedoms, political accountability, adequate human and physical capital bases, free information flows or public access to information are present.

This paper analyses the relationship between FD and multidimensional poverty in Kenya. The study analyses the extent to which fiscal decentralization, measured in terms of revenue decentralisation, intergovernmental transfers and spending decentralisation, affects multidimensional poverty in Kenya. Our paper also anal-

yses whether the effects of fiscal decentralization vary between county (local) governments according to their internal heterogeneity, defined as the degree of ethnic fractionalization.

Our empirical analysis uses subnational revenue dataset spanning 13 years (2006-2019) for 47 counties. We use an adjusted Multidimensional Poverty Index (MPI), Human Development Index (HDI), Headcount Poverty Index (HPI) calculated at the county level using the 2005/06 and 2015/16 Kenya Integrated Household Budget Survey (KIHBS). The rest of the paper is organized as follows. Section 2 gives an overview of FD in Kenya. Section 3 reviews the literature and analyzes the channels through which FD affects multidimensional poverty. Section 4 presents the data variables and sources, methodology, the estimation strategy and the econometric diagnostic test performed on the data. The main results and the robustness checks are discussed in Section 5. Section 6 concludes and provides some policy implications.

2. Understanding Fiscal Decentralisation in Kenya

Like many other African countries, Kenya's system of local government was established during the colonial rule (Smoke, 1993; Smoke, 1994). Wanyande (2016) argues that the colonial state was wasn't a developmental state as it had adopted policies geared towards extracting as many resources from the people as it could without investing the same in the social and economic development of the indigenous people. The state had spent its energies developing regions occupied by British colonial settlers. The result was that some regions of the country developed while others stagnated or experienced underdevelopment (Silas et al., 2018; Throup, 2020). While poor people were found in both the developed and the disadvantaged regions, the severity of poverty was harsh among the people in the disadvantaged regions.

The 1963 Independence Constitution provided for a system of devolution. This semi-federal constitution established regions with elected assemblies and executive authority over roughly a third of government functions including primary education, health road maintenance, water and sanitation, public housing, land administration, part of the police forces and local government. However, the newly independent government quickly weakened devolution by delaying the transfer of functions to the regions. The system was abolished in 1964 and replaced by provincial and district administrations (Smoke, 1994; World Bank, 2014a, 2014b, 2014c, 2014d, 2014e).

In terms of poverty reduction, the founding leaders vowed to fight poverty, ignorance and diseases (Sessional Paper No. 10, 1965) after the attainment of independence in 1963. The successive governments continued to endeavour to address the issue of poverty and inequality, albeit with varying degrees of success. Government decentralised planning of some government policies pursuing economic development. For instance, the Sessional Paper No. 10 of 1965 established the principle of state directed development and decentralisation of planning based on

local inputs as a means of improving socio-economic well-being of local communities (Silas et al., 2018).

The government gradually introduced geographically earmarked funds in an attempt to address spatial inequality with a decade of relatively piecemeal FD beginning in the late 1990s. The most notable ones were the Special Rural Development Programme (SRDP) in 1971, District Focus for Rural Development (DFRD) in 1983, the Local Authority Transfer Fund (LATF) in 1998, the Local Authority Service Delivery Action Plan (LASDAP) in 2001, the Road Maintenance Levy Fund (RMLF) in 2007, the Rural Electrification Fund (REF) in 2006 and the Constituency Development Fund (CDF) in 2003. Despite these efforts to address poverty and inequality in resource distribution, overall spending by the local governments amounted to only about 1 percent of GDP by the late 2000s (Odero, 2004; Barasa & Eising, 2010; Muna, 2016).

Consequently, from 2002, these piecemeal reforms couldn't address the poverty and inequality problems in Kenya. Kenya needed urgent reforms. The successive governments tried different reforms, for example, the Economic Recovery Strategy for Wealth and Employment Creation (ERSWEP), which also failed to solve Kenya's inequality issues. Political tensions remained high spilling over into the 2007/2008 post-election crises and subsequent unrest, which proved to be the tipping point that led to demands for a new Constitution (Bosire, 2017; Kanyinga & Long, 2012; Ndi, 2010; World Bank, 2011). Kenya introduced major constitutional reforms that culminated into the adoption of a new constitution in 2010 bringing about a major devolution drive (Chitere et al., 2006; Kanyinga, 2016).

To promote economic development at the grassroots, the *Constitution of Kenya (2010)* introduced a devolved system of government consisting of one national government and 47 sub-national governments (GoK, 2010; Kabau, 2015). The constitution provided for the allocation of financial resources to subnational governments and authorised these governments to raise their own revenue through specified taxes. The constitution further provided for an Equalization Fund intended to fight poverty in the marginalised regions through provision of social service. Though Kenya launched this ambitious FD system, a few studies have been carried out to assess its impact on multidimensional poverty reduction and our study intends to fill this gap.

3. Literature Review

3.1. Theoretical Literature

This study was based on FD Theories that examine the links through which FD affects poverty. These theories have evolved into two umbrella categories; First Generation Theories (FGTs) and Second Generation Theories (SGTs). The normative FGTs support the transfer of spending responsibilities to subnational governments and centralisation of revenue responsibilities to achieve "efficiency" and "equity" in a decentralised system while SGTs, especially the theory of Market-Preserving

Federalism (MPF) assume that public decision-makers have objectives induced by political institutions that diverge from maximising citizen's welfare and therefore emphasise the importance of incentives generated by subnational tax collection for fostering local growth and development (Bird et al., 2003; Bird & Vaillancourt, 1998; Ter-Minassian, 1997; Chandra, 2012).

The seminal works of Hayek (1945), Tiebout (1956), Musgrave (1959), Oates (1972) and Qian and Weingast (1997) argue that FD promotes higher efficiency, better public service, greater transparency, that can lead to poverty reduction. Musgrave (1959) stipulates that the lower tiers of government should undertake the duty of provision of public goods for maximisation of social welfare, while the central government is suited to the two important functions of income redistribution and stabilisation. Hayek's idea of knowledge in society concludes that there is a better access of local governments to the local preferences and costs through their local knowledge; however, the central government is incapable to carry out the same (Fuel, 2013).

Tiebout's notion of inter-jurisdictional competition posits the idea of "voting with their feet" thereby implying that citizens would prefer to live in the areas which burden them with lower taxes and therefore they tend to move out of the areas with higher tax burdens. Oates' notion of fiscal federalism emphasizes the appropriate assignment of taxes to the various levels of government to improve welfare. Lastly, Weingast's MPF emphasises the larger benefits of decentralization for market development and economic prosperity (Weingast, 1995, 2014, Jin et al., 2005; Montinola et al., 1995).

Klugman (1994) argues that decentralisation increases economic efficiency because local governments are better positioned than the national government to deliver public services as a result of proximity and information advantage. Besley and Burgess (2002) see this proximity particularly important in low-income countries where vulnerable populations especially the poor heavily rely on state action for their survival. Wiggins & Higgins (2008) observe that while economic growth is necessary for poverty reduction, it is far from sufficient. The extent to which growth can reduce poverty depends on a number of context-related variables. Specifically, to harness growth for poverty reduction, countries must have certain policies in place so that poor people can participate in growth (Ravallion, 1999; Rao, 2002; Galasso & Ravallion, 2005; Bird, 2008).

Thießen (2003) developed a model to show that decentralised expenditures can lead to greater "consumer efficiency". As demands are different in each territory, resources can be saved by diversifying governments' outputs in accordance with local demands (Martinez-Vazquez & McNab, 2003; Bardhan & Mookherjee, 2006). Local governments are thus considered to be better equipped to provide a more adequate service to the local population than central governments (Tiebout, 1956; Ebel & Yilmaz, 2002). Decentralisation may thus improve not only the potential for achieving Pareto efficiency, but also for achieving greater economic equality across territories through poverty reduction (Ezcurra & Pascual, 2008;

Brennan & Buchanan, 1980; Breton, 1983). Finally, FD is frequently seen as a means of increasing democratic participation in the decision-making process (Dabla-Norris, 2006; UNDP, 2005; Faguet, 2014), allowing for greater transparency and accountability (Putnam, 1993; Azfar et al., 1999; Kaufman et al., 1999; Ebel & Yilmaz, 2002).

However, there are mounting theoretical arguments that decentralisation is not necessarily pro-poor (Prud'homme, 1995; Treisman, 2000; Martinez-Vazquez & McNab, 2003; Fjeldstad & Kolstad, 2006; Crook, 2003; Jütting et al., 2005; Yao, 2007; Lessmann, 2012; Hernandez-Trillo, 2016). Furthermore, Conyers (2007) notes that local heterogeneity of the population can reduce the efficiency of public service delivery leading to exacerbation of local poverty.

3.2. Empirical Literature

The earlier FD and poverty empirical research focused heavily on the impact of FD on development in general (Davoodi & Zou, 1998; Bahl & Bird, 2018; Schroeder, 2003). Recently more empirical studies have paid attention on the impact of FD on poverty alleviation. Most studies, however, analyse the impact of decentralization on poverty in all three of its forms: political, administrative and fiscal (Crook & Manor, 1998; Von Braun & Grote, 2000; Jütting et al., 2004). Scholars in related fields of development and public finance agree that FD and poverty are indeed correlated (Sepulveda & Martinez-Vazquez, 2011). They have attempted to develop a general framework to exactly account for how FD affects poverty. However, the empirical evidence is quite mixed due to three main factors: (i) differences in the measurement of FD indicators; (ii) the development of analytical models, and (iii) poverty measurement indicators (Nursini & Tawakkal, 2019). For instance, each measurement of FD (i.e. expenditure, revenue, intergovernmental transfers, vertical imbalance and local borrowing) has different roles and values for poverty reduction (Liu et al., 2013; Voigt & Blume, 2012).

The empirical frameworks presented by Jütting et al. (2004) and von Braun and Grote (2000) identify a positive economic influence of FD on poverty reduction via higher efficiency and better targeting. Von Braun & Grote cross-country study concluded that decentralisation (political, administrative and fiscal) served the needs of the poor, as captured by the HDI. Ahmed (2013) used expenditure decentralisation and revenue decentralisation measures to analyse the multiple and more complex channels of poverty reduction through FD in Pakistan, whereby poverty is measured using; (i) the headcount poverty; (ii) poverty gap; (iii) severity of poverty; and (iv) the HDI Galasso & Ravallion (2005) find that in Bangladesh, the Food-For-Education Programme became more pro-poor with decentralisation, while Bardhan & Moorkhejee conclude that decentralised management helped in poverty alleviation goals in West Bengal in India. Using revenue, expenditure and vertical imbalance indicators, Yao (2007) observed a significant and non-linear relationship between FD and poverty through education, agricultural productivity and healthcare facilities.

Nursini and Tawakkal (2019) used intergovernmental transfers, local own-source revenue and spending decentralisation to assess the impact of FD on percentage of poor people in each province from 2010-2016 in Indonesia. Several recent studies that have used expenditure decentralisation to measure FD include; Sepulveda and Martinez-Vazquez (2010), Asante and Ayee (2010), Moche et al. (2014) for South Africa, Jellema et al. (2016) for Uganda, Bekele and Kjosavik (2016) for Ethiopia and Yuliani et al. (2020). These studies have found a positive relationship between FD and poverty. Studies by Bossuyt and Gould (2000), Skira (2006), Valaris (2012), Canare and Francisco (2019), Sepulveda and Martinez-Vazquez (2011), Rao, Bird and Litvack (1998), Bjornestad (2009), Binh and Ha (2018), Khanal (2018), Azila-Gbettor, et al. (2014), Bojanin (2016), Caldeira, Foucault & Rota-Graziosi (2015), Kusumaningrum (2013), Goerl & Seiferling (2014), Cavusoglu & Dincer (2015), and Sasana (2018) also show a positive relationship using different measures for FD. Steiner (2005)'s study on Uganda argues that decentralization could influence poverty by assigning expenditure as well as tax raising power to local governments.

A number of other studies find that FD can negatively affect poverty reduction. West and Wong (1995) note that FD, due to its flawed design (more focus on federal-provincial fiscal relations and leaving local governments entirely at the mercy of provinces), is the prime cause of regional inequality and poverty in China. Hernandez-Trillo and Jaillo-Rabling (2008) empirical study of elite capture under FD supports the theoretical predictions of Bardhan and Mookherjee (2005). The authors demonstrate how political opportunism or elite capture impedes the performance of subnational governments in poor areas. Corrupt bureaucrats tend to overstate costs, divert the public good to resell it to the non-poor on the black market, or give priority to powerful socio-economic groups (Dethier, 2000).

On the other hand, findings by Fuel (2013) show that tax autonomy had a negative and statistically significant relationship with poverty incidence in 58 municipalities in Nepal. Prud'homme (1995), Crook and Sverrisson (2001), Steiner (2005), Shahzad & Yasmin (2016), Banwo (2012), Ravallion (1999), Alene & Worku (2017), Kyei (2008), Faridi and Nazar (2013), Hiktaop et al. (2020), Zambok, Asubonteng, Aikins, and Adomako (2016), Zhang (2006) and Kyriacou et al. (2015) highlighted the negative effect of decentralization on poverty as it increases disparities, jeopardizes economic stability and undermines efficiency in different context. Ravallion (2009) in his empirical analysis examined the impact of decentralization on poverty alleviation programme and concluded that the impact on income poverty was quantitatively small. Crook (2003) suggested that decentralization is unlikely to lead to more pro-poor outcomes without strengthening and broadening accountability mechanisms at both local and national levels.

In terms of differences in terms of poverty measures and empirical tools, different studies use different poverty measures and empirical methodologies. Studies use both money-metric poverty indicators especially FGT indices (Poverty

Headcount Index, Poverty Gap and Severity of Poverty) and non-money metric poverty indicators such as UNDP's Human Development Index (HDI) and the Multidimensional Poverty Index (MPI) to capture the multidimensionality of poverty (Ravallion, 2011; Dotter & Klasen, 2017; Atkinson, 2019; Beck, Hahn, & Lepenies, 2020). Recent studies show a shift from the uni-dimensional measurement to a multi-dimensional model of poverty measurement (Alkire & Foster, 2011). Von Braun and Grote (2000) and Sepulveda and Martinez-Vazquez (2010) used HDI as a proxy for poverty while Ramírez et al. (2016) used poverty headcount index and poverty gap. In addition, Azila-Gbettor et al. (2014) used non-monetary poverty indicators of income consumption.

Studies on FD-poverty nexus have directly or indirectly estimated the relationship between FD and poverty reduction (Boex & Martinez-Vazquez, 2001; Boex et al., 2006; Martinez-Vázquez, 2011; Anggraeni et al., 2022; Kaneva et al., 2023). Nursini and Tawakkal (2019) used Common Effect (CE) together with Pool Ordinary Least Square (OLS), the Fixed effect (FE) and the Random effect (RE). Ahmed (2013) used the standard Ordinary Least Squared, the Random Effects model and Fixed Effects model, Tobit model and the Generalized Method of Moment Instrumental Variable (GMM-IV) procedures. Yao (2007), Valaris (2012), Sepulveda and Martinez-Vazquez (2010) and Moche et al. (2014) used a panel data regression model. However, the issue of endogeneity in the measurement of decentralization remains a critical obstacle to the wholesale validity of results (Martinez-Vazquez et al., 2015).

Only a few studies linking FD to multidimensional poverty in Kenya exist. The existing studies analyse the two variables separately (Geda, de Jong, Mwabu, & Kimenyi, 2001; Omiti, Owino, Otieno, & Odundo, 2002; World Bank, 2014e; Shifa & Leibbrandt, 2017; Diwakar & Shepherd, 2018). Other studies focus on thematic areas within devolution, such as devolved corruption and ethnicity, and local revenue mobilisation (Cheeseman, Lynch, & Willis, 2016; Ataro, Muturi, & Wandera, 2016; Khadondi, 2018; D'Arcy & Cornell, 2016; Hassan, 2015, 2016). Studies that focus on the link between FD and multidimensional poverty include; Chitere & Ngundo (2015), Silas et al. (2018), Andhoga, Mavole and Mose (2017), Wagana (2017), Ngaruiya (2019), and Silas et al. (2018) used intergovernmental transfers, local own-source revenue and spending decentralisation to assess the impact of FD on poverty headcount, HDI and income inequality. Studies that study the FD-poverty link comprehensively are therefore lacking.

4. Methodology and Data

4.1. Construction of Variables and Data Sources

This paper analyses the extent of the effect of FD on MP reduction in Kenya's subnational governments (counties). The paper uses cross-county panel data from 2006 to 2019 and published data from government agencies, World Bank reports and UNDP to analyse the effects of three indicators of FD; intergovernmental transfers, subnational own-source revenue and subnational expenditure on mul-

tidimensional poverty reduction in Kenya.

This paper uses a regression model based on those of Yao (2007), Rodríguez-Pose and Krøijer (2009), Sepulveda & Martínez-Vázquez (2011), Fuel (2013), Ahmed (2013), Sanogo (2017), Maharajabdinul et al., (2015) and Silas et al., (2018) to test the relationship between FD and poverty. The model applies three equations using OLS, FE and RE, and then chooses the best estimation model between OLS, FE and RE models. The estimation equation for Revenue Decentralisation indicator is as follows:

$$\begin{aligned}
 MP_{it} = & \beta_{it} + \beta_1 FDREV_{it} + \beta_2 FDREV_{it}^2 + \beta_3 PCI_{it} + \beta_4 GOVS_{it} + \beta_5 CORP_{it} \\
 & + \beta_6 EVT_t + \beta_7 LABS_t + \beta_8 TDR_{it} + \beta_9 FTR_{it} + \beta_{10} HHS_{it} + \beta_{11} LIT_{it} \\
 & + \beta_{12} PCPPEX_{it} + \beta_{13} IWS_{it} + \beta_{14} UWC_{it} + \beta_{15} POPD_{it} + \beta_{16} URB_{it} \\
 & + \beta_{17} ELE_{it} + \beta_{18} DNC_{it} + \beta_{19} EFL_{it} + \beta_{20} DEV_{it} + \beta_{21} FPC_{it} + \varepsilon_{it} \\
 & i = 1, \dots, n; t = 1, \dots, T
 \end{aligned} \quad (1)$$

The estimation equation for the Intergovernmental Transfers indicator is as follows:

$$\begin{aligned}
 MP_{it} = & \beta_{it} + \beta_1 FDINTER_{it} + \beta_2 FDINTER_{it}^2 + \beta_3 PCI_{it} + \beta_4 GOVS_{it} \\
 & + \beta_5 CORP_{it} + \beta_6 EVT_t + \beta_7 LABS_t + \beta_8 TDR_{it} + \beta_9 FTR_{it} \\
 & + \beta_{10} HHS_{it} + \beta_{11} LIT_{it} + \beta_{12} PCPPEX_{it} + \beta_{13} IWS_{it} + \beta_{14} UWC_{it} \\
 & + \beta_{15} POPD_{it} + \beta_{16} URB_{it} + \beta_{17} ELE_{it} + \beta_{18} DNC_{it} + \beta_{19} EFL_{it} \\
 & + \beta_{20} DEV_{it} + \beta_{21} FPC_{it} + \varepsilon_{it}
 \end{aligned} \quad (2)$$

The estimation equation for the Expenditure Decentralisation indicator is as follows:

$$\begin{aligned}
 MP_{it} = & \beta_{it} + \beta_1 FDEXP_{it} + \beta_2 FDEXP_{it}^2 + \beta_3 PCI_{it} + \beta_4 GOVS_{it} + \beta_5 CORP_{it} \\
 & + \beta_6 EVT_t + \beta_7 LABS_t + \beta_8 TDR_{it} + \beta_9 FTR_{it} + \beta_{10} HHS_{it} + \beta_{11} LIT_{it} \\
 & + \beta_{12} PCPPEX_{it} + \beta_{13} IWS_{it} + \beta_{14} UWC_{it} + \beta_{15} POPD_{it} + \beta_{16} URB_{it} \\
 & + \beta_{17} ELE_{it} + \beta_{18} DNC_{it} + \beta_{19} EFL_{it} + \beta_{20} DEV_{it} + \beta_{21} FPC_{it} + \varepsilon_{it}
 \end{aligned} \quad (3)$$

The estimation equation for the Vertical Imbalance indicator is as follows:

$$\begin{aligned}
 MP_{it} = & \beta_{it} + \beta_1 FDVI_{it} + \beta_2 FDVI_{it}^2 + \beta_4 GOVS_{it} + \beta_5 CORP_{it} + \beta_6 EVT_t \\
 & + \beta_7 LABS_t + \beta_8 TDR_{it} + \beta_9 FTR_{it} + \beta_{10} HHS_{it} + \beta_{11} LIT_{it} \\
 & + \beta_{12} PCPPEX_{it} + \beta_{13} IWS_{it} + \beta_{14} UWC_{it} + \beta_{15} POPD_{it} + \beta_{16} URB_{it} \\
 & + \beta_{17} ELE_{it} + \beta_{18} DNC_{it} + \beta_{19} EFL_{it} + \beta_{20} DEV_{it} + \beta_{21} FPC_{it} + \varepsilon_{it}
 \end{aligned} \quad (4)$$

The summarised equation for the above estimation models is as follows:

$$MP_{it} = \alpha_{it} + \beta FD_{it} + \beta FD_{it}^2 + \gamma Cv_{it} + u_{it} \quad (5)$$

where MP_{it} is the Multidimensional Poverty (MP) indicator that was proxied alternatively by the FGT index (i.e. Headcount Poverty Index, Poverty Gap, and Poverty Severity), Child Poverty, Food Poverty, the HDI as defined by UNDP (2000) and MPI as defined by Alkire and Foster (2011). Therefore, seven metrics of Multidimensional Poverty are used as dependent variables to find a consistent relationship between FD and Multidimensional Poverty. The variable (FD_{it}) is the level of FD measured using the four indicators (Expenditure Decentralisation,

Revenue Decentralisation, Intergovernmental Transfers, and Vertical Imbalance). The variable (FD_{it}^2) is the square of the FD indicators. (Cv_{it}) controls for a set of control variables that are determinants of poverty. We also used the Devolution Introduction Dummy (DEV); 0, Before Devolution, 1, After Devolution, and Former Provinces Dummies (FPC). u_{it} is the error term and subscript while t denotes time. **Table 1** shows a summary of the definitions and data sources for the variables.

Table 1. A summary of variables and data sources.

Variable	Definition	Data Source
Headcount Poverty Index (HPI_{it})	Proportion of poor people in county i at period t . Poverty Headcount Index measures the incidence of poverty.	KIHBS, 2005/06 and 2015/16
Human Development Index (HDI_{it})	Human Development Index for County i at year t measured as an index (per cent).	UNDP Human Development Reports
Multidimensional Poverty Index (MPI_{it})	Proportion of multidimensionally poor individuals in County i at period t measured as an index.	KIHBS 2005 and 2015/2016; KPHC 2009 and 2019; Shifa and Leibbrandt, 2017
Revenue Decentralisation ($FDREV_{it}$)	The share of county i own source revenue in total county revenue for year t measured as a percentage. It captures the degree of autonomy and discretion of county governments in revenue and expenditure responsibilities.	CBIRR, CRA, KNBS, KRA, Silas et al. (2018)
Intergovernmental Transfers ($FDINTER_{it}$)	The share of county i intergovernmental transfers in total national transfers to all county governments for year t . The pre-devolution (2006-2013) data uses total share of CDF and LATF of county i at year t in total CDF and LATF allocations as described by Silas et al. (2018) . Measured as a percentage to capture the effects of central government grants to counties.	CBIRR, CRA, KNBS, Silas et al. (2018)
Expenditure Decentralisation ($FDEXP_{it}$)	The share of county own revenue as a percentage of total sub-national revenues (%). It captures the spending responsibilities of county governments.	CBIRR, NBIRR, KNBS, BROP, CRA
Vertical Imbalance ($FDVI_{it}$)	The ratio of revenues for county i to that county's total expenditures. Measured as a ratio and captures the degree to which the local government expenditure depends on OSR.	CBIRR, CRA, KNBS, BROP
Population Density ($POPD_{it}$)	Population per square kilometer in county i in period t .	KPHC 2009 and 2019
GDP Per Capita (PCI_{it})	Per capita income for County i at period t measured in Purchasing Power Parity measured in USD.	World Bank, KNBS, Bundervoet et al. (2015), UNDP Reports
Per Capita Pro-Poor Expenditures ($PCPPEXP_{it}$)	Expenditures on social services (health, education, water and sanitation, culture and sports) divided by the number of poor people in County i in year t . Measured as a ratio.	CBIRR from FY 2014/15 - FY 2018/2019
Government Size ($GOVS_{it}$)	Total expenditures of County i as a percent of GDP in a year t .	KNBS, CBIRR, CRA

Continued

Labour Share ($LABS_i$)	The share of labour force of County i in total national labour force for time t .	Ndii (2018)
Election Voter Turnout (EVT_{it})	Election voter turnout for County i for the year 2013 and 2017. Elections are assumed to reflect peoples' demands.	Independent Electoral and Boundaries Commission (IEBC)
Corruption Index ($CORP_{it}$)	Average amount of bribe paid in USD in a County i for time t .	EACC National Ethics and Corruption Survey; 2012, 2015, 2016, 2017 issues.
Distance Between Nairobi to County Capitals (DNC_i)	The distance between Nairobi and the County Capitals in kilometres as a proxy for a likely extent of political oversight imposed by the national government.	Google maps
Ethnic Fractionalisation Dummy (EFL)	A dummy variable for ethnic diversity in a County i ; 0 for homogeneous and 1 for heterogeneous.	KPHC 2019, NCIC (2016), Nyabira and Ayele (2016), Lockhart (2019) and Akoth (2011)
Total Dependency Ratio (TDR_{it})	Population that is dependent (age 0 - 14 and 65+ years)	KNBS, KIHBS
Fertility Rate (FTR_{it})	Average number of children per woman	KNBS
Household Size (HHS_{it})	Average number of people per household	KNBS
Underweight Children (UWC_{it})	Proportion of underweight children below five years for County i at year t ; Proxy for Health Outcome; Scale 0 to 100.	KNBS
Former Provinces Dummy (FPC)	A dummy variable for the eight former provinces.	KNBS
Education (Adult Literacy Rate) (LIT_{it})	Literacy rate is the percentage of people age 15 years and above who can, with understanding, read and write a short, simple statement on their everyday life for County i in year t . Used a proxy for Education Outcome.	World Bank and KNBS
Access to Improved Water Source (IWS_{it})	Number of people with access to improved water source i.e. piped and safe (%)	SID, KNBS
Access to Electricity (ELE_{it})	Percentage of population with electricity in County i for year t .	SID, KNBS
Urbanisation (URB_{it})	The share of urban population in County i for year t . Measured as a percentage.	KNBS

4.2. Econometric Diagnostic Test Results

This study performed various diagnostic tests on each model to validate the statistical results and identify the best estimation method. Gujarat (2004) observes that in a classical linear model, the error term should be normally distributed with a zero mean and constant variance. Furthermore, the residuals should be free of heteroskedasticity and autocorrelation. This study employed the following diagnostic tests; the panel unit test, the Hausman test, Multicollinearity test, Het-

eroskedasticity test and Serial correlation test. This study used the Im-Pesaran-Shin (IPS) and Levin-Lin-Chu panel unit root tests where the null hypothesis of non-stationarity was not rejected and the panel was further subjected to a LLC test.

This study also conducted the Hausman tests on various panel models in order to ascertain the most appropriate model of estimation between; Fixed Effects Model (FEM) and Random Effects Model (REM). We compared the FEM with the REM by testing the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. The test verifies whether the unobserved sub-national government effects are correlated with the regressors (Silas et al., 2018). We also conducted multicollinearity test which showed that all the FD independent variables were not correlated since the absolute values of the coefficients were below 0.8 (Studenmund, 2011; Greene, 2012). Lastly, the study employed the Modified Wald Test to test for heteroskedasticity for the MP model specifications and concluded that the models suffered from heteroskedasticity. To control for heteroskedasticity, heteroskedasticity robust standard errors were used. In the case of REM after LM, the study adopted the robust standard error option in order to control for a possible heteroskedasticity problem. The econometric diagnostic results are shown in **Table A1** and **Table A2** in the Appendix.

5. Empirical Findings

5.1. Descriptive Statistics

Table 2 shows a summary of the descriptive statistics used to check for the basic characteristics of the study data. Each county received 2.13 per cent of total inter-governmental transfers (IGTs) on average ranging between 0.3192 per cent and 14.039 per cent from 2006 to 2019. The table also shows that revenue decentralisation, measured as the share of county own revenue in total county revenue, had a mean of 23.77 per cent ranging from 0.119 per cent to 89.47 per cent. This means that county own-source revenue collection is below average which is attributed to several reasons such as weak revenue bases at the sub-national level and weak revenue administration (Onami, 2017; Development Initiatives, 2018; Wanjiru, Maina, Onsomu, & Stewart-Wilson, 2019). **Table 2** also reveals that over the study period, expenditure decentralisation, measured as the share of county government expenditure in total government (national + county) expenditure had a mean of 0.2319 per cent ranging from 0.0059 to 1.487 per cent. Vertical imbalance, measured as the ratio of own source revenues to county expenditures, had a mean of 0.08599 ranging from 0.00898 to 0.45909. These low values of vertical imbalances confirm the low share of county own-source revenues in total county government expenditures. Additionally, Poverty Headcount Index (PHI) had a mean of 41.49 per cent ranging from 16.7 to 87.5 per cent, Human Development Index (HDI) ranged between 17.2 per cent and 77.3 per cent with a mean of 53.09 per cent and Multidimensional Poverty Index (MPI) had a mean of 0.23383 ranging between

0.0741 to 0.5668 over the study period. All the other poverty measures show a wide range between the maximum and the minimum values suggesting a large heterogeneity across the Kenyan counties while the standard deviations show an adequate variable variation of the study data which is good for running regressions.

Table 2. Summary of descriptive statistics for FD-multidimensional poverty, 2006-2019.

Variables	Measures of Dispersion					Observation (No. of)
	Mean	Median	Minimum	Maximum	SD	
Revenue Decentralisation (%)	23.77661	9.8288	0.11947	89.4691	24.51257	329
Intergovernmental Transfers (%)	2.127333	1.8705	0.3192	14.0392	1.328135	329
Expenditure Decentralisation (%)	0.231926	0.2048	0.0059	1.4874	0.233843	329
Vertical Imbalance	0.085994	0.056283	0.00898	0.45909	0.087585	329
Poverty Headcount Index (PHI)	41.49103	38.6	16.7	87.5	15.08069	329
Human Development Index (HDI)	53.08763	54.4	17.2	77.3	9.407617	329
Multidimensional Poverty Index	0.233831	0.212422	0.07405	0.56677	0.090289	329
Population Density	448.173	196	4	6339.489	996.9942	329
Election Voter Turnout	77.80851	79	59	87	6.085503	94
Government Size	55830.64	39925.5	13921.41	219880.1	44588.3	329
Per Capita Pro-Poor Expenditure	17469.37	14350.27	7805.472	47246.8	7962.485	329
Labour Share	2.131915	2	0.3	12	1.769417	329
Corruption Index	237.2128	134	35	1320	283.0388	329
Distance Between Nairobi and County Capitals	321.2457	323.5	1	1027.5	188.0617	47
GDP Per Capita	958.8419	900	170	4038	607.3983	329
Access to Improved Water Source	53.96231	53.6	9	97.1	19.20612	329
Adult Literacy Rate	68.75684	74.8	13.3	98.3	19.78888	329
Fertility Rate	4.535562	4.4	2.3	7.8	1.225832	329
Underweight Children	19.69088	18.3	3.8	44	9.363798	329
Total Dependency Ratio	90.90	91.1	44.9	141.7	19.61	329
Household Size	4.80152	4.7	2.9	8.2	1.012617	329
Urbanisation	24.48742	17.77	6.07	100	18.98443	329

Source: Study data (2020); Key: SD, Standard Deviation.

Table 3 shows the descriptive statistics for FD indicators and poverty indicators

by county from the study data spanning from 2006 to 2019. The study variables show a large variation across the counties. Revenue decentralisation data shows that, *ceteris paribus*, on average, Nairobi City County had the highest revenue percentage accounting for 53 per cent of the total own revenues followed by Narok and Mombasa Counties. Counties of Turkana, Wajir and West Pokot have the least share of the own-source revenues at 6.8 per cent, 10.75 per cent and 11.19 per cent respectively. Turkana County therefore depended on intergovernmental transfers from the national government to finance 93.2 per cent of its expenditures. In terms of intergovernmental transfers, Nairobi City County also receives the lion share of the transfers from the national government with an average of 8.365 per cent while Lamu County receives the least share with an average of 0.69 per cent per fiscal year. Data on expenditure decentralisation shows that Nairobi City County had the highest share of county expenditure with an average of 1.3684 per cent while Lamu County had the lowest share of county expenditure at 0.0612 per cent over the study period. Vertical imbalances data show that Nairobi City County had the highest ratio of own source revenues (OSR) to county expenditures with an average ratio of 0.4591 while Mandera County had the lowest ratio of own source revenues to expenditures with an average ratio of 0.009.

Poverty Headcount Index (PHI) shows that Nairobi City and Kiambu Counties had the least poor with a headcount averaging 20.2 per cent and 22.8 per cent respectively while Turkana and Mandera are the poorest. Furthermore, Nairobi City and Nyeri Counties had the highest HDI averaging 0.694 and 0.646 respectively while Turkana and Mandera Counties had the lowest HDI. Nairobi City County had the least number of multidimensionally poor people with its MPI averaging 0.0967 while Turkana County had the highest MPI averaging 0.4478. Compared to counties highly dependent on intergovernmental transfers, counties that finance most of their expenditures from OSR have managed to reduce poverty headcount and mp by spurring their local growth and development. This opens up the debate between the FGT of Fiscal Federalism that emphasise the importance of transfers for mitigating vertical and horizontal imbalances and the SGT of Fiscal Federalism that give more importance to revenue decentralisation through sub-national tax collection for fostering local economic prosperity (Bird & Vaillancourt, 1998; Ter-Minassian, 1997; Oates, 1999; Chandra, 2012; McKinnon, 1997; Qian & Weingast, 1997; Goerl & Seiferling, 2014).

5.2. Fiscal Decentralisation and Poverty Headcount Index (PHI) in Kenya: Relationship and Effect

In this section, we empirically assess the effect of FD on multidimensional poverty using the money-metric and the non-money metric measures of poverty in Kenya. We regressed the poverty measures (PHI, HDI and MPI) against the four indicators of FD one at a time and other control variables identified in the literature. The following section discusses the results from our empirical tests.

Table 3. Descriptive statistics for FD and poverty measures, 2006-2019.

COUNTY	Revenue	Dece.	Inter.	Trans.	Expe.	Dece.	Vertical	Im.	PHI	HDI		MPI		
	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD
Turkana	6.80	7.47	2.793	1.337	0.2796	0.2630	0.0175	0.0041	71.2	16.8	32.75	7.06	0.4478	0.0919
Baringo	22.46	24.75	1.697	0.093	0.1623	0.1256	0.0617	0.0305	44.6	5.6	56.25	3.95	0.2499	0.0513
Bomet	24.22	28.01	1.705	0.121	0.1813	0.1359	0.0411	0.0236	47.2	8.7	60.27	4.47	0.1949	0.0400
Bungoma	19.36	20.65	2.920	0.130	0.2717	0.2005	0.0753	0.0398	36.1	8.5	53.08	4.43	0.2089	0.0429
Busia	22.26	23.17	2.035	0.171	0.1839	0.1394	0.0555	0.0247	52.5	15.8	43.69	2.41	0.2272	0.0466
E.Marakwet	21.46	25.09	1.263	0.104	0.1167	0.0957	0.0334	0.0206	44.6	6.4	58.71	4.34	0.2037	0.0418
Embu	24.61	25.68	1.562	0.033	0.1608	0.1166	0.0915	0.0476	30.0	6.1	62.90	5.98	0.1869	0.0383
Garissa	11.95	13.82	1.917	0.361	0.2058	0.1857	0.0148	0.0003	54.9	10.4	43.55	7.47	0.3547	0.0728
Homa Bay	15.93	18.08	2.378	0.234	0.2031	0.1494	0.0269	0.0137	41.2	6.1	44.83	3.14	0.2316	0.0475
Isiolo	34.61	40.10	0.920	0.282	0.1135	0.0884	0.0399	0.0064	52.1	10.0	49.50	5.30	0.3349	0.0687
Kajiado	28.90	27.00	1.571	0.216	0.1792	0.1322	0.1411	0.0714	35.4	5.9	56.10	9.42	0.2169	0.0445
Kakamega	19.28	20.18	3.758	0.299	0.3252	0.2334	0.0563	0.0275	39.9	6.5	52.43	3.37	0.2118	0.0435
Kericho	28.21	29.54	1.704	0.024	0.1770	0.1191	0.0905	0.0504	31.5	6.5	62.18	8.85	0.1964	0.0403
Kiambu	34.45	27.31	3.460	0.468	0.4031	0.2301	0.2041	0.1230	22.8	3.4	61.52	4.25	0.1304	0.0268
Kilifi	25.80	26.64	2.780	0.104	0.2880	0.2102	0.0733	0.0303	46.9	8.8	52.60	6.12	0.2844	0.0583
Kirinyaga	27.77	29.58	1.396	0.051	0.1348	0.0923	0.0895	0.0486	24.7	3.7	60.13	3.38	0.1708	0.0350
Kisii	20.56	23.16	2.800	0.173	0.2692	0.2001	0.0394	0.0201	38.0	12.3	54.52	3.52	0.2089	0.0429
Kisumu	19.82	15.42	2.103	0.262	0.2679	0.1355	0.1422	0.0805	36.3	2.6	55.09	3.62	0.1891	0.0388
Kitui	20.61	22.46	2.649	0.111	0.2541	0.2040	0.0474	0.0184	51.0	6.5	49.92	3.86	0.2243	0.0460
Kwale	20.28	21.80	1.817	0.267	0.1807	0.1512	0.0469	0.0202	49.7	15.6	45.06	4.64	0.2887	0.0592
Laikipia	36.02	30.70	1.005	0.350	0.1564	0.0992	0.1179	0.0571	40.1	9.3	60.60	3.42	0.1869	0.0383
Lamu	19.20	22.47	0.690	0.142	0.0612	0.0552	0.0320	0.0143	34.7	5.6	55.37	4.20	0.2770	0.0568
Machakos	34.12	29.78	2.748	0.113	0.3195	0.2049	0.1563	0.0868	34.0	9.1	53.98	7.31	0.1781	0.0365
Makueni	17.99	19.63	2.233	0.045	0.2000	0.1613	0.0459	0.0203	42.9	12.5	49.11	8.95	0.1781	0.0365
Mandera	11.83	14.11	2.345	1.091	0.2847	0.2682	0.0090	0.0034	71.3	15.4	38.63	4.39	0.3342	0.0686
Marsabit	18.11	21.82	1.604	0.417	0.1678	0.1512	0.0184	0.0006	65.4	7.7	42.36	3.18	0.3862	0.0792
Meru	20.17	20.39	2.865	0.238	0.2459	0.1772	0.0749	0.0434	29.2	6.9	57.84	5.13	0.2103	0.0432
Migori	20.11	22.37	2.186	0.057	0.2065	0.1497	0.0563	0.0260	42.6	5.0	46.65	4.17	0.2279	0.0468
Mombasa	39.44	26.26	2.874	0.871	0.4115	0.1203	0.3243	0.1918	29.2	4.3	62.01	8.40	0.1429	0.0293
Murang'a	27.56	27.86	2.203	0.214	0.2199	0.1537	0.0971	0.0544	31.8	4.5	61.34	4.53	0.1744	0.0358
Nairobi	53.15	17.42	8.365	4.164	1.3684	0.1068	0.4591	0.2930	20.2	4.5	69.40	5.92	0.0967	0.0198
Nakuru	33.75	25.35	3.537	0.287	0.3739	0.1889	0.2435	0.1539	29.4	3.7	57.15	4.21	0.1627	0.0334
Nandi	17.73	18.84	1.749	0.077	0.1667	0.1334	0.0464	0.0248	38.2	2.4	57.23	4.18	0.2140	0.0439
Narok	47.03	39.74	1.787	0.324	0.2997	0.1455	0.2712	0.1444	37.5	10.4	53.25	2.99	0.2668	0.0547
Nyamira	11.25	12.36	1.489	0.099	0.1404	0.1142	0.0275	0.0148	36.7	10.6	56.80	5.97	0.1957	0.0401

Continued

Nyandarua	26.50	29.72	1.646	0.078	0.1612	0.1178	0.0642	0.0404	33.4	4.9	59.34	4.42	0.1524	0.0313
Nyeri	30.07	29.32	2.002	0.175	0.2146	0.1378	0.1288	0.0740	23.9	4.5	64.61	4.66	0.1444	0.0296
Samburu	31.71	35.47	1.045	0.298	0.1264	0.0927	0.0610	0.0088	64.8	11.8	41.77	3.50	0.4016	0.0824
Siaya	16.26	18.50	2.031	0.154	0.1618	0.1154	0.0335	0.0169	36.7	3.1	44.12	3.84	0.2221	0.0456
T. Taveta	27.64	30.88	1.256	0.019	0.1263	0.0945	0.0591	0.0248	45.7	14.2	56.76	3.26	0.1920	0.0394
Tana-River	14.48	17.50	1.262	0.324	0.0953	0.0869	0.0129	0.0039	53.7	17.7	38.97	3.86	0.3386	0.0695
T. -Nithi	20.80	23.70	1.085	0.200	0.1117	0.0860	0.0437	0.0223	35.9	11.6	60.88	6.78	0.2103	0.0432
T. Nzioa	22.93	24.94	1.707	0.194	0.1734	0.1248	0.0610	0.0323	34.7	5.4	53.81	3.41	0.2081	0.0427
U. -Gishu	31.48	30.12	2.077	0.127	0.2220	0.1214	0.1386	0.0776	31.2	9.2	60.84	4.33	0.1554	0.0319
Vihiga	16.90	18.76	1.534	0.067	0.1327	0.0983	0.0391	0.0177	35.9	6.9	53.52	3.79	0.2514	0.0516
Wajir	10.75	12.89	2.033	0.596	0.2433	0.2157	0.0105	0.0014	66.5	12.4	38.88	6.00	0.3532	0.0725
W. Pokot	11.19	12.53	1.399	0.264	0.1513	0.1286	0.0213	0.0066	53.9	10.6	44.83	5.19	0.3664	0.0752
ALL	23.78	23.48	2.1273	0.3367	0.2319	0.1459	0.0860	0.0459	41.5	8.3	53.09	4.89	0.2338	0.0480

Source: Study data; Key: Dece., decentralisation; inter. Trans., intergovernmental transfers; Im, imbalance.

First, we regressed Poverty Headcount Index (PHI) on the four FD indicators one at a time and other explanatory variables to assess the impact of FD on FGT income poverty indices. For revenue decentralisation, the results in **Table 4** show the Adjusted R-Square of the model as 0.8938 which implied that 89 per cent of the total variations in the dependent variable were correctly explained by the independent variables in the model. Therefore, the remaining 11 per cent of the total variations can be explained by other predictor variables not included in the model. The F-statistics for the joint statistical significance of all explanatory variables of the model was 37.50 with a p -value of 0.0000. The estimated coefficient of revenue decentralisation was negative and statistically significant at 0.1 per cent level of significance. The coefficient for the square of revenue decentralisation (quadratic specification) was positive and statistically significant at 0.1 per cent level of significance. The negative coefficient on revenue decentralisation (-0.645) along with the positive coefficient on revenue decentralisation squared (0.00526) inform us that this variable exhibits a parabolic shape when graphed against poverty headcount index. This means that increasing revenue decentralisation leads to poverty reduction, but at a decreasing rate to a certain critical point.

The coefficients for this model show that, holding everything equal, a one per cent point increase in revenue decentralisation of a county i reduces poverty headcount in the county i by $[-0.645 + 2(0.00526)(\text{FDREV})]$. When FDREV is substituted by the mean value of revenue decentralisation the equation becomes $[-0.645 + 2(0.00526)(23.78)]$, that equals to -0.3948 . Therefore, on average, a one per cent increase in revenue decentralisation reduces poverty headcount by 0.3948 per cent points ceteris paribus. Furthermore, the critical point of revenue decentralisation beyond which the sign of the marginal effect is reversed, is obtained by taking the partial derivative of poverty headcount equation with respect to reve-

nue decentralisation, equating it to zero and solving for FDREV.

$$\begin{aligned}\frac{\partial P}{\partial \text{FDREV}} &= -0.645 - 2(0.00526)(\text{FDREV}) = 0 \\ \rightarrow \text{FDREV} &= -\frac{0.645}{2(0.00526)} = -61.31\%\end{aligned}\quad (6)$$

The solution of the above Equation (6) shows that an increase in revenue decentralisation reduces poverty headcount up to a critical revenue decentralisation threshold equal to approximately 61.31 per cent. Therefore, increasing revenue decentralisation beyond 61.31 per cent will increase poverty levels in Kenyan sub-national governments. The descriptive statistics showed a mean of 23 per cent for revenue decentralisation implying that most counties still have a policy space to expand their own revenues to attain this upper bound of 61.31 per cent. However, our study data showed that this threshold had been met by Nairobi, Laikipia, Machakos and Narok counties before introduction of devolution in 2013 but their revenue shares significantly dropped after devolution. The reason why revenue decentralisation beyond the upper bound of 61.31 per cent would exacerbate poverty headcount, is that beyond 61.31 per cent, county governments may pursue different redistribution policies that may undermine the redistributive power of the national government (Silas et al., 2018). Furthermore, revenue decentralization beyond 61.31 per cent would trigger a race-to-the-bottom competition across jurisdictions leading to tax rates that are too low compared to the social optimum (Keen & Kotsogiannis, 2004). Lastly, in Kenya, subnational taxes are mainly indirect taxes that tend to be more regressive, and property taxes that are generally less progressive than those of the national government. Therefore, the increased subnational taxation efforts to reduce the progressivity of the national tax system, burdens the poor increasing poverty.

Generally, our findings on revenue decentralisation show that poverty headcount is likely to be reduced because an increase in revenue decentralisation increases county governments' fiscal autonomy that's key in poverty reduction. Furthermore, increased revenue decentralisation leads to increased demand for accountability and transparency in the use of local revenues by the local citizens who are closer to the county governments. It is evident that the devolution of revenue in Kenya seems to have enhanced accountability in the service delivery process of counties that benefit the poor. Since local leaders are elected by local citizens during general elections, they tend to make fiscal decisions regarding local taxation and expenditures that are more responsive to local needs especially those touching on the social welfare of the citizens.

Our findings on revenue decentralisation echo the arguments of the Second-Generation Theory (SGT) of Fiscal Federalism. For instance, Market-Preserving Federalism (MPF) argues that greater revenue decentralisation increases the fiscal incentives of political officials to foster local market growth and MP reduction. When revenue decentralisation is enhanced, local officials capture revenue from broad taxes on the increased economic activity in the market which motivates

them to create new market opportunities as a means of increasing the fiscal proceeds generated by markets (Canaleta et al., 2004; McKinnon, 1997; Qian & Weingast, 1997; Weingast, 2009). Furthermore, part of the fiscal proceeds is spent on provision of public goods and social welfare programs that target the poor. In Kenya, as pointed out by Silas et al. (2018), county governments have autonomy and discretion on the use of locally raised revenues, which are spent on transfer programs such as bursary funds, construction of houses for the elderly and youth programs. These programs may have a positive effect on welfare and poverty reduction.

However, it's important to note that the findings on revenue decentralisation contradicts the First-Generation Theory (FGT) of Fiscal Federalism arguments that redistributive policies should be exclusively the function of central governments (Tiebout, 1956; Musgrave, 1959; Oates, 1972). For instance, the Tiebout's model of 'voting with the feet' doesn't hold water for Kenya because of the limited interjurisdictional mobility by households. Furthermore, the distributive policies of subnational governments do not differ much across Kenyan counties. Similarly, FGT are based on perfect and costless inter-jurisdiction mobility which can't be met by Kenya's devolution.

The poverty-reducing characteristics of revenue decentralisation are confirmed by the results on vertical imbalance, which measures the ratio of county own source revenues in total county expenditures. The results presented in Table 4 show that vertical fiscal imbalance had a negative and significant relationship with poverty headcount at one per cent significance level while the square of the vertical imbalance had a positive and statistically significant coefficient at one percent level of significance. These results imply that an increase in vertical imbalance ratio reduces poverty headcount up to 53.54 per cent where it begins to increase poverty headcount. As the size of own source revenues in total county expenditures increases, poverty headcount reduces significantly. A case in point is Nairobi City County which finances a large part of its budget from locally-raised revenues and has low PHI.

To assess the effects of intergovernmental transfers (FDINTER) on Poverty Headcount Index (PHI), we regressed PHI against intergovernmental transfers and a number of other explanatory variables. The results presented in Table 4 show that intergovernmental transfers had a positive and significant relationship with poverty headcount at one per cent significance level. On the other side, the square of intergovernmental transfers (quadratic specification) had a negative and statistically significant coefficient at one percent level of significance. These results imply a hump-shaped relationship between FDINTER and PHI whereby an increase in intergovernmental transfers (IGTs) to counties increases poverty headcount when implemented at low levels, however, when implemented above 9.92 per cent it reduces poverty headcount.

The marginal level of 9.92 per cent is the partial derivative of the poverty headcount equation with respect to intergovernmental transfers given as,

$$\frac{\partial P}{\partial \text{FDINTER}} .$$

The study data showed that intergovernmental transfers of all counties fell below this threshold except for Nairobi before the inception of devolution in 2013 when the Nairobi City Council used to receive a lion share of the Local Authority Transfer Fund (LATF) for public service delivery. This means that almost all counties still have a policy space in their fiscal structures to reach the upper bound of 9.92 per cent for IGTs where PHI can be reduced significantly. The coefficients for this model show that, holding everything equal, a one per cent point increase in intergovernmental transfers of a county i reduces poverty headcount in the county i by $[3.651 - 2(0.184) (FDINTER)]$. When $FDINTER$ is substituted in the equation by the mean value of intergovernmental transfers, the equation becomes $[3.651 - 2(0.184) (2.1273)]$, that equals to 2.8682. Therefore, on average, a one per cent increase in intergovernmental transfers increases poverty headcount by 2.8682 per cent points. These findings oppose the arguments of the First Generation Theories (FGT) of Fiscal Federalism which believe that greater welfare gains can be generated from FD through various forms of intergovernmental transfers to correct the potential inefficiencies and promote fiscal equity. From these arguments, subnational governments should play a minimum role in redistributive policies that are better accomplished by the central governments for better equity and efficiency reasons (Tiebout, 1956; Stigler, 1957; Musgrave, 1959; Oates, 1972).

However, the above findings support the arguments of SGT especially the MPF that argues for limits on intergovernmental fiscal transfers (Weingast, 2009). MPF emphasises the need for maintenance of an equilibrium between expenditure and revenue that calls for a reduction in intergovernmental transfers and an increase in revenue decentralisation. In fact, MPF argues for limited revenue sharing among levels of governments so that they face hard budget constraints. This is not the case for FGT that see no necessary relationship between local expenditure and local revenue being generated, which instead argues for increased intergovernmental transfers to subnational entities. However, in such a scenario, the critical question has always been whether or not increased intergovernmental transfers will create the necessary incentives for local poverty reduction. For instance, Careaga and Weingast (2003) observe that the incentives to engage in rent-creation and corruption increase when subnational governments depend more on the central government transfers and have low local revenue generating capabilities. This seems to be the case for Kenyan counties.

Kenyan subnational governments receive a large amount of IGTs in two main forms; general-purpose (unconditional) transfers through revenue sharing between the national government and county governments, and specific-purpose (conditional or earmarked) transfers from national government and other development partners such as the World Bank and DANIDA. For instance, in 2018, counties received conditional grants for development and rehabilitation of village polytechnics, compensation for user fee foregone, leasing of medical equipment and Road Maintenance Fuel Levy Fund. However, as results pointed out, these transfers seem to have increased poverty headcount in Kenyan counties. Several

reasons can be posited to explain this phenomenon. First, Kenya's revenue sharing formulae seem to follow the approach of "how much do we get" instead of "finance follows functions" that lead to unfunded functions at the county level (TISA, 2012). Furthermore, the changes in the revenue sharing formula by Commission on Revenue Allocation (CRA) over time make transfers less sustainable and unstable as the changes bring about losers who are mostly marginalised counties, a situation that disrupts provision of services to the poor. The process of changing the revenue sharing formula is always accompanied by intense political/party bargaining, especially in the senate, which boils down to county voters' support in national elections as well as political rewards and punishments.

Secondly, there has been an increasing trend of reduced interest and ability by the national government to fund pro-poor programs since the introduction of devolution. With transfer of responsibilities to counties, the national government felt relieved and not answerable to what happens in the counties, including matters on poverty reduction. There has been a perception that counties receive funds that could otherwise be devoted to poverty reduction by the national government. This is in line with Sepulveda and Martinez-Vazquez (2010) argument that the presence of FD might negatively affect the national preferences for poverty reduction and other outcomes like economic growth, macroeconomic stability and regional disparities which exacerbate poverty. Thirdly, the presence of weak institutions both at the national government and the county government makes them more susceptible to elite capture and exploitation by the bureaucrats and elites. In many ways, the Kenyan state still suffers from the effects of years of state centralism that gave rise to extractive political institutions that concentrated power in the hands of a few elites (Ngaruiya, 2019). Lastly, subnational governments divert unconditional transfers from the national government to unintended purposes other than pro-poor programs. The few remaining conditional grants are earmarked to specific projects and programmes by the national government in health and infrastructure projects. There have also been cases of pork barrel transfers in some counties for reasons of winning majority votes during general elections.

To assess the effects of expenditure decentralisation (FDEXP) on Poverty Headcount Index (PHI), we regressed PHI against expenditure decentralisation and a number of other explanatory variables. The results presented in Table 4 show that expenditure decentralisation had a positive and significant relationship with poverty headcount at 0.1 per cent significance level, while the square of the expenditure decentralisation had a negative and statistically significant coefficient at 0.1 percent level of significance. These results imply that beginning from no expenditure decentralization (FDEXP = 0), a move towards FDEXP will first increase poverty headcount up to a critical threshold of 0.801, where expenditure decentralization begins to have a positive effect on poverty headcount. This critical threshold of expenditure decentralization is the partial derivative of the poverty headcount equation with respect to expenditure decentralisation given as, $\frac{\partial P}{\partial \text{FDEXP}}$. These results echo the

results on intergovernmental transfers.

A possible explanation for expenditure decentralisation having poverty-exacerbating features is that, in Kenya, counties are not more directly involved in the provision of services that most immediately help the poor (Silas et al., 2018). These results echo FGT arguments that subnational governments should not play any role in redistributive policies (Tiebout, 1956; Stigler, 1957; Musgrave, 1959; Oates, 1972). The results can also be explained by vertical fiscal imbalance findings which show that most counties don't finance their budgets through own-source revenues, but rather through intergovernmental transfers. However, it is expected that at higher levels of expenditure decentralization, beyond 0.801 per cent, counties could use their proximity advantage to effectively implement anti-poverty programs. The upper threshold of 0.801 per cent has been met by Nairobi City County only meaning that the remaining 46 counties have a policy gap to achieve this spending threshold. To reduce the spending wastage that comes with IGTs, the subnational governments need to put in place fiscal structures to deal with local corruption and elite capture. As noted by Cheeseman, Lynch & Willis (2016) and D'Arcy and Cornell (2016), decentralisation in Kenya has exacerbated corruption and rent-seeking practices at the subnational level. This has created perverse incentives at the county level leading to embezzlement of public funds and imprudent expenditure policies. Devolution has further created new local elites and made county administrations more prone to elite capture (Afrobarometer, 2014; Silas et al., 2018; Fonshell, 2018; Stedtjer, 2018; D'Arcy, 2020).

In conclusion, findings on the effect of FD on the money-metric poverty headcount index in Kenya show that increased revenue decentralisation and vertical imbalance reduce poverty headcount up to a certain critical point where they begin to increase poverty while increased intergovernmental transfers and expenditure decentralisation increase poverty headcount up to a certain critical point where they begin to reduce poverty. These differences in results between poverty-reducing revenue decentralisation and the poverty-exacerbating expenditure decentralisation show the missing link between public revenue generation and spending at Kenyan subnational governments. This link also echoes the First-Generation Theories of Fiscal Federalism that doesn't consider a strong linkage between subnational government's own revenue and expenditure (Jin, Qian, & Weingast, 2005, 1999). FGT arguments incline to focus on allocative distortions under a decentralised revenue collection by recommending a centralised revenue collection and a decentralised expenditure system. This then allows sizeable transfers from central to subnational governments to fill the local revenue-expenditure gap (Ghani, 2014). On the other hand, SGT and MPF emphasise the importance of local governments' incentives in pursuing fiscal responsibility related policies through the maintenance of equilibrium between expenditure and revenue (Ghani, 2014). The lower levels of revenue decentralisation provide low incentives for the county governments to choose pro-poor policies and they therefore rely on the transfers/grants from the national government. Fiscal intergovernmental transfers seem to reduce the urgency for proper fiscal management and a sense of respon-

sibility and accountability among county governments.

Looking at other studies, our findings on revenue decentralisation are consistent with [Sanogo \(2017\)](#) who found out that increased local revenues positively affected the access to public services and reduced poverty headcount in Côte d'Ivoire; [Silas et al. \(2018\)](#) who found out that increased own-source revenue reduces poverty headcount up to a critical level of 44.47 per cent where it leads to increase in poverty in non-marginalized counties; [Fuel \(2013\)](#) who found out a negative effect of tax autonomy on poverty headcount in Nepal; [Faridi and Nazar \(2013\)](#) who found a negative relationship between provincial revenue and poverty headcount ratio in Pakistan; [Nursini and Tawakkal \(2019\)](#) who found a negative and significant relationship between revenue decentralisation and poverty rate in Indonesia; and [Sepulveda & Martinez-Vazquez \(2010\)](#) who found a negative effect of revenue decentralization on poverty headcount using a cross-country data. Other studies with negative effects include [Canare and Francisco \(2019\)](#) for Philippines and [Andhoga, Mavole and Mose \(2017\)](#) for Kenya and [Banwo \(2012\)](#) for Nigeria while [Abdillah and Mursinto \(2016\)](#) found an insignificant effect of provincial own-source revenues on poverty.

However, our revenue decentralisation findings contradict with those of [Sepulveda and Martinez-Vazquez \(2011\)](#) and [Shahzad and Yasmin \(2016\)](#) who report that FREV increases poverty rate. Pertaining vertical imbalances, [Valaris \(2012\)](#) found a negative, non-linear parabolic and significant relationship between vertical imbalance and poverty rate in American states similar to our study. Findings on intergovernmental transfers are constituent with [Silas et al. \(2018\)](#) who found out that increase in the share of intergovernmental transfers to counties would increase poverty up to 18.42 percent where it begins to reduce poverty head count, [Sanogo \(2017\)](#) who found a positive and insignificant relationship between HPI and central transfers and [Ramírez et al. \(2016\)](#) who found out a positive relationship between transfers and poverty incidence. [Bird et al. \(1998\)](#) make a conclusion in favour of greater FD and better intergovernmental fiscal arrangements in order to increase the expenditure on pro-poor programmes. Studies by [Rao, Bird and Litvack \(1998\)](#), [Yao \(2007\)](#), [Bjornestad \(2009\)](#), [Litschig and Morrison \(2013\)](#), [Maharajabdinul et al. \(2015\)](#), [Andhoga et al. \(2017\)](#) and [Binh and Ha \(2018\)](#) found a negative relationship between intergovernmental transfers and poverty headcount/rate.

Lastly, our findings on expenditure decentralisation are consistent with those of [Sepulveda and Martinez-Vazquez \(2011\)](#), [Nursini and Tawakkal \(2019\)](#), [Banwo \(2012\)](#), [Shahzad and Yasmin \(2016\)](#), [Yuliani et al. \(2020\)](#), [Moche et al. \(2014\)](#), [Jellema et al. \(2016\)](#), [Silas et al. \(2018\)](#), [Asante and Ayee \(2010\)](#), [Bekele and Kjosavik \(2016\)](#) who found out that the coefficient for expenditure decentralization to be positive and statistically significant with poverty headcount/rate/incidence. However, these results contradict with those of [Sacchi and Salotti \(2011\)](#) who found that the coefficient for expenditure decentralization to be statistically insignificant while studies by [Crook and Sverrisson \(2001\)](#), [Steiner \(2005\)](#), [Ahmed \(2013\)](#), [Fuel \(2013\)](#), [Odior \(2014\)](#), [Sasana \(2018\)](#), [Kusumaningrum \(2013\)](#), [Valaris \(2012\)](#),

Llorca-Rodríguez, García-Fernández and Sáez-Lozano (2017) and Faridi and Nazar (2013) found a negative relationship between expenditure decentralisation and poverty headcount/rate. Using post-devolution data in Kenya, Andhoga et al. (2017) found a negative coefficient for capital expenditures and a positive coefficient for recurrent expenditures.

There also exist other studies that show general results on the relationship between FD and poverty reduction. For instance, Rao (2002), Von Braun and Grote (2000), Bird and Rodríguez (1999), Bardhan and Mookherjee (2004), Galasso and Ravallion (2005), Nguyen (2008), Khanal (2018), Alene & Worku (2017), Kyei (2008), Skira (2006), Simanjuntak and Muhklis (2017), Zambok et al. (2016) and Hiktaop et al. (2020) found a negative relationship and effective role of FD in poverty alleviation. Furthermore, studies by Brixiova, Gemayel and Said (2003), Bosuyt and Gould (2000), Bojanic (2016), Robinson and Stield (2001), Xu (2011), Goerl & Seiferling (2014), Cavusoglu & Dincer (2015), Chitere and Ngundo (2015) and Azila-Gbettor et al. (2014) support a positive relationship and ineffective role of FD in poverty reduction.

Table 4. Effects of fiscal decentralisation on multidimensional poverty: OLS approach.

MODELS	RE	RE	FE	FE	FE	FE	FE	FE	FE	FE	RE	FE
DEPENDENT VARIABLES	HPI	HPI	HPI	HPI	HDI	HDI	HDI	HDI	MPI	MPI	MPI	MPI
FDREV	-0.645*** (-8.66)				0.0980*** (5.17)				0.00161*** (4.83)			
FDREV2	0.00526*** (5.66)				-0.00105* (-1.87)				-0.0000155*** (-3.76)			
FDINTER		3.651** (3.11)				-1.08** (-2.03)					-0.0381*** (-7.49)	
FDINTER2		-0.184* (-2.17)				0.0556* (1.25)					0.00210*** (6.07)	
FDEXP			60.73*** (8.40)				-9.168* (-2.00)				-0.214*** (-6.74)	
FDEXP2			-37.93*** (-6.21)				10.37* (2.39)				0.132*** (4.40)	
FDVI				-0.212** (-2.61)				0.00166** (2.93)				0.185* (2.51)
FDVI2				0.00198** (3.15)				-0.000108* (-2.41)				-0.0969 (-0.15)
PCI	-0.00122 (-0.99)	-0.000717* (-0.56)	-0.000297* (-0.23)	-0.000143 (-0.11)	0.00364*** (5.01)	0.00470*** (6.10)	0.00467*** (7.13)	0.00458*** (6.41)	-0.0000104* (-2.20)	-0.0000778* (-1.40)	-0.0000117* (-2.21)	-0.000082* (-1.47)
GOVS	0.0000301 (1.27)	0.0000782** (2.94)	0.0000821* (3.32)	0.0000231 (0.81)	0.00000718 (0.42)	0.0000293 (1.68)	0.0000162 (0.96)	0.0000312 (1.82)	0.0000689*** (5.30)	0.0000628*** (4.78)	0.0000589** (4.55)	0.0000631* (4.65)
CORPT	0.00361 (1.40)	0.00157 (0.58)	0.00274 (1.01)	0.00283 (1.03)	-0.000798 (-0.45)	-0.000570 (-0.33)	-0.000981 (-0.48)	-0.000634 (-0.30)	0.000804 (0.67)	0.00228 (1.60)	0.00157 (1.26)	0.000602 (0.47)
BVT	-0.0702 (-0.47)	-0.263 (-1.69)	-0.173 (-1.12)	-0.284 (-1.81)	-0.228* (-2.52)	-0.209* (-2.20)	-0.274** (-2.93)	-0.214* (-2.22)	-0.00160* (-2.27)	-0.00142* (-1.97)	-0.00191** (-2.67)	-0.00156* (-2.18)
LABS	-0.0470 (-0.08)	-3.110*** (-3.57)	-2.066* (-2.26)	-0.539 (-0.63)	-0.594 (-1.66)	-0.911 (-1.34)	-0.0119 (-0.03)	-0.967* (-2.39)	-0.00927*** (-4.23)	-0.00374 (-0.65)	-0.00323 (-1.20)	-0.00525* (-2.14)
FTR	0.210 (0.27)	2.562** (2.78)	2.431** (2.84)	0.807 (0.98)	-0.937* (-2.09)	-1.343** (-2.92)	-1.301** (-2.83)	-0.0284*** (-6.66)	0.0337*** (8.41)	0.0287*** (8.43)	0.0297*** (9.02)	0.0303*** (7.53)
LIT	-0.265*** (-5.64)	-0.315*** (-5.92)	-0.298*** (-6.08)	-0.310*** (-5.61)	0.0897** (2.79)	0.0944** (2.83)	0.121*** (4.23)	0.100*** (3.33)	-0.000641** (-3.05)	-0.000892*** (-3.85)	-0.000872*** (-3.86)	-0.000859* (-3.69)

Continued

POPD	-0.00136 (-1.29)	-0.000487 (-0.56)	-0.00224* (-2.05)	-0.00271* (-2.37)	0.000420 (0.85)	0.000888 (0.92)	0.000719 (1.26)	0.00102 (1.68)	0.00000209 (0.43)	0.00000263 (0.56)	0.00000324 (0.73)	0.00000642 (1.08)
URB	0.214** (2.89)	0.0727 (1.13)	0.0656 (1.05)	0.148* (2.22)	-0.129*** (-3.55)	-0.0833* (-2.27)	-0.0118 (-0.23)	-0.0331 (-0.96)	-0.000600* (-2.10)	-0.000273 (-1.01)	-0.000319 (-0.81)	-0.000337 (-0.01)
PCPPEXP	-0.00104*** (-5.30)	-0.000962*** (-5.06)	-0.00106*** (-5.72)	-0.00103*** (-5.40)	0.0000423 (0.54)	0.0000424 (0.49)	0.0000423 (0.54)	0.0000458 (0.58)	-0.00000433 (-0.81)	-0.00000277 (-0.50)	-0.00000230 (-0.30)	0.00000338 (0.69)
DNC	0.00527 (1.02)	0.0175*** (3.34)	0.0152** (2.97)	0.0190*** (3.40)	-0.00335 (-1.19)	-0.00372 (-1.32)	-0.00335 (-1.19)	-0.00270 (-0.89)	0.0000626** (2.62)	0.0000444* (2.02)	0.0000557** (2.61)	0.00000647 (0.28)
EFL DUMMY	-0.217 (-0.22)	-0.786 (-0.74)	-0.223 (-0.21)	-0.290 (-0.27)	1.294 (1.22)	1.379 (1.31)	0.0795* (2.32)	1.508** (2.61)	-0.00196 (-0.43)	-0.000865 (-0.19)	-0.00427 (-0.98)	-0.00299 (-0.66)
DEV DUMMY	-0.120 (-0.10)	-5.974*** (-4.79)	-4.857** (-3.24)	-6.130*** (-4.47)	3.380*** (3.85)	1.363* (1.69)	2.016* (2.46)	0.0289*** (5.57)	-0.0152** (-2.75)	-0.0265*** (-4.67)	-0.0414 (-0.63)	-0.0311*** (-5.43)
FP Dummies	39.68*** (3.52)	17.74 (1.52)	25.48* (2.22)	13.70 (1.17)	18.98** (2.88)	19.69** (3.01)	18.93** (2.87)	29.96*** (4.71)	0.215*** (4.11)	0.246*** (5.01)	0.240*** (5.16)	0.297*** (6.17)
-Coast	-0.200 (-0.07)	-2.435 (-0.84)	-2.510 (-0.90)	-2.048 (-0.72)	2.485 (1.05)	3.084 (1.37)	3.037 (1.30)	1.354 (0.87)	0.0103 (0.83)	0.0204 (1.67)	0.00499 (0.46)	0.00773 (0.67)
-Eastern	0.116 (0.05)	2.082 (0.84)	0.677 (0.28)	1.177 (0.48)	2.331 (1.15)	1.936 (1.00)	2.006 (0.99)	0.910 (0.69)	0.0188 (1.77)	0.0205* (1.99)	0.0107 (1.27)	0.00692 (0.80)
-Nairobi	4.772 (0.95)	0.173 (0.03)	-17.10* (-2.41)	6.990 (1.27)	-12.09 (-1.43)	-2.037 (-0.39)	0.962 (0.17)	-3.097 (-1.05)	0.00960 (0.41)	0.0740** (2.81)	0.117*** (4.23)	0.0278 (0.56)
-Rift Valley	-0.326 (-0.19)	-0.102 (-0.05)	-1.097 (-0.59)	-0.194 (-0.10)	3.722* (2.10)	3.693* (2.22)	3.708* (2.13)	3.198** (3.10)	-0.0148* (-1.97)	-0.00407 (-0.51)	-0.00848 (-1.20)	-0.00372 (-0.48)
-Western	-0.372 (-0.16)	1.973 (0.78)	0.308 (0.13)	-2.482 (-1.02)	-3.710 (-1.56)	-4.491* (-2.00)	-4.152 (-1.77)	3.547** (-2.69)	-0.00990 (-0.94)	0.00249 (0.24)	-0.00132 (-0.13)	-0.00932 (-0.84)
-Nyanza	-2.762 (-1.24)	-1.171 (-0.49)	-1.850 (-0.80)	-2.482 (-1.02)	-5.759** (-2.63)	-6.163** (-2.95)	-6.111** (-2.81)	5.615*** (-4.37)	0.00631 (0.62)	0.00249 (0.24)	0.0101 (1.05)	0.00125 (0.12)
-North Eastern	-5.200 (-1.83)	-4.445 (-1.45)	-4.909 (-1.65)	-2.899 (-0.92)	6.976* (2.49)	7.721** (2.89)	7.885** (2.83)	7.899*** (4.79)	-0.0537*** (-4.08)	-0.0535*** (-4.17)	-0.0479*** (-3.87)	-0.0563*** (-4.42)
Observations	329	329	329	329	329	329	329	329	329	329	329	329
Adjusted R-Squared	0.8938	0.8262	0.8260	0.7172	0.7926	0.7305	0.7034	0.9077	0.8457	0.8724	0.8660	0.8547
F-statistic	37.50	30.46	33.25	30.07	51.44	46.51	46.25	56.78	76.21	81.54	81.87	71.27
Prob (F-statistic)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin-Watson stat	1.548754	1.421901	1.28723	1.67245	1.652394	1.6785	1.187467	1.9825	1.76243	1.25348	1.403167	1.97245
Critical threshold	61.31	9.92	0.801	53.54	46.67	9.71	0.442	76.85	51.94	9.07	0.811	0.955

5.3. Fiscal Decentralisation and Human Development Index (HDI) in Kenya: Relationship and Effect

We also used Human Development Index (HDI) as a proxy of poverty in our study. [Ahmed \(2013\)](#) observes that compared to poverty headcount, the use of HDI enables a broader understanding of welfare. The HDI combines the indicators of basic education, healthcare and level of income. Generally, an increase in the HDI normally represents a decrease in the level of poverty. The measurement of HDI is consistent due to its single and well-defined measures of health and education as well as per capita income, against FGT indices that may suffer from measurement inconsistency ([Ahmed, 2013](#)).

The regression for the FEM presented in [Table 4](#) shows that revenue decentralisation had a positive and statistically significant relationship with HDI at 0.1 level of significance while the square of revenue decentralisation had a negative and

statistically significant coefficient at five per cent level of significance. This hump-shaped relationship implies that an increase in revenue decentralisation improves human development up to a critical point of 46.67 per cent when it starts to have a negative effect on HDI. These results are further strengthened by the findings on vertical imbalances, which show that increasing county own-source revenues in total local expenditures has a positive effect on human development. These findings echo the propositions of the Second-Generation Theories of Fiscal Federalism where increased revenue decentralisation gives subnational governments the fiscal autonomy to allocate fiscal resources efficiently through productive spending and investment in their respective jurisdictions.

Revenue decentralisation brought about by devolution, though limited, has given some fiscal autonomy to Kenyan counties to invest in welfare programmes that greatly improve human standards of living in the subnational jurisdictions. Several counties have used locally collected taxes to implement universal healthcare and education programmes such as school feeding programmes, school bursaries and scholarships and improvement of ambulance services and primary healthcare. Revenue decentralisation has also opened up local economies to both domestic and foreign investments providing counties with an additional source of revenue for implementation of infrastructure projects with long-term effects on human development. Our results are consistent with those of Nursini and Tawakkal (2019) who found a positive and statistically insignificant relationship between revenue decentralisation and HDI in Indonesia. However, these findings contradict those of Silas et al. (2018) who find a negative and insignificant relationship between the share of county own revenue and HDI in Kenya.

The results in **Table 4** also show that intergovernmental transfers had a negative and significant coefficient at one per cent level of significance while its quadratic specification coefficient was positive and statistically significant at five per cent level of significance. These results suggest that, *ceteris paribus*, an increase in intergovernmental transfers to subnational government is likely to worsen the standards of living up to a critical point of 9.71 per cent where it begins to improve human development. In the beginning of FD, intergovernmental transfers tend to exacerbate human living conditions but in the long run intergovernmental transfers seem to improve the welfare of the subnational constituents. The extent of intergovernmental transfers is therefore a critical decisive factor in the effects of intergovernmental transfers on human development. The negative results of intergovernmental transfers on HDI are due to the fact that Kenyan counties are unable to self-finance and are therefore highly dependent on intergovernmental transfers. The transfers experience accountability challenges due to increased elite capture and corruption which reduces human development. There has also been a fluctuation in the transfers from the national government to subnational governments due to the rising national debt and debt payment burden and also changes in revenue sharing formula, a situation that makes transfers an unreliable source of financing development projects.

In Kenya, the issue of soft budget constraint has contributed to a huge deficit in the national government account which directly affects the national government grants and transfers, and all the planned development expenditures in counties. Generally, increasing transfers is a disincentive for county governments to choose development-fostering policies. These negative findings echo the normative view about the redistributive role of subnational governments, according to which their intervention in redistributive policies is ineffective and should be avoided (Tiebout, 1956; Stigler, 1957; Musgrave, 1959; Oates, 1972). Our findings, however, contradict those of Nursini and Tawakkal (2019) who found a positive and statistically significant effect of intergovernmental transfers on HDI.

Lastly, the FEM regression results presented in **Table 4** show a negative and statistically significant coefficient at five per cent level of significance for expenditure decentralisation and a positive and statistically significant coefficient at five per cent level of significance for the square of expenditure decentralisation. These results suggest a parabolic shape whereby an increase in county expenditures, first, worsens human development up to a critical level of 0.442 per cent points where it begins to improve human development. Only a few counties like Kakamega, Kiambu, Nakuru, Narok, Mombasa and Nairobi have managed to hit this critical mark of 0.442 per cent. These findings echo the normative views of FGT that subnational governments should play a minimum role in redistributive policies that can be better accomplished by the central governments (Tiebout, 1956; Stigler, 1957; Musgrave, 1959; Oates, 1972). Our results are consistent with those of Silas et al. (2018) and Sacchi & Salotti (2011) who find that expenditure decentralization had a negative but insignificant effect on HDI and income inequality. Our results contradict with those of Lindaman and Thurmaier (2002), Yao (2007), Sepulveda & Martinez-Vazquez (2010), Nursini and Tawakkal (2019), and Ahmed (2013) who found a positive and statistically significant effect of expenditure decentralization on HDI.

5.4. Fiscal Decentralisation and Multidimensional Poverty Index (MPI): Relationship and Effect

The third measure used as a proxy for poverty in this study was Multidimensional Poverty Index (MPI). Unlike HPI, MPI is a single indicator that captures the deprivations in non-monetary factors that contribute towards well-being. MPI uses health (child mortality and nutrition), education (years of schooling and school attendance) and standard of living (cooking fuel, sanitation, drinking water, electricity, housing and assets) as indicators to determine the degree of poverty experienced by a population (Alkire & Foster, 2011). MPI measures both the proportion that is deemed poor and the breadth of poverty experienced by the poor households (Alkire & Foster, 2011). MPI is therefore a good proxy for poverty because by design, this index represents the deprivation of citizens in several dimensions of poverty (Sanogo, 2017). MPI is calculated by multiplying the incidence of poverty by the average intensity of poverty across the poor ($MPI = H \times$

A); as a result, it reflects both the share of people in poverty and the degree by which they are deprived.

The regression for the FEM presented in **Table 4** shows that revenue decentralisation had a positive and statistically significant relationship with MPI at 0.1 level of significance while the square of revenue decentralisation had a negative and statistically significant coefficient at 0.1 per cent level of significance. These results imply that, *ceteris paribus*, an increase in revenue decentralisation increases multidimensional poverty up to a critical point of 51.94 per cent where it starts to have a negative effect on MPI. These results are supported by regression results on vertical imbalances which show that increasing county own revenues in total county expenditures, increases multidimensional poverty. Revenue decentralisation has led to an increase in interest groups at the local areas, that is, county and sub-county levels. These groups of economic elites use public skepticism to avoid paying local taxes used to implement multidimensional poverty programs. There has been an increase in cases of payment of bribes and kickbacks to tax/user charges assessors and collectors leading to wastages/distortions of local taxes meant for multidimensional poverty reduction programmes.

Revenue decentralisation seems to have worsened the population's living conditions through bureaucratic corruption that reduces the local income. Additionally, the act of citizens paying bribes to receive public services greatly disadvantages the poor who have no money to pay bribes. Devolved taxes especially property taxes face several challenges especially land revaluation issues. Additionally, history of wastage and embezzlement of public funds has made people suspicious of new local taxes or higher local tax rates hurting the revenue source for poverty reduction strategies by counties. The limited administrative capacity of county tax and revenue decentralisation has led to lower tax collections. Furthermore, cases of double taxation by the county and national governments heavily burden the poor. Lastly, limited public participation and communication have limited the participation of the poor in programmes that could have improved their voices in social welfare provision. This has led to implementation of white-elephant projects that have little impact on the lives of the multidimensionally poor. These results are consistent with *Prud'homme (1995)* and *Treisman (2000)* arguments that FD worsens delivery of public services leading to increased poverty. These results, however, contradict those by *Sanogo (2017)* who finds a negative and statistically significant relationship between local revenues and MPI. *Ramírez et al. (2016)* find a negative and statistically significant relationship between revenue decentralisation proxied by property tax revenue and multidimensional poverty.

The results in **Table 4** show that intergovernmental transfers had a negative and significant coefficient at 0.1 per cent level of significance while its quadratic specification coefficient was positive and statistically significant at 0.1 per cent level of significance. These results suggest that, *ceteris paribus*, an increase of intergovernmental transfers to subnational government is likely to reduce multidimensional poverty up to a critical point of 9.07 per cent where it begins to increase

multidimensional poverty. In the beginning, intergovernmental transfers tend to reduce multidimensional poverty but in the long run intergovernmental transfers seem to exacerbate multidimensional poverty. Both conditional and unconditional transfers constitute the largest source of revenues for many counties. Most of these transfers touch on sectors that form the MPI, such as education, health and living standards indicators. Since counties are closer to the people, they have a better access to local information and needs especially areas concerning local poverty like identification of multidimensionally poor households and individuals. Identification of multidimensionally poor individuals and households is important for targeting of cash transfers from both the national and county governments. The equalisation transfers to marginalised counties from the national government through the Equalisation Fund, and other transfers from the development partners have played an important role in reducing MP in targeted counties.

The REM regression results presented in **Table 4** show a negative and statistically significant coefficient at 0.1 per cent level of significance for expenditure decentralisation and a positive and statistically significant coefficient at 0.1 per cent level of significance for the square of expenditure decentralisation. These results suggest a parabolic relationship whereby an increase in county expenditures, first, reduces multidimensional poverty up to a critical level of 0.811 per cent where it begins to exacerbate multidimensional poverty. Generally, by assigning revenue and expenditure assignments to counties, devolution seems to have enhanced counties' revenue autonomy and discretion in allocating resources for pro-poor programmes. For instance, many counties have spent substantial amount of money on transfer programs such as bursary funds, construction of houses for elderly, youth programs among other programs that touch on MPI indicators.

Devolution has also improved the quality of delivery of public services, though, with large inequalities across and within counties. Any improvement in public services directly benefit the multidimensional poor who highly depend on public goods and services. Devolution has further enhanced accountability in the service delivery process of counties as compared to the former central-led provincial administration. The multidimensional poverty-reducing characteristics of intergovernmental transfers are consistent with [Hayek \(1945\)](#) and [Oates \(1993\)](#) arguments that devolving decision making to local government makes local authorities more accountable increasing their effectiveness in service delivery. These findings contradict those of [Sanogo \(2017\)](#) who finds a positive and statistically significant relationship between central transfers and MPI.

Lastly, **Table 4** shows results for several control variables that were used to account for the effects of other socio-economic factors on various poverty measures. First, Per Capita Income (PCI) has a statistically significant coefficient at various significance levels for most of poverty measures. This means that counties with higher per capita income have more capacity to finance pro-poor programmes. Per-capita pro-poor expenditures index also has a statistically significant and negative coefficient with headcount poverty index. This suggests that an increase in

pro-poor expenditure, that is expenditure by county governments on health, education, water, and sanitation, culture and sports, has a considerable impact on poverty reduction. Education, measured by adult literacy, had a negative and statistically significant coefficient for HPI and MPI at different levels of significance. Education is, therefore, a major determinant of poverty in Kenya since an improvement in education reduces poverty.

Devolution Reform Dummy that checks for the impact of FD after the introduction of devolution in Kenya through the 2010 Constitution implementation from 2013 shows that poverty significantly reduced after the devolution reforms due to the shifting of revenue-raising and decision-making powers to counties enhancing local accountability and public service delivery. Lastly, the Former Provinces Dummies show that the impact of FD on poverty varies across counties with the North Eastern counties experiencing the highest poverty-reducing characteristics of FD.

6. Conclusion

This study assessed the extent of the effect of fiscal decentralisation on multidimensional poverty reduction in Kenya's subnational governments (counties). The study used cross-county panel data from 2006 to 2019 published by government agencies, World Bank reports and UNDP to analyse the effects of four indicators of FD; intergovernmental transfers, subnational own-source revenue, vertical imbalances and expenditure decentralisation on MP reduction in Kenya. Our estimation results reveal that the impact of FD on multidimensional poverty measures and economic growth depends on the nature and extent of FD. On the side of poverty headcount (money-metric poverty), revenue decentralisation and vertical imbalances were found to reduce poverty headcount at low levels below 61.31 per cent and 53.54 per cent respectively while intergovernmental transfers and expenditure decentralisation were found to increase poverty headcount at low levels below 9.92 per cent and 0.801 per cent respectively beyond which they would reduce poverty headcount. On the side of the non-money metric poverty, revenue decentralisation and vertical imbalance were found to increase MPI at low levels below 51.94 per cent and 0.955 per cent respectively while intergovernmental transfers and expenditure decentralisation were found to reduce MPI at low levels below 9.07 per cent and 0.811 per cent respectively beyond which they would increase multidimensional poverty.

The FD-human development nexus results showed that an increase in revenue decentralisation improves human development up to a critical point of 46.67 per cent where it reverses its effect. The findings on vertical imbalances confirmed these results on revenue decentralisation by showing that increasing county-own source revenues in total local expenditures had a positive effect on human development. However, the intergovernmental transfer results showed that an increase of intergovernmental transfers to subnational government is likely to worsen human development up to a critical point of 9.71 per cent. Lastly, HDI-spending de-

centralisation relationship had a negative and statistically significant coefficient up to a critical level of 0.442 per cent. However, there are differences in the effects of FD and multidimensional poverty across regions and counties.

In addition, our results show the major role played by the devolution reforms of 2013 in increasing the overall decentralisation that improved multidimensional poverty reduction through pro-poor expenditures. Generally, our results revealed that the different effects of FD on the money-metric and non-money metric measures are due to the nature and extent of decentralisation in Kenya.

In conclusion, our paper points out four policy areas that need to be emphasised by the counties to ensure that FD delivers for the poor: (i) how to maximise and utilise the benefits from the implementation of FD especially through reinforcing and supporting factors that affect multidimensional poverty reduction in Kenya; (ii) how to design a better intergovernmental transfer system that doesn't create an environment of fiscal dependency but rather ensures poverty reduction and equitable distribution of resources; (iii) how to enhance county's revenue decentralisation and tax collection systems while making them cognizant of the multidimensional nature of poverty; and (iv) how to strengthen national and subnational institutions and legal/constitutional frameworks to strengthen multidimensional poverty reduction strategies. Future research can employ dynamic panel estimators such as System-GMM to address potential endogeneity and simultaneity bias more rigorously in the methodology considering the likely lagged effect of fiscal policy on poverty outcomes.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Abdillah, K., & Mursinto, D. (2016). The Effects of Fiscal Decentralization, Economic Growth and Income Inequality on Poverty Rate of Indonesia's 33 Provinces. *International Journal of Advanced Research*, 4, 405-414. <http://www.journalijar.com>
- Afrobarometer (2014). *Afrobarometer Round 6 Survey in Kenya*. http://afrobarometer.org/sites/default/files/publications/Summary%20of%20results/ken_r6_sor_en.pdf
- Ahmad, R., & Akif, S. A. A. (2007). Technocratic Solutions versus Political Realities: Implementing Governance Reforms in the Balochistan Province of Pakistan. *Policy and Society*, 26, 83-108. [https://doi.org/10.1016/s1449-4035\(07\)70109-1](https://doi.org/10.1016/s1449-4035(07)70109-1)
- Ahmed, M. (2013). *Fiscal Decentralisation and Political Economy of Poverty Reduction: Theory and Evidence from Pakistan*. Ph.D. Thesis, Durham University. <http://Etheses.Dur.Ac.Uk/7288/>
- Alene, A., & Worku, D. (2017). Does Decentralization Have a Role in Poverty Reduction? The Ethiopian Experience. *Journal of African Studies and Development*, 9, 1-6. <https://doi.org/10.5897/jasd2016.0421>
- Alkire, S., & Foster, J. (2011). Counting and Multidimensional Poverty Measurement. *Journal of Public Economics*, 95, 476-487. <https://doi.org/10.1016/j.jpubeco.2010.11.006>
- Andhoga, W. O., Mavole, J., & Mose, G. N. (2017). Influence of Devolved Financial Dis-

- bursement and Use on Poverty Alleviation in The Kenyan County Governments. *Scholars Journal of Arts, Humanities and Social Sciences*, 5, 1671-1680.
- Anggraeni, R. M., Khusaini, M., & Prasetyia, F. (2022). Fiscal Decentralization and Its Effect on Poverty Alleviation: Case Study of Indonesia. *Bulletin of Islamic Economics*, 1, 35-48. <https://doi.org/10.14421/bie.2022.012-04>
- Asante, F. A., & Ayee, J. R. A. (2010). *Decentralization and Poverty Reduction*. <https://www.researchgate.net/publication/265047859>
- Ataro, P. O., Muturi, W., & Wandera, W. R. (2016). Factors Affecting Revenue Collection Efficiency in County Governments in Kenya: A Case Study of Trans-Nzioa County. *International Journal of Social Sciences and Information Technology*, IV, 196-205.
- Atkinson, A. B. (2019). *Measuring Poverty around the World*. Princeton University Press. <https://doi.org/10.2307/j.ctvc77fd6>
- Azfar, O., Kahkonen, S., Lanyi, A., & Meagher, P. (1999). *Decentralisation, Governance and Public Services: The Impact of Institutional Arrangements*. Centre for Institutional Reform and the Informal Sector University of Maryland Working Paper No 255.
- Azila-Gbettor, E. M., Adjimah, H. P., & Tibu, S. K. (2014). Fiscal Decentralization and Poverty Reduction: Citizens View. *Journal of Social Economics Research*, 1, 118-128. <https://ideas.repec.org/a/pkp/josere/v1y2014i6p118-128id1300.html>
- Bahl, R., & Bird, R. (2018). *Fiscal Decentralisation and Local Finance in Developing Countries: Development from Below*. Edward Elgar Publishing Limited.
- Banwo, M. A. (2012). Fiscal Decentralisation Policy and Poverty Reduction: Lessons from Nigeria. *IPPR Journal*, 7, 1-35.
- Bardhan, P., & Mookherjee, D. (2004). Pro-Poor Targeting and Accountability of Local Governments in West Bengal. *Journal of Development Economics*, 79, 303-327. <https://doi.org/10.1016/j.jdeveco.2006.01.004>
- Bardhan, P., & Mookherjee, D. (2005). Decentralizing Antipoverty Program Delivery in Developing Countries. *Journal of Public Economics*, 89, 675-704. <https://doi.org/10.1016/j.jpubeco.2003.01.001>
- Bardhan, P., & Mookherjee, D. (2006). *Decentralisation and Local Governance in Developing Countries: A Comparative Perspective*. MIT Press.
- Bartolucci, F., Belotti, F., & Peracchi, F. (2015). Testing for Time-Invariant Unobserved Heterogeneity in Generalized Linear Models for Panel Data. *Journal of Econometrics*, 184, 111-123. <https://doi.org/10.1016/j.jeconom.2014.09.002>
- Beck, V., Hahn, H., & Lepenies, R. (2020). *Dimensions of Poverty: Measurement, Epistemic Injustices, Activism*. Springer.
- Bekele, Y. W., & Kjosavik, D. J. (2016). Decentralised Local Governance and Poverty Reduction in Post-1991 Ethiopia: A Political Economy Study. *Politics and Governance*, 4, 1-15. <https://doi.org/10.17645/pag.v4i4.590>
- Besley, T., & Burgess, R. (2002). The Political Economy of Government Responsiveness: Theory and Evidence from India. *The Quarterly Journal of Economics*, 117, 1415-1451. <https://doi.org/10.1162/003355302320935061>
- Binh, P. T. T., & Ha, V. V. (2018). Poverty Reduction in Vietnam and the Role of Public Administration. *Journal of Contemporary Asia*, 49, 151-163. <https://doi.org/10.1080/00472336.2018.1515368>
- Bird, R. et al. (1998). *Rethinking Decentralization in Developing Countries*. World Bank.
- Bird, R. M. (2008). *Tax Assignment Revisited*. International Center for Public Policy Working Paper Series, at AYSPS, GSU Paper 0805, International Center for Public Policy, An-

- drew Young School of Policy Studies, Georgia State University.
- Bird, R. M., & Vaillancourt, F. (1998). Fiscal Decentralization in Developing Countries: An Overview. In R. M. Bird, & F. Vaillancourt (Eds.), *Fiscal Decentralization in Developing Countries*. Cambridge University Press.
- Bird, R., & Rodriguez, E. R. (1999). Decentralization and Poverty Alleviation. International Experience and the Case of the Philippines. *Public Administration and Development*, 19, 299-319.
[https://doi.org/10.1002/\(sici\)1099-162x\(199908\)19:3<299::aid-pad82>3.0.co;2-1](https://doi.org/10.1002/(sici)1099-162x(199908)19:3<299::aid-pad82>3.0.co;2-1)
- Bird, R., Dafflon, B., Jeanrenaud, C., & Kirchgässner, G. (2003). Assignment of Responsibilities and Fiscal Federalism. In R. Blindenbacher, & A. Koller (Eds.), *Federalism in a Changing World* (pp. 351-372). McGill-Queen's University Press.
<https://doi.org/10.1515/9780773571402-026>
- Bjornestad, L. (2009). Fiscal Decentralization, Fiscal Incentives, and Pro-Poor Outcomes: Evidence from Viet Nam. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.1616968>
- Boex, J., & Martinez-Vazquez, J. (2001). *The Design of Equalization Grants: Theory and Applications (Part 1). Fiscal Decentralization: A Review of Concepts and Application for Indonesia*. Fiscal Policy Summer Training Course. Andrew Young School of Public Studies. Georgia State University.
- Boex, J., Heredia-Ortíz, E., Martínez-Vázquez, J., Timofeev, A., & Yao, G. (2006). *Fighting Poverty through Fiscal Decentralization*. United States Agency for International Development (USAID) Report. http://pdf.usaid.gov/pdf_docs/PNADH105.pdf
- Bojanic, A. N. (2016). *The Impact of Fiscal Decentralization on Growth, Inflation, and Inequality in the Americas*. Working Papers 1610, Tulane University.
- Booth, A. (2003). Decentralisation and Poverty Alleviation in Indonesia. *Environment and Planning C: Government and Policy*, 21, 181-202. <https://doi.org/10.1068/c0127>
- Bosire, C. M. (2017). *County Governance and Pluralism in Kenya*. Katiba Institute.
- Bossuyt, J., & Gould, J. (2000). *Decentralisation and Poverty Reduction: Elaborating the Linkages*. Policy Management Brief, No. 12, The University of Helsinki, Institute of Development Studies.
- Brennan, G., & Buchanan, J. (1980). *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge University Press.
- Breton, A. (1983). Federalism versus Centralism in Regional Growth. In D. Biehl, K. W. Roskamp, & W. F. Stolper (Eds.), *Public Finance and Economic Growth: Proceedings of the International Institute of Public Finance Tokyo 1981*. Wayne State University Press.
- Brixiova, Z., Gemayel, E. R., & Said, M. (2003). Can Fiscal Decentralization Contribute to Poverty Reduction? Challenges Facing a Low Income Country. *Middle Eastern and North African Economics (Electronic Journal)*, 5.
- Caldeira, E., Foucault, M., & Rota-Graziosi, G. (2015). Decentralization in Africa and the Nature of Local Governments' Competition: Evidence from Benin. *International Tax and Public Finance*, 22, 1048-1076. <https://doi.org/10.1007/s10797-014-9343-y>
- Canaleta, C. G., Pascual Arzoz, P., & Rapun Garate, M. (2004). Regional Economic Disparities and Decentralisation. *Urban Studies*, 41, 71-94.
<https://doi.org/10.1080/0042098032000155696>
- Canare, T., & Francisco, J. P. (2019). Decentralization, Fiscal Independence, and Poverty in the Philippines. *Public Budgeting & Finance*, 39, 94-117.
<https://doi.org/10.1111/pbaf.12241>

- Careaga, M., & Weingast, B. R. (2003). Fiscal Federalism, Good Governance, and Economic Growth in Mexico. In D. Rodrik (Ed.), *Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton University Press.
- Cavusoglu, T., & Dincer, O. (2015). Does Decentralization Reduce Income Inequality? Only in Rich States. *Southern Economic Journal*, *82*, 285-306.
<https://doi.org/10.1002/soej.12047>
- Chandra, J. P. (2012). *Theory of Fiscal Federalism: An Analysis*. MPRA Paper No. 41769.
- Cheeseman, N., Lynch, G., & Willis, J. (2016). Decentralisation in Kenya: The Governance of Governors. *The Journal of Modern African Studies*, *54*, 1-35.
<https://doi.org/10.1017/s0022278x1500097x>
- Chitere, O. et al. (2006). *Kenya Constitutional Documents: A Comparative Analysis*. Institute of Policy Analysis and Research (IPAR), Working Paper No. 7.
- Chitere, P. O., & Ngundo, V. M. (2015). Devolution as a Means for Self-Governance: Its Potential for Poverty Reduction in Kenya. *International Journal of Social Work and Human Services Practice*, *3*, 38-49. <https://doi.org/10.13189/ijrh.2015.030105>
- Conyers, D. (2007). Decentralisation and Service Delivery: Lessons from Sub-Saharan Africa. *IDS Bulletin*, *38*, 18-32. <https://doi.org/10.1111/j.1759-5436.2007.tb00334.x>
- Crook, R. C. (2003). Decentralisation and Poverty Reduction in Africa: The Politics of Local-Central Relations. *Public Administration and Development*, *23*, 77-88.
<https://doi.org/10.1002/pad.261>
- Crook, R. C., & Manor, J. (1998). *Democracy and Decentralisation in South Asia and West Africa: Participation, Accountability and Performance*. Cambridge University Press.
<https://doi.org/10.1017/9780511607899>
- Crook, R. C., & Sverrisson, A. S. (2001). *Decentralisation and Poverty-Alleviation in Developing Countries: A Comparative Analysis or, Is West Bengal Unique?* Institute of Development Studies.
- D'arcy, M. (2020). *Devolution and County Government*. Oxford University Press.
- D'Arcy, M., & Cornell, A. (2016). Devolution and Corruption in Kenya: Everyone's Turn to Eat? *African Affairs*, *115*, 246-273. <https://doi.org/10.1093/afraf/adw002>
- Dabla-Norris, E. (2006). The Challenge of Fiscal Decentralisation in Transition Countries. *Comparative Economic Studies*, *48*, 100-131.
<https://doi.org/10.1057/palgrave.ces.8100063>
- Davoodi, H., & Zou, H. (1998). Fiscal Decentralization and Economic Growth: A Cross-Country Study. *Journal of Urban Economics*, *43*, 244-257.
<https://doi.org/10.1006/juec.1997.2042>
- Dethier, J. J. (2000). *Governance, Decentralization, and Reform in China, India, and Russia*. Kluwer Academic Publishers.
- Development Initiatives (2018). *Strengthening Subnational Government Own-Source Revenue Mobilisation in Kenya: Progress, Challenges and Opportunities*. Development Initiatives.
- Dincer, O. C., Ellis, C. J., & Waddell, G. R. (2009). Corruption, Decentralization and Yardstick Competition. *Economics of Governance*, *11*, 269-294.
<https://doi.org/10.1007/s10101-009-0067-x>
- Diwakar, V., & Shepherd, A. (2018). *Understanding Poverty in Kenya: A Multidimensional Analysis*. Chronic Poverty Advisory Network.
- Dotter, C., & Klasen, S. (2017). *The Multidimensional Poverty Index: Achievements, Conceptual and Empirical Issues*. Courant Research Centre: Poverty, Equity and Growth—

- Discussion Papers 233, Courant Research Centre PEG.
- Ebel, R. D., & Yilmaz, S. (2002). *On the Measurement and Impact of Fiscal Decentralization*. Policy Research Working Paper Series 2809, The World Bank.
- Ezcurra, R., & Pascual, P. (2008). Fiscal Decentralization and Regional Disparities: Evidence from Several European Union Countries. *Environment and Planning A: Economy and Space*, 40, 1185-1201. <https://doi.org/10.1068/a39195>
- Faguet, J. (2012). *Decentralization and Popular Democracy: Governance from below in Bolivia*. University of Michigan Press. <https://doi.org/10.3998/mpub.175269>
- Faguet, J. (2014). Decentralization and Governance. *World Development*, 53, 2-13. <https://doi.org/10.1016/j.worlddev.2013.01.002>
- Faridi, M. Z., & Nazar, R. (2013). Impact of Fiscal Autonomy on Poverty in Pakistan. *Pakistan Journal of Commerce and Social Sciences*, 7, 141-156.
- Fisman, R., & Gatti, R. (2002). Decentralization and Corruption: Evidence across Countries. *Journal of Public Economics*, 83, 325-345. [https://doi.org/10.1016/s0047-2727\(00\)00158-4](https://doi.org/10.1016/s0047-2727(00)00158-4)
- Fjeldstad, O., & Kolstad, I. (2006). *Fiscal Decentralisation and Corruption: A Brief Overview of the Issues* (p. 3). Chr. Michelsen Institute.
- Fonshell, J. (2018). *Corruption Devolved: People's Perceptions on Devolutions Impact on Transparency, Accountability and Service Delivery by the Government of Kisumu County, Kenya*. Independent Study Project (ISP) Collection, 2815.
- Fuel, D. N. (2013). *A Study of Linkage between Fiscal Decentralisation and Poverty Reduction in Nepal*. Ph.D. Thesis, The University of Burdwan.
- Galasso, E., & Ravallion, M. (2005). Decentralized Targeting of an Antipoverty Program. *Journal of Public Economics*, 89, 705-727. <https://doi.org/10.1016/j.jpubeco.2003.01.002>
- Geda, A., de Jong, N., Mwabu, G., & Kimenyi, M. S. (2001). *Determinants of Poverty in Kenya: A Household Level Analysis*. Institute of Social Studies and the Kenya Institute for Public Policy Research and Analysis (KIPPRA).
- Ghani, J. A. (2014). *Market Preserving Federalism: Implications for Malaysia*. Ph.D. Thesis, Victoria University.
- Goerl, C., & Seiferling, M. (2014). Income Inequality, Fiscal Decentralization and Transfer Dependency. *IMF Working Papers*, 14, 1. <https://doi.org/10.5089/9781484354711.001>
- GoK (2010). *The Constitution of Kenya*.
- Greene, W. H. (2012). *Econometric Analysis* (7th ed.). Prentice Hall.
- Gujarati, D. (2004). *Basic Econometrics* (4th ed.). The McGraw.
- Hankla, C. R. (2009). When Is Fiscal Decentralization Good for Governance? *Publius: The Journal of Federalism*, 39, 632-650. <https://doi.org/10.1093/publius/pjn034>
- Hassan, M. (2015). Continuity Despite Change: Kenya's New Constitution and Executive Power. *Democratization*, 22, 587-609. <https://doi.org/10.1080/13510347.2013.853174>
- Hassan, M. (2016). A State of Change: District Creation in Kenya after the Beginning of Multiparty Elections. *Political Research Quarterly*, 69, 510-521. <https://doi.org/10.1177/1065912916653476>
- Hayek, F. A. (1945). The Use of Knowledge in Society. *The American Economic Review*, 35, 519-530.
- Hernandez-Trillo, F. (2016). Poverty Alleviation in Federal Systems: The Case of México. *World Development*, 87, 204-214. <https://doi.org/10.1016/j.worlddev.2016.06.012>
- Hernandez-Trillo, F., & Jarillo-Rabling, B. (2008). Is Local Beautiful? Fiscal Decentraliza-

- tion in Mexico. *World Development*, 36, 1547-1558.
<https://doi.org/10.1016/j.worlddev.2007.09.008>
- Hiktaop, K., Ulita, A. S., Meilvidiri, W., Herdjiono, M. V. I., & Hayon, P. P. (2020). Influence of Fiscal Decentralization on the Economic Growth of Public Welfare and Poverty between Regions of Province of Papua. *IOP Conference Series: Earth and Environmental Science*, 473, Article ID: 012030. <https://doi.org/10.1088/1755-1315/473/1/012030>
- Ingram, G. K., & Hong, Y. H. (2008). *Fiscal Decentralisation and Land Policies*. Lincoln Institute of Land Policy.
- Jellema, J., Lustig, N., Haas, A., & Wolf, S. (2016). *The Impact of Taxes, Transfers, and Subsidies on Inequality and Poverty in Uganda*. International Growth Centre.
- Jin, H., Qian, Y., & Weingast, B. R. (2005). Regional Decentralization and Fiscal Incentives: Federalism, Chinese Style. *Journal of Public Economics*, 89, 1719-1742.
<https://doi.org/10.1016/j.jpubeco.2004.11.008>
- Jütting, J. et al. (2004). *Decentralization and Poverty in Developing Countries: Exploring the Impact. Working Paper 236*. OECD Development Center.
- Jütting, J., Corsi, E. & Stockmayer, A. (2005). *Decentralisation and Poverty Reduction*. Policy Insights No.5, OECD Development Centre.
- Kabau, T. (2015). Constitutional Law of Kenya on Devolution. *Strathmore Law Journal*, 2, 213-220. <https://doi.org/10.52907/slj.v2i1.23>
- Kaneva, T., Karpenko, M., Nasibova, O., Tabenska, J., & Tomniuk, T. (2023). Fiscal Decentralization Influence on Public Services Efficiency and Economic Growth. *Financial and credit activity problems of theory and practice*, 5, 68-78.
<https://doi.org/10.55643/fcaptop.5.52.2023.4193>
- Kanyinga, K. (2016). Devolution and the New Politics of Development in Kenya. *African Studies Review*, 59, 155-167. <https://doi.org/10.1017/asr.2016.85>
- Kanyinga, K., & Long, J. D. (2012). The Political Economy of Reforms in Kenya: The Post-2007 Election Violence and a New Constitution. *African Studies Review*, 55, 31-51.
<https://doi.org/10.1353/arw.2012.0002>
- Kaufman, D. et al. (1999). *Governance Matters*. World Bank Policy Research Working Paper, No. 2196.
- Keefer, P., & Khemani, S. (2003). *Democracy, Public Expenditures, and the Poor*. Policy Research Working Paper Series 3164, The World Bank.
<https://doi.org/10.1596/1813-9450-3164>
- Keen, M. J., & Kotsogiannis, C. (2004). Tax Competition in Federations and the Welfare Consequences of Decentralization. *Journal of Urban Economics*, 56, 397-407.
<https://doi.org/10.1016/j.jue.2004.04.005>
- Khadondi, S. (2018). Determinants of Own Source Revenue Mobilisation by Counties in Kenya. *International Journal of Science and Research (IJSR)*, 5, 155-164.
<https://www.ijsr.net/archive/v5i11/ART20162462.pdf>
- Khanal, G. K. (2018). Fiscal Decentralization and Human Poverty in Nepal: A Causal Analysis. *Journal of Management and Development Studies*, 28, 1-15.
<https://doi.org/10.3126/jmds.v28i0.24955>
- KIPPRA (2009-2020). *Kenya Economic Report, Various Issues*. Kenya Institute for Public Policy Research and Analysis (KIPPRA).
- Klugman, J. (1994). *Decentralization: A Survey of Literature from a Human Development Perspective*. Human Development Occasional Papers (1992-2007) HDOCPA-1994-05, Human Development Report Office (HDRO), United Nations Development Programme

(UNDP).

- Kusumaningrum, R. S. D. (2013). Link of Fiscal Decentralization to Poverty Reduction: Indonesian Context. *Jurnal Economia*, 9, 116-129.
- Kyei, P. O. (2008). Decentralisation and Poverty Alleviation in Rural Ghana: Perspective from District Elites and Voices of the Poor. *Bulletin of Ghana Geographical Association, Special Edition, No. 25*, 3-17.
- Kyriacou, A. P., Muinelo-Gallo, L., & Roca-Sagalés, O. (2015). Fiscal Decentralization and Regional Disparities: The Importance of Good Governance. *Papers in Regional Science*, 94, 89-108. <https://doi.org/10.1111/pirs.12061>
- Lessmann, C. (2012). Regional Inequality and Decentralization: An Empirical Analysis. *Environment and Planning A: Economy and Space*, 44, 1363-1388. <https://doi.org/10.1068/a44267>
- Lindaman, K., & Thurmaier, K. (2002). Beyond Efficiency and Economy: An Examination of Basic Needs and Fiscal Decentralization. *Economic Development and Cultural Change*, 50, 915-934. <https://doi.org/10.1086/342760>
- Litschig, S., & Morrison, K. M. (2013). The Impact of Intergovernmental Transfers on Education Outcomes and Poverty Reduction. *American Economic Journal: Applied Economics*, 5, 206-240. <https://doi.org/10.1257/app.5.4.206>
- Liu, Y., Martinez-Vazquez, J. & Timofeev, A. (2013). Measuring the Extent of Fiscal Decentralization: An Application to the United States. In OECD & Korea Institute of Public Finance (Eds.), *Measuring Fiscal Decentralization: Concepts and Policies*. OECD Publishing. http://scholarworks.gsu.edu/econ_facpub
- Llorca-Rodríguez, C. M., García-Fernández, R. M., & Sáez-Lozano, J. L. (2017). Pobreza y descentralización fiscal. Un análisis empírico mediante panel de datos de países. *El Trimestre Económico*, 84, 611-643. <https://doi.org/10.20430/ete.v84i335.509>
- Lockhart, K. (2019). *Decentralisation: Road to Development or Bridge to Nowhere? Estimating the Effect of Devolution on Infrastructure Spending in Kenya*. Master's Thesis, London School of Economics and Political Science.
- Maharajabdinul, R., Paddu, Hamid, A., & Nursini. (2015). Contribution of Fiscal Decentralization to Poverty Reduction in Eastern Indonesia. *IOSR Journal of Business and Management (IOSR-JBM)*, 17, 53-60. <https://www.semanticscholar.org/paper/Contribution-Of-Fiscal-Decentralization-To-Poverty-Maharajabdinul-Rahmatia/b1ec8c1262e69fabbb968f98e67f60fa14676723>
- Martinez-Vázquez, J. (2011). *The Impact of Fiscal Decentralization: Issues in Theory and Challenges in Practice (No. 5)*. Asian Development Bank. http://scholarworks.gsu.edu/econ_facpub/23
- Martinez-Vazquez, J., & McNab, R. M. (2003). Fiscal Decentralization and Economic Growth. *World Development*, 31, 1597-1616. [https://doi.org/10.1016/s0305-750x\(03\)00109-8](https://doi.org/10.1016/s0305-750x(03)00109-8)
- Martinez-Vazquez, J., Lago-Peñas, S., & Sacchi, A. (2015). The Impact of Fiscal Decentralization: A Survey. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2633869>
- McKinnon, R. (1997). Market-Preserving Fiscal Federalism in the American Monetary Union. In M. Blejer, & T. Ter-Minassian (Eds.), *Macroeconomic Dimensions of Public Finance: Essays in Honour of Vito Tanzi* (pp. 73-93). Routledge. <https://doi.org/10.4324/9780203024980.pt2>
- McLure, C. E. (1995). Comment on “The Dangers of Decentralization” by Prud' Homme. *The World Bank Research Observer*, 10, 221-226. <https://doi.org/10.1093/wbro/10.2.221>

- Moche, T. J., Monkam, N., & Aye, G. C. (2014). Fiscal Decentralization and Poverty in South Africa: Evidence from Panel Data Analysis. *Investment Management and Financial Innovations*, 11, 69-76.
- Montinola, G., Qian, Y., & Weingast, B. R. (1995). Federalism, Chinese Style: The Political Basis for Economic Success in China. *World Politics*, 48, 50-81. <https://doi.org/10.1353/wp.1995.0003>
- Muna, W. K. (2016). *Fiscal Decentralization in Kenya: An Analysis of the Implementation of the Constituency Development Fund in the Naivasha and Gatanga Constituencies*. Ph.D. Thesis, College of Humanity, University of KwaZulu-Natal.
- Musgrave, R. A. (1959). *The Theory of Public Finance: A Study in Public Economy*. McGraw Hill.
- Narayan, D. et al. (2000). *Voices of the Poor. Can Anyone Hear Us?* Oxford University Press.
- Ndii, D. (2010). *Decentralization in Kenya. Background Note*. World Bank.
- Ndii, D. (2018). *The Politics of County Economies: Why Central Kenya MPs are Wrong*. The Elephant.
- Ngaruiya, T. K. (2019). *The Political Economy of Devolution: Rethinking Participatory Governance for Development from the Bottom in Kenya*. Master's Thesis, United States International University (USIU).
- Nguyen, H. P. (2008). What Is in It for the Poor? Evidence from Fiscal Decentralization in Vietnam. *Journal of Public and International Affairs*, 19, 69-90.
- Nursini, N., & Tawakkal, T. (2019). Poverty Alleviation in the Context of Fiscal Decentralization in Indonesia. *Economics & Sociology*, 12, 270-285. <https://doi.org/10.14254/2071-789x.2019/12-1/16>
- Oates, W. E. (1972). *Fiscal Federalism*. Harcourt Brace Jovanovich.
- Oates, W. E. (1977). An Economist Perspective on Fiscal federalism. In W. E. Oates (Ed.), *The Political Economy of Fiscal Federalism*. Lexington Books.
- Oates, W. E. (1991). *Studies in Fiscal federalism*. Edward Elgar Co.
- Oates, W. E. (1993). Fiscal Decentralization and Economic Development. *National Tax Journal*, 46, 237-243. <https://doi.org/10.1086/NTJ41789013>
- Oates, W. E. (1994). Federalism and Government Finance. In J. M. Quigley, & E. Smolensky (Eds.), *Modern Public Finance* (pp. 125-151). Harvard University Press.
- Oates, W. E. (1999). An Essay on Fiscal Federalism. *Journal of Economic Literature*, 37, 1120-1149. <https://doi.org/10.1257/jel.37.3.1120>
- Oates, W. E. (2005). Toward a Second-Generation Theory of Fiscal Federalism. *International Tax and Public Finance*, 12, 349-373. <https://doi.org/10.1007/s10797-005-1619-9>
- Oates, W. E. (2006). *On the Theory and Practice of Fiscal Decentralization*. Working Papers 2006-05, University of Kentucky, Institute for Federalism and Intergovernmental Relations.
- Odero, K. K. (2004). *PRSPs in Decentralized Contexts: Comparative Lessons on Local Planning and Fiscal Dimensions*. World Bank Publications.
- Odiro, E. S. O. (2014). Government Expenditure on Education and Poverty Reduction: Implications for Achieving the MDGs in Nigeria a Computable General Equilibrium Micro-Simulation Analysis. *Asian Economic and Financial Review*, *Asian Economic and Social Society*, 4, 150-172.
- Omiti, J., Owino, W., Otieno, W., & Odundo, P. (2002). *Poverty Reduction Efforts in*

- Kenya: Institutions, Capacity and Policy*. Discussion Paper No. 033/2000.
- Onami, H. (2017). *Taxation at the County Level: A Review of County Levies, Charges and Taxes*. ICPAK, Public Policy & Research Division.
- Prud'homme, R. (1995). The Dangers of Decentralization. *The World Bank Research Observer*, 10, 201-220. <https://doi.org/10.1093/wbro/10.2.201>
- Putnam, R. D., Leonardi, R., & Nonetti, R. Y. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press. <https://doi.org/10.2307/j.ctt7s8r7>
- Qian, Y., & Weingast, B. R. (1997). Federalism as a Commitment to Preserving Market Incentives. *Journal of Economic Perspectives*, 11, 83-92. <https://doi.org/10.1257/jep.11.4.83>
- Ramírez, J. M., Díaz, Y., & Bedoya, J. G. (2016). *Fiscal Decentralization and Multidimensional Poverty Reduction in Colombia: A Spatial Approach*. Institute for Social and Economic Research.
- Rao, M. G., Bird, R. M., & Litvack, J. I. (1998). Fiscal Decentralization and Poverty Alleviation in a Transitional Economy: The Case of Viet Nam. *Asian Economic Journal*, 12, 353-378. <https://doi.org/10.1111/1467-8381.00068>
- Rao, V. (2002). Poverty and Public Celebrations in Rural India. *The Annals of the American Academy of Political and Social Science*, 573, 85-104. <https://doi.org/10.1177/0002716201573001005>
- Ravallion, M. (1999). Are Poorer States Worse at Targeting Their Poor? *Economics Letters*, 65, 373-377. [https://doi.org/10.1016/s0165-1765\(99\)00173-1](https://doi.org/10.1016/s0165-1765(99)00173-1)
- Ravallion, M. (2009). *Why Don't We See Poverty Convergence?* Policy Research Working Paper, No. WPS 4974.
- Ravallion, M. (2011). On Multidimensional Indices of Poverty. *The Journal of Economic Inequality*, 9, 235-248. <https://doi.org/10.1007/s10888-011-9173-4>
- Robinson, R., & Stiedl, D. (2001). Decentralization of Road Administration: Case Studies in Africa and Asia. *Public Administration and Development*, 21, 53-64. <https://doi.org/10.1002/pad.159>
- Rodríguez-Pose, A., & Krøijer, A. (2009). Fiscal Decentralization and Economic Growth in Central and Eastern Europe. *Growth and Change*, 40, 387-417. <https://doi.org/10.1111/j.1468-2257.2009.00488.x>
- Sacchi, A., & Salotti, S. (2011). The Effects of Fiscal Decentralization on Household Income Inequality: Some Empirical Evidence. *Spatial Economic Analysis*, 9, 202-222. <https://doi.org/10.1080/17421772.2013.833343>
- Sanogo, T. (2017). Does Fiscal Decentralization Enhance Citizens' Access to Public Services and Reduce Poverty? Evidence from Côte d'Ivoire Municipalities in a Conflict Setting. *World Development*, 113, 204-221. <https://doi.org/10.1016/j.worlddev.2018.09.008>
- Sasana, H. (2018). Is Fiscal Decentralization Able to Reduce Poverty? Empirical Cases in Indonesia. *International Journal of Civil Engineering and Technology (IJCIET)*, 9, 544-552. <http://www.iaeme.com/ijciet/issues.asp?JType=IJCIET&VType=9&IType=6>
- Schroeder, L. (2003). Fiscal Decentralization in Southeast Asia. *Journal of Public Budgeting, Accounting & Financial Management*, 15, 385-413.
- Sepulveda, C. F., & Martinez-Vazquez, J. (2010a). *The Consequences of Fiscal Decentralization on Human Development and Income Inequality, WP 10-02*. International Studies Program, Andrew Young School of Policy Studies, Georgia State University.
- Sepulveda, C. F., & Martinez-Vazquez, J. (2011). The Consequences of Fiscal Decentralization on Poverty and Income Equality. *Environment and Planning C: Government and*

- Policy*, 29, 321-343. <https://doi.org/10.1068/c1033r>
- Sepulveda, C., & Martinez-Vazquez, J. (2010b). *The Consequences of Fiscal Decentralization on Poverty and Income Inequality*. International Center for Public Policy Working Paper Series, at AYSPS, GSU paper1002, International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University.
- Sewell, D. O. (1996). "The Dangers of Decentralization" According to Prud'Homme: Some Further Aspects. *The World Bank Research Observer*, 11, 143-150. <https://doi.org/10.1093/wbro/11.1.143>
- Shahzad, S., & Yasmin, B. (2016). Does Fiscal Decentralisation Matter for Poverty and Income Inequality in Pakistan? *The Pakistan Development Review*, 55, 781-802. <https://doi.org/10.30541/v55i4i-iiip.781-802>
- Shifa, M., & Leibbrandt, M. (2017). *Profiling Multidimensional Poverty and Inequality in Kenya and Zambia at Subnational Levels*. Consuming Urban Poverty Project Working Paper No. 3, African Centre for Cities, University of Cape Town.
- Silas, P. M., Wawire, N. H. W., & Onono Okelo, P. A. (2018). Effects of Fiscal Decentralization on Poverty Reduction in Kenya. *International Journal for Innovation Education and Research*, 6, 213-230. <https://doi.org/10.31686/ijier.vol6.iss1.937>
- Simanjuntak, T. H., & Mukhlis, I. (2017). The Relation of Fiscal Decentralization, Regional Finance and Social Justice for the Local Development of Indonesia. *Applied Economics and Finance*, 4, 9-17. <https://doi.org/10.11114/aef.v4i1.1911>
- Skira, M. (2006). *Fiscal Decentralization and Poverty*. Internship Paper, Andrew Young School of Policy Studies, Georgia State University.
- Smoke, P. (1993). Local Government Fiscal Reform in Developing Countries: Lessons from Kenya. *World Development*, 21, 901-923. [https://doi.org/10.1016/0305-750x\(93\)90051-a](https://doi.org/10.1016/0305-750x(93)90051-a)
- Smoke, P. (1994). *Local Government Finance in Developing Countries: The Case of Kenya*. Oxford University Press.
- Smoke, P. (2014). *The Role of Decentralization/Devolution in Improving Development Outcomes at the Local Level: Review of the Literature and Selected Case, A Study Produced for UK Aid*. Local Centre for Financial and Management Studies 29 Development International LLC.
- Stedtjer, F. (2018). *Opportunities for Kenyans to Fight Corruption: A Qualitative Case Study in Western and Central Kenya, on Devolution's Effect on Citizens' and Civil Society's Engagement to Mitigate Corruption*. Bachelor's Thesis, Lund University.
- Steiner, S. (2005). Decentralisation and Poverty Reduction: A Conceptual Framework for the Economic Impact. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.907265>
- Stigler, G. (1957). The Tenable Range of Functions of Local Government. In W. Patman Ed., *Federal Expenditure Policy for Economic Growth and Stability* (pp. 213-219). Joint Economic Committee, Sub-Committee on Fiscal Politics.
- Studenmund, A. H. (2011). *Using Econometrics: A Practical Guide* (6th ed.). Addison Wesley Longman.
- Ter-Minassian, T. (1997). *Fiscal Federalism in Theory and Practice*. IMF.
- Thießen, U. (2003). Fiscal Decentralisation and Economic Growth in High-Income OECD Countries. *Fiscal Studies*, 24, 237-274. <https://doi.org/10.1111/j.1475-5890.2003.tb00084.x>
- Thrup, D. W. (2020). Jomo Kenyatta and the Creation of the Kenyan State (1963-1978). In N. Cheeseman, K. Kanyinga, & G. Lynch (Eds.), *The Oxford Handbook of Kenyan*

- Politics. Oxford University Press.
- Tiebout, C. M. (1956). A Pure Theory of Local Expenditures. *Journal of Political Economy*, 64, 416-424. <https://doi.org/10.1086/257839>
- TISA (2012). *Fiscal Transfers in Kenya: Unconditional and Conditional Transfers*. The Institute for Social Accountability.
- Treisman, D. (2000). The Causes of Corruption: A Cross-National Study. *Journal of Public Economics*, 76, 399-457. [https://doi.org/10.1016/s0047-2727\(99\)00092-4](https://doi.org/10.1016/s0047-2727(99)00092-4)
- UNDP (2005). *Fiscal Decentralisation and Poverty Reduction*. UNDP Primer. UNDP.
- Valaris, N. (2012). *Fiscal Decentralization and Its Effect on Poverty Evidence from Panel Data on the Lower 48 American States*. Capstone Projects-Economics, Paper 2. <http://www.ir.library.illinoisstate.edu/cpe/2>
- Voigt, S., & Blume, L. (2012). The Economic Effects of Federalism and Decentralization—A Cross-Country Assessment. *Public Choice*, 151, 229-254. <https://doi.org/10.1007/s11127-010-9745-z>
- Von Braun, J. & Grote, U. (2000). *Does Decentralization Serve the Poor?* <http://www.imf.org/external/pubs/ft/seminar/2000/fiscal/vonbraun.pdf>
- Wagana, D. M. (2017). *Effect of Governance Decentralization on Service Delivery in County Governments in Kenya*. Ph.D. Thesis, JKUAT.
- Wanjiru, R., Maina, A. W., Onsomu, E., & Stewart-Wilson, G. (2019). *Local Government Property Tax Administration and Collaboration with Central Government: Case Studies of Kiambu, Laikipia and Machakos Counties, Kenya*. ICTD, Working Paper 95.
- Wanyande, P. (2016). *Devolution and Territorial Development Inequalities: The Kenyan Experience*. Territorial Cohesion for Development Working Paper Series, Working Paper No. 187.
- Webster, N. (2000). Democracy, Development and the Institutionalised Participation of the Poor for Poverty Reduction. In P. Collins (Ed.), *Applying Public Administration in Development: Guide Posts to the Future*. John Wiley and Sons Ltd.
- Weingast, B. (1995). The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Growth. *Journal of Law, Economics and Organization*, 11, 1-31.
- Weingast, B. R. (2009). Second Generation Fiscal Federalism: The Implications of Fiscal Incentives. *Journal of Urban Economics*, 65, 279-293. <https://doi.org/10.1016/j.jue.2008.12.005>
- Weingast, B. R. (2014). Second Generation Fiscal Federalism: Political Aspects of Decentralization and Economic Development. *World Development*, 53, 14-25. <https://doi.org/10.1016/j.worlddev.2013.01.003>
- West, L. A., & Wong, C. P. W. (1995). Fiscal Decentralization and Growing Regional Disparities in Rural China: Some Evidence in the Provision of Social Services. *Oxford Review of Economic Policy*, 11, 70-84. <https://doi.org/10.1093/oxrep/11.4.70>
- Wiggins, S., & Higgins, K. (2008). *Pro-Poor Growth and Development*. ODI Briefing Paper, 33, ODI.
- World Bank (1999). *Beyond the Center: Decentralizing the State*. World Bank.
- World Bank (2011). *The State of Kenya's Economy Special Focus: Kenya's Momentous Devolution*. World Bank. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/327691523276540220/kenya-economic-update-policy-options-to-advance-the-big-4-unleashing-kenya-s-private-sector-to-drive-inclusive-growth-and-accelerate-poverty-reduction>

- World Bank (2014a). *A Measured Approach to Ending Poverty and Boosting Shared Prosperity: Data, Concepts, and the Twin Goals*. DECRG Policy Research Report.
- World Bank (2014b). *Decision Time: Spend More or Spend Smart: Kenya Public Expenditure Review*. World Bank.
- World Bank (2014c). *Kenya: A Sleeping Lion or Speedy Lioness? Country Economic Memorandum*. World Bank.
- World Bank (2014d). *Laying the Foundation for a Robust Health Care System in Kenya. Kenya Public Expenditure Review, Volume II*. World Bank.
- World Bank (2014e). *The Evolution of Kenya's Devolution: What's Working Well; What Could Work Better*. World Bank.
- Xu, C. (2011). The Fundamental Institutions of China's Reforms and Development. *Journal of Economic Literature*, 49, 1076-1151. <https://doi.org/10.1257/jel.49.4.1076>
- Yao, G. A. (2007). *Fiscal Decentralization and Poverty Reduction Outcomes: Theory and Evidence*. <https://www.semanticscholar.org/paper/Fiscal-Decentralization-and-Poverty-Reduction-and-Yao/ebdfaa6b4c51366f2fae3213ab434ff4d4ce7294>
- Yuliani, D., Dendy, S. A., Brata, Y. R., Herlina, E., & Budiawan, A. (2020). Education, Health, Fiscal Decentralization & Poverty: Evidence in One of the Areas in Indonesia. *Journal of Asian Review of Public Affairs and Policy*, 5, 22-40.
- Zambok, S., Asubonteng, A. A., Aikins, D., & Adomako, I. (2016). *Effects of Fiscal Decentralization on Community Representation and Poverty Reduction, Achievements and Challenges: Case Study of Some Selected Districts in the Ashanti Region, Ghana*. https://scholar.google.com/scholar_lookup?hl=en&publication_year=2016&author=S.+Zambok&author=A.+A.+Asubonteng&author=D.+Aikins&author=I.+Adomako&title=Effects+of+fiscal+decentralization+on+community+representation+and+poverty+reduction%2C+achievements+and+challenges%3A+case+study+of+some+selected+districts+in+the+Ashanti+region%2C+Ghana
- Zhang, X. (2006). *Fiscal Decentralization and Political Centralization in China: Implications for Growth and Inequality*. WIDER Working Paper Series RP2006-93, World Institute for Development Economic Research (UNU-WIDER).

Appendix

Table A1. Panel unit root test results.

Variable	t-bar		statistic	
	Level		First	Difference
	IPS	Levin, Lin & Chu	IPS	Levin, Lin & Chu
Poverty Headcount Index	-4.2939***	16.8507***		
Poverty Gap	-5.0314**	18.5623**		
Severity of Poverty	-2.4971**	-12.1490*		
Child Poverty	-3.3249**	14.3017***		
Food Poverty	-6.9018**	20.2391*		
Human Development Index	-4.7814**	-67.2413**		
Multidimensional Poverty Index	-9.1290**	-34.784***		
Revenue Decentralisation	1.8724	-13.5678***	5.5104***	-23.0156***
Expenditure Decentralisation	6.8914	16.0917	-0.3109	-27.1058***
Vertical Imbalances	3.4102**	12.6709**		
Per Capita Income	0.7806	-9.3284***		
Overall School Enrolment	2.8267	-4.4891**		
Adult Literacy Rate	5.2398	12.5423	7.7245**	-21.6245***
Life Expectancy	1.7824**	-45.4581**		
Underweight Children	-2.0912**	-67.1702**		

Table A2. Heteroskedasticity test results for various model specifications.

H0: $\sigma(i)^2 = \sigma^2$		Modified	Wald	Test	Results			
Dependent	Revenue	For all i						
Variable	Chi-square statistics	Dece.	Inter.	Trans.	Expe.	Dece.	Vertical	Im.
		<i>p</i> -value	Chi-square statistics	<i>p</i> -value	Chi-square statistics	<i>p</i> -value	Chi-square statistics	<i>p</i> -value
PHI	-	-	-	-	2407.75**	0.0000	881.58**	0.0000
HDI	2661.67**	0.0000	1055.88**	0.0000	2729.30**	0.0000	1588.00*	0.0000
MPI	1378.40*	0.0000	905.19	0.0000	-	-	2224.03**	0.0000

Source: Study data.