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FISCAL DECENTRALISATION, REVENUE PERFORMANCE AND POVERTY IN GHANA

BY

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Declaration

I, Agbemavor Korsi Fiagbe, hereby declare that this thesis, except for references to other literature, which have been acknowledged, is the result of my own effort, produced from research undertaken under supervision, and that it has neither in whole nor in part been presented elsewhere for the award of a degree.

October 25, 2023

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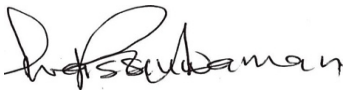

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Abstract

Sub-Saharan Africa (SSA) has experienced robust growth since the mid-1990s however, formidable development challenges such as poverty, unemployment, and low revenue, and inefficient public service delivery persist. Poverty particularly has become a major global concern, with its eradication in all forms and dimensions by 2030 constituting the first, and perhaps the most critical goal among the Sustainable Development Goals (SDGs). Against this background, SSA countries including Ghana have adopted decentralization policy since the 1980s as an alternative development strategy. The decentralization policy is anchored on grants from the central government and donors. Additionally, the Local Authorities are granted the autonomy to mobilize resources to fund their local development plans.

The relationship between decentralization and development outcomes as espoused in the theoretical and empirical literature remains unclear. Whilst a school of thought postulates that the grant system discourages revenue effort and exacerbates poverty, others proffered otherwise. Also, some studies show that intergovernmental transfer arrangements may be susceptible to political manoeuvering that could create social conflicts. Whilst extensive empirical studies exist on fiscal federalism and development outcomes such as poverty in developed economies, very little is known about Sub-Saharan Africa (SSA). This study contributes to the literature on SSA, specifically Ghana using the recent Ghana Living Standard Survey (GLSS 7), district and community-level data for the period 2012-2016 to examine the relationship between grants, local revenue mobilization, and poverty in Ghana. It also examines the influence of political manipulation on DACF disbursements in Ghana.

The contribution made to the literature in this thesis covers a number of areas. First, we examine the effect of grants on local revenue mobilization by testing the flypaper hypothesis. The system GMM results show that a 10 percent increase in total transfer leads to 2.7 percent reduction in local revenue at 1 percent. However, disaggregated components of grants into

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unconditional, conditional and sectorial-limited transfers have no effects on revenue. Second, The OLS regression results show that a 10 percent increase in DACF reduces district-level poverty by 6 percentage points whilst local revenue does not affect poverty. Moreover, the Logit and Probit regression results show that local services such as complementary (non-formal) and primary education, construction of development projects, and improvement in job opportunities are positively associated with perceived improvement in community welfare. Third, the thesis assesses the extent to which political consideration influences DACF allocation in Ghana. The system GMM result reveals that not only politically-aligned districts are targeted in the distribution of DACF, but also politically-swing districts are well targeted.

This study found evidence in support of the argument that grants crowds-out revenue whilst the former reduces poverty. It is recommended that, grants should be directed towards improving local tax administration system whilst innovative strategies are adopted to maximize local revenue. Grants should be invested in technology to ensure that local tax administration processes are digitalized. Additionally, the 5 percent minimum threshold of the DACF allocation should be reviewed to 10 percent of national revenue similar to those in SSA in order to accommodate the rising cost of living in the various localities. Furthermore, apolitical team of experts should be formed to manage the DACF in consultation with Non-Governmental Organizations (NGOs), Civil Society Organization (CSOs) and the MMDAs to minimize the occurrence of political manipulation.

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List of Abbreviations

ABFA	Annual Budget Funding Amount
DACF	District Assembly Common Fund
DDF	District Development Fund
FCUBE	Free Compulsory Universal Basic Education
FGT	Foster-Greer-Thorbecke
FOAT	Functional and Organizational Assessment Tool
GLSS	Ghana Living Standard Survey
GMM	Generalized Methods of Moments
IGF	Internally Generated Fund
LEAP	Livelihood Empowerment Against Poverty
MDG	Millennium Development Goals
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
MMDCE	Metropolitan, Municipal and District Chief Executive
MTPF	Medium Term Plan Framework
SDG	Sustainable Development Goal
TREE	Tax Revenue for Economic Enhancement
UDG	Urban Development Goals
UNDP	United Nations Development Partners
UNU	United Nations University
WDI	World Development Indicators
WIDER	World Institute for Development Economics Research

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Chapter One
Introduction

1.0 Background

Economic growth and poverty eradication have become major development targets for most developing countries hence policy reforms are pursued towards achieving these goals. Poverty especially has become a major global concern with its eradication in all forms and dimensions by 2030 constituting the first, and perhaps the most critical goal among the Sustainable Development Goals (SDGs). The global approach to poverty eradication involves targeting the most vulnerable, increasing basic resources and services, and supporting communities especially those that are affected by conflict and climate-related disasters (UNDP, 2020).

Available data shows that poverty has declined significantly in all regions since the 1980s except in Sub-Saharan Africa (SSA), where marginal progress has been made relative to achieving the Millennium Development Goal 1 (UNDP, 2020). For instance, between 1990 and 2015 the number of people living on less than $1.90 a day fell by 1.3 billion representing about 10 percent of the world's population (World Bank, 2020). In SSA, an estimated 40 percent of the people were living on less than $1.90 a day (Lakner et al., 2019). The headcount rates were reported to be high in sub-regional economies characterized with conflicts including West African states. According to Beegle and Christiansen (2019), although SSA is fast urbanising, 82 percent of its poor lived in the rural areas. Thus, poverty has been largely considered as a rural phenomenon in the sub-region.

From country specific perspective, the national poverty rate for Ghana has more than halved from 1991 to 2015. The estimated national headcount ratio fell from 52.6 percent in 1991 to 21.41 percent in 2012 (World Bank, 2015). This performance is considered as a remarkable success on the sub-region for two reasons. First, not many other SSA countries managed to

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reduce poverty at that relatively faster rate. Second, the fact that this achievement can be monitored using comparable rounds of Ghana Living Statistical Survey (GLSS) data.

Additionally, the reduction in the Ghana's poverty rate has been associated with significant economic growth. The country's Gross Domestic Product (GDP) was 6.5 percent in 2019 and declined to 0.9 percent in 2020 as a result of the impact of the Covid-19 pandemic (Ministry of Finance, 2020). In view of fiscal consolidation pursued post covid-19, GDP growth realized in 2022 stood at 3.1 percent with overall fiscal deficit of 11.8 percent of GDP. The overall fiscal deficit is expected to decline to 5.9 percent with GDP growth target of 2.8 percent in 2024. In view of the approval of Ghana's Extended Credit Facility by the International Monetary Fund (IMF), there is the need for fiscal prudence whilst protecting the poor and the vulnerable.

Theories of fiscal federalism propounded by Musgrave (1959) and Oates (1972) hypothesize that appropriate assignment of fiscal authority to subnational governments has the potential to spur local development. These theories assume that subnational governments have access to quality local information compared to the central government, which allows them to provide public goods and services that appropriately match local preferences. Fiscal decentralization is therefore expected to promote poverty reduction. In view of the expected gains of fiscal decentralization, many countries have undertaken intergovernmental fiscal mechanisms as an alternative development strategy.

Providing adequate funding for public expenditures remains crucial for economic growth and equity goals. Therefore, the drive towards improved and efficient public resource management at all levels of governance has gotten some level of urgency in many developing economies. Smoke (2001) noted that local government services are heavily subsidized through grants system that lack transparency, and are fragmented across multiple programs. The heavy

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reliance on grants could be traced to the 1980s, when donor funds were made easily accessible to many developing countries with less pressure for accountability. International donors and governments in those periods assumed that subsidization would improve equity in service provision and help reduce poverty (Smoke, 2006). However, over the recent past, there have been an increasing concern for both central and subnational governments to ensure fiscal prudence, accountability and equitable distribution of national resources.

The economic justification for resource redistribution is to achieve equity and efficiency against the background of scarcity of resources. Similarly, development partners have advocated for fiscal decentralisation as a way of promoting efficiency in public resource management in developing countries. However, the literature on fiscal decentralization and local development remains divided. While advocates such as Joulfaian and Marlow (1990) argue that fiscal decentralization ensures competition in the public sector, leading to a relatively lower tax burden, opponents such as Ayee, (1999) and Owusu (2005) point out that grant mechanisms only make sub-national governments spending agents that may have adverse effects on economic stability.

Smoke (2006) states that fiscal reform that is based on intergovernmental fiscal arrangements are mostly unsustainable for the following reasons: First, pro-poor subsidies may place heavy fiscal burdens on central governments. Second, excessive subsidization undermines incentives for subnational governments to recover costs, which may result in overconsumption. Third, poverty alleviation effects of subsidized services are exaggerated, which often basically benefits higher income individuals. However, as part of the Structural Adjustment Programme, many developing countries have adopted intergovernmental fiscal mechanisms to mitigate the adverse impact on the poor.

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Ghana adopted decentralization reform in 1988 as part of its institutional reform to make government more responsive to the needs of its citizens. The local government system was envisaged to encourage participatory governance for socio-economic development (Ohene-Konadu, 2001). Ghana's Local Government Act, 1993 (Act 462) provides that MMDAs shall have sound financial bases with adequate and reliable sources of revenue to deliver on their mandates. Thus, they are empowered to collect revenue and make expenditure decisions so as to carry out their assigned functions for local level development. But according to Faguet et al (2014), the local government system has failed to deliver effective and equitable local services in Ghana due to inadequate financial resource.

In order to deepen and consolidate the gains of Ghana's decentralization policy, the country launched the fiscal decentralization policy in 2010 in line with the principle of allowing the "finances follow the function". Thus, the fiscal decentralization policy seeks to fill the gap between the decentralized functions and fiscal resources (DACF, 2014). Therefore, the central government budgetary allocations and other governmental transfers, as well as the Internally Generated Funds are expected to be sufficiently available to the local governments to cover the total cost of providing local services to their citizenry.

The fiscal reform has been characterized with some level of improvement in the local government finances, which can have impacts on poverty. For instance, an increase in public spending at the subnational levels on basic health and education could promote human capital development of the poor. Poverty is multi-dimensional in nature and may be influenced by different factors. Fiscal decentralization has become an important part of Ghana's fiscal policy, which covers many different types of public expenditure that may have the potential to reduce poverty. The main question that arises is that, what are the local development implications of Ghana's fiscal decentralization reform? The specific objectives of this study are therefore informed by this question.

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Public spending such as DACF can have some poverty impacts. For instance, these transfers could be applied to infrastructure development in poor areas, strengthen legal processes that fail to benefit the poor, complement revenue mobilization efforts, among others. Pro-poor transfers may be targeted at providing basic services to the poor however, these indirect transfers are not necessarily less important than direct cash transfers. The multidimensional nature of poverty and deprivation especially in local communities resonates with the theoretical representation of standards of living.

According to Sen (1999), poverty is a complex concept that needs to take into consideration people's diverse characteristics and circumstances. The poor lack not only income, but also education, health, justice, credit and other productive resources, and opportunities. Thus, poverty should be seen as deprivation of capabilities, which then limits the freedoms to achieve progress rather than low income. Thus, poverty becomes failure in capability and human development advances. In the Ghanaian context, the fiscal decentralization policy reform and the inter-governmental relations may affect different aspects of poverty including access to education, health services, and good sanitation aside from improvement in income.

In terms of expenditure allocation, cash transfers have been noted to effectively ameliorate the impact of poverty. Therefore, the common fiscal policy prescription is that taxation should mostly focus on generating revenue for social and pro-poor expenditures (Bird and Zolt, 2005). However, critics argue that whilst financial transfers from central government may help the lower-tier governments finance the provision of public services, they can obviate the need for local revenue generation, which may undermine the fiscal autonomy of the local governments. Intergovernmental transfers have "crowding-out" effects on the generation of local revenue whereby external transfers can sap incentive for sub-national governments to collect their own revenues Buettner and Wildasin, 2006).

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In most African countries including Ghana, institutional capacity of local governments to collect taxes, particularly in rural areas with high poverty is weak (Fjeldstad, 2014). This weakness makes it extremely difficult for local governments in Ghana to mobilize adequate tax revenue. Ghana offers an interesting setting for an experiment on the impact of fiscal resource transfers on revenue and poverty. The country has experienced moderate economic growth over the last decade, however, this growth has not translated into a significant decline in poverty rates (Fosu, 2008). While poverty rates remain high, the ongoing fiscal policy reforms are expected to lessen the menace in the country. It is therefore expected that, fiscal decentralization, which guarantees grant transfers to the MMDAs, is likely to have an important role in reducing poverty in Ghana.

1.2 Problem Statement

Ghana's per capita GDP reached $1,326 in 2010, making it a lower-middle income country. Also, the country has experienced significant decline in national poverty over the recent years however, such gains have not benefitted all sections of the society including the poorest (GSS, 2017). The country's national poverty rate declined more than half from 52 percent in 1991/1992 to 23.4 percent in 2016/2017 (GSS, 2017). Compared to a significant decline in consumption poverty of 7.7 percentage points for the period 2005/2006-2012/2013, the rate declined marginally by 0.8 percentage points for the 2013/2014-2016/2017 period whilst extreme poverty increased from 2.2 million to 2.4 million for the latter period *(ibid)*. These indicators suggest a slow progress towards achieving the Sustainable Development Goals (SDGs) on ending all poverty in all forms by 2030.

Several programmes including the Livelihood Empowerment Against Poverty (LEAP), Capitation Grants and School Feeding Programme, and the Free Senior High School Programme have been implemented to alleviate poverty especially among the vulnerable population. However, these programs have not resulted in any significant decline in the

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country's poverty profile. The decentralization policy gives the authority to the MMDAs among other things, to plan, legislate, budget and execute programmes for the development of the various localities.

Accordingly, the 1992 Constitution of Ghana established the District Assemblies Common Fund (DACF) as a means of proving central government financial support to the MMDAs. In 2018, total net financial transfers to the MMDAs amounted to GH₵863 million, which resulted in the provision of over 1,200 sub-projects including educational and health projects, water and sanitary facilities at the local communities across the country (MLGRD, 2019). Additionally, the MMDAs are mandated to collect tax and non-tax revenues to finance local expenditures. This fiscal reform was intended to provide MMDA with sound financial base with adequate and reliable sources of revenue (Asibuo, 2000) in order to deliver public goods to citizens. However, inadequate funding and untimely disbursement of funds remains a critical factor obstructing Ghana's decentralization policy.

Fiscal decentralization was adopted in 2010 to grant financial autonomy to MMDAs whereby the local authorities become initiators and implementers of development in their respective jurisdictions. In line with the objectives of the policy, DACF component of the total grants to the MMDAs have increased significantly from GH₵150 million in 2009 to GH₵1.61 billion in 2019 representing more than 900 percent increase over the period (MoF, 2020). Despite the rising levels of grants to the local governments, local revenue mobilization efforts remain low over the years. For instance, a total amount of GH₵1.34 billion representing 63 percent of local government budget was funded by central government grants whilst they only managed to mobilize GH₵365 million as IGF in 2019 (MLGRD, 2020).

Local revenue mobilization is relatively low whilst expenditures are high in Ghana, compared to its peers in Sub-Saharan Africa. Countries such as South Africa, Rwanda and Kenya in the

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Sub-Region reported higher local revenue-to-GDP ratio compared to Ghana over the period 2010-2016 (see Table 1), a phenomenon mainly attributed to effective use of technology in the mobilization of revenue in those economies. Moreover, it is worth noting that Kenya has experienced significant improvement in local revenue over the period, which is characterized by substantive local government reform. In Table 1, the high performing country in terms of local revenue mobilization is South Africa. As revenue-to-GDP ratio for South Africa rose from 7.6 percent to 8.3 percent for the period 2010-2016, Ghana's ratio deteriorated from 1 percent to 0.7 percent over the same period.

Table 1: Local government revenue and expenditure as a percentage of GDP in some selected SSA Countries, 2010-2016

Country	2010		2011		2012		2013		2014		2015		2016	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Ghana	1	0.9	0.9	1	0.8	0.8	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.7
Malawi	NA	NA	1.4	1.1	1.3	1.1	1.2	1	0.7	0.6	0.9	0.7	0.8	0.6
Mauritius	1.1	0.8	1	0.8	1	0.7	0.9	0.8	1	0.8	0.5	0.4	0.9	0.8
Tanzania	NA	NA	NA	NA	4.1	3.3	4.2	3.5	4.2	2.8	3.3	3.3	4.1	3.7
Uganda	3.4	3.1	3.1	2.9	3	2.8	2.9	2.8	3.2	2.9	3.1	2.9	3.1	2.8
Kenya	0.6	0.6	0.8	0.6	0.5	0.7	NA	NA	4.4	2.1	4.2	2.8	4.4	2.9
Rwanda	NA	NA	NA	NA	NA	NA	NA	NA	5.6	4.4	5.7	4.3	5.6	4.2
South Africa	7.6	7.2	8.3	8.1	7.7	7.2	7.8	7.3	8	7.5	8.2	7.6	8.3	7.3

Source: IMF Government Finance Statistics, 2019, NA=Not Available
A=revenue/GDP ratio, B=expenditure/GDP ratio

Moreover, local government expenditure-to-GDP ratios in most of SSA countries are lower compared to their revenues-to-GDP levels. For instance, whilst Kenya recorded revenue-to-GDP ratio of 4.4 percent in 2016, its expenditure-to-GDP ratio stood at 2.9 percent. Similarly, in 2016 Malawi mobilized 0.8 percent of its GDP as local government revenue whilst its spending was 0.6 percent of GDP. This trend suggests that many of the SSA local governments in this sample runs budget surplus, and hence accumulates local government savings. However, Ghana's local government expenditure-to-GDP is virtually at par with its revenue-to-GDP ratio over the same period, suggesting lack of savings.

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According to Oates (1999), fiscal federalism and political innovation and would enhance growth and income. Moreover, Bradford and Oates (1971) noted that under certain political arrangements, a lump sum transfer to a local government and an identical increase in private income may create the same effect on public expenditure. This hypothesis suggests that transfers have no adverse impact on local revenue. However, other schools of thought hold the view that grants discourage own-source revenue mobilization via the flypaper effect (see Turnbull, 1998; Masaki, 2018). Thus, transfer serves as a disincentive to local revenue mobilization at the subnational level.

Theories of political economy of grants postulates that manipulation of grant distribution formula based on the political incentives may result in inefficient allocation of resources (Samuelson, 1954; Musgrave, 1959; Oates, 1999). The Core Supporter Model assumes that politicians are like risk-averse investors who will allocate more grants to areas in which their political support is concentrated in order to have assured returns (Cox and McCubbins, 1986). Thus, grant systems may be manipulated in reward of political loyalty. However, the Swing Voter Model assumes that voters have preferences for political parties, which they are willing to compromise for economic benefits. Thus, political influence in grants allocation would target districts with more swing voters (Dixit and Londregan, 1998). Banful (2011) and Fumey (2018) in Ghana found that successive governments targeted swing districts than aligned districts in the distribution of DACF.

Although a plethora of country-specific studies have been conducted, the focus has been predominantly on the developed countries (see Lui 2014, Checherita et al., 2009; Dahlberg et al., 2008; Veiga and Pinho, 2007; Buettner and Wildasin, 2006; and Zhuravskaya, 2000). Developing countries and for that matter SSA has not received fair attention relative to its counterparts from other parts of the world especially the developed economies. Although some studies have been done on few countries in Africa (see Fumey, 2018; Caldeira and Rota-

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Graziosi, 2014; Caldeira, 2012; Banful, 2011), the focus has largely been on the political economy of grants with very little attention on local revenue mobilization, and poverty. Also, assessment of the impact of fiscal decentralization on poverty is virtually non-existent on Ghana.

Empirical studies on fiscal decentralization, revenue performance and poverty also reveal mixed conclusions. While some studies have found that grants were more responsiveness to local needs (see, Brollo, et al. 2013; Olken, 2007; Reinikka and Svensson, 2005; Crook, 2003), complements revenue effort (Caldeira and Grota-Graziosi, 2014), others found that grant system creates serious fiscal misalignments at the centre (Smoke, 2004) and crowds-out local revenues (see Mogues and Benin, 2012; Buettner and Wildasin, 2006; Zhuravskaya, 2000). Thus, there is no consensus in the empirical literature on the relationship between grants, revenue and poverty. Moreover, amidst the ensuing controversy, I find that work on Ghana is very scanty. This study contributes to the debate on decentralization and poverty in the context of developing economies. The novelty of this study is that it seeks to investigate how grants-revenue nexus affects poverty in Ghana.

1.3 Motivation of the study

World Bank (1993) emphasized the relevance of local government system as part of the structural reform process. This recommendation is based on assumption that efficient public resource management requires major institutional and governance reform. Similarly, Cochrane (1983) noted that a series of World Bank reports in the 1980s recommends that public sector efficiency in a modern developing country should be measured by the ability of the central government to mobilize resources at lower levels of its governance structure.

Likewise, decentralization can bring service agencies closer to poor communities and enhance people's control of basic services. This reform therefore presents the opportunity to attack

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poverty eradication in a meaningful way (World Bank, 2000). Following the adoption of the decentralization policy in 1988, the fiscal component of the reform was implemented in 2010 to provide sufficient financial support to MMDAs with the mandate to mobilize IGF to support developmental projects in their localities. However, low fiscal space in Ghana tends to affect central government transfers whilst revenue generation capacities of the local authorities remain low.

Over the recent past, public finances in Ghana have come under severe pressure, resulting in capital expenditure compression and worsening fiscal deficit. This increasing fiscal slippages culminated in increasingly high debt burden, where new loans are secured to service outstanding debts. Subnational governments are assigned statutory responsibilities to provide certain local public goods to its citizenry but there exist imbalances between their revenue-mobilization capacities and the assigned expenditure mandates. This fiscal gap is more onerous in developing countries where local governments' taxation powers are often limited (Smoke, 2004) and hence could not provide sufficient funding for the provision of basic local public services.

Some economists and governance experts have argued for strengthening the fiscal decentralization institution so that the MMDAs can achieve fiscal autonomy to deliver on their mandates. Currently, the Local Government Finance Bill is being considered by the Parliament of Ghana to ensure that the MMDAs float municipal bonds to finance cash-strapped district and municipal projects (MLGRD, 2019). These bonds are expected to be anchored on revenues from the assemblies to ensure sustainable repayment and financing, which would spur local development.

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The MMDAs have experienced low revenue mobilization over the decades, a situation that is partly attributable to the guaranteed flow of grants from the central government. Generally, they lack the capacity to collect adequate revenue whilst in many of the Assemblies, tax collection procedures are based on manual processes. Local governments on average collect less than one percent of total government revenues (see Figure 1), a situation that is attributed to huge informality in the economic activities, lack of operational tax offices and bank accounts that could facilitate voluntary tax payment (Oppong, 2020).

The Local Government Act, 2016 guaranteed the minimum threshold of 5 percent of national revenue to the MMDAs in addition to the authority to impose certain levies. However, the MMDAs currently face low revenue challenges, suggesting that the legal and institutional reforms are not enough to stimulate revenue efforts. Compared to 2011, local government revenue as a percentage of total subnational revenue rose from 19.3 percent to 23.3 percent in 2018 whilst local revenue to central government revenue ratio declined from 0.85 percent to 0.72 percent over the same period. Thus, although local government revenue as a percentage of subnational revenue has shown some moderate improvement for the period 2011-2018, local revenue relative to national revenue has been on the decline (see, Figure 1). This trend shows that MMDAs lack the capacity to collect revenue. According to Smoke (2001) in countries where there is a strong political will, decentralized reforms could overwhelm subnational government capacity, which may result in low revenue performance.

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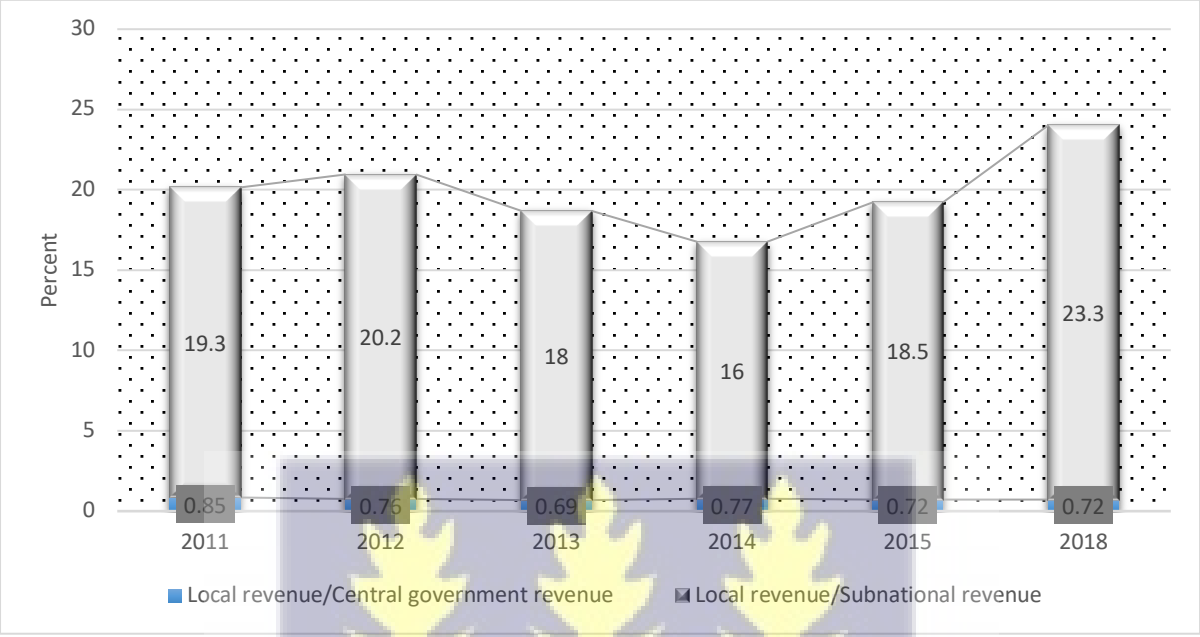
Figure 1: Share of local revenue in total government revenue in Ghana, 2011-2018



Source: MLGRD and MoF data

The Government of Ghana in collaboration with VNG International launched the Tax Revenue and Economic Enhancement (TREE) program in 2018 to enhance revenue mobilization efforts in the local authorities. The program employs new technologies such as the Taxman software in the collection of rates and administration of tax revenue in the subnational level. The four-year program was part of a grant facility from the Royal Netherlands Government to enable the local authorities eliminate inefficiencies that impede local revenue mobilization, and improve participatory governance for effective local service delivery (MLGRD, 2019). The TREE project denotes a revenue collection-led strategy that is intended to build institutional capacities of the MMDAs for economic development.

Central government transfers to DACF has increased over the years despite its inadequacy relative to the needs of the Assemblies and the perennial delays that characterizes its disbursement. In some districts, the DACF covers 80 percent to 90 percent of annual expenditure (DACF, 2014) but the 5 percent allocation of national revenue remain relatively inadequate compared to 34 percent in South Africa (Mogues and Benin, 2012). Figure 2 shows the breakdown of DACF releases on quarterly basis over the decade 2008-2018. It is evident

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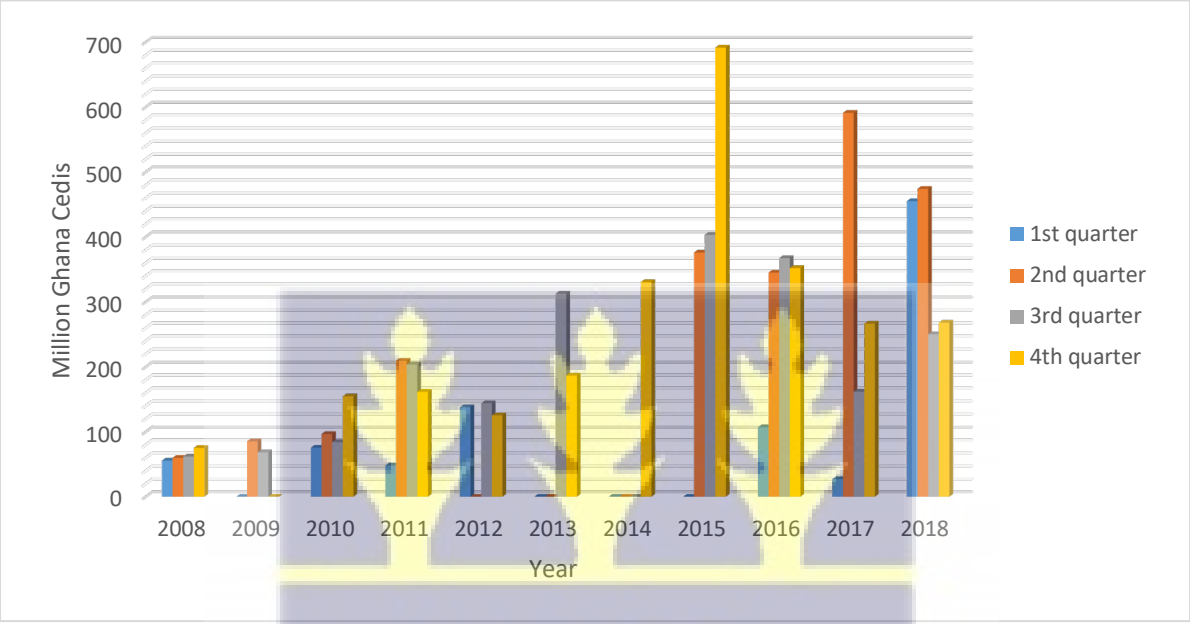
that DACF releases do not follow any regular trend, suggesting that funds are released based on availability of national revenue.

Figure 2: Trend in quarterly releases of DACF in Ghana, 2008-2018



Source: Ministry of Finance online data

Moreover, delays in the release of funds creates uncertainty and unpredictability in the grants system. For instance, in 2001, only 35 percent of the budgeted DACF was released whilst the remaining 65 percent was paid in instalments over five-year period (DACF, 2014). This was targeted at reducing government expenditure in order to downsize government fiscal deficit, but contravenes the rules governing the DACF administration. Additionally, the first half 2018 witnessed relatively higher and stable DACF transfer compared to the second half where releases fluctuated and reduced significantly. This practice is inconsistent with reliability, predictability and sustainability criteria of a good transfer system (Smoke, 2006) and may undermine proper planning and smooth implementation of the MMDA composite budgets. It is against this background that there is need for local governments to mobilize more revenue from the local economy to complement these transfers in order to carry-out their developmental mandates.

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The Supreme Court of Ghana ruled in 2019 declaring unconstitutional, government attempt to cap funds allocated to the DACF. Consequently, the Court indicated that the total national revenue, which 5 percent is allocated to the DACF should include Annual Budget Funding Amount (ABFA) and Non-Tax Revenue paid to the Central Government. This decision of the apex court, and other government interventions indicate a national commitment towards providing sufficient financial support to the MMDAs. However, achieving revenue autonomy requires effective institutions but rules and procedures at the local government level in Ghana still remains at its nascent stage. For instance, whilst there is a robust auditing procedure that reports financial statements to the central government, these statements are not readily available for the public to hold their local authorities accountable. The Auditor-General's report of MMDAs in 2012 attributed lack of accountability in the local governments to weak internal controls. This is exacerbated by the inability of the local authorities to elect their own MMDCEs, who are appointed by the central government and therefore cannot not directly hold them accountable for their stewardship.

Therefore, the key relevant question that requires answers is, why have the MMDAs have not been able to mobilize sufficient revenue to support local development projects? No comprehensive study has been conducted to find possible answers to this question. By analysing the grants-revenue-poverty nexus, it is possible to formulate policies that can help improve local government financing for national development.

1.4 Research questions

It is difficult to state a priori the effect of grants on revenue performance, and poverty at the local jurisdictions. Fiscal decentralization promotes local development if grants to local governments improve poverty but retards development when transfers rather stifles poverty reduction efforts. Intergovernmental framework in Ghana comprises one-way financial resource flows from the central government and development partners to the subnational

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governments. The distribution of District Assembly Common Fund and District Development Fund components of the transfers are formula driven where sociodemographic characteristics of the assemblies are largely considered.

Generally, fiscal decentralization is measured as subnational expenditures as a percentage of national expenditure, and subnational revenue as a percentage of national revenue. Internally Generated Funds (IGF) Retention Act, 2007 empowers MMDAs to retain 100 percent of their own-source revenues. Moreover, responsiveness factor has been incorporated into the DACF distribution formula to provide incentives to MMDAs to mobilize local revenues and reduce reliance on central government grants. However, revenue mobilization remains abysmally low whilst expenditures have increased significantly in the MMDAs over the years. This study attempts to find answers to some pertinent questions regarding central government grants and its impact on revenue mobilization and poverty in Ghana. The research questions of the study specifically are:

i. What is the effect of transfer grants on local revenue mobilization in Ghana?
ii. What are the effects of local revenue and transfer grants on poverty in Ghana?
iii. To what extent is DACF disbursement influenced by political considerations other than development needs of districts in Ghana?

1.5 Objectives of the study

The broad objective of the study is to explore the relationship between fiscal decentralization and local development in Ghana. The study specifically seeks to:

i. examine the effect of transfer grants on local revenue mobilization in Ghana
ii. evaluate the effects of local revenue and transfer grants on poverty in Ghana
iii. estimate the extent to which DACF disbursement is influenced by political considerations other than development needs of districts in Ghana.

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1.6 Significance of the study

Decentralization has the potential of improving government response to the needs of the poor (World Bank, 2008). However, the Government of Ghana noted that the major challenge to the implementation of decentralization policy is financial inadequacy at the subnational level (MLGRD, 2010). In view of this challenges, the government adopted the fiscal decentralization strategy to ensure that MMDAs have sound fiscal base and sustainable revenue sources to deliver on their mandates.

As part of the criteria for MMDAs to enjoy significant proportion of grants such as the DACF, District Development Fund (DDF) and Urban Development Fund (UDF), they are required to improve local revenue efforts, and improve poverty indicators. For instance, qualification to access DDF is tied to Functional and Organizational Assessment Tool (FOAT), a regular performance assessment tool that prioritizes improvement in water and sanitation services, education and health delivery, transparency among others (UNICEF/CDD/CSPS, 2019). However, there is very scanty empirical studies on the grants-revenue-poverty nexus in Ghana.

The contribution of this study to literature covers the following areas. First, unlike the previous studies, we examine the effect of grants on local revenue through the flypaper effect by estimating both revenue and expenditure models. The theory of flypaper effect predicts that transfer grants to subnational government crowd-out local revenue. Most of the studies conducted in developed economies employed only expenditure models to extrapolate their findings without estimating revenue models (see, Cardenas and Sharma, 2011; Kakamu et al, 2014; Yu, Wang and Tian, 2016; Yacoub and Lestari, 2019). Moreover, studies in SSA estimated only revenue models without first estimating the expenditure models (see, Caldeira and Rota-Graziosi, 2014; Nangoli et al, 2015; Masaki, 2018; and Taiwo, 2020).

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Second, we estimate the district-level poverty for Ghana using poverty decomposition technique "POVDECO" developed by Jenkins (1998) based on the household-level poverty in Ghana. The household-level poverty is extracted from the GLSS 7 data to examine the effect of local government grants and local revenue on poverty in Ghana. Moreover, we employed econometrics analysis to examine the effect of local service delivery on the living condition in communities (community poverty) using the community-level data in the GLSS 7. This analysis provides some fair knowledge about how fiscal decentralization impacts poverty in the local communities in Ghana. The use of econometric approach and nationally representative data in estimating the welfare impact of local service delivery on communities makes this study unique and different from other studies that are qualitative and limited to particular districts or regions.

Third, the thesis assesses the extent to which political considerations influence DACF disbursements other than development needs of local assemblies in Ghana. Banful (2011) and Fumey (2018) in Ghana examine the political economy of grants to local governments from 1994-2005 and 1994-2004 respectively. Following the theoretical argument of Veiga Pinho (2007) and Dahlberg Johansson (1998), Fumey (2018) argue that a district is classified as politically swing when the difference in vote shares between the incumbent party at the centre and its main opponent in the last parliamentary election is weakly less than 67 percent of the total valid votes cast. This theoretical threshold coincides with the constitutional constraint that requires parties in Ghana to obtain two-thirds majority in parliament in order to unilaterally enact laws. As theoretically sound this threshold might be, analysis of the district election results in Ghana suggests that some districts have been ruled by one party since 1992 although obtaining less than the 67 percent vote shares. We therefore complement the 67 percent threshold with the dominance of parties in districts since 1992 to determine swing and non-swing districts.

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This thesis examines how transfer grants affect revenue mobilization and poverty in Ghana. This work will help economic managers to better understand the extent to which grant and poverty correlate in order to adopt efficient policy instruments towards achieving set targets that are germane to local development. It will also be useful to international development partners and donors to better appreciate grants-revenue-poverty nexus for control and regulation purposes in order to minimize any adverse effect that may accompany grants in Ghana.

1.7 Data Source

The data used in this thesis are obtained from the Ghana Living Standard Surveys (GLSS), Ministry of Finance, Ministry of Local Government, Decentralization and Rural Development, and Ghana Statistical Service. The GLSS is conducted by the Ghana Statistical Service with support from the World Bank, which provides information on household and individual level variables covering all the administrative districts in Ghana. Currently, Ghana has seven rounds of this survey thus, GLSS 1 to GLSS 7. The first round of the GLSS was conducted in 1986/1987 whilst the most recent one was in 2016/2017. The empirical analysis uses poverty data from the GLSS 7 and other socioeconomic data from the above-referenced sources to study the relationship between grants, local revenue and poverty in Ghana.

The fiscal data on Municipal, Metropolitan and District Assemblies were extracted from the MMDAs Annual Composite Budgets from the Ministry of Finance. Upon the full implementation of the fiscal decentralization in 2012 and the creation of the Fiscal Decentralization Unit of the Ministry of Finance, MMDAs were required to report information on their expenditures, local revenue receipts, and external revenue inflows, which are published in the Composite Budget. Moreover, data on demographic characteristics of the MMDAs such as population estimates, population density, and geographical size were

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obtained from the Budget. Also, data on staff strength of the MMDAs were obtained from the Ministry of Local Government, Decentralization and Rural Development.

1.8 Outline of the thesis

The research questions as well as the objectives of the study stated above clearly requires an empirical analysis. Examining the effects of fiscal decentralization on local development requires comprehensive analysis on the overview of the policy in Ghana and extensive review of the literature. Such exercise often involves review of the theoretical and empirical literature on the subject matter. Therefore, Chapter Two presents the overview on decentralization, revenue and poverty performance whilst Chapter Three presents the literature review.

Chapter Four focuses on examining the effect of transfer grans on local revenue. Whilst many empirical studies found that transfer grants crowd-out local revenue, Caldeira and Rota-Graziosi (2014) in Benin found that central government grants crowd-in local revenue in developing countries. We employ panel analysis to examine the crowding-out or crowding-in effect of grants on local revenue by estimating expenditure and revenue models. Thus, the effects of grants on local revenue is examined by testing the existence or otherwise of flypaper effect in local government fiscal decision in Ghana.

Chapter Five presents empirical analysis on the effect of grants and local revenue on poverty in Ghana. The country is a signatory to international agreements, which seeks to promote participatory democracy, and good governance. These agreements include the Kigali Declaration (2005) on Leadership Capacity Building for Decentralized Governance and Poverty Reduction in SSA. Fiscal decentralization policy seeks to provide the financial support through grant mechanism and promotion of local revenue mobilization for local development. Therefore, we examine how grants and local revenue affect poverty reduction by using the GLSS 7 data and fiscal data extracted from the MMDA composite budget. The GLSS data

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measures poverty at the household level but the data is aggregated to the district level by the use of econometric technique. Furthermore, we examine the development effect of the decentralization policy by assessing how local service delivery affects perception on living condition at the community level.

Chapter Six focuses on measuring the extent to which local government grant is politically manipulated using the politically aligned and swing voter models. In addition, we employed the decomposition approach proposed by Blinder (1973) and Oaxaca (1973) which was originally applied to study labour market outcomes to assess the proportion of transfer inequality among the assemblies that is explained by variations in district characteristics. Krö̈ger and Hartmann (2020) latter extended the Kitagawa-Oaxaca-Blinder decomposition approach that could be applied to panel data. Finally, in Chapter Seven, we provide the summary of key findings, policy recommendation and outline the limitations of the study as well as areas for future research.

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Chapter Two
Overview of Local Revenue Performance and Poverty in Ghana

2.0 Introduction

Ghana's fiscal decentralization is expected to enhance participatory governance, improve service delivery, to facilitate socio-economic development (Ohene-Konadu, 2001). The Fiscal decentralization programs, intergovernmental relations, as well as poverty reduction strategies all require information on the resource movement patterns to the local authorities for effective formulation and implementation of policies. Analysis of the impact of fiscal decentralization on local development hinges largely on the knowledge of fiscal and poverty performances in the local authorities. This chapter presents overview of decentralization, the trend in local government fiscal performance and poverty in Ghana.

2.1 Decentralization in Ghana

Ghana has adopted several policy reforms to accelerate its development agenda both at the national and local level. The local government system could be traced to the country's old colonial rule and the British indirect rule system, which was centred on native authorities comprising traditional Chiefs or the local royalty (Ayee, 1999). In view of this development agenda, the Local Government Act, Act 54 of the 1961 was enacted after independence to provide a roadmap for the devolution of governance to the local areas.

The decentralization strategy espoused in Act 462 forms the foundation of Ghana's modern-day decentralization framework that according to MLGRD (2010) hinges on four main (4) interrelated pillars namely:

i. Political decentralization
ii. Administrative decentralization
iii. Decentralized planning

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iv. Fiscal decentralization

Institutional reforms towards political decentralization were promoted since 1983. Although committees and councils became part of the decentralization process since 1988, they were formally established in 1999 through an election of Committees of 16,000 in addition to 1,276 Urban/Town/Area and Zonal Councils (Twum-Baah, 2000). Yankson (2007) notes that a survey of the traditional authorities suggests that most traditional chiefs considered the District Assembly concept as a positive reform. The decentralization reform has been considered as a success despite the problems and deficiencies characterizing its implementation. Twum-Baah (2000) noted that the reform has engendered successful project implementation, enhanced local participation and growth, but the overall growth has not benefited the poor.

The formal political decentralization did not occur until 1988 where the Provisional National Defence Council (PNDC) Local Government Law 207 provided the landmark legislation for the commencement of the local government system in Ghana. The PNDC Law 207 became an entrenched provision in Article 240 of the 1992 Constitution of Ghana, which provides a broad framework for the country's decentralization policy reform (Adusei-Asante and Hancock, 2012). Ghana's local government system is expected to be as practicable and be decentralized to facilitate local development.

Administrative decentralization adopted in 1983 sought to promote power sharing, and capacity building at the district level in order to reduce reliance on the central government for local government functions (Arthur, 2006). In 1993, the Local Government Act was introduced as new legal framework to decentralize development process in Ghana. This reform comprises the establishment of Regional Coordinating Council, four-tier Metropolitan and three-tier Municipal/District Assembly structure to perform the overall administrative functions including budgeting and planning of the development of the districts.

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Currently, Ghana operates a multi-party system with a presidency, cabinet, parliament and independent judiciary system and the press. The governance system comprises a central-level administration with bureaucratic structures including Ministries, Department and Agencies (MDAs) to oversee planning and implementation of program. For administrative and political purposes, the country is divided into 16 regions and 261 districts (MLGRD, 2019) as well as several other sub-district structures to fulfil the political and administrative functions under the decentralization framework.

The local government system of Ghana is therefore divided into Metropolitan, Municipal and District Assemblies (MMDAs) depending on the population size of an area for administrative and more importantly development-oriented purposes. Thus, the MMDAs forms the basic unit of the decentralization policy and local government system in Ghana. They are statutorily mandated to ensure the overall development of their local jurisdictions through Internally Generated Funds and disbursement of intergovernmental transfers as per the Local Government Act, 1993 of Ghana thus Act 462 (MLGRD, 2019).

In light of the growing demands on MMDAs to deliver local services to match the development needs in their jurisdictions, Act 462 confers the power on the President to declare an area Metropolitan, Municipal and District as it may be necessary, based on the recommendations from the Electoral Commission. Pursuant to Section 1(4) of the Act 462, population and economic viability of the area are used as the basis to create new districts. According to this provision:

i. an area with a minimum of two hundred and fifty thousand (250,000) people is conferred as a Metropolitan
ii. a geographical area consists of a single compact settlement with a minimum of ninety-five thousand (95,000) people is considered as a Municipality

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iii. a locality can be declared a District when there is a minimum population of seventy-five thousand (75,000) people

iv. an area with the geographical contiguity and viable to generate adequate monetary and other resources to provide basic infrastructure and other development needs for itself could be declared as a district

Considering the statutory provisions above, it is obvious that the population requirements does not need any effort to attain the status of an MMDA. Ghana's population according to the Ghana Statistical Service (2013) has a high annual growth rate of 2.5 percent. The second requirement of economic viability of an area however constitutes an important determinant of functionality of the districts as it relates to the fiscal autonomy and statutory responsibility, which determines the overall development of their jurisdictions.

As part of the implementation of the fiscal decentralization policy, a performance-based budgeting approach was adopted to achieve "District Budgeting" system as defined in section 92(3) of the Act 462. The Act 462 defines District Budget to "include the aggregate revenue and expenditure of all departments and organizations under the District Assembly and the District Coordinating Directorate, including the Annual Development Plans and programs of the departments and organizations under the Assembly". Effective local service delivery requires adequate and appropriate financing arrangements to make the local governments more responsive to the public needs. Therefore, fiscal decentralization entails providing financial autonomy (MLGRD, 2010) where MMDAs takes initiatives to mobilize revenue and implement development in their jurisdictions.

According to MLGRD (2010), the policy objective of the fiscal decentralization policy is to improve funding and financial management of the local authorities through the following measures:

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i. implementation of the district composite budgeting system
ii. improving local revenue generation through identification and harnessing of alternative revenue sources
iii. facilitation of revenue assignments so that the composition of revenue sources depends on the type of expenditures assignments at each level of government
iv. harmonization and review of legislation on fiscal decentralization
v. implementation of intergovernmental fiscal framework

In the context of decentralization in Ghana, development largely encompasses provision of infrastructure, facilities and district services at the local levels that include provision of sustainable clean water and sanitation, schools, clinics, roads, and waste management facilities and associated services (DACF, 2014 and Shirazu, 2013). Therefore, it is obvious that MMDAs need to have the capacity to mobilize adequate and stable revenues to achieve the development as envisaged with the decentralization system in Ghana.

2.2 Local Government Revenue Sources

The fiscal decentralization policy in Ghana assigns fiscal authority to Municipal, Metropolitan and District Assemblies (MMDAs) to mobilize local resources to finance local services. Local Government Act, 2016 section 144-145 empowers the MMDAs to set and levy rates and other taxes. The low revenue performance among the MMDAs brings to light pertinent concerns about the fiscal capacity of the local authorities. The cost of tax administration, identification of taxpayers, and the competitiveness of tax bases are at the centre of the debate. Many of the MMDAs are not able to fully utilize the taxing authority and hence weakens their ability to expand their revenue autonomy (Mogues and Benin, 2012). The key sources of Internally Generated Funds (IGF) for the MMDAs comprise rates, fees and fines, license, land, rent, investment and miscellaneous sources.

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Fees and Fines

Fees refer to revenue generated from public consumption of local services and facilities. These include market tolls, fees from slaughter houses, which is determined by the extent to which facilities are used. Fines comprises funds from payment of penalties for noncompliance with assembly bylaws. This include stray animals, parking restrictions, flouting building regulations, among others. Over the recent years, fees and fines constitute the largest component of Internally Generated Fund (IGF) for the MMDAs except in 2013 where its share fell from 28.5 percent to 24.4 percent compared to the previous year. However, its share rose to 29.4 percent at the end of 2016 (see Figure 2).

The Chief Executives of the MMDAs who are the political appointees of the president, who lead the fee fixing process in consultation with members of the community whilst inputs are collated from the locally elected assembly members. The fee fixing resolution is then submitted to the government gazette, upon approval by the Minister for Local Government, Decentralization and Rural Development. In the process of approving the new rates, political heads may be reluctant in reviewing the rates upwards for fear of their party losing elections. Thus, the fee fixing process is susceptible to political influence whereby the central government may manipulate the rate setting to elicit electoral fortunes. Moreover, Section 150 of the Local Government Act, 2016 requires Ministry Local Government and Rural Development to issue guidelines for fixing rates each year but this has not been done since 1993 (MLGRD, 2018), a situation that has left tax rates low and the rate setting unguided.

Lands

Revenues from lands are levies imposed on the use of lands owned by the MMDAs for specific purposes such as burial ground, natural resource exploitation. In addition, revenue receipts from lands comprises permits, application for building permits and renewals, among others.

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The share of land revenue in the local revenues of the District Assemblies has risen significantly from 2.3 percent to 6.8 percent of total IGF over the period 2012-2016 (see Figure 2). Thus, local revenues from lands increasingly provide a major source of revenue for the local authorities in Ghana.

Rents

Rents are levies that are imposed on residential accommodation, market stores and stalls, classroom, lorry parks and grounds that are owned by the MMDAs and charges for placement of billboards. Prior to 2013, local revenues from rent represent the largest source of revenue, however its proceeds have fallen significant after 2012. Rents, returns on investments and miscellaneous revenue constitute minor sources of IGF to the MMDAs, falling below 2 percent of the total IGF as at the end of 2019 fiscal year (see Figure 2). Miscellaneous incomes are received in the form interests, dividends and returns on investments owned by the MMDAs.

Licenses and Permits

License and permits are imposed on business enterprises operating within the territories of the MMDAs. License constitutes the third major source of local revenue in 2019. This revenue source depends highly on the robustness of economic activities in the jurisdiction and the size of firms as well as the extent of capital use by firms in the Assemblies. The share of license and permits in the total local revenue generally depicts upward trend over the period 2011-2019. The license and permits revenue as a percentage of total IGF grew from 4.7 percent to 6.3 percent over the same period (see Figure 3).

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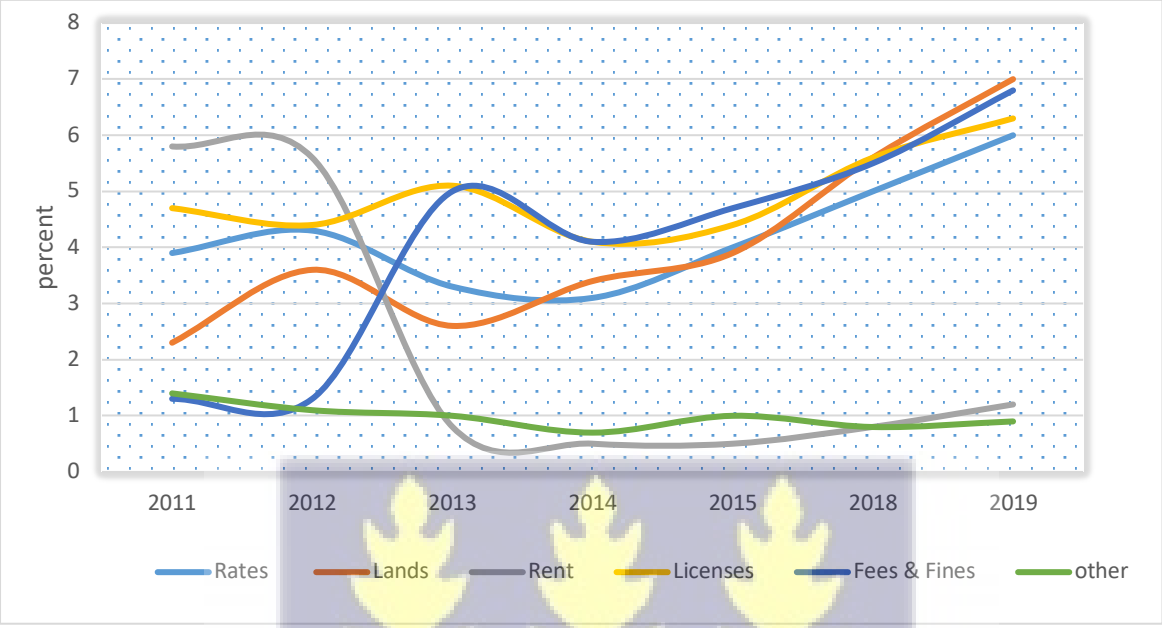
Figure 3: Shares of IGF sources in local revenue in Ghana, 2012-2016



Source: Authors computation based on MLGRD data

Rates

The economy of Ghana grew by 6.8 percent on average between 2010 and 2019 whilst population growth is estimated at 2.6 percent per annum (World Bank, 2020). This development trajectory in associated with surge in the construction of houses and other properties over the country. However, local governments have not leveraged on the boom in the construction industry to maximize property rates. The rates represented on average 18 percent of total IGF for the period 2010-2016, whilst grants constituted about 80 percent of total subnational revenue over the same period.

Section 146 of the Local Government Act, 2016 prescribes two types of rates thus, general rates and specific rates. The general rates are levied on properties and the rate is paid base on the assessed value of the residential properties and premises. The specific rates are imposed on any person considered as an adult thus, between the ages of eighteen (18) and seventy (70) who resides in a particular district.

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Property tax represents a good source of local revenue because of its broad base, revenue productivity, and stability in generating revenue for governments (Bahl and Cyan, 2011). By the nature of the rates, it is difficult to be avoided by rates payers. It is generally progressive and hence could provide economically efficient and socially equitable ways of generating tax revenue. However, the sector remains largely untapped in Ghana partly due institutional and political constraints on its administration. Property tax administration in Ghana is fraught with data challenges and lack of property valuation by Land Valuation Division of the Land Commission. Moreover, most homeowners in Ghana do not keep proper records of capital improvements and building cost especially on residential properties (Mogues and Benin, 2012). Furthermore, there are no official record on the sales and purchases of houses for tax purposes thereby limiting the database of houses in the districts.

Revenue from rates constitutes a very important source of revenue for local governments in Ghana. Despite the fact that revenue potential in the sector is under exploited, its share in total IGF formed the fourth largest source of local revenue to the MMDAs in 2019. The rates outperformed license in 2016 representing the second largest source of revenue in that year reaching 25.6 percent of the total IGF (MLGRD, 2018).

Revenue autonomy provides the right to the local authorities to introduce or abolish a tax, set tax rates, define tax base, grant tax relief to individuals and firms (Blochliger and Nettley, 2015). In the case of Ghana, the local authorities have the responsibility to design and collect rates and other revenues but have little control over the entire process. The rates are proposed by the Ministry of Finance and submitted to parliament for approval. Ghana Revenue Authority is responsible for administering the tax, pursuant to the Revenue Administration Act, 2016. This arrangement suggests that, the enactment and implementation of property tax are centralized thereby denying the local governments such autonomy.

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There are notable innovations in tax administration in recent years including the creation of large taxpayer units, which exploit scale economies, concentrating countries' efforts on central taxes. Taxes, duties and tariffs paid at the borders are relatively easier to collect than local taxes. These taxes include value added tax, corporate income tax and personal income tax (Baer, 2003). Local tax reform has not received the same support and attention in their design compared to the central ones.

2.3 Transfer Grants

Transfer grant forms the most important source of revenues to the local governments in Ghana (see Figure, 4). This circumstance confirms the findings of Shah (1990) who indicated that about 60 percent of local public spending in developing countries is financed through grants. The Government of Ghana usually transfer statutory grants to the MMDAs pursuant to the provisions of the Ghana's 1992 Constitution to complement their own-source revenue to undertake their developmental projects. However, the IGF revenue performance of the MMDAs vis-a-vis grants suggests high dependence on intergovernmental transfers over the period.

Fiscal resources from the central government to the local assemblies can be traced to various organisational levels. These levels include the Ministry of Local government, Decentralization and Rural Development, Local Government Service, Ministry of Finance, and the District Assemblies Common Fund Secretariat. The Office of Local Government Service administers the payments of emoluments such as the wages and salaries to central government staff who are serving in the various MMDAs. Other expenditure categories such as the goods and services, capital expenditure, and management grants are covered by the Budget of the Ministry of Local Government, Decentralization and Rural Development. Resources from the Ministry of Finance includes Highly Indebted Poor Country (HIPC) funds and ceded revenues.

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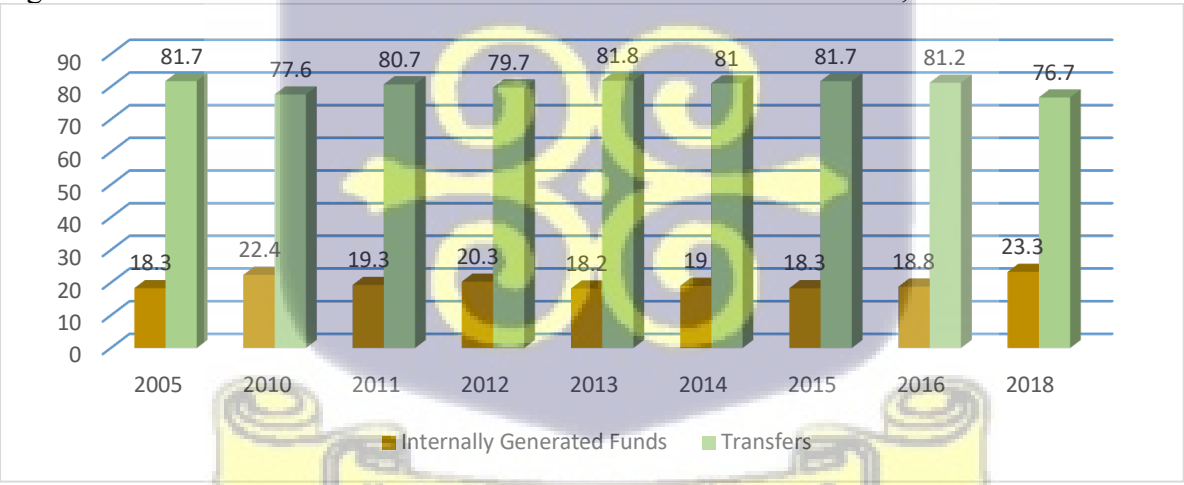
The main source of central government grant to the MMDAs is the DACF, which is disbursed to the local assemblies through the Office of the District Common Fund Administrator.

Moreover, programmes and projects are undertaken by different sectors especially decentralized departments with budget allocations from donors, non-governmental organizations (NGOs), and Ministries, Departments and Agencies (MDAs). Donors and NGO-financed projects are directly undertaken in the localities whose financial information are not captured by district financial data (Aryeetey and McKay, 2004). Such inflows of financial resources may significantly affect development in those beneficiary assemblies. Figure 4 shows the shares of the two major sources of funds to the MMDAs in Ghana covering the period 2012 to 2016.

Figure 4: Shares of MMDA revenue sources in total revenue in Ghana, 2005-2018



Source: MLGRDD data

The regional level data as shown in Table 2 depicts over reliance on grants by the MMDAs. The extent of dependence varies across the regions, and more predominant in the three Northern Regions and Volta Region of Ghana. For instance, in 2016, transfers constituted 94.2 percent of total revenue to the local governments in the Northern Region whilst Upper West and Upper East received 93.9 percent and 93.1 percent of total revenue as grants respectively. Volta region received 92.2 percent of its revenue as transfer grants. It is worth noting that, these regions constitute areas where poverty is relatively higher in Ghana.

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Dependence on transfers by local governments in relatively richer regions such as Greater Accra, Western Region and Ashanti are lower whilst their shares of own-revenue in the total revenue are higher. The allocation of higher amounts of transfers to the poorer localities is achieved through the use of transfer formula, which assigns more weights to poverty indicators. This trend suggests some attempts by successive governments to equalize the resource gap among the local authorities in Ghana.

Table 2: Local revenue per capita[1] performance by region, 2005-2016

Regions	**2005**					**2016**				
	Total revenue	Own revenue		Transfers		Total revenue	Own revenue		Transfers	
	GH₵	GH₵	percent	GH₵	percent	GH₵	GH₵	percent	GH₵	percent
Central	5.31	0.45	8.50	4.86	91.50	52.97	5.74	10.84	47.23	89.16
Greater Accra	9.64	3.91	40.53	5.74	59.47	71.56	27.20	38.02	44.35	61.98
Ashanti	5.29	0.82	15.49	4.47	84.51	48.31	10.67	22.09	37.64	77.91
Brong Ahafo	7.5	0.89	11.83	6.61	88.17	70.46	8.86	12.57	61.60	87.43
Upper East	8.59	0.46	5.32	8.14	94.68	66.81	4.59	6.86	62.22	93.14
Upper West	11.22	0.53	4.76	10.68	95.24	79.63	4.86	6.11	74.77	93.89
Volta	6.24	0.58	9.35	5.66	90.65	56.53	4.42	7.81	52.11	92.19
Northern	6.59	0.25	3.78	6.35	96.22	64.73	3.78	5.84	60.95	94.16
Western	5.92	1.37	23.14	4.55	76.86	61.45	17.19	27.97	44.26	72.03
Eastern	2.42	0.27	11.27	2.14	88.73	56.21	7.99	14.21	48.22	85.79

Source: Oppong, 2020. [1]calculated based on 2010 population census and formerly ten Regions of Ghana

From Table 2, total revenue received and local revenue per capita in all regions have increased significantly between 2005 and 2016. The local revenue per capita has increased more than 100 percent in all the regions, indicating that local authorities are gradually moving towards achieving revenue autonomy. The MMDAs in the Greater Accra, Ashanti and Western Regions have recorded better performance in local revenue mobilization over the period. Against the background of Covid-19 pandemic and its negative impact on national revenue, improving the local revenue performance among the MMDAs becomes crucial in generating adequate financial resources at the subnational level.

The major component of grant transfers to the MMDAs include Compensation of Employees (CoE), District Assemblies Common Fund (DACF), grants from donor partners, District

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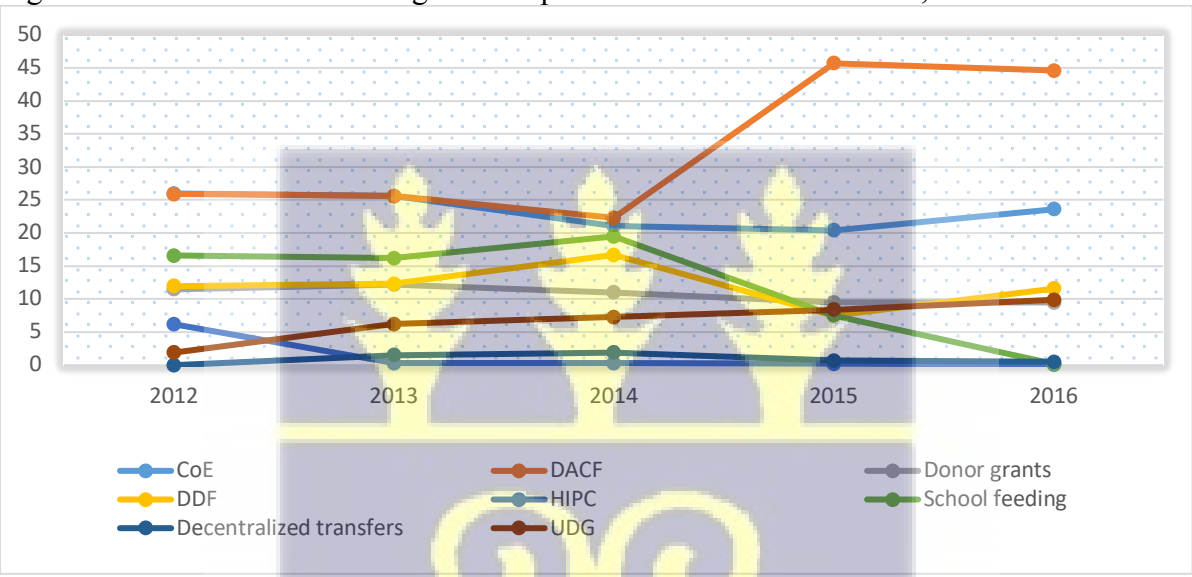
Development Fund (DDF), Highly Indebted Poor Countries Initiative Fund, School Feeding transfers, decentralized transfers, and Urban Development Grant. Figure 5 presents the composition of transfers to the MMDAs from 2012 to 2016. The Figure shows that DACF and CoE constitutes the largest share of transfers received by the local governments.

Figure 5: Trend in the shares of grant components to MMDAs in Ghana, 2012-2016



Source: Author's Computation based on data from MLGRD

Compensation of Employees (CoE) is direct salary payments to local government staff that work at the MMDAs. It constitutes the second largest transfer component, which was 23.6 percent of total grant to the MMDAs in 2016. The CoE grants are not transferred to the MMDAs for payment of salaries but are directly paid to the local government staff through the National Payroll system. This practice has the tendency to stifle both expenditure and revenue autonomy since there will not be any incentive on the part of the subnational government to mobilize sufficient revenue to pay salary and pension benefits of their staff.

District Assembly Common Fund

The District Assemblies Common Fund (DACF) constitutes the largest share of transfers to the MMDAs and has more than doubled over the period 2014-2016 (see Figure 5). The DACF was established under Article 252 of the 1992 Constitution to ensure equitable distribution of

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financial resources across the various localities. The Constitution requires that not less than 5 percent of the total national revenue be allocated to the DACF for onward distribution to the MMDAs. The DACF Act 1993, Act 455 defines total revenue of the state as "all revenue collected by or accruing to the central government other than foreign loans, grants, non-tax revenue and revenues already collected by or for District Assemblies under any enactment in force".

The Act further provides that the Administrator of the DACF shall propose an annual formula, which is approved by Parliament for distributing the Fund to the MMDAs. Once the formula is approved by Parliament, the funds are disbursed and monitored by the Administrator and the reports of utilization are thereby submitted to the Minister for Local Government, Decentralization and Rural Development for onward submission to Parliament. The Office of the Administrator of the DACF uses factors such as need, equalization and service demand and responsiveness to revenue in determining the DACF allocation formula.

The need factor addresses variations in resource endowment, differences in opportunities and capacities of the local governments in the provision of local services. Additionally, the equalizing factor provides equal shares of the DACF revenue pool to support development projects in all the MMDAs irrespective of their needs. Moreover, service factor seeks to compensate for the depreciation of existing facilities in the communities. The responsiveness factor is considered in the development of the DACF formula to provide incentives to MMDAs to generate local revenues and reduce their dependence on central government grants.

DACF releases has increased consistently over the years despite the perennial delays that characterizes its disbursement (see Figure 6). From 2000 to 2008, DACF transfers rose from GH₵19.3 million to GH₵252.1 million representing more than 1200 percent increase over the period, but declined to GH₵188.6 million in 2009 due to a fall in national revenue. This decline

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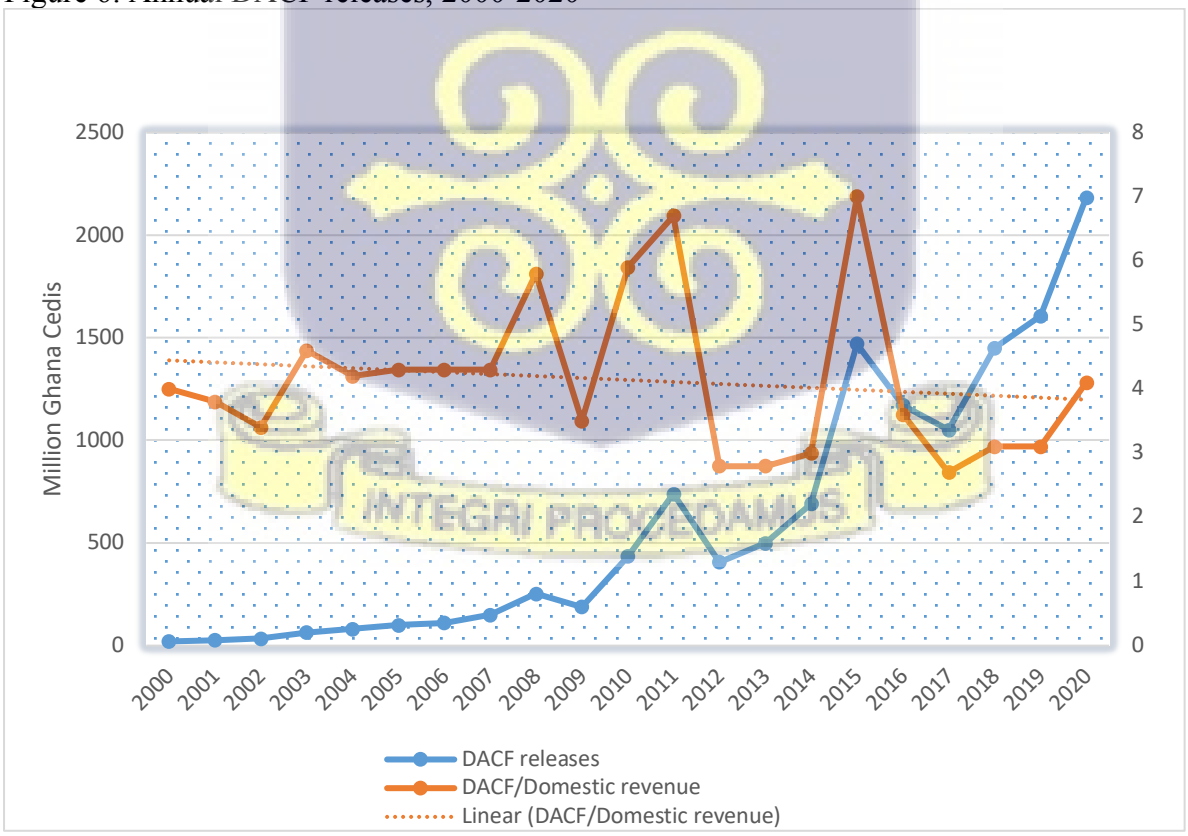
coincides with global economic downturn following the global financial crises experienced in the previous year. The DACF transfers rose sharply thereafter, hitting GH₵738.7 million at the end of 2011, a situation attributed to government resolve to pay accumulated arrears and not to withhold DACF transfers during the period (DACF, 2014).

However, transfers to the DACF declined to GH₵406.5 million 2014. This decline shows government inability to release the earmarked fund and thus withheld a portion of the DACF, translating into spikes in fund releases in subsequent years. In 2015, an amount of GH₵441.9 million DACF arrears were cleared and the total DACF releases increased to a whopping GH₵1,912.3 million. This period coincided with the IMF's Extended Credit Facility program where the Government of Ghana was required to clear arrears owed to statutory funds.

Figure 6: Annual DACF releases, 2000-2020



Source: Ministry of Finance online data
DACF/Domestic revenue on secondary axis
DACF release on primary axis

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DACF (2014) reported that about 40 percent of the Common Fund comprising Sanitation Improvement Package, Fumigation are deducted from source, a situation that compromises the expenditure autonomy enshrined in the intergovernmental fiscal framework. Moreover, the creation of the MPs Common Fund as a component of the DACF creates tension between Members of Parliaments and District Chief Executives (Azeem, 2003). This situation has the tendency to serve as an obstacle for accountability, transparency and efficiency in the use of the Fund. The lack of accountability in the utilization of the MPs Common Fund provides little guarantee that the MPs use their share of the Fund for the intended purposes.

The DACF has been characterized with other deficiencies including managerial lapses and weak monitoring procedures at both managerial and administrative levels of the local government structure, creating avenues for mismanagement of funds. According to King et al. (2003), successive audit reports have shown common improprieties with the management of DACF. These improprieties include misapplication of funds, non-deduction of 5 percent withholding tax on contract payments, questionable payments on uncompleted projects, overdue loan payments and payments of goods that are never delivered.

District Development Facility

The District Development Facility (DDF) was implemented as a form of performance-based grant system that seeks to provide both institutional and financial support to the MMDAs. The DDF transfer serves as a way of providing incentives to the local authorities to improve the quantity and quality of service delivery for local development. Specifically, DDF seeks to provide additional source of revenue to the MMDAs, motivate the MMDs to comply with legal and regulatory framework, establish a harmonized source financing investments and infrastructure, and to establish a link between performance assessment and capacity building (MLGRD, 2010). The Fund is part of earmarked funds to support local investments and social infrastructure in hospitals, health care centres, and schools. This component of local

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government grants is jointly financed by the Government of Ghana and donor partners such as the Governments of Switzerland, Germany, Canada, Denmark and France.

The government of Ghana and the development partners developed the Functional and Organizational Assessment Tool (FOAT), a regular performance assessment tool that is tied to the DDF. The District Development Facility is multi-sectorial transfers that is different from other sector specific grants. The facility is however, constrained by legal and regulatory framework for financial management administration such as those relative to the preparation of annual action and medium-term plans. The DDF is performance-based but provides discretionary non-matching source of funds. Thus, the local governments have the discretion to use the DDF to finance multi-sectorial projects that are specified in the Annual and Medium-Term Plans however, the MMDAs are required to meet the minimum set of criteria to access the fund. Table 3 presents the weighted performance indicators used in determining the MMDAs who qualify to access the DDF.

Table 3: FOAT performance indicators and scores for DDF in Ghana

Performance indicator	Maximum score
District Development Fund	**100**
Environmental sanitation management	6
Procurement	7
Fiscal capacity	20
Financial management & auditing	20
Sub-structural relationship	3
Human resource management	5
Planning system	18
Transparency, openness & accountability	11
Management & organization	10
Urban Development Grant	**100**
Budgeting	15
Reporting & Auditing	15
Asset management	20
Revenue management	35
Social accountability	15

Source: Government of Ghana, 2013

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Moreover, the MMDAs are assessed on the FOAT indicators on annual basis by a team of independent consultants engaged by the Ministry of Local Government, Decentralization and Rural Development (MLGDRD). Additionally, civil servants from the Ministry, Local Government Service, Ghana Audit Service, and the Controller and Accountant-General's Department constitutes a technical committee, which supervises and reviews the work of the project consultants. The MMDAs who performs well and thus meet the minimum criteria of the FOAT are granted the financial resources from the District Development Facility. The District Development Facility constituted the third largest source of grants to subnational governments in 2016 (See Figure 4). The facility however, declined from 16.7 percent in 2014 to 11.4 percent in 2016.

Urban Development Grant

The Metropolitan and Municipal Assemblies (MMAs) in Ghana are faced with rising rural-urban migration, urban poverty, emergence and development of slums, poor sanitation and shortage of water, and high demand for modern services. The Urban Development Grant (UDG) was launched in 2011 to provide additional source of funds for urban development specifically in Metropolitan and Municipal Assemblies in Ghana. Thus, UDG is intended to support urban expenditures on local goods and services as identified in the National Decentralization Plan launched in 2010. Similar to the DDF, distribution of the UDGs is based on an annual independent assessment done alongside the FOAT assessment process. The UDG assessment is conducted with indicators with weighted scores as indicated in Table 3.

The UDG has increased significantly from 1.9 percent to about 10 percent of total transfers to the local governments over the period 2012-2016 (see Figure 5). The amount of UDG that is disbursed to the Metropolitan and Municipal Assemblies increases with improvement in performance. The UDG funds are used to finance only legally assigned expenditure functions.

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To qualify for this fund, the local expenditures must be approved through appropriation of the local composite budget and should be in line with priorities specified in the Annual and Medium-Term Development Plans. The use of the funds is strictly scrutinized by the Ghana Audit Service through an external audit process that ensures that resources are utilize for their intended purposes.

2.4 Local Government Expenditures

Expenditure mandates for the central government and subnational governments are defined in the 1992 Constitution and the Local Government Act, 2016. Whilst the central government provides overarching role of macroeconomic management, collection of various taxes, and the execution of national projects and the formulation of national policies, Regional Coordinating Councils are responsible for coordinating and monitoring the implementation of those policies. The MMDAs are responsible for providing basic services such as education, primary health, portable water and sanitation, construction and maintenance of roads, agricultural services, protection of cottage industries and local development (MLGRD, 2019).

In Ghana, MMDA's expenditure mandates include determination of the type of expenditure at the subnational level, and the time of implementing local projects (MLGRD, 2019). These local government projects and policy interventions are executed through the Medium-Term Development Policy Framework (MTPF). The MTPF identifies the potentials and opportunities within an MMDA and how those potentials could be harnessed to address needs in the jurisdiction. The Local Government Act, 2016 section 170(1) authorizes MMDAs to incur expenditures to perform statutory functions as approved in their budgets. The composite budget is submitted to the Regional Coordinating Council and the Ministry for Local Government and Rural Development for approval each year.

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The accounting system at the local government level in Ghana categorizes expenditures into three (3) major economic classifications namely: Compensation of Employees (CoE), Goods and Services (G&S), and capital expenditures (capex). Table 4 presents the trend in MMDA expenditure as a share of total government expenditure in Ghana. The data shows significant decline in the share of the subnational government expenditure in the total government expenditure from 4.3 percent to 3.0 percent from 2011 to 2016.

Whilst the share of recurrent expenditures rose from 1.3 percent to 1.5 percent for the same period, the share of capital expenditures declined from 3.0 percent to 1.6 percent. The significant decline in capex could explain the decline in local infrastructure and the incidence of poor maintenance at the subnational level. Since the salaries of the local government staff are managed at the centre, staff deployment to the local government level did not affect the Compensation of Employees expenditure. Administrative cost associated with the day-to-day running of the assemblies have however contributed to the rise in total recurrent expenditure.

Table 4: Local government expenditure as a percentage of total government expenditure in Ghana, 2011-2016

Year	2011	2012	2013	2014	2015	2016
Total expenditure	4.3	2.8	2.6	2.9	2.9	3.0
Total recurrent expenditure	1.3	1.0	1.5	1.7	1.6	1.5
o/w Compensation of employees	0.7	0.7	0.7	0.7	0.6	0.6
o/w Goods and services	0.3	0.2	0.5	0.6	0.6	0.6
o/w Other recurrent expenditure	0.2	0.1	0.3	0.4	0.3	0.3
Capital expenditure	3.0	1.8	1.2	1.2	1.3	1.6

Source: Authors computation based on MoF and MLGDRD data

Figure 7 shows that capital expenditure remains the highest expenditure component of the total MMDAs expenditure except between 2013 and 2015 where Compensation of Employees expenditure dominated the local government expenditure. The capex figure dropped marginally from 40.8 percent in 2012 to 40.4 percent in 2016 whilst the share of CoE increased from 31.4 percent to 32 percent over the same period. Expenditure on goods and services has also experienced marginal increase over the period.

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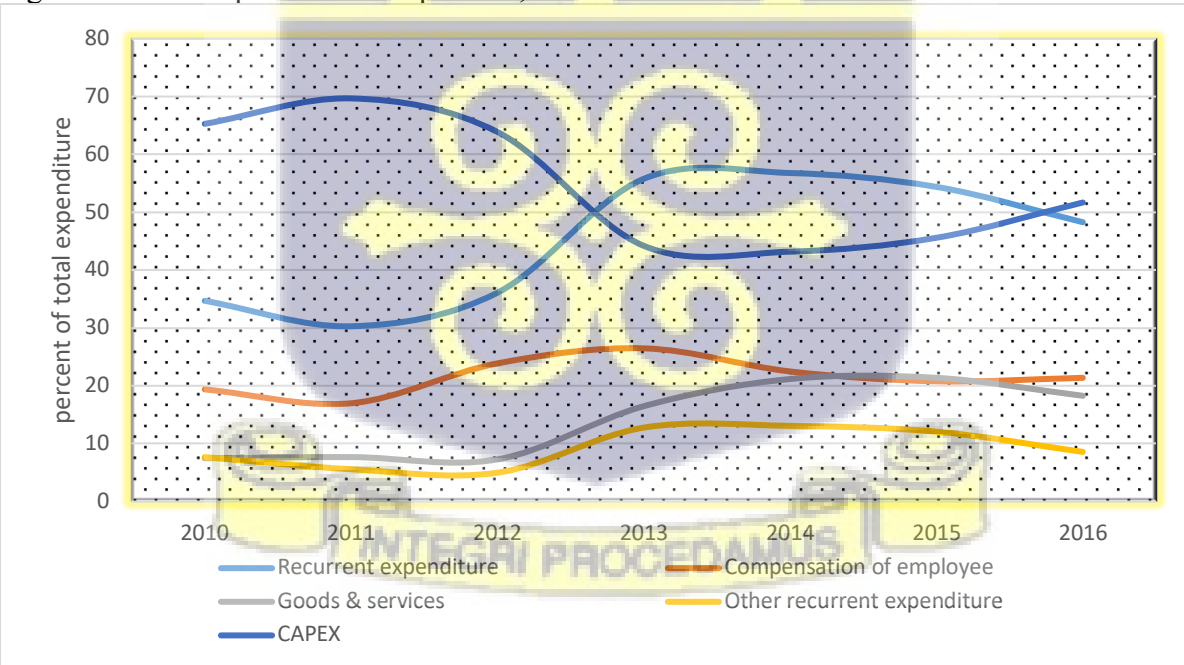
According to Bird and Wallich (1993), expenditure can be enshrined in legislation but those provisions may not be substantively effective due to other government laws, and delays of transfers. In Ghana, the degree of expenditure autonomy is limited by the high dependence of subnational governments on grants. Approximately about 80 percent of the local government expenditures are funded by grants from central government and development partners (DACF, 2014). Additionally, utilization of most of these grants is tied to conditional and specific projects that gives very little discretion to the subnational governments. The Local Government Act, 2016 section 170(2) limits local government discretion over the use of the DACF to projects captured under assemblies' development plans and approved by the Ministry of Local Government, Decentralization and Rural Development.

Figure 7: Local expenditure components, 2010-2016



Source: Ministry of Local Government and Rural Development data

Moreover, the Earmarked Funds Capping and Realignment Law, 2017 caps earmarked funds to 25 percent of central government tax revenue. This capping system encompasses the MMDA composite budget where Ministry of Finance annually issues budget ceilings on the expenditure allocations to the various MMDAs.

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Also, expenditures reported by the MMDA budget does not include those that have been incurred by MDAs, NGOs and development partners that directly embark on programs in the assemblies. The local authorities are often aware of those interventions by development partners and other government agencies but they have virtually no control over those expenditures. Similarly, a situation whereby the Government of Ghana directed the Ministry of Local Government, Decentralization and Rural Development in 2017 to implement a national address system using the DACF (Oppong, 2020), and MMAs in 2020 to use the DDF for Covid-19 related expenses, interfered with the expenditure autonomy of the MMDAs.

Moreover, the administrative framework for transferring grants from the central government to the subnational governments poses a major challenge to achieving local fiscal autonomy. The Ministry of Finance is required to transfer funds to the DACF administrator who disburses the fund to the MMDAs based on approved formula by Parliament. The DACF administrator procures some goods and services for all MMDAs without their consent, and then distributes the rest of the fund to them. Moreover, bureaucratic processes cause delays in the release of the fund, which affects the execution of MMDAs' Annual Action Plans.

2.5 Decentralization and Poverty trend in Ghana

In Ghana, the decentralization has been implemented after the Structural Adjustment Program and the Economic Recovery Program in the 1980s, however poverty still remains a formidable development challenge. Sowa (2002) opined that Programme of Actions was implemented to mitigate the social cost of the Structural Adjustment Program but they have failed to provide any significant relief due to the inefficiency in its implementation where most of the funds were given to non-poor. However, no comprehensive study has been conducted to ascertain the effect of decentralization on poverty in Ghana.

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The social benefit of fiscal decentralization could be traced through a direct channel and indirect channels. The direct effects include a scenario in which poverty and inequalities are altered because of the changes in public policies or/and the behaviour relevant economic agents. For instance, fiscal decentralization might change the tax mix and the composition of public expenditures, which might in turn change the tax and expenditure incidences. These changes may induce migration of individuals searching for better standard of living (Sepulveda and Martinez-Vazquez, 2011). On other hand, a number of socioeconomic factors such as economic growth, quality of governance and service delivery and size of government are some of the indirect mechanisms that fiscal decentralization affects poverty and inequality (ibid).

The concept decentralization in Ghana comprises political decentralization, administrative decentralization and fiscal decentralization. Political decentralization devolves decision-making powers to locally elected officials who are accountable to their own community members whilst administrative decentralization involves the transfers of decision-making powers on planning and management of public functions such hiring and setting of wages and salaries to local authorities. In practice, it is more meaningful to discuss fiscal decentralization with the presence of the political and administrative dimensions (Sepulveda and Martinez-Vazquez, 20101). However, given the data limitation on all forms of decentralization in Ghana, this study focuses on fiscal decentralization without considering the administrative and political dimensions.

The measure of fiscal decentralization is usually based on the accounting executions of general budgets. For instance, in the empirical literature, the ratio of subnational revenue/expenditure to national revenue/expenditure is widely used. However, since Ghana's fiscal decentralization system is still at its nascent stage, local government budget executions are highly insignificant compared to central government budget executions. In addition, Ghana runs a centralized government system as opposed to a federal government system hence most of the local fiscal

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decisions are taken at the centre, thereby creating very little autonomy to the local government. Therefore, this study focuses mainly on central government grants, local revenue and poverty as well as the political economy of the local government grants system in Ghana.

Economic literature usually focuses on measures of poverty that related to consumption and expenditure thresholds. Households/individuals are considered poor if their income or expenditure levels falls below a selected threshold. Against this background, it therefore possible to estimate poverty incidence, the depth and severity of poverty for a particular group of persons within a given period (Todaro, 2011). The poverty incidence also known as headcount index is basically the share of the population that defined as poor. The depth of poverty or the poverty gap is the sum of the distance between the selected threshold and the level of income or consumption of each individual, divided by the total population. The severity of poverty is computed by adding up the square of the distance between the selected threshold and the level of income or consumption of each individual, divided by the population. Measuring severity of poverty places a higher weight on individuals that farther from the poverty line.

These measures of poverty are commonly associated with certain problems. They are based on arbitrary choice of poverty line, and poverty is limited to income and consumption whilst the concept might encompass other dimensions such as opportunities and security. In order to overcome some of these problems, the United Nations Development Program (UNDP) developed the Human Development Index (HDI) as a measure of poverty. The HDI combines the normalized measures of the population health and longevity, knowledge and education, and standard of living. Specifically, the population health and longevity are measured by life expectancy at birth, education by adult literacy rate and combined primary, secondary, and tertiary gross enrolment ratio, whilst standard of living is measured by Gross National Product per capita (Wahab and Rahman, 2011).

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According to the UNDP's measure of poverty, increase in HDI is interpreted as reduction in poverty and the index provides some advantages relative to other measures of poverty. For instance, the HDI considers alternative dimensions of wellbeing in addition to income and consumption, does not require any arbitrary definition of poverty line, and considers level poverty or development of the whole population of a country. Given that fiscal decentralization reform covers the whole country that can affect poverty in various ways, the HDI might be a better measure of the poverty. However, the challenge with the use of the Human Development Index is the unavailable of data on health, education and Gross National Product at the District level. This study hence employs the income and consumption-based measures of poverty as captured by the several waves of the GLSS data.

Ghana's economic growth has remained robust over the recent past leading to attainment of lower-middle-income status in 2011. The annual growth rates of GDP reached the highest level of 14 percent in 2011, and the lowest of 0.4 percent in 2020, a decline mainly attributed to the negative impact of Covid-19 pandemic. The country recorded an average GDP growth rate of 9.6 percent for the period 2010-2013, whilst per capita income averaged at GH₵2,672.20 over the same period. Following the attainment of the lower-middle-income status, the country's annual GDP growth rates averaged 5 percent with average per capita income of GH₵5,540.80 over the period 2014-2017. However, the progress made in terms of economic growth has not translated significantly into the poverty reduction as expected (Fosu, 2008).

The GLSS seven (7) employed the Foster-Greer-Thorbecke (FGT) model to estimate poverty indices in terms of absolute and extreme poverty. The absolute poverty measures were estimated for the GLSS5-GLSS7 period using the absolute poverty lines of GH₵1,760.86 as a measure of the distribution of standard of living in the country. Extreme poverty refers to the state where the standard of living is insufficient to meet the basic nutritional requirements of the household even if they devote their entire consumption budget to food (GSS, 2018). The

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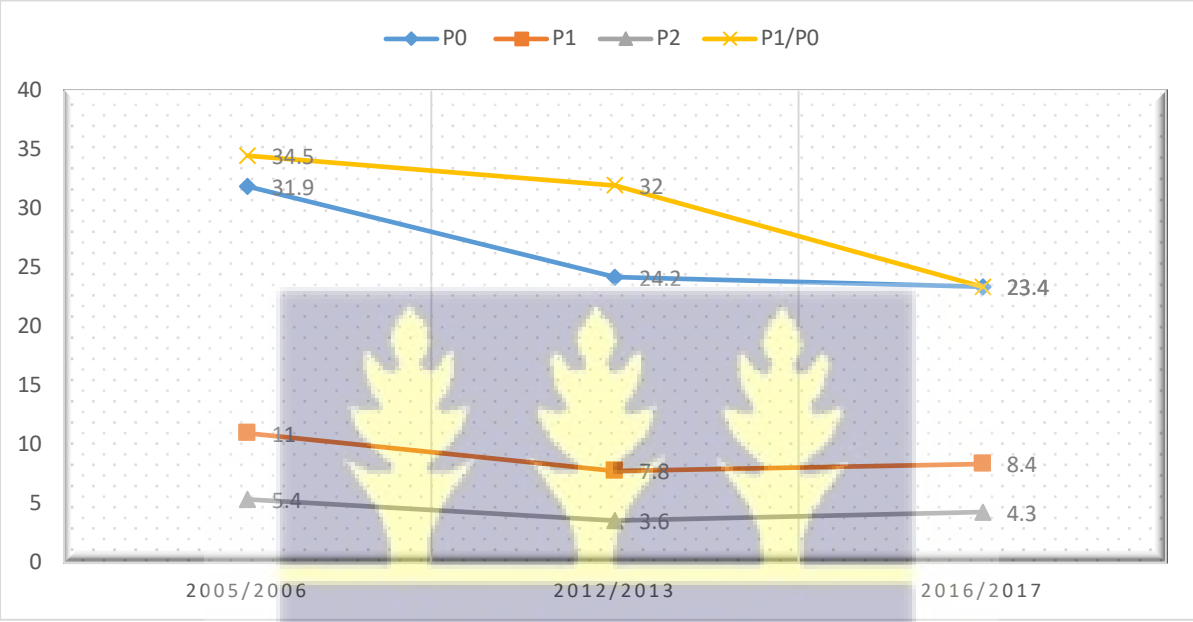
households whose real welfare falls below the extreme poverty line of GH₵984.16 per adult equivalent per year are considered extreme poor.

Figure 8: Trend in absolute poverty indexes in Ghana, 2005-2017



Source: GSS, 2018
Poverty line = GH₵1,760.86

Several social interventions programs have been implemented to alleviate poverty among vulnerable population in Ghana. These programs include Livelihood Empowerment Against Poverty (LEAP), Capitation Grant, School, Feeding Program, and the Free Senior High School Program. However, these interventions have not significantly led to the expected reduction in poverty. Consumption poverty estimated based on the several rounds of the GLSS shows that the country made a marginal progress in the reduction in poverty. From Figure 8, poverty incidence, gap and depth have shown a downward trend, suggesting decline in poverty in Ghana over the period 2005-2017. Poverty headcount declined by 7.7 percentage points between the period 2005/2006 and 2012/2013 whilst the decline between 2012/2013 and 2016/2017 was 0.8 percentage points. Thus, the poverty headcount declined marginally from 24.2 percent to 23.4 percent for the period 2012/2013-2016/2017, suggesting that poverty in Ghana declined at a decreasing rate over the recent past.

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Relatively greater progress in terms of poverty reduction was achieved during the period 1991/1992-2005/2006, when poverty decreased by 23.2 percentage points and extreme poverty incidence reduced by more than half, declining from 37 percent to 18 percent over the same period (GSS, 2018). Ghana's performance in extreme poverty reduction enabled the country to achieve the Millennium Development Goals (MDG) of halving extreme poverty ahead of schedule. However, the marginal progress made between 2012/2013-2016/2017 indicates that the country may be unable to meet the SDG target of ending extreme poverty in all forms by 2030.

Extreme poverty declined from 8.4 percent to 8.2 percent whilst in absolute terms, the number of people living in extreme poverty increased from 2.2 million to 2.4 million over the same period (GSS, 2018). This means that population growth outstripped reduction in poverty reduction making more Ghanaians living in extreme poverty. From Figure 9, the rate of decline in extreme poverty has slowed down from 8.1 percentage points for the period 2005/2006-2012/2013 to 0.2 percentage points during 2012/2013-2016/2017 period. The slow pace in the decline of national extreme poverty is largely driven by deterioration in extreme poverty in the rural areas of Ghana. Based on the 2010 Population and Housing Census projections, it is estimated that 2.4 million (2.2 million being rural) people could not afford the minimum daily requirement of 2,900 calories per adult equivalent of food per day, even if they spend all their income of food (GSS, 2018).

Poverty in Ghana is predominantly a rural phenomenon since the pattern of poverty in the rural areas is higher than that of the urban areas. Even though approximately half of Ghana's population lives in the rural communities, the rural population contributed more than 80 percent to the country's poverty incidence in 2016/2017 (GSS, 2018). Although the contribution of the urban population to poverty incidence has declined over the period, it contributed about 20 percent to poverty incidence in 2016/2017.

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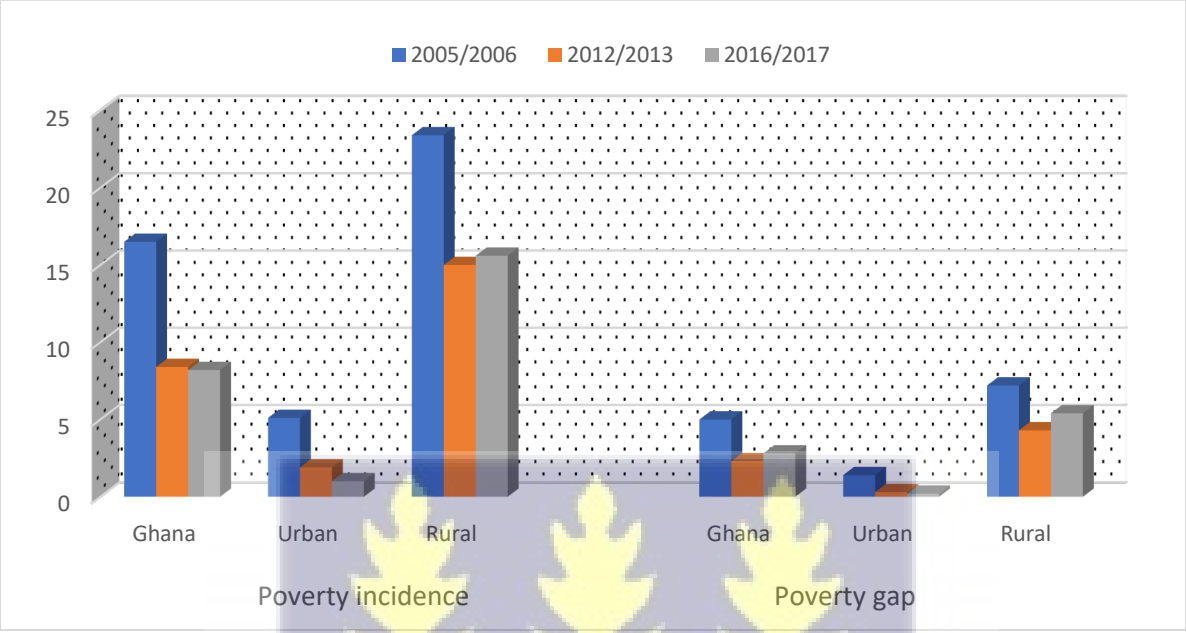
Figure 9: Extreme poverty incidence and poverty gap in Ghana, 2005-2017



Source: GSS, 2018
Poverty line = GH₵984.16

Poverty incidence varies among the 10 administrative regions (now 16 regions) of Ghana. Half of the ten regions comprising Greater Accra, Western, Central, Eastern and Ashanti had poverty incidence rates lower than the national average (23.4 percent) in 2016/2017 whilst the remaining half of the regions had rates of poverty incidence higher above the national average (see Figure 10). Moreover, the poverty incidence worsened in the Western Region, Volta Region, Northern Region, Upper East Region, and Upper West Region and improved in the Greater Accra Region, Central Region, Eastern Region, Brong-Ahafo, and Ashanti Region between 2012 and 2017. However, Northern Region recorded the largest number of people who were poor over the period. The Greater Accra Region had the lowest poverty headcount since 2005/2006 (see Figure 10)

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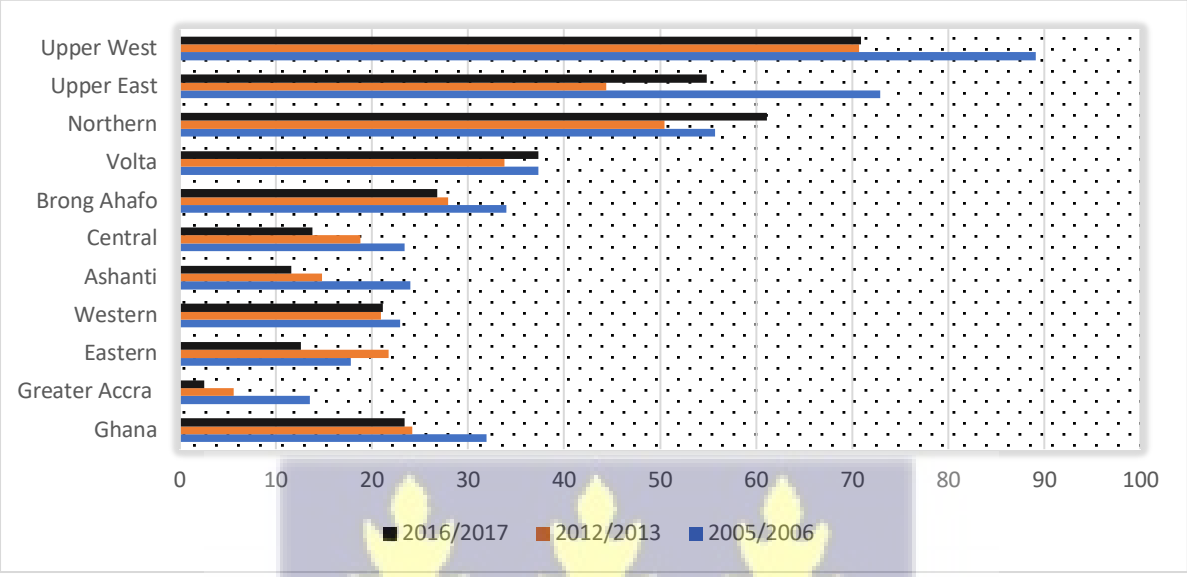
Figure 10: Trend in poverty incidence by region, 2005-2017



Source: GSS, 2018
Poverty line = GH₵1,760.86

Poverty at the local level may be exacerbated by lack of access to social services by the households. Rural areas tend to have less access to social services compared to their urban counterparts due to the inadequate infrastructure in the rural areas. The Local Government Act (Act 462) mandates the local authorities to provide some specific basic services and infrastructure to their localities to promote poverty eradication agenda. These services include public utilities, maintain formal and special schools, promote and safeguard public health, among others.

Access to services, which is normally used as a measure of the standard of living has improved significantly among households over the period. Many districts have made significant progress with open defecation, with several of them close to achieving open defecation free status. The districts in the three Northern Regions recorded the highest percentage of communities certified as open defecation free (see Figure 11). Districts in the Upper West, Northern and Upper East Regions comprising Nandom, Tatale Sanguli, East Mamprusi and Sawla-Tuna-Kalba have performed well in terms of ODF coverage. Nandom District and Tatale Sanguli District in the Northern Region have nearly 90 percent of their respective communities certified

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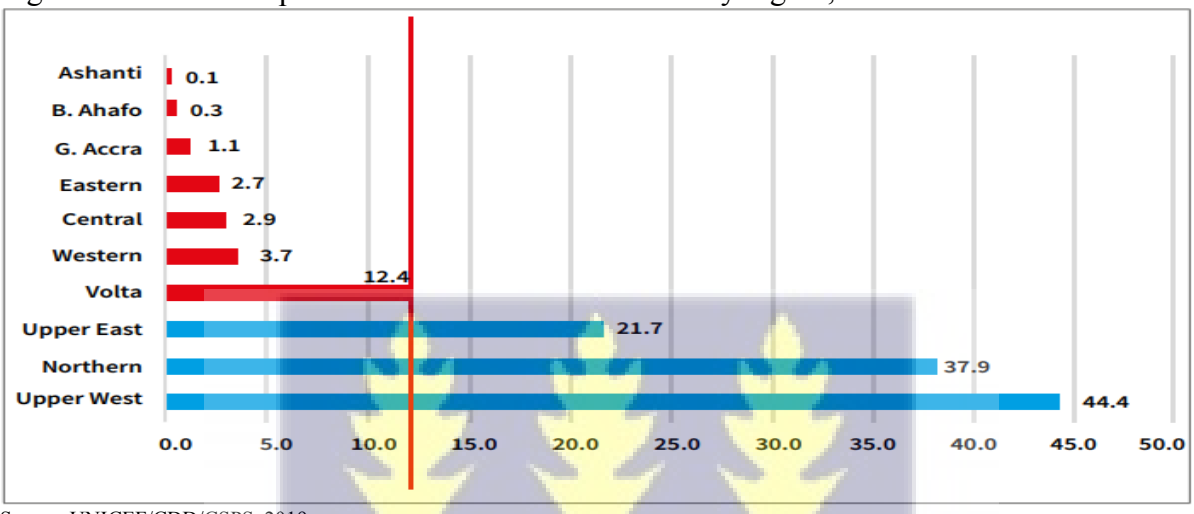
as ODF whilst Tamale Metropolitan of the Northern Region ranked low with only 0.9 per cent (UNICEF/CDD/CSPS, 2019).

Figure 11: Certified open defecation free communities by region, 2018-2019



Source: UNICEF/CDD/CSPS, 2019
Variable measured in percentage of persons

Moreover, all regions have recorded improvement in access to adequate toilet facilities over the period but with large disparities (see Figure 12). For instance, in 2016/2017, only 13 percent of households in the Upper East Region has access to flush/KVIP toilets compared to 86 percent of households in the Greater Accra Region who have access to flush/KVIP. However, the percentage of household with access to toilet facility has declined in Ashanti, Western, Volta and Upper East Region in 2017 compared to 2013.

The trend in the percentage of households using potable water by locality and standard of living quintiles are provided in Figure 13. The indicator reflects the coverage of rural or urban water supplies as applicable to a given jurisdiction and provides information on the proportion of rural and urban populations covered by a water supply system. The proportion of the population using potable water by standard of living quintiles have improved marginally for the period 2012/2013-2016/2017, compared to a relatively higher increase for the period 2005/2006-2012/2013 (see Figure 13). The improvement in access to potable water increases

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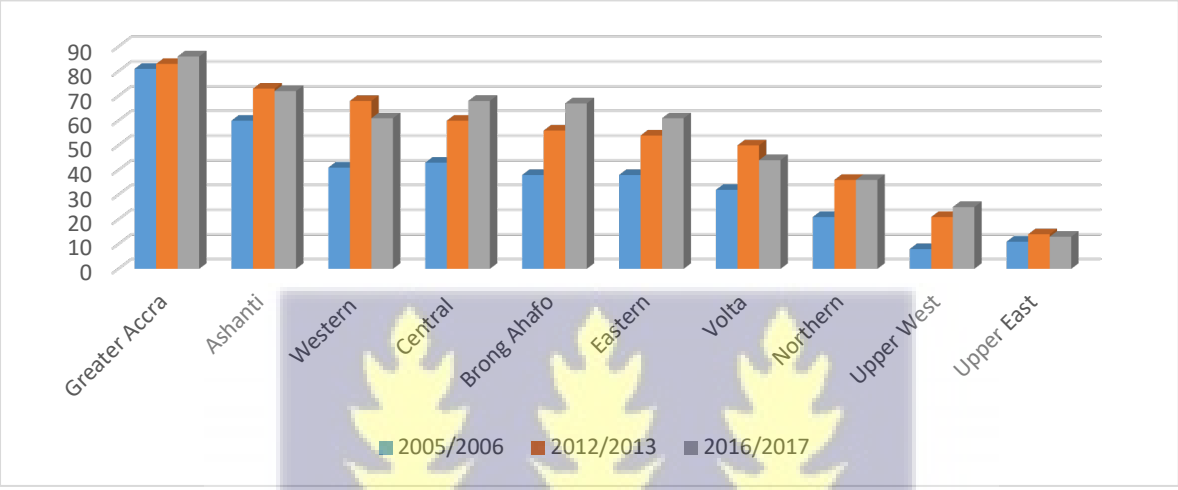
with income distribution among rural and urban communities but the rate of improvement is larger in the urban localities compared to the rural localities.

Figure 12: Percentage of households using flush/KVIP toilet by region, 2005-2017



Source: GSS, 2018

Moreover, Figure 13 shows that by the end of 2016/2017 period, at least 98 percent of the top two quintiles in the urban areas have access to potable water compared to 90 percent and 88 percent in the highest and second quintiles respectively in the rural areas. However, the period 2012/2013-2016/2017 recorded higher increases in the percentage of rural households using portable water. Overall, the period 2012/2013-2016/2017 was characterized with a decline in the rural-urban gap whilst the rise in access to portable water is most pronounced in the rural areas and among poorer urban households.

In addition, the number of households that have access to portable water has increased significantly. The top six districts in terms of higher access to safe water are Kpone Katamanso, Tema Metropolitan, Ledsokuku-Krowor Municipal, La Dade-Kotopon Municipal, Accra Metropolitan and La Nkwantanang-Madina Municipal districts all in the Greater Accra Region (UNICEF/CDD/CSPS, 2019). The Upper West Region also has relatively high coverage of access to safe water. The districts with relatively low access to safe water are concentrated in the Eastern, Western and Ashanti regions (ibid).

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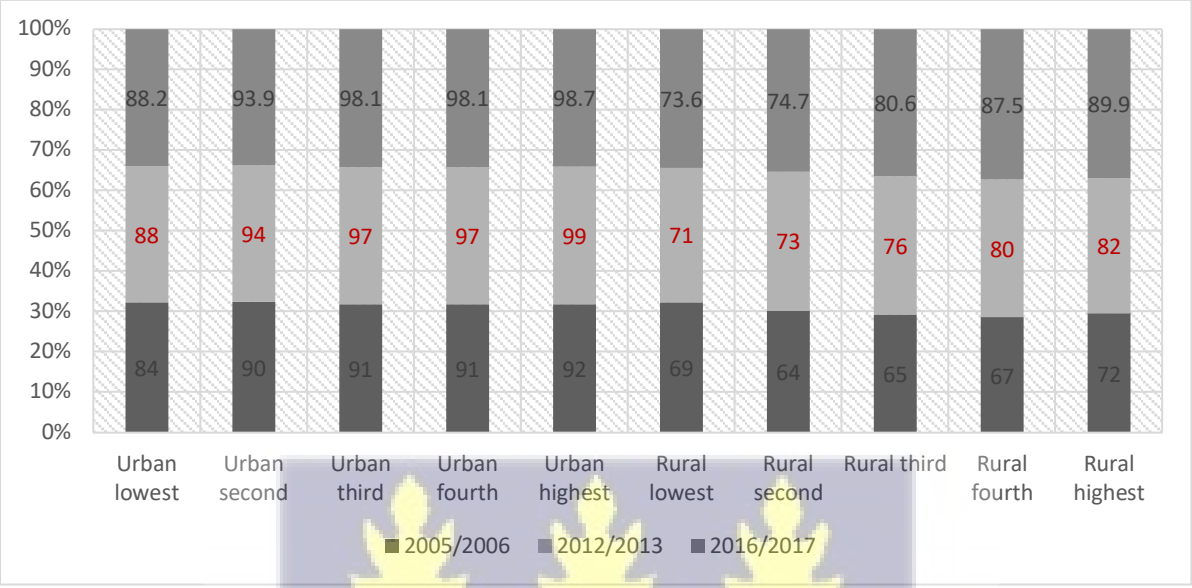
Figure 13: Access to potable water by localities and standard of living quintile, 2005-2017



Source: GSS, 2018
Variable measured in percentage of households

Human capital development is key to poverty eradication in all forms and dimensions as specified in the SDG targets. It concerns expanding access to education and health facilities that allow individuals to be productive (Grossman, 1980). Health according to the World Health Organization is a state of complete physical, mental, social wellbeing, and not mere absence of disease or infirmity. It is an important determinant of poverty because it determines the ability of an individual to work and earn a meaningful income. Thus, health has a strong influence on people's earning capacity and productivity. Individuals who have the means are able to access quality healthcare whilst those who are unable to satisfy food needs would usually unable to afford healthcare.

The GLSS 7 data shows that access to health services has improved in most of the regions in recent year. However, the Western, Central and Greater Accra Regions recorded consistent decline in the proportion of the ill or injured persons who consulted doctors in the period 2012-2017 (see Figure 14). The other regions recorded improvements, with the Northern Region having the highest rise of 13 percentage points for the same period. However, the share of the injured or the ill who neither consulted a doctor nor visited a health facility for treatment has

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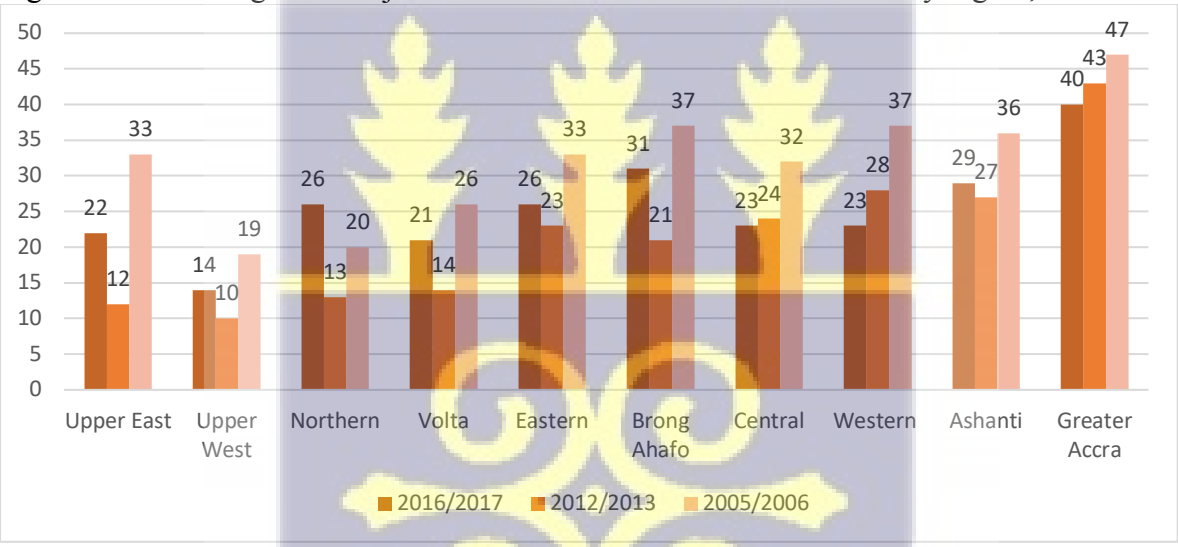
increased across all localities over the period (GSS, 2018). This situation suggests a negative impact on human capital development since a healthy workforce would ensure increase in economic productivity. The increase in the number of the ill or the injured who are unlikely to visit a health facility in the 2016/2017 was more pronounced in the rural localities. This peculiarity could be attributed to the distance and the financial cost that the rural dwellers have to bear in order to get access to the nearest health facility.

Figure 14: Percentage of ill/injured individuals that consulted a doctor by region, 2005-2017



Source: GSS, 2018

According to Lewin (2015), continuous and sustained access to education promotes long-term improvements in productivity, reduce poverty, and help improve health care. Poverty is largely caused by lack of education, which triggers lack of knowledge and skills (Grossman, 1980). Successive governments in Ghana over the years have made efforts to ensure increased enrolments at both basic and secondary education levels to achieve Free Compulsory Universal Basic Education (FCUBE) as enshrined in the 1992 Constitution.

Net attendance rate (NAR) is the number of children of official school going age who are attending school as a percentage of total number of children of the official school-age population. Net primary attendance rate has increased generally in all regions at all levels of schooling for the period 2012/2013-2016/2017 (GSS, 2018). The improvements in school

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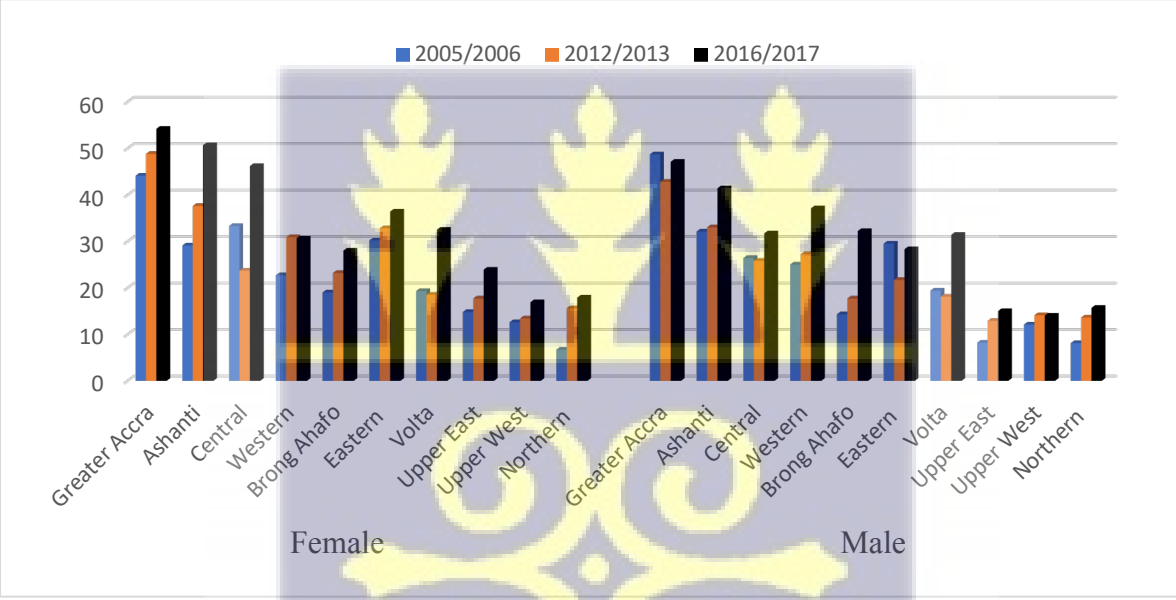
attendance favoured the female child in most localities compared to the male counterpart. Figure 15 shows that out of the ten (10) regions of Ghana, only Greater Accra and Northern Regions recorded a drop in net primary school enrolment ratio for males over the same period. Moreover, there was no improvement in the NAR for boys enrolled in Junior High Schools in the Upper West Region 2016/2017 (see Figure, 15).

Figure 15: Net JSS school attendance rate by sex and region, 2005-2017



Source: GSS, 2018

Furthermore, school enrolment has increased at all levels in 2016/2017 relative to 2012/2013. Gross enrolment and net enrolment rates at primary, junior high, and senior high school levels have increased significantly over the period. The improvement in school attendance has favoured females in most localities relative to their male counterparts (see Figure 15 and 16). Moreover, BECE pass rate has improved significantly among the various districts over the recent past. The five top-performing districts were found in the Northern, Western, Central and Ashanti Regions. The Nanumba South district in the Northern Region ranked the highest nationally in 2019 (UNICEF/CDD/CSPS, 2019). The Western Region has the highest number of districts among the top 10 performing districts for BECE pass rate, followed by Central, Ashanti, Brong Ahafo and Northern Regions. Using the BECE pass rate as an indicator of

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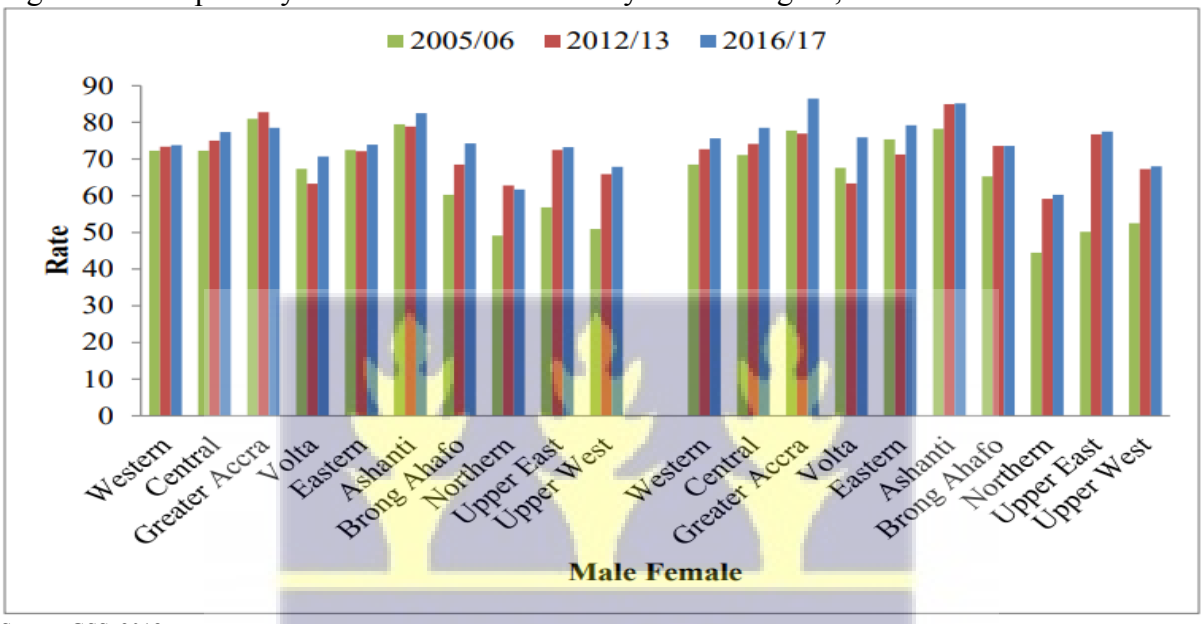
education attainment, the Eastern and Volta Regions recorded the highest number of low-performing districts (ibid).

Figure 16: Net primary school attendance ratio by sex and region, 2005-2017



Source: GSS, 2018

2.6 Concluding Remarks

Ghana has recorded some moderate reduction in poverty over the recent past however, this decline does not reflect the robust economic growth chucked over same period. Projections have rated Ghana's growth to remain within the top 30 percent in the world in the near-term outlook (IMF, 2021). However, there are concerns about how this growth can be inclusive and be translated into widespread poverty reduction, towards the achievement of Sustainable Development Goals by 2030 deadline. In view of the negative economic impact of Covid-19, low tax revenue mobilization and increasing public sector debt, experts have argued for deepening of fiscal decentralization policy to empower subnational governments for resource mobilization. This study examines whether the fiscal decentralization policy has any effect on local revenue and poverty. We also assess the political economy of the local government grant system in Ghana.

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Chapter Three
Literature Review

3.0 Introduction

Governance reform constitutes an important part of transition from a centralized economy to a market economy. From a politico-economic perspective, decentralization may preserve the efficient properties of market economies from the threat of overregulation and rent-seeking behaviours (Weingast, 1996). Thus, transforming an economy from a centralized to a decentralized economy may support market-oriented policies and decentralized economic activities. Devolution of fiscal power represent an institutional reform for economic development. This reform according to Besley and Case (1995) presents a relevant yardstick of competition among neighbouring jurisdictions that would engender efficiency in the provision of public services.

Decentralization can be defined as the transfer of authority and responsibility of public functions from a central government to subordinate government (Smoke, 2006). Centralization and decentralization are modes of governance in which control is exercised and decisions are made within governments. Governments are typically heterogeneous and complex entities that comprises central, provincial, and local layers (von Braun and Grote, 2002). In analysing the impact of decentralization on development outcomes, Litvack and Seddon (1999) notes that decentralization should be distinguished in terms of political decentralization, administrative decentralization and fiscal decentralization.

Political decentralization gives local citizens and representatives more power in any form of decision-making including standards and legal frameworks (Smith, 1996). Political decentralization is measured by the degree of decentralization of election. In addition, administrative decentralization redistributes authority, responsibilities and resources among different levels of government. It is measured by the degree of sub-division of nation states,

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and the population size of a country (Smoke, 2006). Enhancing institutional strength and suitable capacity at all tiers are necessary preconditions to ensure administrative efficiency (von Braun and Grote, 2002). Fiscal decentralization entails the definition and assignment of revenue mobilization authority, and access to transfers and making decisions on current and investment expenditures. The share of sub-national expenditure (revenue) in total national expenditure (revenue) measure the level of fiscal decentralization in a country.

The theory of fiscal federalism assumes that devolving revenue and expenditure authority to subnational government, supported by a robust transfer system, allow subnational governments to make effective policies towards national development (Musgrave, 1959). The adoption of fiscal decentralization by many countries as an alternative development strategy has invited theories and empirical investigations into its impact on local development. This section discusses existing theories and empirical studies on fiscal federalism in order to better understand the nature, scope, and methodology informing their findings and conclusions.

3.1 Theoretical Review

The effect of decentralization on poverty nexus has been largely traced through the former's potential to foster economic growth. The neoclassical theory of growth that has its origins in the Harrod-Domar model explains the relationship between investment, growth rate and employment in an economy with stationary growth. The Harrod-Domar growth model explains that economic growth is a function of capital accumulation in form of savings. Therefore, the financing gap is the difference between available investible fund and the required investment, hence external capital is obtained to fill the gap to achieve a targeted growth rate.

Solow (1956) and Swan (1956) relaxed the severity of the assumptions of the neoclassical models. The theory assumed that production is a function of capital, labor and technology. The theory predicts that long-run growth is determined by technological change whilst saving only

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affects temporal growth because the economy will experience diminishing returns as the ratio of capital per worker increases. The long-term economic growth per worker is explained by labor augmenting technological change. However, the models fail to provide explanation on the determinants of the exogenous variables such as savings, population growth and the technological change. Moreover, the Solow model fails to explain the cross-country differences, whilst it predicts a convergence of growth among countries (Mankiw and Romer, 1992; Barro, 1989).

In neoclassical models, it is assumed that there is perfect competition and capital is paid its marginal product, which must be above the discount rate for investment to be profitable for entrepreneurs. However, in the long-term diminishing returns of production factors might hinder economic growth. The new growth models predict that in view of spillover effects, growth can be sustained by continuing accumulation of inputs that generate positive externalities (Pack, 1994). Hence, the endogenous models are characterized by the assumption of non-decreasing returns to factors of production. This implies that countries that save more grow faster indefinitely and that countries do not need to converge in income per capita even if they have the same preferences and technology.

Some development experts argue that although fiscal decentralization can promote growth and development, excessive central government grants to subnational governments could cause macroeconomic misalignments. Static transfer arrangement reduces central government control over the disposition of public resources (Smoke, 2015) especially when the subnational governments have weak capacity to efficiently use those resources. Despite the potential macroeconomic risk in transfer arrangements, most developing countries have institutionalized grants systems that allocates pool of revenue to subnational governments.

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According to Smoke (2006), although institutionalization of significant transfers to local government increases the legitimacy, stability, and financial viability of subnational governments, those arrangements may create problems usually arising from deficiencies in the structure of the transfer systems. Notwithstanding the macroeconomic vulnerabilities of guaranteed resource allocations, the potential microeconomic gains of decentralized service delivery cannot be overemphasized.

Public choice theorists identify two routes through which wealth could be accumulated. Thus, through production and exchange in markets, and the use of political power. They argue that in markets, one does need not need to agree to an exchange that renders one worse-off. Therefore, insofar as the pursuit of wealth takes place within markets, it is compatible with social welfare maximization (Hirshleifer, 1995). However, in political settings, power can be marshalled to elicit involuntary transfers especially when political institutions underpin dictators. Also, Buchanan (1993) noted that even in democracies where political majorities can expropriate minorities or where concentrated minorities can use public power to extract private benefits, and such political arrangements could be a threat to social welfare.

However, the new institutionalism school of thought, which has gained much currency in the economic literature argues otherwise. According to North (1990), institutions are humanly devised constraints that shape human interaction. New institutionalism views political institutions as a form of capital that, if properly configured, can unleash the productive potential of an economy, making economic growth possible (Bates et al., 2013). Highlighting the pervasiveness of market failure, the new institutionalists argue that political sanctions can be structured so as to strengthen the forces of production, enforce property rights in ways that align private interests with social welfare in situations that might otherwise have led to opportunistic and self-defeating behaviours.

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Economic theories of federalism have conventionally emphasized allocative benefits of political arrangements in the provision of public goods and services. Traditionally, there are two basic related schools of thought on the impact of federalism on an economy, thus the social welfare maximization and political preference schools of thought. These schools of thought explain how devolution of fiscal authority could inure to the wellbeing of people or otherwise in a particular jurisdiction.

The social welfare school of thought identifies social preferences and the maximization of consumer utility as the bases of decentralization. Hayek (1945) noted that subnational governments have better access to local information, which allows them to provide public goods and services that better match local preferences than the central government. Also, Tiebout (1956) propounded the inter-jurisdictional competition dimension theory, which hypothesizes that competition among subnational governments provides a sorting mechanism to better match public goods and services with consumer preferences. These earlier ideas were adopted by Musgrave (1959) and Oates (1972) to build a theory of fiscal federalism. They argued that appropriate assignment of tax and expenditures responsibilities to various government levels improves social welfare. Thus, the fiscal federalism theory predicts a positive relationship between fiscal decentralization and improvement in social welfare.

Moreover, Oates (1972) noted that when preferences of local people become more influential in local government decisions, two important results ensue. First, in a democratic setting even when there are no local elections but politicians are sensitive to public sentiments, local officials become more responsive to the local population, who are served with the optimal quantity, quality and variety of services. Second, since people are more likely to get what they want, they are likely to be more willing to pay for local services. Thus, the potential gains of fiscal decentralization include economic efficiency, greater accountability, improved service delivery and more effective revenue mobilization.

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The fiscal decentralization system hinges on grant mechanisms that are operated with some degree of subjectivity that undermines basic economic objectives. However, many countries have adopted more objective-based, formula-driven transfer programs (Smoke, 2012). There are usually instances whereby political and institutional issues arise. Political considerations may inform transfer allocations to a few special categories of local governments that have small percentage of the national population with weak absorptive capacity (Smoke, 2006). Thus, political and institutional concerns play some roles in decentralization policies.

Cox and McCubbins (1986) developed the Core Supporter Model in which they argue that voters respond more strongly to economic incentives provided by the political party they prefer. This implies that politicians like risk-averse investors will allocate more resources to areas where their political support is concentrated in order to have an assured vote return. In contrast, Dixit and Londregan (1998) developed the Swing Voter Model where voters are modelled as having preferences for particular political parties, which they are willing to compromise in response to economic benefits. The Swing Voter Model predicts that political manipulations in resource allocation transfers would target districts with relatively more swing voters.

Furthermore, Rogoff (1990) propounded the Basic Competence Model that incorporated the role of signalling and asymmetric information in a pre-election fiscal decision. The model is based on assumption of perceived unobserved competence that is used as a measure of the ability of political parties to deliver more public goods for the same level of taxes. Thus, competence is correlated over time, so that a candidate who is believed by voters before an election to be more competent than average is expected to be more competent than average after the election. A more competent policymaker can generate higher welfare and so are preferred by voters. Therefore, voters rationally prefer a candidate who delivers higher expenditures before an election, since this is a signal of higher competence.

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Theories that explored the political economy of grants predicts that determination of transfer grants based on the political incentives of the allocating entity may result in inefficient allocation of resources across geographic regions (Buchanan, 1993; Samuelson, 1954; Musgrave, 1959; Oates, 1999). This outcome may arise from policies that elicit negative social consequences between classes, ethnic and religious groups.

3.1.1 Fiscal Decentralization and Poverty Reduction

The main theoretical anchor for the study is the theory of fiscal federalism. Federalism is conceptualized to be associated with a different level of efficiency in governance compared to centralized systems. Theoretically, when there is association between growth rate of technology, and the level of decentralization, which is expected to have a persistent impact on economic growth (Baskaran et al., 2016). Thus, devolution of fiscal authority would therefore enhance growth and eventually at different levels of income.

Oates (1999) notes that federalism presents "laboratory federalism" where a system of many parallel small-scale experiments can be undertaken at the sub-central level. The information resulting from such political experiments could be considered as a pure public good that provides the conditions for growth (Rose-Ackerman, 1980). Similarly, from a Schumpeterian perspective, processes of creative destruction may be more efficiently managed in federal arrangements, which may benefit the poor in the subnational jurisdictions. For instance, Fosu (2008) noted fiscal policy has an important impact on growth and other things being equal, a sustained growth rate may translate into faster poverty reduction.

In addition, Edwards and Clough (2005) incorporates time-inconsistency problem in the neoclassical growth model where human capital investment is the major determinant of growth. Within this modified neoclassical growth model, it hypothesized that unitary government cannot commit to low tax rates in the future. Thus, such unitary governance structure is

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characterized by high taxes, low human capital and low growth. However, local governments are susceptible to the threat of migration of fiscally expropriated factors. The exit option available for inputs helps to resolve the time-inconsistency problem, thereby inducing a decentralized equilibrium with low taxes, high investment and high growth rates and low poverty.

Moreover, Besley (1997) categorizes the approaches to poverty reduction into technocratic approach and institutional approach. The technocratic approach emphasizes targeting and program designs that directs limited resources to people with the most need whilst the institutional approach involves developing institutions, change of political structures, improved governance and changed attitudes towards the poor. The institutional approach assumes that the poor lacks political power, which hinders public service delivery to the poor. Therefore, decentralization offer the legal framework and avenue for effective configuration of political power of the poor (von Braun and Grote, 2002). Thus, fiscal decentralization provides the infrastructure for implementing pro-poor policies in an economy.

Poverty is multi-dimensional in nature, and its different aspects may be influenced by different factors. Conventionally, poverty is viewed as the result of inadequate income to secure basic goods and services. However, World Bank (1993) defines poverty as the inability to meet basic needs such as physical and nonphysical needs including participation and identity required for a meaningful life. UNDP (2005) defines poverty as the denial of opportunity and choices most basic to human development that leads to a long healthy and creative life, to enjoy a decent standard of living, freedom, dignity, esteem and the respect of the others. The Ghana Living Standard Survey (GLSS) defines the poor as those subsisting on a per capita income of less than two thirds of the national average. It also defines “hard core” poverty as those with income below one third of the national average (GLSS, 2018). These definitions suggest the complex

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nature of poverty hence pro-poor fiscal policy may cover many different types of public expenditures, which requires different sources of funding.

The theoretical representations of living standards in terms of capabilities (see Sen, 1999) as well as the experiences of poor communities themselves, confirm the multidimensional nature of poverty and deprivation. According to Sen (1999), these different dimensions include human capital development, nutrition, consumption, income levels, vulnerability and capabilities, which needs to be considered and measured separately. Considering poverty from capability perspective is desirable given that different dimensions are not always closely correlated (Appleton and Song, 1999) and may be influenced by different factors.

It is important to note that fiscal policy reform can assume different forms, each of which can have impacts on some or all dimensions of poverty. For instance, an increase in spending on basic health and education may stimulate human development among the poor. Also, increased spending on public transfers or in-kind transfers such as food subsidies can have beneficial impacts on income, nutrition among the poor especially when these transfers are effectively accessible to them. Public expenditures on infrastructure may have strong poverty impacts, but these effects may be more indirect but it does not necessarily mean that their impacts are less important.

It is easier to assess the poverty impact of some fiscal policy programs compared to others. For instance, the poverty impact of direct cash transfers paid to households, taxes paid directly by households, consumption subsidy granted to households, public spending on education and health among others, could easily be assessed whilst it is much difficult to quantify the direct impact of public spending on infrastructure (Smoke, 2006). Most of the empirical studies of the poverty impact of fiscal policy focuses on the impact evaluation of direct transfers to the poor, using the Benefit Incidence Methods (BIM). The BIM measures poverty impacts of fiscal

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policy in terms of increment or reduction to income or consumption. Thus, changes in welfare is measured in money-metric terms (see Heltberg et al, 2001). The benefit incidence approach becomes popular partly due to the modest data requirements, especially requiring cross sectional data.

However, the Benefit Incidence Methods rely on a number of strong assumptions. For instance, the method assumes that individuals affected by the policy do not change their behaviours as a result of the intervention. However, both theoretical and empirical literature suggests that such assumption is not generally true. Although benefit incidence analysis focuses on average rather that marginal incidences, it provides a reasonable estimate of first round, static, distributional incidence of existing fiscal policy measure (McKay, 2002). More effective measures of the poverty impact of fiscal transfers consider the progressivity of such policy but the BIM is more concerned about whether the interventions are well targeted at the poor.

The benefit incidence analysis requires relatively modest data and modelling to quantify poverty impacts of fiscal transfers especially when standard of living is measured in money-metric terms. But the BIM analysis cannot easily be applied to fiscal programs whose poverty impacts are quite indirect (van de Walle and Nead, 1995). This approach could not be easily applied to interventions whose poverty impacts are indirect, involves general equilibrium analysis, and dynamic in mature (McKay, 2002). This implies that the poverty impacts of public spending on development projects cannot be effectively evaluated using the Benefit Incidence Approach.

The general principle of modelling these behavioural responses involves the use of differences in fiscal policy over time to examine their impact on welfare outcomes, controlling for all other likely influences (McKay, 2002). This approach therefore requires an appropriate econometric analysis or an approach based on appropriate control groups. In this approach, the welfare

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measure could be monetary or non-monetary and the estimating the welfare effect of the fiscal transfers gives a better measure assuming the behavioural responses are adequately modelled (Cox and Jimenez, 1998). This study therefore employs econometric analysis in estimating the poverty impacts of local revenue and central government grants, which are enshrined in the fiscal decentralization framework as the main sources of funding for the MMDAs.

3.1.2 Transfer grants and Local Revenue

Fiscal decentralization according to Porcelli (2009) is the subsidiarity of fiscal policy whereby spending responsibilities and the fixing of tax instruments are ceded to local governments as form of institutional reform. At the epicentre of fiscal decentralization is intergovernmental transfer systems that ensure flow of resources from national governments to subnational governments. These intergovernmental relations are characterized with financial distribution arrangements aimed at achieving certain objectives. However, these arrangements most often create adverse fiscal incentives at the subnational level (Rosen, 2005), and political manipulations at the centre (Smoke, 2006).

Intergovernmental transfers to local governments undoubtedly provide the financial resources for the delivery of pro-poor social services at the local levels, however, concerns have been raised about its tendency to undermine the incentives for subnational governments to recover cost. According to Rosen (2005), unconditional transfers and grants crowd-out local revenue since local government authorities perceives such inflows as windfall revenues thereby reducing local revenue efforts. Thus, grants have a negative effect on local revenue mobilization.

Bradford and Oates (1971) proffer a formal theory of how grants may affect fiscal performance at the subnational level through the flypaper effect. Under the assumption that public and private incomes are fungible, the authors posit that unconditional grants free up extra resources

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for local governments, which benefit citizens in the form of a lump-sum tax reduction, thus crowding out efforts to mobilize local revenues. This implies that transfer grants erode local fiscal autonomy because it may serve as substitute for local tax revenue. However, Crook (2003) argued that in developing countries where financial challenges on the local governments are onerous, transfer grants become crucial to support local revenue mobilization.

Moreover, some scholars hold the view that fiscal decentralization provides the avenue to reduce bureaucracy and tax compliance burden, as well as administration costs since the tax administration structures are made closer to the rural folks. Perhaps more importantly, grants directly supports the provision of public services, which in turn promotes voluntary tax compliance (Caldeira and Rota-Graziosi, 2014; Bodea and LeBas, 2016). This mechanism can be attributed to the situation whereby central government transfers are channelled into local development activities that improves the economic wellbeing of the people. Also, Musgrave (1989) noted that strong headquarters function and effective decentralization is required for a robust revenue performance. These assertions suggest a complementary relationship between fiscal decentralization and revenue mobilization at the subnational level.

Intergovernmental transfer arrangement involves designing the appropriate criteria for allocating the resources. Identifying the main objective of a particular transfer program and how resources could be best allocated to achieve those objectives can be challenging. According to Smoke (2006), a redistributive unconditional transfer program such as major recurrent transfer programs in most countries are designed simply to target poor areas, or more ambitiously designed to bridge a fiscal gap between defined expenditure needs and fiscal capacity. Thus, transfer programmes are carefully designed to achieve specific targets that are measurable hence the need for effective resource distribution framework to achieve those targets are difficult to design.

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Most countries adopted formula-based allocation approach, ranging from very simple to relatively complex one. These variations in the approaches illustrate the issues of trade-offs in transfer formula design. For instance, while a single-variable-based allocation approach such as the use of population satisfies the objectives of simplicity and transparency, it only measures in a crude way expenditure needs of a particular jurisdiction (Smoke, 2006). Other transfer approaches attempt to broaden the measures of need beyond population by using land area and equal share component, however, some analysts have questioned the choice and effects of these particular variables.

A major constraint to the use of complex allocation approach is that some variables that might be desirable to be used are difficult to define accurately. For instance, properly measuring service delivery costs may not be a straightforward exercise. Also, equal expenditures should not be expected to yield equal outcomes, and even if significant inter-jurisdictional differences could be accounted for, there is the question about the appropriate weights to be ascribe to each component of an expenditure index (Smoke, 2006). It is further argued that even if the allocation variables can be properly defined, data availability and reliability especially in developing countries makes the use of this approach often problematic.

3.1.3 Justification for Transfer Grants

In many countries, the provision of local public services is ceded to subnational governments as fundamental responsibilities. In order to deliver on those responsibilities, fiscal resources are transferred to those lower-tier governments and those transfer arrangements are justified on several grounds. These reasons include achieving vertical and horizontal equalization, to correct for inter-jurisdictional spillovers, correct for major administrative weaknesses and restructure bureaucracy.

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3.1.3.1 Vertical Imbalances

In most countries, national governments retain major tax bases, leaving insufficient fiscal resources to the subnational governments. Generally, both central and local governments are required to provide public services but often, own-source revenue-raising powers of subnational governments are not sufficient to meet the costs of providing the assigned services. Intergovernmental transfer is therefore needed to balance the budget at the subnational levels. Vertical equalization implies raising local revenue-generation powers or transferring resources from higher levels to the subnational authority (Smoke, 2006) to provide local services to their citizens.

However, growing local revenues can often create some economic difficulties for the central government. Promoting subnational governments to acquire substantial revenue-generating powers reduces central control over the total size of the public sector, which could jeopardize macroeconomic stability (Smoke, 2006). In view of huge informal sector of many developing economies, appropriate local revenue bases are commonly weak and administratively complex for local authorities to manage. Hence, transfer mechanisms are often the most popular, preferred and suitable way to achieve vertical equalization in developing countries.

3.1.3.2 Horizontal Imbalances

Horizontal equalization becomes very useful when there are wide differences in the ability of subnational governments to mobilize resources individually on their own. Differences in resource endowments among the authorities may create substantial inter-jurisdictional differences in the quantity and quality of public services (Smoke, 2001), especially if only local revenues were available to finance the public services. Some jurisdictions may have better access to natural resources or other tax bases that are not available in other jurisdictions. Also, there may be differences in fiscal capacities such as income and expenditure need among jurisdictions because they may have high proportions of the poor, old, and young population.

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The net fiscal benefits, measured by the gap between fiscal capacity and fiscal need, are often caused by such uncontrollable factors (Smoke, 2006) and are therefore addressed by inter-governmental transfer. The central government bridges horizontal imbalance by redistributing personal incomes and wealth at the subnational level. However, transferring funds from high-income to low-income localities does not necessarily mean that high-income households bear the tax burden used to finance the transfers that provide services consumed by low-income households (Smoke, 2006). The net effect of the transfer is conditional on the distributional incidence of both revenues and expenditures.

3.1.3.3 Inter-jurisdictional Spill-over Effects

Another rationale for intergovernmental transfers is that some local government services generate inter-jurisdictional spillovers (Ma, 2006) which extend beyond the borders of the area generating the externality. For instance, health services provided in one jurisdiction may improve the overall health situation in neighbouring communities. Other positive externality generating services such as pollution control, inter-regional highway, higher education etc. may be beneficial to citizens in other jurisdiction (Smoke, 2006).

In view of the positive externality, local governments may be unwilling to provide an efficient level of certain services when residents outside the locality will benefit from the resulting externality. Thus, without reaping all the benefits of these projects, a local government may tend to underinvest in such projects. Therefore, central government needs to provide financial resources to address the problems of under-provision. Ma (2006) argues that the transfer mechanism may achieve the targeted objective if it is conditioned that such resources be spent only on services that generate spillovers. Allocating adequate resources to the subnational authority to provide more of the goods generating the positive externality frees up other resources that might have been used on the same services.

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3.1.3.4 Administrative Efficiency

Administrative efficiency can sometimes be improved by centralizing the management of certain taxes. Collection of property taxes, and many other types of fees can be adequately collected by subnational authorities. Subnational governments in some jurisdictions levy some taxes generally reserved by central governments. However, taxes such as personal income and business taxes are likely to be managed more efficiently through a central tax administration system than by a fragmented local system (Smoke, 2006). Thus, those taxes are generally collected nationally with the revenues redistributed to local governments through a transfer system to ensure efficiency.

3.1.4 Characteristics of Robust Transfer Systems

Transfer mechanisms are evaluated based on some criteria that are considered desirable features of efficient transfer system. These criteria include:

i. revenue adequacy and growth
ii. predictability, simplicity and transparency
iii. allocative efficiency
iv. equity and
v. incentives for sound fiscal management and subnational resource mobilization

Revenue adequacy and growth relates to the ability of a transfer system to adequately support legitimate local expenditure needs. A grant system meets these criteria when it is designed to promote adequate mobilization of enough resources to cover unmet revenue needs of a subnational government. Also, the grant system should ensure that transferred resources grow proportionately with needs over time (Smoke, 2006). However, in developing countries, resources are limited while expenditure needs of localities are unlimited hence real revenue adequacy may be difficult to achieve.

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The criteria of predictability, transparency, and simplicity are closely interrelated. For the purposes of fiscal planning, there is the need for a reasonable degree of certainty to be associated with the flow and timing of resources from the central government. Thus, a good grant system must provide the opportunity for subnational governments to have a general idea about the amount of money it would generate from its various sources prior to the planning and budgeting period for a fiscal year. This provides a strong basis for formulating future plans, which minimizes the possibility of large swings in resource availability (Smoke, 2006), a situation that can compromise service delivery.

Transparency in transfer mechanisms requires that subnational government officials and their constituents are able to ascertain how their portion of a particular transfer was determined. Transparency would provide some level of understanding why they received a different amount than other localities, even if they are dissatisfied. Such an understanding is facilitated by relatively simple but explicit transfer formulas, which reduces the likelihoods for capricious political manipulation of transfer allocations (Smoke, 2006). However, this requires availability of appropriate data whilst local governments do not have the opportunity to manipulate the values of the factors included in the formula.

Smoke and Jim (2001) argue that the criterion of allocative efficiency includes two sub-objectives. First, allocative efficiency requires that public services be provided at the lowest possible cost and thus given a particular level of spending, the highest amount of services possible is produced. This implies that, grant systems should encourage local governments to use their resources judiciously and in the most productive way possible. Second, the concept of allocative efficiency requires that resources are allocated to services identified sub-nationally as the utmost priorities (Smoke, 2006). The author argues that unless spillovers exist, grants should not be allowed to distort how subnational governments allocate resources across locations, among sectors, or in the combination of factors of production.

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Equity criterion relates to horizontal equalization, which involves combinations of complex factors. Although complete equalization of access to resources may be possible and desirable, equal expenditures on the same service in different localities do not guarantee the provision of equal levels of services. As indicated by Smoke (2006), transfer systems should ideally distribute resources across localities in a manner that accounts for differences in expenditure needs and fiscal capacity. Thus, equity requires that more resources are made available to those with greater need where unit costs of producing public services are higher, and providing less to those with greater fiscal capacity. It is however noted in the literature that achieving the criteria of equity remains a difficult task due to the problems associated with measuring need, and the controversy surrounding what constitutes fiscal capacity.

Moreover, transfers can significantly affect local financial management (Smoke, 2006) and local resource mobilization. A situation whereby subnational governments perceive intergovernmental transfers as entitlement without any conditionality, they may use the funds inefficiently especially when mechanisms for accountability to local citizens are weak. This problem may ensue especially when subnational governments see transferred funds as substitutes for their own resource effort, reduce local tax effort at the locality for political gains. Additionally, transfers may serve as a disincentive to local governments to maintain infrastructure when the size of the grant is determined by the condition of those infrastructure (Smoke, 2006). Consequently, subnational officials may deliberately allow capital facilities to deteriorate so as to access new flow of grants to replace the depreciated infrastructure. Therefore, effective transfer system should be tailored to promote effective fiscal management and local revenue mobilization.

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3.1.4.1 Design of Transfer System

According to Lewis and Smoke (2017) intergovernmental transfer relations entails three policy choices. These choices are to be considered systematically in designing an appropriate transfer system and they include:

(i) determination of the total amount of resources to be distributed

(ii) allocation of resource pool across all eligible subnational governments

(iii) restriction on utilization of the transfer funds

Determination of Transfer Pool

The size of resource pools can be defined based on a predefined percentage of national revenues in the current or recent fiscal year. This form of transfer pool provides high degree of certainty to local authorities about the release of transfer funds. The approach can also safeguard growth of revenue sources for subnational governments especially when the pool is tied to buoyant revenue sources such as income tax (Lewis and Smoke, 2017). The challenge to this approach is that central government may lack full control over macroeconomic fiscal policy when a share of national revenues is ceded to subnational governments in an inflexible arrangement. However, Smoke (2006) avers that this approach proves to be problematic since it depends on the national budget and how the local governments use those resources. In many developing countries, statutory allocations to subnational governments represents a percentage of national revenue.

Additionally, transfer pool may be designed based on the spending plans of subnational governments (Lewis and Smoke, 2017). For instance, the overall size of grant financing for approved projects for a local authority can be determined on the basis of the size of those projects. Smoke (2006) asserts that these transfer pools can either be closed-ended or open-ended. Closed-ended allocations set aside a maximum amount of resources for distribution,

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and not all the funds may be distributed especially when approved plans submitted are lower than the pools. Open-ended pools depend on all approved expenditures and can usually be unlimited. Open-ended pools design can create a difficulty for central government in keeping low overall expenditure level, and the fiscal space to balance variety of competing demands.

Moreover, a common way of determining a transfer pool is through annual budget decisions. This approach provides some level of flexibility to the central government in other to respond to national fiscal conditions. However, such ad hoc allocations can create uncertainty for local governments, making them vulnerable to economic fluctuations and political negotiations (Smoke, 2006). A situation whereby local governments plan expenditures based on the amount of grants received in previous years and the legislature decides to reduce transfers substantially in the current fiscal year, such decision may cause serious problems for local fiscal management.

Allocation of Funds

A number of approaches are employed to allocate the transfer pool among eligible subnational governments. One approach involves tax-sharing revenue being returned to a particular local government as central government tax collected within the sub-national's jurisdiction. This transfer could either be the full or a proportion of the tax revenue collected and can be growth elastic if the tax being shared has significant growth potentials. However, this approach may be counter-equalizing since subnational governments with larger tax bases receive greater amounts of transfer funds (Lewis and Smoke, 2017) relative to their counterparts with low tax bases. This suggests that, the approach is based on subnational fiscal capacity and are not good mechanisms for redistribution across subnational jurisdictions.

Another approach that has become increasingly popular in the allocation of transfer pool is the use of objectively defined formula. The formula-based approach is widely used because it

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provides greater transparency for the recipient local governments and provides the central government with considerable freedom to determine which objective should be emphasized in the determination of the formula (Lewis and Smoke, 2017). Formula-based transfers are commonly difficult to use in developing countries due to lack of timely and adequate data. Moreover, Lewis and Smoke (2017) note that there is sometimes the tendency to achieve too many objectives with a single transfer program, thereby incorporating so many indicators into the formula with no clearly targeted effect.

A resource pool could also be allocated through a cost-sharing transfer mechanism whereby subnational governments are reimbursed for expenditures incurred on a particular priority programme deemed worthy of subsidization. Such transfers can be executed based on either total-cost or partial-cost sharing approach (Smoke, 2006). The total-cost recovery approach reimburses the local authority for the full costs associated with the services provided, while the partial-cost process requires a subnational to contribute some minimum portion of total costs from their own resources (Ma, 2006). It is worth nothing that, granting subsidy to the cost of local service instead of full cost recovery may distort the budget of the recipient local government in undesirable way especially when such transfer is not clearly acceptable by the local government.

Moreover, some transfer allocation mechanisms depend on ad hoc decisions of the granting authority in determining amount of the transfer pool each locality receives. This approach may create high level of uncertainty on the part of grant beneficiaries since they may not know the amount and the method of distributing the grants. This mechanism also opens the door to arbitrary, subjective, non-transparent allocations that may work against broader public sector goals (Lewis and Smoke, 2017).

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Degree of Spending Autonomy

An important policy decision in transfer design is the extent of autonomy that has to be granted to the subnational governments in using transfer funds. Some experts have argued that giving a greater degree of autonomy to subnational governments implies that the central government has less control over how the transferred funds are spent. Devolution of fiscal autonomy from the centre to subnational authority could be achieved in many ways. First, general-purpose allocation gives a subnational government full autonomy over the use of transferred funds. However, this full autonomy is exercised within the legal limits of decentralized functional responsibilities (Lewis and Smoke, 2017). Thus, the recipient local authority can allocate the money for whatever purpose it perceives as priority for the locality. Such transfer mechanisms are very much close to the spirit of full devolution of fiscal authority advocated by proponents of decentralization (Lewis and Smoke, 2017). There is a growing shift towards general-purpose allocations in intergovernmental transfer schemes especially in many developing countries.

Second, sector restricted block transfer allows the subnational government to decide how funds are to be utilized only within a particular sector. This transfer is particularly relevant where the government identifies significant positive externality associated with activities in a particular sector, for instance health service delivery within a particular locality. Similarly, capital development grant system can be designed to allow subnational governments the choice to use the funds on specific projects such as constructing new roads, health centres, or school buildings, but prohibit diversion of those funds to other infrastructure projects (Lewis and Smoke, 2017).

Third, specific-purpose transfers are used to restrict how funds are spent at subnational levels. Restrictions may be applied to subnational government's choices between the use of labour and non-labour inputs and/or for particular expenditure plans (Lewis and Smoke, 2017). Thus,

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grants for capital development projects, and other local social projects may have to be spent strictly according to the provisions of project plans or services submitted by the local authority and approved by central government. For instance, grant intended to pay salaries of teachers, direct transfer to households (such as school feeding grants) are restricted to expenditures related directly and exactly for that purpose.

3.2 Empirical Literature

The New Institutional economists argue that power could serve as a productive resource when properly organized. Bates and Block (2013) use the history of Africa's political reform to test the hypothesis of the new institutional economics. The authors explored the relationship between changes in political institutions and changes in economic performance both at macro and micro level. The study reveals that political reform promotes GDP per capita growth in the African subset of the global data, and reform of political institutions in Africa relates to factor productivity growth in agriculture. This result corroborates the finding of earlier studies on the role of institutional reform in economic development such as Rodrick, Subramanian, and Trebbi (2005) who examined the primacy of institutions in economic development and find that quality of institutions "trumps" everything else in the development process of countries.

Given that majority of African electorates predominantly lives in the rural arrears, which are generally characterized by high incidence of poverty, adoption of political and fiscal reform that drives decision making process closer to people could be conducive for local development. Thus, this study derives an inspiration from the new institutional school of thought and we argue that fiscal decentralization provides an opportunity of institutional reform, which could spur local development.

Studies on the impact of decentralization on local level development outcomes in Sub-Saharan Africa countries have mainly sprung up following the beginning of the institutional reforms in

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the 1990s. However, most of the empirical investigations on fiscal decentralization focused on group of countries whilst few are country-specific. Moreover, whilst some of these research works found positive relationship between fiscal decentralization on one hand, and revenue efforts, service delivery, economic growth, poverty and inequality on the other hand, others obtained negative relationships whereas some found no significant relationship between them. Some of these previous studies are reviewed below:

3.2.1 Studies that Examined the Political Economy of Decentralization

Some authors emphasized political considerations as mediating factors in local service delivery. For instance, De Mello and Barenstein (2001) employed Tobit and Weighted OLS model with cross-sectional data on seventy-eight (78) developed and developing countries, covering the period 1980-1998 to examine the correlation between fiscal decentralization and the efficiency in governance. The authors found that the higher the share of subnational revenues and grants, the stronger the association between decentralization and governance. In addition, the level of expenditure decentralization positively influences the association between governance and local service delivery. Thus, fiscal decentralization has positive association with improved quality of governance and service delivery.

Crook and Manor (2000) examined the political decentralization process in India, Bangladesh, Cote d'Ivoire and Ghana. The authors found that the governance reform reduce grand theft but increases the incidence of petty corruption in short run while in the long run both declined. Thus, the authors found that decentralization enhances transparency and reduces the incidence of corruption in those countries in the long run.

Fisman and Gatti (2002a) used dataset on fifty-nine (59) countries for the period 1980-1995 to examine the effect of expenditure decentralization on corruption. The regression analysis control for GDP, country size, openness, index of civil liberty, contract enforceability, colonial

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dummies and ethnic fractionalization. The results show a negative association between expenditure decentralization and corruption measures. Similarly, Fisman and Gatti (2002b) conducted similar study in the USA using a panel data from fifty (50) states covering the period 1976-1987. The results show that the effect of expenditure decentralization on subnational performances depends on accompanying revenue decentralization.

In addition, Gurgur and Shah (2014) analysed the disparity in the effects of decentralization on corruption between industrialized and non-industrialized economies. The study sought to identify major drivers of corruption so as to isolate the effect of centralized decision-making. The authors used Weighted Least Square method on panel data for a sample of thirty (30) non-industrialized and industrial countries covering the period 1990-1999. In the subsample of non-industrialized developing economies, weak democratic institutions, lack of service orientation in the public sector, economic isolation and centralized decision-making were identified as the major causes of corruption. Decentralization led to a significant reduction in the incidence of corruption in unitary countries than in federal countries.

However, Foster and Mijumbi (2001) found a contrary result in Uganda. The authors conducted a case study on Uganda by using key informant interviews conducted in 2000-2001, review of the Ugandan budget system and policy history. The study shows a steep decline in spending on primary healthcare following the decentralization reform. Also, funds intended for schools and health facilities were diverted for administrative use whilst drugs and supplies were diverted for private use.

Reinikka and Svensson (2004) employed panel regression analysis and primary school surveys to examine the extent to which education capitation grants actually reached the intended schools in Uganda. The authors found that during 1991-1995, schools received only 13 percent of the total grant while some targeted schools received nothing, and local officials and

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politicians captured the bulk of the school grant. These findings support the argument that transfer of financial and political power may provide avenue for wrong incentives and abuse.

Furthermore, some empirical studies on decentralization focused on the political economy of intergovernmental transfers to subnational governments. Veiga and Pinho (2007) in Portugal employed political budget cycles model and tactical redistribution theory to examine the impact of political institutions on the allocation of financial resources to subnational jurisdictions for the period 1979-2002. Their panel GMM results shows that political factors evolve with maturation of Portugal's democracy, and allocations of intergovernmental transfers favour swing voters in early period of the democratic process. This finding suggests that decentralization policy could be used to manipulate political incentives and outcomes.

Banful (2011) in Ghana adopted Tactical Redistribution and Political Budget Cycles theories developed by Dixit and Londregan (1996) and Rogoff and Sibert (1988) respectively, to analyse the factors determining intergovernmental transfers in Ghana. The author employed Seemingly Unrelated Regression and Fixed Effect methods on district-level panel data. The author used the districts' shares of DACF endowments covering the period 1994-2005. The study revealed that amount of DACF releases and disbursements differ from allocations whilst per capita grants are higher in districts where vote margins are lower in previous election, suggesting that swing districts are targeted in Ghana.

Caldeira (2012) in Senegal analysed the political economy and the redistributive effects of intergovernmental transfers. Fixed Effect estimation technique was used on a micro-level public finance data. The study shows that Senegalese system of redistribution is tactical as grants allocation targets swing communes relative to partisan communes. Similarly, Maystadt and Salifu (2019) examined the relationship between VAT transfers to subnational governments and electoral performance in Nigeria. They used Instrumental Variable approach

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on variations in VAT transfer data from 2007 to 2015. The authors found that an increase in VAT transfers induced by higher oil windfalls improves electoral fortunes of incumbent government in Nigeria.

Moreover, Fumey (2018) in Ghana examined the political economy of intergovernmental transfers from the central government to local governments. The author examined the Core Supporter and Swing Voter theories by using two-step system GMM approach to estimate a dynamic linear panel regression. Data on DACF transfers and election results covering 167 MMDAs from 1994-2004 were used for the analysis. The author found that government generally targets more urban swing districts than rural aligned districts. Thus, the allocation formula of the DACF transfers was influenced by political factors especially during election years.

Hanif et al (2020) examined the impact of expenditure decentralization and revenue decentralising on growth and poverty. The authors used a panel data of fifteen (15) developing federations from 2000 to 2015 and two-step system GMM estimation method. The results show that in federal developing countries, both revenue and expenditure decentralization have a positive impact on economic growth. It is found that decentralization-poverty nexus depends on the level of perceived corruption and the quality of the country's institutions. This finding confirms the supremacy of institutions as espoused by the new institutional economist such as North (1990) and Bates et al. (2013).

3.2.2 Studies that examined the Effect of Grants on Revenue Effort

The expected gains of decentralization reform include improvement in policy responsiveness to local preferences. As a result of the imbalance between the revenue mobilization abilities of local governments and their expenditure responsibilities especially in developing countries, grants are made available to fill the fiscal gap in the subnational governments. However,

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transfers from central governments may modify local government behaviour. Any increase in transfers may lead to greater local government spending higher than the one attributed to a rise in private revenue of a local population (Hines and Thaler, 1995). The disincentive effects of grants on local revenue mobilization have elicited plethora of research on how inter-governmental relationship influences the local government's fiscal behaviour in both developed and developing countries.

Most of the studies on the grants and own-source revenue mobilization reveal that intergovernmental transfers tend to be associated with flypaper effects. Cardenas and Sharma (2011) investigated the phenomenon of flypaper effect and its relationship with local tax effort in Mexico, using a dynamic expenditure model and a panel data covering 1,195 Mexican municipalities for the period 1993-2005. The estimations were based on Fixed Effects and differenced GMM estimators, which confirmed the existence of flypaper effect in the municipal expenditures. The authors find that the magnitude of the flypaper effect is a decreasing function of the economic wellbeing of the municipalities.

Mogues and Benin (2012) in Ghana used panel data on the total of 110 MMDAs, to investigate the way intergovernmental transfers affect local government incentive to collect Internally Generated Funds (IGFs). The authors used district local public finances data from 1994 to 2004, and fixed effects, two-stage least square and GMM estimators to examine the transfer-revenue nexus by estimating a dynamic revenue model. They found that despite the incentive scheme built in one of the major intergovernmental grants, total grant discourages IGF mobilization. Thus, intergovernmental transfers show both depressing effect on IGF levels, and IGF growth.

Yu, Wang and Tian (2016) employed a reduced-form public expenditure model to examine the flypaper effect in China using cross-sectional education data in 2007 on a sample of 1,329

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counties. The study used unconstraint Spatial Autoregressive and Moving Average (SARMA) model, estimated using generalized spatial two-stage least squares (GS2SLS) estimator that accounts for spatial interaction behaviour on public expenditure. The authors found that in the presence of spatial interdependence, there is no evidence of flypaper effect when different spatial weighting schemes and endogeneity problems of education grants are considered. Thus, anti-flypaper effect holds for the Chinese subnational government system.

Kakamu et al (2014) employed Seemingly Unrelated Regression (SUR) model to examine the flypaper effect in Japan. The authors argue that other categories of expenditures influence the expenditure on a particular policy objective. They employed a Bayesian approach to estimate the empirical model on prefecture-level data for 2005 fiscal year. The study revealed that flypaper effect exists in land development, police, education and debt expenditures whilst spatial variations were also significant in sanitation, police, education, and disaster recovery expenditures.

Muinelo-Gallo and Dufrechou (2018) studied the sensitivity of regional budgets to unconditional central grant transfers by measuring two types of asymmetries. First, the magnitude of the reaction to increases in private income as compared to increases in unconditional transfers and second, the sign of the variations in the transfers. The authors employed Fixed Effects and Random Effects models, and system GMM technique on unbalanced panel data of 18 Uruguayan regional governments from 1991 to 2016. The results show that there is a sizeable flypaper effect for the subnational authorities, and no evidence on the asymmetric behaviour relative to the direction of changes in transfers.

Similarly, Yacoub and Lestari (2019) in Indonesia examined the impact of central government fiscal policy decisions on regional expenditures. The authors used Pooled Least Square method on panel data from fifty-six (56) regencies and cities on Kalimantan Island. They found that

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intergovernmental fiscal transfers have a significant relationship with expenditure. Thus, flypaper effect occurs in regional expenditures, which means that the local authorities are heavily reliant on central government to finance their expenditures.

Furthermore, Taiwo (2020) examined the effect of the unconditional grants on local revenues of subnational governments in Nigeria. The study employed Two-Stage Least Square (2SLS) and system GMM techniques to estimate a revenue model using annual panel data covering Nigerian states from 2007 to 2013. The results suggest that states depend mainly on transfers from federal governments to run operations, and transfers to states crowd-out local revenues. Additionally, the authors found that revenue mobilization drive declined during election years.

Empirical evidence on the crowding-out effects of central government grants on local revenue has been far from conclusive. Some studies have also found anti flypaper effect of intergovernmental transfers. For instance, Jin, Qian and Weingast (2005) in China employed "grabbing" versus "helping" hand models to investigate the relationship between provincial government's fiscal incentives and provincial market development. The study used a panel data on twenty-nine (29) Chinese provinces covering the period 1970-1999, a period that featured two successive fiscal reform "fiscal contracting system" and "separating tax system" at the provincial level. The growth of rural enterprise employment and growth of non-state and non-agricultural employment were used as measures of local development whilst marginal revenue retention rate was used as proxy for fiscal incentive. The authors found that provincial governments faced much stronger fiscal incentives to mobilize own-source revenue after the fiscal reforms.

Dahlberg et al. (2008) in Sweden used discontinuous grant rule to identify the effect of intergovernmental grants on local taxes and spending. The formula for the distribution of funds was used as an exclusion restriction in an Instrumental Variable estimation. The study used an

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unbalanced panel data of 283 municipalities observed over the period 1996-2004. The authors found evidence of crowding-in effect when federal grants are shifted to local spending whilst local tax rates are not reduced. Thus, transfers from the central government do not reduce local tax revenues, but instead increase local spending.

Amusa et al (2008) in South Africa employed the median voter model to evaluate the flypaper variant of fiscal illusion hypothesis. They used two-stage least square (2SLS) and OLS methods on cross-sectional financial and expenditure data for 2005/2006 fiscal period from two hundred and thirty-seven (237) local governments. The findings of the study show that the marginal effect of municipal local revenues on local expenditure exceeds those of the transfer grants. Thus, the authors found no evidence in support of the flypaper effect in the municipal expenditures in South Africa.

Furthermore, Caldeira and Rota-Graziosi (2014) in Benin examined the crowding-in effect of unconditional central grant on local revenue. The authors conducted an analysis of the grants collected at the border by Customs that is allocated to local governments through fixed rule (based on population) approach. The authors used GMM estimation technique and a parsimonious revenue model. The analysis covered a panel data for seventy-seven (77) Benin communes from 2003 to 2008. Consistent with the anti-flypaper effect, the authors found that grants positively affect local revenue mobilization. They argue that the positive relationship between grants and revenue is contingent on some minimum level of wealth of the commune and stronger for local governments whose heads do not share the same political affiliation with the president.

Nangoli et al (2015) examined the impact of fiscal decentralization on revenue performance in Uganda. The authors employed a cross-sectional survey research involving both qualitative and quantitative methods. The study used descriptive statistics and correlation analysis on the

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data obtained from a sample of six hundred (600) respondents including council and technical members of three (3) local government districts. The author found that fiscal decentralization improves revenue performance. The positive impact of the fiscal reform was attributed to the reduction in poverty, tax bureaucracy, which significantly reduced tax evasion.

Moreover, Masaki (2018) in Tanzania examined the relationship between intergovernmental transfers and local revenue. The author used Ordinary Least Square, Instrumental variable, Fixed Effects and System GMM regression techniques on local government quarterly fiscal data from 2010-2013 to estimate a revenue model. IGF per capita and per capita transfers were used as a measure of local revenue and grants respectively. The results show that intergovernmental transfer improves local revenue mobilization, and the positive effect of transfers on revenue mobilization is more pronounced in rural districts compared to their urban counterparts.

It is worth noting that, the empirical results on the effect grant on local revenue remain mixed and inconclusive. Whilst most of the studies found a negative relationship between grants and local revenue, others found a positive relationship. The study on Ghana has received very little attention whilst much focus is placed on the political economy of the local government grants system. Moreover, the most recent study done by Mogues and Benin (2012) that covers the period 1994-2004 only estimated a dynamic revenue model. This study examines the grant-revenue nexus by estimating both dynamic expenditure and revenue models using the recent local government data covering the period 2012-2016.

3.2.3 Studies that examined the Effect of Decentralization on Poverty

Poverty reduction has gotten global attention and finds expression in the Sustainable Development Goals (SDGs). Following the drive for the adoption of decentralization as a form of development strategy, some researchers have examined the relationship between

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decentralization and poverty. Most of these empirical investigations focus on developed countries whilst few were conducted on Sub-Saharan African Countries.

Habibi et al (2001) in Argentina studied the effect of devolution on human capital development for twenty-three (23) provinces for the period 1970-1994. The study used two measures of health and educational status and two indicators of decentralization (controlled resources/total resources and provincial taxes/controlled resources). The authors found that fiscal decentralization has a positive influence on the effectiveness of public policy directed towards improvement in the level of human development as well as reducing intraregional disparities. This finding was corroborated by the results of Filmer and Eskeland (2002) who used a cross sectional data from a sample of Argentine schools to examine the impact of decentralization on educational outcomes among students.

Bardhan and Mookherjee (2003) in India tested the hypothesis that states that decentralization allows local elites to capture local government as a result of poverty, socioeconomic inequality and lack of political competition in the local communities. The authors used a longitudinal survey data on a sample of eighty (80) West Bengal villages with focus on some key poverty programs such as targeting of credit, provision of agricultural inputs, employment programs and fiscal grants that occurred during 1978-1998 period. They found that decentralization enhances poverty-alleviating goals, although there exists vulnerability of elite capture within local communities.

Arze del Granado et al (2005) examined the relationship between decentralization and the functional composition of public expenditures, using a distance-sensitive representative agent model. In this model, it is hypothesized that higher levels of fiscal decentralization cause individuals to demand higher amounts of public goods. The study used unbalanced panel data set of forty-five (45) developed and developing countries for 1973-2000 period to test the

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hypothesis. The authors found a strong evidence that decentralized system of government is associated with higher investments in human capital development.

Qiao et al. (2008) investigated whether there exists any potential trade-off between economic growth and regional equity in the design of fiscal decentralization policy in China. The authors test a theoretical model that hypothesizes a trade-off between economic growth and equity in regional distribution using a provincial panel data covering the period 1985-1998. They concluded that there is a positive relationship between fiscal decentralization and growth with no adversarial effect on regional inequality.

Additionally, Hatfield and Kosec (2013) in USA used the exogeneity in counties' natural topography to estimate the causal impact of inter-jurisdictional competition on growth of employee income. The authors used data from Metropolitan Statistical Areas (MSAs) and Consolidated Metropolitan Statistical Areas (CMSAs) for the period 1969-2006. They report that doubling the number of county governments in a metropolitan area increases the average annual growth rate of earning per employee by 17 percent. Decomposing the income effect using 2000 Census worker-level data revealed that half of the effect stems from improving workers productivity. This study relates to fragmentation argument, which states that higher fragmentation of a polity into different jurisdictions causes inter-jurisdictional competition and improved labour market outcomes.

In sharp contrast to studies that established a positive relationship between decentralization and poverty reduction and inequality, some research suggests that fiscal decentralization could exacerbate poverty incidence. Ravallion (1998) in Argentina studied how federal antipoverty programs reached the poor targeted areas following several reforms in the local government system. Program resources were reallocated across provinces following a pro-poor policy reform (from the country's "Trabajar 1" into "Trabajar 2") with higher spending and greater

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targeting to the poor. The authors found that poorer provinces were disadvantaged following the reform and decentralization generated substantial inequality in public spending.

Crook (2003) conducted literature review of local government systems in some selected Sub-Saharan African countries including Ghana to examine the extent to which poverty reduction is influenced by the politics of local-central relations. Despite some variations identified in the framework of decentralization policies being rolled-out in these countries, the review shows that the policy reforms have not challenged local elites who are indifferent to pro-poor policies. Thus, decentralization is unlikely to promote more pro-poor outcomes without effective strengthening and broadening of accountability mechanisms at the national and local levels.

Similarly, Okojie (2009) in Nigeria conducted literature review on decentralization and rural service delivery. The policies and strategies for public service delivery as well as the impact of access to rural services on agricultural productivity and development outcomes in Nigeria were examined. The author noted that despite the significant improvement in local government revenue, lack of accountability, issues of diversion of earmarked funds remains the bottlenecks of the Nigerian local government system. They also concluded that following the implementation of the local government system, there is no clear improvement in the poorest municipalities.

Moreover, Azila-Gbettor et al (2014) analysed the relationship between fiscal decentralization and poverty reduction in Ghana using a qualitative research method, and non-monetary measurement of poverty. The study employed focused group discussion with one hundred and thirty (130) community stakeholders in five (5) area councils in the Akatsi District to examine citizen understanding on the use of DACF in poverty reduction programs. The authors found very limited support for the theoretical construct that establishes a positive relationship between fiscal decentralization and poverty reduction.

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According to other researchers, fiscal decentralization has a non-linear effect on poverty. Sepulveda and Martinez-Vazquez (2011) examined the effect of fiscal decentralization on poverty and income inequality using Generalized Two-Stage Least Squares (G2SLS) method. The study used panel data for one hundred and fifteen (115) developed countries and one hundred and eighty-two (182) developing countries covering the period 1971-2000. The authors found that fiscal decentralization tends to reduce poverty when the share of subnational expenditures is equal or equal to one-third of total government expenditures. Additionally, fiscal decentralization reduces income inequality only if the overall government budget is at least 20 percent of GDP.

Sacchi and Salotti (2014) analysed the effects of fiscal decentralization on income inequality using a sample of twenty-three (23) OECD countries over the period 1971-2000. The authors adopted several regression specifications including Fixed Effects models to mitigate the influence of potential endogeneity. They used robust measures of fiscal decentralization including the extent of expenditure and tax autonomy of sub-central governments. The study reveals that higher degree of tax decentralization correlates with higher household income inequality. This finding suggests that although fiscal decentralization may be attractive relative to efficiency reasons, it may create undesirable social consequences.

Lui et al. (2014) used panel Fixed Effect method on US provincial data for the period 1995-2011 and county-level data covering the period 1995-2005 to examine factors affecting subnational grants. They adopted the Opportunistic Redistribution Theory propounded by Cox and McCubbins (1986) to examine the factors determining transfers of tax rebates to subnational governments. They found that better-off provinces receive more tax rebate per capita than non-better-off provinces. This study explores the inequality in intergovernmental transfers between poor subnational governments and their non-poor counterparts.

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Similarly, Zambok et al (2016) studied the influence of community representation in fiscal decentralization-poverty nexus in the Asokore Mampong Municipality and the Atwima Nwabiagya districts of Ghana. They observed that fiscal decentralization had no meaningful impact on poverty reduction because of delays in disbursement of funds from the central government, inadequate human resources, logistical constraint and weak revenue mobilization of local governments. In addition, Agyemang-Duah et al (2018) conducted a literature review on the fiscal decentralization and its effects on poverty in Ghana from the optimist and pessimist point of views. The study revealed that fiscal decentralization has the potential for poverty reduction especially when greater fiscal autonomy is assigned to the local governments.

The literature on Ghana is scanty with the most recent by Zambok et al (2016) and Agyemang-Duah et al (2018). Agyemang-Duah et al (2018) conducted a literature review on the Ghana's fiscal decentralization and poverty and found no significant effect. Similarly, Zambok et al (2016) examined the poverty impact of community representation using a sample of two districts, and found no significant influence on poverty. Although these empirical studies have provided some explanation on the relationship between decentralization and poverty, they could not provide sufficient justifications for countrywide policy decision in Ghana. The main contribution of this study is to probe whether transfer grants and local revenue, which form the main sources of fund for Ghana's fiscal decentralization have any influence on poverty. The System GMM technique and a balanced panel data collected on MMDAs in Ghana are used in the analyses.

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3.3 The Conceptual Framework for the Study

According to Jung and Smith (2007), decentralization promotes poverty reduction through enhancement in resource mobilization at the subnational level. Central government's fiscal support to the local governments may enhance equity in the distribution of economic resources to the various jurisdictions. Moreover, subnational governments may become more accountable and hence deliver local services in an efficient manner. Thus, Local governments are better positioned to identify local needs and deliver effective public services because of their proximity to the local folks (UNDP, 2005).

Figure 17 shows the conceptual linkage between decentralisation and poverty reduction. The framework identifies the influence of fiscal decentralization on poverty reduction. The grant system, which forms the pillar of the fiscal reform is expected to improve fiscal imbalances among the local governments. The devolution of fiscal authority is expected to enhance tax compliance and engender efficiency in revenue mobilization. Thus, the main instruments within the fiscal decentralization framework is to mobilize adequate revenue from the local level and from the central government. The fiscal resources are expected to help in the provision of local services and infrastructure that are crucial for poverty eradication.

However, central government efforts in improving local tax administration processes, vertical and horizontal imbalances, as well as to internalize externalities may creates macroeconomic instability. Also, local government fiscal decisions may be characterized by flypaper effects as a result of grant inflows, which may crowd-out local revenue mobilization. Additionally, targeting politically aligned or/and political swing assemblies may compromise the principle of allocative efficiency and instigate social conflicts among local jurisdictions.

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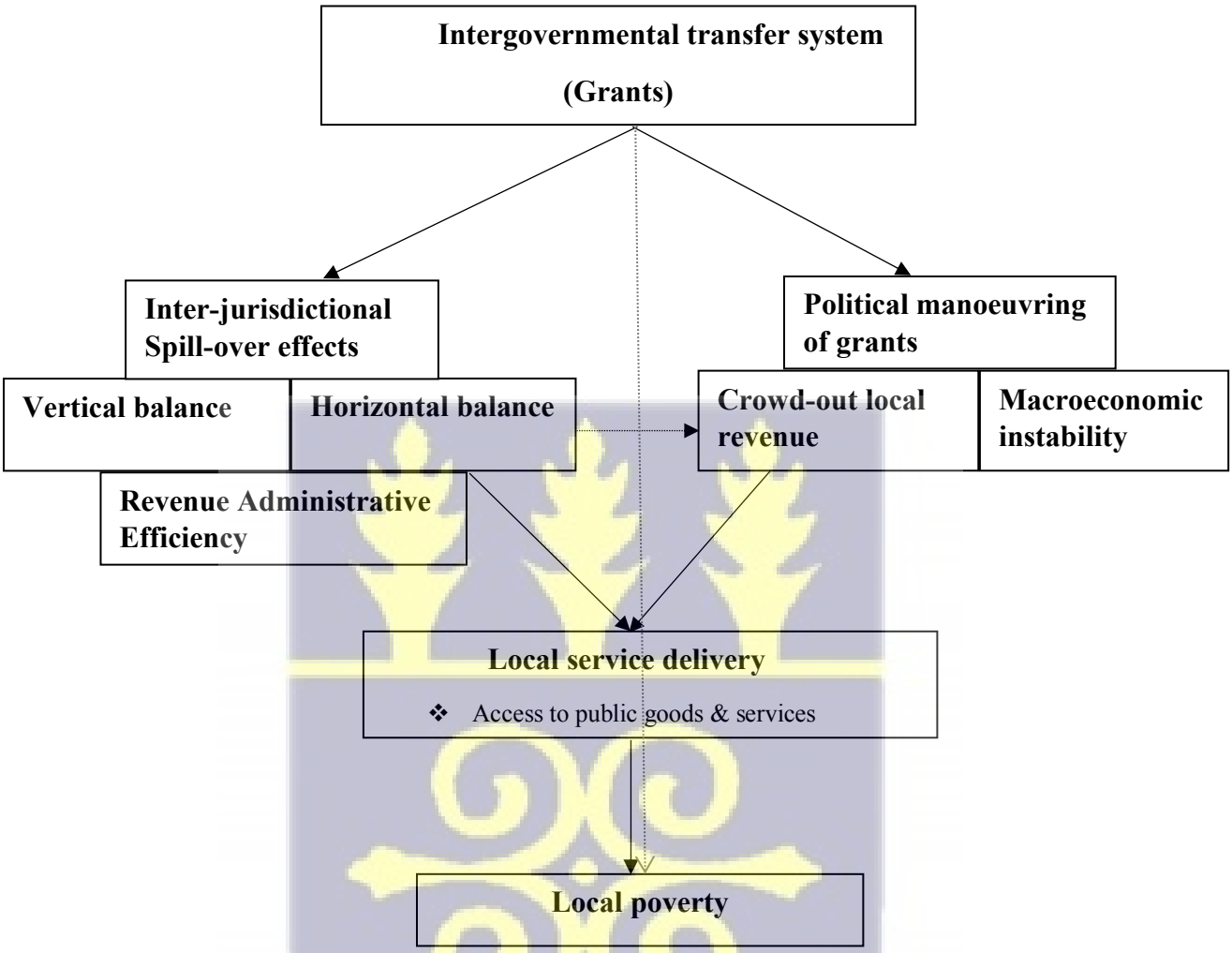
Figure 17: Conceptual framework, decentralization-poverty nexus



Source: Author

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3.4 Summary of Literature Review Findings

Most countries including developing economies have moved away from centralized socialist system of governance to a decentralized system. According to Garman et al. (2001), more than 80 percent of developing countries were undergoing decentralization reform by the beginning of the millennium. The literature on the effect of grants on revenue effort, and poverty suggests mixed conclusions. Whilst some of the studies found that grants promote revenue efforts, and poverty reduction, others proffered otherwise, and some posit no correlations. Lack of unison in the findings of previous studies clearly suggests ambiguity in existing literature requiring more enquiries into the subject matter.

Moreover, many studies on decentralization-poverty nexus have been conducted on country specific (individual country) and cross-country (group of countries) basis but it is worth mentioning that most of these studies especially the country-specific investigations were done on developed economies (Qiao et al., 2008; Akai et al., 2007) whilst others (like Hanif et al., 2020) focused on the indirect impact of fiscal decentralization on poverty, tracing its effect through economic growth. However, studies such as Fjeldstad (2014) and Fosu (2008) have shown that economic growth has not been necessarily associated with significant poverty reduction in developing countries. Additionally, recent few studies such as Sepulveda and Martinez-Vazquez (2011) that were much focused on poverty were concerned about determining revenue and expenditure thresholds that reduces poverty in the developed countries.

The literature on Ghana is scanty with the most recent by Fumey (2018) who used a panel data for 167 MMDAs from 1994-2004 to examine the political economy of the fiscal decentralization policy in Ghana and found evidence of political manipulation in favour of swing districts. Agyemang-Duah et al (2018) conducted comprehensive review of the fiscal decentralization policy and concluded that the reform has the potential to promote poverty

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reduction. Zambok et al., (2016) examined community participation in the local government system in the Asokore Mampong Municipality and the Atwima Nwabiagya districts of Ghana and concluded that decentralization has no impact on poverty due to the bottlenecks bedevilling the policy. Moreover, Mogues and Benin (2012) investigated the impact of central government grants on local revenue performance by estimating a revenue model, using local government data covering the period 1994-2004. Moreover,

Although these empirical studies have provided some explanation on the relationship between fiscal decentralization and local development outcomes, they are unable to provide comprehensive explanation on decentralization-poverty nexus in Ghana. The MMDAs in Ghana share common characteristics however, their level of economic activity and quality of institutional performance varies. The main contribution of this study is to probe whether local government grants and revenue affects poverty in Ghana whilst controlling for the quality of local institutions. Grants-revenue nexus is examined by testing the flypaper effect whilst the political economy of DACF grants is analysed using the more recent local government data.

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Chapter Four
The Effect of Transfer Grants on Local Revenue in Ghana

4.0 Introduction

Many African countries have adopted decentralisation policy in early 1980s and hence devolved some authority, resources and responsibilities to the local governments. This reform has been adopted as an alternative development strategy to ensure participatory governance, better accountability and effective service delivery (Ohene-Konadu, 2001). The development community is getting interested in fiscal decentralization since it provides support for achieving SDG 1 thus, eradicating poverty in all forms by 2030.

The World Bank report on titled "priorities for ending poverty and boosting shared prosperity" in Ghana, emphasizes the need to reform and strengthen the fiscal decentralization policy and transfer system to enhance efficiency in local service delivery. Consequently, there have been several internal developments to strengthen the local governance system. The fiscal decentralization policy was launched in 2010 to consolidate the gains of the broader decentralization reform. This fiscal policy reform assigns greater responsibility to MMDAs in planning, financing and the provision of local services to the local communities. The main objective of the fiscal decentralization policy is to guarantee sustainable sources of funding towards the provision of local services (MLGR, 2018). However, the local government system is fraught with inadequate financial resources since local governments' taxation powers are often limited.

As part of the efforts to strengthen the local governance institution, the Tax Revenue for Economic Enhancement (TREE) program was implemented with support from Netherland Government to provide technical support for MMDAs in mobilizing local revenue to fund local development projects. The TREE project is a revenue collection-led strategy that leverages on technology to improve revenue from property rates, business operating permits, and general

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revenue for the assemblies. The project also seeks to improve institutional capacity and procedures in revenue collection process as well as participatory planning process.

However, the progress made towards the achievement revenue autonomy remains marginal. Most MMDAs have outsourced their revenue collection duties to private companies that are paid 10 percent of already meagre local revenue (Oppong, 2020). This practice coupled with the lack of revenue mobilization capacity in the local governments have deepened their dependence on central government transfers. Some local authorities still rely on manual ways of keeping database on economic and financial activities in their jurisdictions. This problem is exacerbated by the absence of street naming and local address system, making it difficult to keep database on taxpayers in the country.

The local governments in Ghana largely depend on grants to finance development projects. According to Shah (2006), about 60 percent of local public government spending is financed through grants. These transfers are expected to complement the local revenue of the subnational governments. However, some experts have argued that grants from central government may crowd-out local revenue since the local governments may consider those transfers as windfall resources (Hines and Thaler, 1995). Thus, transfer grants may alter local government's behaviour in relation to expenditures and revenue decisions and the willingness to improve revenue mobilization efforts may decline. Figure 18 depicts the trend in grants and local revenue over the period 2007-2016. Generally, the figure shows a positive association between grants and local revenue in Ghana.

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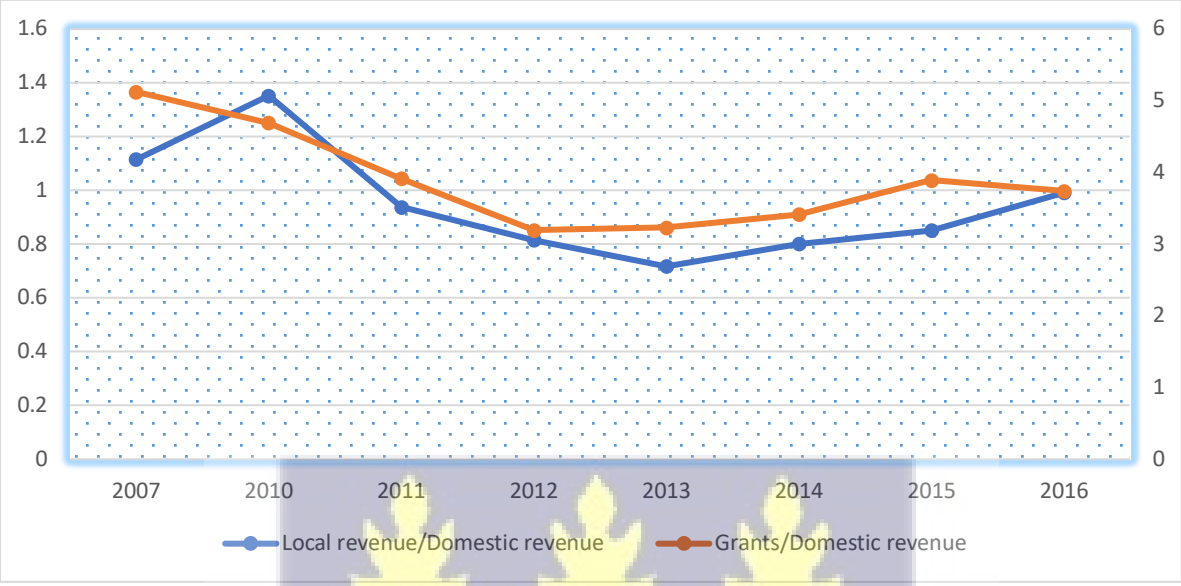
Figure 18: Local revenue sources as percentage of domestic revenue in Ghana, 2007-2016



Source: Authors computation based on MLGRDD and Ministry of Finance data
Grants/Domestic revenue on secondary axis

Many developed countries have focused on the tax-raising effects in designing grant systems. Some developing countries have also incorporated performance criteria such as fiscal effort in their formulas for distributing government transfers (Smoke, 2006). Thus, measures of tax effort are incorporated into the transfer allocation formula to provide incentive for revenue mobilization. However, lack of relevant data limits the use of such comprehensive approach especially in developing countries whilst the complexity of the formulas increases the risk of political manipulation of transfer systems (Smoke, 2015). This political capture of transfer systems and manoeuvring of grant allocation formula poses a challenge to transfer mechanisms.

Moreover, there is an ensuing debate in both theoretical and empirical literature regarding whether grants crowd-out local revenue, a concept known as the flypaper effect. Theoretically, Bradford and Oates (1971) argue that under certain political conditions, a lump sum transfer to a local authority and an identical increase in private income should have the same effect on public expenditure. However, Courant et al. (1979) and Hines and Thaler, 1995 argue that expenditure impact of grant is larger than that of an equal rise in private income.

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Some empirical studies (such as Amusa et al, 2008; Muinelo-Gallo and Azar, 2018) found no relationship between grants and revenue whilst others (such as Rosen, 2005; Mogues and Benin, 2012; Taiwo, 2020) found that grants crowd-out revenue efforts. Dahlberg et al. (2008), Caldeira and Rota-Graziosi (2014) and Masaki (2018) found evidence of crowding-in effect of transfer grants on local revenue whilst Ayee and Dickovick (2014) found that grants reduces the extent of revenue autonomy.

The empirical literature on the effect of grants on local revenue in Ghana remains scanty. The most recent study conducted by Mogues and Benin (2012) used panel data on one hundred and ten (110) MMDAs to investigate the effect of grants on IGF by estimating only revenue model. The authors used district local public finances data from 1994 to 2004 and found that grants discourage IGF mobilization. This study examines how grants to the local governments affects local revenue mobilization by testing the flypaper hypothesis.

Generally, it is perceived that unconditional transfers provide low incentives for local government to raise own revenue. The total grant is decomposed into the three main components to ascertain their independent effects on local revenue. The three main components of grants identified in the literature include general-purpose unconditional grants, sectorial-limited grants and specific-purpose conditional grants. The specific-purpose grant being tied to specific projects, provides no room for manoeuvring and diversion of funds. Sectorial-limited grants are spent on specific sectors whilst general-purpose grants provide room for the exercise of discretion over the use of disbursed funds. This study examines the effect of grants on local revenue using the system GMM estimation technique on most current panel data collected on 91 MMDAs for the period 2012-2016.

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4.1 Methodology

4.1.1 Theoretical Perspective

Following Caldeira and Grota-Graziosi (2014), the study adopts the stylised Optimal Tax Theory to examine the effect of transfer grants on local revenue. The optimal tax theory assumes an economy with a composite private good (**X**) and a locally provided public good (**Y**). A representative local government seeks to maximise the utility of its representative consumer. The local government maximizes this utility using two sources of public revenue. These revenue sources comprise local revenue, denoted by $\mathbf{T_L}$, obtained essentially from taxing the local population, and grants from central government denoted by ($\mathbf{T_R}$). Following from the above, the local government's budget constraint could be specified as:

$\mathbf{T_L + T_R \geq Y}$.

The local government maximises a representative resident's utility function **U(X, Y)** subject to the local government constraint and individual's budget constraint specified as $\mathbf{Y = T_L + T_R}$ and $\mathbf{y = X + g(T_L)}$ respectively, where **y** denotes pre-tax income and **g** represents sensitivity of individual income to grants. The strategic variable of local government as a social planner is its own-source revenue ($\mathbf{T_L}$). The solution of the Lagrangean utility maximisation equation specified in equation (1) is the optimal local tax revenue denoted by $\boldsymbol{T_L^*}$.

$$T_L^* \equiv \arg\max_{T_L} U(y - g(T_L), T_R + T_L) \quad \ldots\ldots(1)$$

The First Order Condition (FOC) is given by:

$$-g'(T_L)U_x(.) + U_y(.) = 0$$

The Second Order Condition (SOC) is specified as:

$$\frac{\partial^2 U(.)}{\partial T_L^2} = g''(T_L)U_x(.) + (g'(T_L))^2 U_{xx}(.) - 2g'(T_L)U_{xy}(.) + U_{yy}(.) < 0$$

By differentiating the FOC with respect to transfers implies:

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$$\frac{\partial T_L}{\partial T_R} = \frac{-g'(T_L)U_{xy}(.) + U_y(.)}{SOC} \gtrless 0$$

There is crowding-out effect on local revenue (flypaper effect) if the marginal utility of public good is decreasing in local tax revenue thus, $\partial U_y(.)/\partial T_L < 0$. Conversely, unconditional central grants crowd-in local revenue if the marginal utility of public good is increasing in local tax revenue thus, $\partial U_y(.)/\partial T_L > 0$.

Most of the empirical studies, which focused on flypaper effect usually assume normality of the commodities consumed by the representative individual, and no substitutability or complementarity between the private and the public good. Thus, to obtain the intuitive negative relationship between transfer grants and local revenue, it is assumed that commodity **X** and **Y** are normal goods and have no relationships. The assumption of independence between public and private consumption implies that $U_{xy}(.)=0$ whilst the that of normality implies that $U_{yy}(.)<0$. The combination of these two assumptions ($U_{yy}(.)<0$ and $U_{xy}(.)=0$) yields the flypaper effect, as discussed in the literature.

In this framework, we relax the assumption of normality and no relationship assumption. Assuming a concave utility function with respect to public spending thus $U_{yy}(.)<0$, implies that transfer grants promote local revenue mobilization if the degree of substitutability between public and private goods is sufficient. In developing countries where financial constraint on the local governments is onerous, transfer grants may serve as a complement to local revenue. Also, public goods play a very important role in welfare maximization in developing countries (Smoke, 2001). This means that the framework establishes counter-intuitive result with respect to usual conclusions in the literature on the negative effect of grants on local revenue.

There is a likelihood of a vicious circle between transfers, expenditures and revenue mobilization. Transfers may lead to an increase in local public expenditures, which improves private income and/or voluntary tax compliance, and consequently local revenue. For instance,

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a local government may undertake refurbishment of local markets using grants, which may improve the revenue of traders and their willingness to pay fee to the local authority. In this case, transfers are expected to crowd-in local revenue.

In contrast, inflows of transfers may be disincentive to local governments to improve their tax effort, while keeping the level of local public expenditure unchanged. This suggests that grants may crowd-out local revenue by reducing revenue efforts of the local authorities. However, it is important to indicate that the variation in marginal utility of public good relative to local revenue may be attributed to individual preferences in public consumption, economies of scale in the provision of public goods and efficiencies of local administrations in tax collection (Caldeira and Grota-Graziosi, 2014).

4.1.2 Empirical Model Specification

This study adopts dynamic expenditure and revenue models to examine the effect of transfer grants on local revenue. We employ panel analysis on data collected on 91 MMDAs sampled from all the ten (formerly) Regions in Ghana over the period 2012-2016, to test whether the flypaper hypothesis holds for Ghana. The flypaper effect is present in local government fiscal decisions when the elasticity of expenditure to grants is greater than that of local revenue (Zhuravskaya, 2000). However, the flypaper effect has to be confirmed by the sign of transfer coefficient in the revenue model (Caldeira and Grota-Graziosi, 2014). We therefore adopt both expenditure and revenue models of Gennari and Messina (2009) and Caldeira and Grota-Graziosi (2014) specified respectively as:

$$S_{it} = \alpha_1 + \alpha_2 T_{Rit} + \alpha_3 A_{it} + \alpha_4 Y_{it} + \beta X_{it} + \mu_i + v_t + \varepsilon_{it} \quad \text{..... (2)}$$

$$\mathbf{T_{Lit}} = \beta T_R + \varphi\, X_{it} + \alpha_i + \theta_t + \varepsilon_{it} \quad \text{..... (3)}$$

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where S is expenditure, T_R denotes transfers, A represents asymmetric variables, Y is income per capita. T_L represents local revenue, X denotes other control variables, μ and α are jurisdiction-specific idiosyncratic characteristics, ν and θ represents time effects, ε is the random error term, and *i* is specific jurisdiction and *t* specific period.

This study employs dynamic panel regression models in estimating the effect of transfers on local revenue mobilization in Ghana. Therefore, the predetermine variables in the model comprises lagged values of the dependent variables (local revenue per capita and expenditure per capita). The inclusion of the lagged value of the dependent variables captures the persistence of the variables in the model. Furthermore, the use of dynamic panel model accounts for temporal serial correlation, and minimize the likelihood of estimating spurious regression model.

Generally, a dynamic panel regression can be specified as:

$$q_{it} = \alpha q_{it-1} + \beta x_{it} + \mu_i + \nu_{it} \quad \text{.....(4)}$$

Where q represents expenditure per capita or local revenue per capita, **x** is the matrix of all the explanatory variables, μ_i denotes unobserved district-specific time-invariant effect, ν_{it} represents the stochastic error term, **α, β** are the parameters to be estimated, **i** stands for a particular district, and **t** is time.

The empirical expenditure and income models to be estimated are specified in Equations (5) and (6) respectively as:

$$\mathbf{lnEXP_{it} = \beta_0 + \beta_1 lnEXP_{it-1} + \beta_2 lnTRA_{it} + \beta_3 lnINC_{it} + \beta_4 FIB_{it} + \beta_5 LAF_{it} + \beta_6 POD_{it} + \beta_7 DUM + \beta_8 ELY + \mu_i + \nu_t + \xi_{it}} \quad \mathbf{.....(5)}$$

$$\mathbf{lnINC_{it} = \alpha_0 + \alpha_1 lnINC_{it-1} + \alpha_2 lnTRA_{it} + \alpha_3 EXP_{it} + \alpha_4 FIB_{it} + \alpha_5 LAF_{it} + \alpha_6 POD_{it} + \alpha_7 DUM + \alpha_8 Ely + \varphi_i + \theta_t + \xi_{it}} \quad \mathbf{.....(6)}$$

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where lnEXP is natural log of total expenditure per capita, lnTRA represents natural log of total transfer per capita, lnINC denotes natural log of IGF per capita, FIB represents fiscal balance, LAF denotes labour force, PoD is population density, DUM is deprived-district dummy, ELY is election year dummy variable, μ and φ are jurisdiction-specific idiosyncratic characteristics, ν and θ represents time effects, ε is the random error term, α and β are the parameters to be estimated *i* is specific district and *t* specific year.

4.1.3 Econometric Technique

In undertaking an empirical investigation into transfers-revenue nexus, this study employs panel regression analysis with STATA 15 as the main analytical software. Formal panel regression analysis involves the use of model estimation techniques including Pooled Ordinary Least Square Estimation (OLS), Fixed Effect (FE) and Random Effect (RE), Instrumental Variable Method (IV), Two-Stage Least Square Estimation (2SLS), and Generalized Methods of Moments (GMM). However, biases in panel regression analysis may render coefficient estimates inconsistent in different techniques.

The Pooled OLS model estimation assumes that all the assemblies have the same expenditure and revenue functions and these are stable over time. Additionally, the Pooled OLS does not make full use of the richness of the panel data since the technique ignores time effects and entity heterogeneity, and this might lead to wrong conclusions. Thus, the pooled regression estimation technique is inappropriate for estimating the empirical models.

Additionally, the Random Effects (RE) model assumes that there is no correlation between unobserved district-specific time-invariant characteristics and explanatory variables. Thus, *Cov* (μ_{it}, x_{it}) = 0. The Random Effect model hypothesizes that although district-specific time-invariant effect and the regressors are not correlated, influence of such unobserved variables must be specified into the regression model. The model therefore uses all available data,

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produces unbiased parameter estimate and smallest standard error, but the unobserved district-specific time-invariant variable would produce omitted variable bias.

Fixed Effects regression method controls for omitted variables in panel data when the omitted variables are time-invariant but district-variant. Thus, Fixed Effect method controls for omitted variables that varies across districts but do not change over time, for instance, institutional quality, cultural, historical and geographical differences. The Fixed Effect regression method has n different intercepts for each district which is represented by binary variable to absorb the influence of all omitted variables that are district-specific and time-invariant. The introduction of district-specific time-invariant variable would produce fixed effects regression model as:

$$Y_{it} = \beta_1 x_{it} + \alpha_i + \mu_{it} \quad \text{.....(7)}$$

Where $\alpha_1 = \beta_0 + \beta_2 z_i$, z_i denotes unobserved district-specific time-invariant variable and α is the district-fixed effects and its variations come from omitted variables z_i.

In view of unobserved district-specific and time-invariant variables, there is a potential problem of endogeneity, which may bias the estimated coefficients. The risk of endogeneity of central government grants is key. Whilst conditional and equalizing grants depend on fiscal efforts and capacity, and therefore are endogenous by nature, unconditional grants are implicit matching grants if central government rewards local governments that commits their own revenue to public spending (Darhlberg et al., 2008). Therefore, the Fixed Effect method seeks to resolve the problem through the process of "entity demeaned" OLS algorithm. The process adopts two steps to address the endogeneity problem by subtracting the mean of district-specific effect from each variable after which the regression is estimated using the district demeaned variables. Taking the mean of district-specific effects ($\bar{Y}_i = \beta_1 \bar{X}_i + \alpha_i + \bar{\mu}_i$) from both sides of equation (6) gives us:

$$\tilde{y}_{it} = \beta_1 \tilde{x}_{it} + \tilde{\mu}_{it} \quad \text{.....(8)}$$

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where, $\tilde{y}_{it}$ and $\tilde{x}_{it}$ are district-demeaned variables that are used in fixed effects estimation model. NB: $\bar{Y}=\frac{1}{T}\sum_{t=1}^{T} Yit$, $\bar{X}$ and $\bar{\mu}$ are similarly defined.

The process hence eliminates the district-specific effect from the model and the mean value of the error term ($\bar{\mu}_i$) remain the same as the actual value of the district-specific error terms (μ_i) since the error term does not change over time. The FE model estimation technique deals with heteroscedasticity in panel regression estimation because it assumes heterogeneity in the error term across districts.

However, in panel regression analysis, existence of biases may render coefficient estimates inconsistent in different techniques. Literature has identified two major estimation techniques as effective tool namely, the Instrumental Variable (IV) and Two-Stage Least Square Estimation (2SLS) methods to deal with such biases but have a weakness as they use "external" instrument. These methods use "external" variables as instruments to correct for potential endogeneity among variables however those instruments hardly meet the condition of "validity and relevance" of a good instrument, and are usually weak. Thus, both IV and 2SLS techniques use another variable that is correlated with the explanatory variable causing the endogeneity, but uncorrelated with the error term. However, it is difficult to find an instrument that is correlated with the explanatory variable and the same time uncorrelated with the error term.

According to Stock and Watson (2007), when the error term is heteroscedastic the class of instrumental variable estimators such as 2SLS and the IV that use linear combination of the instrument no longer becomes efficient but the efficient estimator is the Generalizes Methods of Moments. The GMM technique uses lags of endogenous variables as instruments; in which instance the endogenous variables are predetermined hence are not correlated with the error term. Generally, GMM technique produces consistent and efficient estimates of parameters in view of the following characteristics within data generating-process:

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- Instruments used are lags of the explained regressors.
- The data sample contains small time periods and large entities (countries).
- There exist country-specific fixed effects, which are randomly distributed.
- No autocorrelation across countries but with country-specific autocorrelation and heteroscedasticity in the error term.
- When lagged dependent variable influences the dependent variable.
- And if there is a presence of endogeneity among some variables.

The literature identifies two forms of GMM estimators, namely, the Difference GMM and System GMM. The difference GMM presented by Arellano and Bond (1991) seeks to resolve the problem of inconsistency as a result of endogeneity among some variables in the model by using the first difference of the equation being estimated. Generally, differencing equation (4) would yield the functional relation of the form:

$$y_{it} - y_{i,t-1} = \alpha_1(y_{i,t-2} - y_{i,t-2}) + \alpha_2(x_{it} - x_{i,t-1}) + (v_{it} - v_{i,t-1}) \quad \text{.....(9)}$$

Equation 9 hence eliminates district-specific effect thereby resolving inconsistency and biases due to endogeneity by using lags of the endogenous variables as instruments. The difference GMM technique hinges on moment condition with the assumption of weak exogeneity of regressors and no serial correlation respectively specified in the equations below:

$$E[y_{i,t-1}(v_{it}-v_{i,t-1})] = 0, \; t=3,4,\ldots,T \qquad (9.1)$$

$$E[x_{i,t-1}(v_{it}-v_{i,t-1})] = 0, \; t=3,4,\ldots,T \qquad (9.2)$$

Although the difference GMM helps solve endogeneity among variables, it has some limitations. The process out rightly eliminates time-invariant district-specific effect which may be of interest leading to model misspecification. The difference estimator may suffer weak instrument problem when the explained variable is highly persistent given that the difference method poses some serious biases. Weak instrument undermines the asymptotic properties of

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the differenced estimator and may be harmful for small sample resulting in increased variance of the coefficient and biases the coefficient of the small samples.

System GMM technique was designed by Arellano and Bover (1995) and Blundell and Bond (1998) to address the problem of weak instrument associated with the difference GMM technique using level equation and differenced equation. Efficiency of the equation under estimation is improved if moment conditions of its level form and the differenced forms are combined (Roodman, 2009). The system GMM is designed within additional moments condition specified as:

$$E[(y_{i,t-1} - y_{i,t-2})(\mu_i + v_{it})] = 0, \; t = 3, 4, \ldots\ldots, T \qquad (9.3)$$

$$E[(x_{i,t-1} - x_{i,t-2})(\mu_i + v_{it})] = 0, \; t = 3, 4, \ldots\ldots, T \qquad (9.4)$$

Lagged differences are used as the instruments for the endogenous variables in the level equations since these values become suitable instruments in view of additional moment conditions. The additional moment conditions are based on the assumptions that there may be a correlation between the country-specific fixed effects and the predetermined variables in the equation, and there is no correlation between the lagged differences and the country-specific fixed effects.

The system GMM is considered the most appropriate panel regression estimation technique due to the following characteristics inherent in its process:

i. It resolves endogeneity problem by the use of lagged values of explanatory variables as instruments.
ii. It allows the use of level and lagged values of the variables used in the equation under estimation.

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iii. The problem of information loss associated with cross-sectional regression is eliminated since the system GMM make use of multiple observations for each entity (country) across time.

iv. System GMM is able to produce consistent and unbiased estimate of parameters even with small time period (T) and large countries (N).

According to theory, dynamic panel GMM estimator solves the problems of endogeneity, omitted variables bias, measurement error within panel OLS estimation but portrays weak instrument problem (Bazzi and Clemens, 2009; and Roodman, 2009). Hauk and Wacziarg (2009) and Kumar and Woo (2010) claim that system GMM is the most preferred technique but may exhibits weak instrument drawback especially when variables are highly nonstationary. To ensure the validity of instruments within the system GMM, Sargan Test of over-identification would be conducted to test the hypothesis of valid over-identifying restrictions. Moreover, Arellano-Bond Test would be used to test the hypothesis of no serial correlation. The System GMM estimation technique is employed in estimating the dynamic panel model to deal with any possible biases.

4.2 Variable Description

In this study, we test the flypaper effect by using a panel data set on Ghana's MMDAs for the period 2012–2016. The fiscal data was collected on ninety-one (91) MMDAs across the formally ten (10) regions of Ghana. The period 2012-2016 represents the post fiscal decentralization reform era where adequate local government fiscal data is available to conduct econometric analysis. Before conducting an empirical investigation of the effect of grants on revenue mobilization in Ghana, some variables in the empirical model are described below in order to present some preliminary explanation to the relationships between some key variables.

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4.2.1 Local government expenditures

The flypaper hypothesis holds when expenditure is more elastic to transfers than local revenue (Gennari and Messina, 2014). Most of the empirical studies that examined the flypaper effect used total expenditure (see Doi, 1996; Gennari and Messina, 2014) and expenditure per capita (see Ca'rdenas and Sharma, 2011) as a proxy for subnational expenditure to examine the transmission mechanism of grants-revenue nexus. Whilst the latter measure accounts for the differences in population need, the former does not. Following Ca'rdenas and Sharma (2011), this study uses local government per capita expenditure as a measure for subnational expenditure.

4.2.2 Transfer grants

Some schools of thought hold the view that transfer grants provide the incentive for local governments to engage in needless expenditures with no motivation to raise local revenue. Any increase in central government transfers may lead to greater local public spending disproportionately higher than expenditures associated with a rise in private revenue (Hines and Thaler, 1995). However, other schools of thought argue that transfers may help establish an immediate link between the quality of local services and local taxation. Transfer grants may support domestic waste collection and improve accountability of local authorities, which makes tax collection easier (Caldeira and Rota-Graziosi, 2014). In testing the flypaper effect, the empirical literature generally considered conditional, unconditional and sectorial-controlled transfer grants. Aside from examining the impact of total transfer grants on local revenue, this study considered these three dimensions of central government transfers namely; school feeding transfers (conditional), goods and services (unconditional) and DACF transfers (sectorial-controlled).

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4.2.3 Local revenue

According to the Spend-Tax Hypothesis, the quest to increase local expenditures in a given year may exert pressure to expand revenues in subsequent years. This phenomenon is more likely to occur in the local government system where the tendency to incur budget deficits is virtually absent (Dahlberg and Johansson, 1998). Local revenue could also be influenced by several factors other than transfer grants. These factors include tax limitation measures imposed by higher-tier government and the level of autonomy enjoyed by the local government authorities (Dye and McGuire, 1997; Skidmore, 1999), pressures exerted by local expenditures on subsequent local revenue efforts (Buettner and Wildasin, 2006; de Mello, 2002), among others. Earlier studies used per capita income, total personal income, Internally Generated Funds (IGF), total tax and non-tax revenue sources of the sub-national government as a measure of own-source revenue. This study adopts IGF per capita as a measure of local revenue, consistent with the works of Mogues and Benin (2012) in Ghana.

4.2.4 Fiscal balance

Fiscal balance is measured by comparing the revenues of subnational government with the costs of providing an appropriate quantity and quality of the local public services. However, measuring such appropriate levels of public goods may be difficult since there is often no consensus on what constitutes appropriate levels of services (Smoke, 2006). One simple indicator that is used to measure fiscal balance is the ratio of local revenue to recurrent expenditures. Similarly, one minus the ratio of subnational resources not under subnational control to total subnational expenditures is used to measure fiscal balance. For instance, a local government with GH₵2 million expenditure and local revenues of GH₵1million, its vertical balance indicator would be 0.50. Following Smoke (2006), the ratio of local revenue-recurrent expenditure is employed as a measure of fiscal balance.

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4.2.5 Population density

Demographic characteristics are potential determinants of fiscal decisions of local governments especially factors that determine the tax revenue base and the capacity of the local government to collect taxes. For instance, localities with greater nonfarm economic activity and private properties may generate more revenues from the collection of business license fees, property taxes (Smoke, 2006). Similarly, locality with high population density is likely to spend less in the provision of certain local public services. This could be attributed to the non-rivalry characteristics of public goods and services. Thus, the marginal cost of providing the good for additional consumers is virtually zero. Also, local revenue generation efforts may be enhanced with high population density as revenue collectors may easily locate and identify individuals and firms. Following Gennari and Messina (2014), population density (population-to-land area) is incorporated into the expenditure and revenue equations to ascertain its impact of local government fiscal decisions.

4.2.6 Labour force

The role of labour resource in development process of a country cannot be overemphasized. This is firmly espoused by neoclassical growth models such as the Solow growth model. The labour force within the local government system in Ghana comprises permanent staff and casual staff. The permanent staff are centrally recruited and posted to the local authorities whilst casual staff are employed and paid directly by the decentralized authorities. However, lack of appropriately trained and resourced staff of the assemblies especially the revenue collectors has contributed to low revenue mobilization (Robinson, 2004). Number of workers, population growth rate, employment rate, and number of hours worked are some of the variables used for labour force. The number of workers is used in this study as a measure of labour force.

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4.2.7 Low-income district dummy

Real GDP at the local level is often used as a measure of welfare level and the income of the communities. Moreover, an increase in a district's GDP is associated with an increase in the district's ability to pay taxes (Hanif et al, 2020). This position assumes local revenue depends on on the robustness of the tax bases and the economic activities that predominates in the particular locality. We can deduce that, areas dominated by nonfarm activities would have a greater revenue potential compared to those dominated by agriculture. Due to the unavailability of GDP data at the district level, we control for district's ability to generate revenue by assuming a dummy variable of 1 (high-income districts) for MMDAs whose IGF is at least equal to the sample average (GH₵4.68) for at least one of the years under study, otherwise 0 (low-income districts).

4.2.8 Election year dummy

Political economy factors influence fiscal performance, through the effects of ideology, the structure of government, and fiscal pressures exerted by electoral competition (Allers et al, 2001; Sole'-Olle', 2006). Additionally, the occurrence of flypaper effect is usually occasioned by the misalignments between the objectives of the local politician and the preferences of the median voter. This is akin to the concept of pork-barrel fiscal decisions whereby politicians engage in frivolous expenditures to win political favours and sympathy (Arezki and Gylfason, 2013) without any deliberate effort to shore-up local revenue. Subnational governments may receive more grants and physical projects in an election period, which may erode the incentives to mobilize local revenues. The impacts of the election cycle on fiscal performance at the local government level is captured by election year dummy variable, which assume one (1) when a particular year is election year, and zero (0) otherwise.

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4.3 Data Source and Scope

This study uses secondary data mainly drawn from Ministry of Finance (Composite Budget), Ghana Statistical Service (2010 census data) and data from the Local Government Service. Ghana currently has 261 MMDAs however, due to data unavailability on some important variables for some assemblies, annual data for ninety-one (91) MMDAs is used for the empirical analysis. The study covers a time period of 5 years (2012-2016), which captures the period in which adequate local government fiscal data was generated following the implementation of the fiscal decentralization policy in 2010. Post 2016, the MMDAs adopted Program-Based Budgeting, a departure from the Activity-Based Budgeting resulting in the change in the reporting template in the Composite Budget. The change in the reporting template has led to unavailability of data on key fiscal variables for the more recent years.

Table 5: Summary of variables, expected signs of their coefficients and data sources

Variable	Name	Data Source	Expected sign
EXP	Expenditure per capita	MoF-Composite Budget	Positive
INC	IGF per capita	MoF-Composite Budget	Positive
TRA	Transfer per capita	MoF-Composite Budget	Positive, Positive
FIB	Fiscal balance	Computed (IGF/RCE)	Negative, Positive
LAF	Labour force	Local government service	Positive, Positive
POD	Population density	GSS, 2010 census data	Negative, Positive
DUM	District dummy	(IGF less than 4.68=1, otherwise 0)	Negative, Negative
ELY	Election year dummy	(2012/2016=1, otherwise=0)	Positive, Negative

Source: Author's computation
Expected sign of the coefficient are presented in terms of expenditure and revenue equations respectively

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4.4 Presentation and Discussion of Results

The estimated results of the effect of grants on local revenue are presented and analysed under this section. The empirical analysis uses annual data on nine-one (91) MMDAs in Ghana for a 5-year period (2012-2016). Panel regression analysis is usually characterized with certain biases, which are likely to cause inconsistency in the model. Those biases include endogeneity, autocorrelation, heterogeneity, heteroscedasticity among others. The study therefore employs system GMM estimation technique as the main estimation technique to evaluate the effect of grants on local revenue mobilization in Ghana in order to ensure robustness of the estimated results.

4.4.1 Descriptive Analysis

The descriptive statistics considered are maximum and minimum, mean, standard deviation values of the variables. The statistics is based on selected ninety-one (91) MMDAs out of the 261 in the country due to the unavailability of data on some key variables for some of the assemblies. The mean represents the average value whilst standard deviation indicates the distribution around the mean values. Table 6 shows the descriptive statistics of the variables for the period under study.

The average local expenditure per capita is GH₵38.07 and it ranges between GH₵1.13 and GH₵188.30 with standard deviation of GH₵26.47. The disparity among the assemblies in terms of their level of expenditure per capita could be attributed to differences in the levels of total revenue available and population differences. Local government revenue comprises transfer grants and Internally Generated Funds (IGFs). Whilst disparity in grants are largely influenced by external factors such as the grants allocation formula, the IGF is influenced by internal characteristics of the local authorities including revenue efforts.

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Local revenue (Internally Generated Fund) per capita for the selected MMDAs averaged GH₵4.70 for the period 2012-2016, ranging from GH₵0.04 to GH₵54.07 within the same period. This revenue disparity among the MMDAs may be attributed to differences in the MMDAs ability to enforce tax payments and disparity in the structure of the local economy thus the kind of industry that dominates in the various localities. For instance, local economies that are dominated by extractive activities such as mining and oil exploration are likely to mobilize more royalties from the proceeds of those natural resources compared to jurisdictions whose economic activities are dominated by farming and fishing.

Table 6: Descriptive statistics of variables

Variable	Mean	Minimum	Maximum	Standard Deviation
Local expenditure	38.068	1.130	188.299	26.466
Internally Generated Fund	4.679	0.036	54.074	5.202
Transfers:	42.557	0.988	191.776	27.969
Goods and services	1.173	0.000	59.394	3.722
School feeding	3.296	0.000	20.386	3.691
DACF	14.327	0.000	107.536	13.973
Fiscal balance	0.294	0.002	3.756	0.372
Population density[1]	488.378	4.931	18,248.18	2,077.582
Labour force	204.051	115.000	428.000	55.933
Low-income district dummy	0.626	0.000	1.000	0.484
Election year dummy	0.400	0.000	1.000	0.490

Source: Author's Computation using STATA 15
Fiscal variables in Gh₵ per capita. [1]measured in per km^2.

In the same period, grants per capita to the MMDAs averaged GH₵42.56 per annum for the sample of MMDAs considered under the study. Some MMDAs recorded grant per capita lower than GH₵1.00 whilst others received as high as GH₵191.78 within the same period. Goods and services, and school feeding components of total transfers averages at GH₵1.17 and GH₵3.30 respectively whilst DACF averages at GH₵14.33. However, for these components of the total transfers, funds were not released to some MMDAs for a particular year within the period under the study.

The maximum amount of goods and services per capita and school feeding per capita was GH₵59.39 and GH₵20.39 respectively, whilst DACF was GH₵107.54 within the same period.

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The difference in grants among the MMDAs may be attributed to variations in their socioeconomic characteristics that are considered in the allocation formula, and political manoeuvring of the formula (see Fumey, 2018). For instance, an assembly with high population growth in a particular year is considered as a jurisdiction of higher need in the DACF allocation formula (DACF, 2014).

The level of fiscal balance ranges between 0.002 and 3.76 with an average of 0.29 for the period 2012-2016, with a standard deviation of 0.37 for the same period. The minimum of 0.002 suggests that some MMDAs could only support 0.2 percent of their annual recurrent expenditures with their IGF whilst some could raise more than 300 percent of their recurrent expenditures through IGF. The difference in the fiscal balance suggests that some jurisdictions have better access to robust tax bases, and tax efforts compared to other jurisdictions. Transfer grants provides an effective mechanism to help equalize these differences in fiscal capacity.

The population density, which is the population within a particular jurisdiction divided by land area remains high averaging at 488.38 per km^2, and ranging between 4.93 per km^2 and 18,248.18 per km^2 for the period under study. Population density has the highest standard deviation of 2,077.58 on the descriptive statistics table. The high variation among the MMDAs in terms of population density could be attributed to the high incidence of rural-urban migration in Ghana. The population density remains one of the important variables in transfer allocation formulas that measures service pressure on existing infrastructural facilities in the local jurisdictions.

Labour force has a mean value of 204.05 persons with a standard deviation of 55.93. Some MMDAs reported a minimum labour force of 115 persons whilst others have as much as 428 persons for the selected sample of the MMDAs over the period 2012-2016. The wide differences in the labour force could be attributed to the tendency to deploy more staff to the

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urban districts compared to rural and deprived assemblies. Metropolitan and Municipal Assemblies tends to have relatively larger number of local government staff compared to the District Assemblies perhaps due to the difference in service demands.

The dummy variable for low-income district assumes zero (0) for districts whose IGF falls below the sample average of GH₵4.70 for all the years under study, otherwise one (1). The low-income district dummy has a mean value of 0.63 with standard deviation of 0.48, suggesting that the number of low-income districts in the sample is less than their high-income counterparts. Also, dummy variable for election year assumes one (1) for an election year and zero (0) for non-election year. It has a mean of 0.40 and a standard deviation of 0.49, which suggests that the years under study is dominated by nonelection years relative to election years. The election years include the initial year 2012 and the end year 2016.

4.4.2 Correlation Results

Table 7 presents the Pairwise correlation results of the variables that are used in the empirical analysis. The correlation coefficients show a bird-eye view of associations among the variables. The results show that there is strong correlation among the key variables used in the estimated model. Local revenue and expenditure have a positive correlation coefficient (r = 0.36) and significant at 1 percent, suggesting a strong correlation between local revenue and expenditure. Thus, an increase in income of the MMDAs is expected to be associated with higher expenditure levels since more income relaxes the fiscal constraint on the local authorities.

Additionally, the correlation estimates show that fiscal balance have a positive correlation (r = 0.41) with local revenue but a negative correlation (r = -0.30) with expenditure. The positive association between fiscal balance and local revenue suggests that improving the disparity in revenue mobilization capability among the local governments could enhance revenue

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generation. Also, the negative correlation between fiscal balance and expenditure implies that improving the fiscal balance has the potential of promoting effective spending among the local authorities. The negative correlation could also be attributed to the high levels of fiscal imbalances among the local government authorities, which discourages expenditures on some local goods and services.

Population density has a positive relationship with local revenue (r = 0.19) but has a negative correlation with expenditure (r = -0.05). These associations among population density, revenue and expenditure are significant at 1 percent. A local jurisdiction with high population density is likely generate more revenue since the revenue collectors may easily locate and identify rates payers. Moreover, the cost of revenue mobilization may be low since revenue collectors may have small geographical to cover (Gennari and Messina, 2014) whilst local governments may not have to bear an extra cost for providing some public goods in the same locality.

Table 7: Pairwise correlation matrix

	Revenue (IGF)	Expend-iture	Fiscal balance	Population density	Labour force	Low-income district[1]	Election year[2]	Transfer	G&S	SF	DACF
Revenue (IGF)	1.000										
Expenditure	0.359*	1.000									
Fiscal Balance	0.413*	-0.295*	1.000								
Population Density	0.189*	-0.046	0.124*	1.000							
Labour force	0.253*	-0.069	0.202*	0.293*	1.000						
Low-income district[1]	-0.556*	-0.173*	0.258*	0.131*	0.272	1.000					
Election year[2]	-0.039	0.005	0.059	0.000	0.016	0.000	1.000				
Transfer	0.289*	0.633*	-0.267*	-0.214*	-0.101	0.037	-0.009	1.000			
G&S	0.007	0.091	0.008	0.015	-0.054	0.075	-0.081	0.232*	1.000		
SF	-0.059*	0.253*	-0.126	-0.101	-0.065	-0.050	-0.093	0.293*	0.170*	1.000	
DACF	0.167*	0.313*	-0.148*	-0.320*	-0.036	-0.029	-0.094	0.647*	0.285*	0.003	1.000

* denotes significance at 1percent. Fiscal variables in per capita terms
[1, 2] are dummy variables, G&S is grants for goods and services, SF is grants for school feeding, DACF denotes District Assembly Common Fund

Moreover, labour force has a strong positive correlation with local revenue mobilization (r = 0.25). The positive correlation between the variables suggests that, an increase in the number workers at the MMDAs is associated with increase in local revenue. Thus, competent and well-

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resourced local government staff especially revenue collectors have the potential to collect more revenue. The correlation coefficient for labour force and expenditure is statistically insignificant, suggesting no association between the variables.

Moreover, the results show that low-income districts are less likely to perform better in terms of local revenue mobilization and expenditure. The correlation coefficient for low-income district dummy and local revenue is negative (r = -0.56) and significant at 1 percent. Similarly, the correlation coefficient between low-income district dummy and expenditure is negative (r = -0.17) and significant at 1 percent. This implies that low-income districts have inadequate tax bases, and thus generate insufficient revenue to support local service delivery. Election year dummy has no significant correlation between local revenue and expenditure.

Furthermore, the results show a positive correlation between total transfers and local revenue (r = 0.29) as well as expenditure (r = 0.63). The positive association between grants and local revenue suggests that transfers complement local revenue mobilization. However, it could be observed that the correlation coefficient for local revenue and expenditure (r = 0.36) is smaller than that of transfer grants and expenditure (r = 0.63), suggesting some evidence of flypaper effect.

Goods and services component of grants shows no correlation with revenue and expenditure, although the correlation coefficients are positive. School feeding transfers significantly has a negative association with local revenue (r = -0.06) whilst its correlation with expenditure is positive (r = 0.25), showing a potential crowding-out effect of school feeding transfers on local revenue. In addition, DACF component of the total grants have a positive correlation with local revenue and expenditure respectively.

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4.4.3 Econometric Results

As prerequisites for employing the system GMM estimation technique, the Pooled OLS, Random Effects and Fixed Effects models are estimated. These results are presented in Appendix I and II for the expenditure and revenue equations respectively. From Appendix I, the results show that transfers per capita have a positive effect on per capita expenditure at 1 percent significant level. In addition, local revenue per capita have a positive effect on per capita expenditure except for the Fixed Effects results. Expenditure per capita is more elastic to grants than local revenue, indicating an evidence of flypaper effect. The first lag of expenditure positively affects current level of expenditure, which suggests persistence of the variable.

In addition, fiscal balance has a negative relationship with expenditure at 1 percent significant level. Similarly, population density negatively affects expenditure however, such effect is not statistically significant. In the Fixed Effects results, the variable is omitted due to multi-collinearity. The Pooled OLS and Random Effects results shows labour force has positive effect on expenditure whilst Fixed Effects results shows a negative effect but those effects are statistically insignificant. Low-income district dummy has a negative coefficient for Random and Fixed Effects whilst Pooled OLS has a positive coefficient. In addition, election year dummy has positive coefficient in the Random and Fixed Effects results but negative for Pooled OLS.

Similarly, the results of the pooled OLS, Random Effects, and Fixed Effects estimation on the revenue equation show that grants have a positive effect on local revenue (see Appendix II). The level of significance rises from 10 percent, 5 percent and 1 percent in the order of the three (3) estimation techniques respectively. This result suggests that contrary to the popular empirical results, transfer grants crowds-in local revenue. The first lag of revenue positively affects current level of revenue, which suggests persistence of the variable.

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Moreover, fiscal balance has a positive effect on revenue at 1 percent significant level. Expenditure has a positive relationship with revenue, suggesting a stimulatory effect of expenditures on revenue. Similarly, population density has a positive coefficient however, such effect is statistically insignificant whilst the Fixed Effects results, it is omitted due to multi-collinearity. The results show that labour force positively affects local revenue. Low-income district dummy has a negative coefficient at 1 percent significant level, suggesting that low-income districts mobilizes lower revenue compared to their high-income counterparts. Election year negatively affects revenue relative to non-election year except for Pooled OLS result that is dropped due to multi-collinearity.

The stability of the regression functions over time and the significance of district heterogeneity effect were tested on the Pooled OLS and Random Effect models respectively. The time dummies tests jointly significant at 5 percent while the Breusch-Pagan Lagrange Multiplier (LM) Test suggests there are significant idiosyncratic differences across the MMDAs. Therefore, we conclude that the model with time effects is more appropriate.

The presence of heterogeneity effect indicates the existence of significant differences across the assemblies that affects their fiscal performance. This implies that the assumption of Fixed Effects model, which states that unobserved specific effects vary across MMDAs is valid. The Random Effects Model assumes that the heterogeneity effects and the regressors are uncorrelated, whilst the Fixed Effects Model assumes that the regressors and the heterogeneity effects are correlated. Therefore, the Hausman test is performed to ascertain whether the data fits Random Effects or Fixed Effects model. The null hypothesis tested is that the data conforms to Random Effects model. Results from the Hausman test as shown in Appendix III suggests that the null hypothesis is rejected in favour of the alternate hypothesis for both expenditure and revenue equations. We therefore conclude that the data conforms to Fixed

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Effects model. However, the Fixed Effects results for both expenditure and revenue models suggests the existence of endogeneity problem (see Appendix I and II), which may render the regression results spurious and unreliable.

Table 8 shows the results of the system GMM estimations for the expenditure model. Coefficients of the explanatory variables are not much different from those from the Fixed Effect estimation. The results from system GMM estimation indicate that a percent increase in total grants promotes local expenditure growth by 0.56 percent, ceteris paribus. Similarly, 1 percent increase in local revenue promotes expenditure growth by 0.46 percent, holding all other factors constant. These effects are significant at 1 percent significant levels respectively.

Table 8: Results of System GMM estimation on the expenditure equation

Dependent variable: Expenditure per capita								
Variable	Total transfers	z value	Goods & services	z value	School Feeding	z value	DACF	z value
Constant	-0.707 (0.933)	-0.76	4.409*** (0.787)	5.60	4.350*** (0.844)	5.15	2.652*** (0.716)	3.70
1st lag of expenditure	0.134** (0.055)	2.43	0.023 (0.060)	0.38	0.041 (0.066)	0.63	0.125** (0.053)	2.32
Fiscal balance	-1.858*** (0.306)	-6.06	-1.531*** (0.168)	-9.08	-1.070*** (0.162)	-6.58	-1.352*** (0.139)	-9.69
Transfers per capita	0.556*** (0.091)	6.12	0.038 (0.031)	1.24	0.124*** (0.039)	3.15	0.074* (0.039)	1.86
IGF per capita	0.459*** (0.150)	3.06	0.583*** (0.161)	3.62	0.054 (0.132)	0.41	0.413*** (0.108)	3.81
Population density	3.06e-05** (1.49e-05)	2.05	-2.83e-05** (1.27e-05)	-2.22	2.7e-05* (1.48e-05)	-1.85	-7.60e-06 (1.48e-05)	-0.51
Labour force	0.2584** (0.119)	2.16	-0.227 (0.153)	-1.51	0.044 (0.132)	-0.33	0.008 (0.115)	0.08
Poor districts dummy	-0.208 (0.321)	0.65	-0.148 (0.216)	-0.68	-0.596** (0.240)	-2.48	-0.036*** (0.194)	-0.19
Election year dummy	0.120** (0.060)	1.99	-0.031* (0.085)	-0.37	-0.351** (0.144)	-2.43	0.037 (0.064)	0.57
Wald chi2 (Prob>chi2)	174.01		123.76		76.61		155.73	
Arellano-Bond (Pr>chi2)	0.248		0.687		0.494		0.752	
Sargan Test (Prob>chi2)	0.002		0.432		0.023		0.019	
AR2	0.341		0.163		0.204		0.307	
Prob > F	0.000		0.000		0.000		0.000	
No. of observation	364		257		265		362	

*, **, *** denotes significance at 10 percent, 5 percent and 1 percent respectively, standard errors in parenthesis

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According to the flypaper hypothesis, the flow of unconditional grants to subnational governments would reduce their incentives to increase local revenue (Saruc and Sagbas, 2008). From the GMM results, the elasticity of expenditure to grants is greater than that of local revenue, suggesting a potential case of flypaper effect. This result is consistent with the findings of Cardenas and Sharma (2011) and Zhuravskaya (2000) who found evidence of flypaper effect by estimating only expenditure models. However, the flypaper effect has to be confirmed by the sign of transfer coefficient in the revenue model (Caldeira and Grota-Graziosi, 2014). The revenue model is therefore estimated to confirm the existence or otherwise of the flypaper effect in local government fiscal decisions.

The system GMM results shown in Table 8 indicates that, coefficient of the first lag of expenditure is positive and significant at 5 per cent. Thus, the first lag of expenditure stimulates current expenditures by 0.13 percent, suggesting the persistence of the variable. We can therefore extrapolate that greater local government expenditure in the previous period attracts more resources for higher expenditures in the next period. Thus, expenditure in the previous year promotes more spending in the current year.

Local governments have statutory responsibilities to provide certain local services but there exist imbalances between their revenue-mobilization capacities and the assigned expenditure mandates (Slack and Bird, 2015). According to the theory of fiscal federalism, such fiscal imbalances are equalized through transfer grants with greater allocations to deprived jurisdictions (Smoke, 2015). From the system GMM results, fiscal balance negatively affects expenditure growth at 1 percent significant level. An improvement in fiscal balance by one percent leads to 1.8 percent reduction in local expenditure. This result corroborates the findings of Smoke (2006) and could be attributed to the fact that as the fiscal position of the local authorities improves, they tend to be more efficient in their expenditure decisions.

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According Solow growth model, high population growth is likely to be associated with high rate of depreciation of capital. From service demand point of view, local governments with high population density are likely to spend high to service the worn-out local infrastructure. The coefficient of population density is positive indicating that 1 percent increase in the population density encourages growth of expenditure by 3.06e-05 percentage points. This result derived from the system GMM estimation is in consonance with the findings of Mogues and Benin (2012), and Gennari and Messina (2014) who found that higher population density leads to higher service pressure and hence higher expenditures on existing infrastructure in the communities.

Under the neoclassical assumption that labour is paid according to its marginal productivity, local expenditure on remuneration is an increasing function of the number of workers/labour force employed. The outcome of the system GMM shows that 1 percent increase in labour force promotes expenditure growth by 0.26 percent at 5 percent significant level. This result confirms the findings of Robinson (2004) and Mogues and Benin (2012) local expenditure is an increasing function of staff level.

Furthermore, the results show that, being a low-income district decreases the growth of expenditure by -0.21 percent relative to a high-income district but the effect is statistically insignificant. Okojie (2009) conducted comprehensive literature review on decentralization and rural service delivery and averred that following the implementation of the local government system, there is no clear improvement in the poor municipalities compared to their non-poor counterparts. The author noted that there are issues of lack of accountability and diversion of earmarked funds remains the bottlenecks in local government system in many countries. This result also corroborates the findings of Hanif et al (2020) and Ravallion (1998) that poorer localities have not benefited from grants compared to their non-poor counterparts.

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The dummy variable for election year is included in the expenditure model to capture the impact of electoral decisions on expenditure growth within the local government system. The Competence Model hypothesizes that voters rationally prefer a candidate who delivers higher expenditures prior to an election, since those expenditures are used as signal of higher competence (Rogoff, 1990). The coefficient for election year dummy indicates that expenditures in election year is 0.12 percent higher than in non-election year, all things being equal. Consistent with the findings of Arezki and Gylfason (2013), this result can be attributed to the incidence of fiscal profligacy that characterizes the Ghanaian electoral cycle. Although local governments finance their expenditures through the Composite Budget, allocations and disbursements of statutory funds, for instance the DACF increased significantly especially in the years preceding elections (see Figure 6).

Furthermore, the total transfer is decomposed into general-purpose unconditional transfers, sectorial-limited transfers and specific purpose conditional grants. The components considered are goods and services, school feeding and DACF transfers respectively, to ascertain their independent impact on local expenditures. The system GMM estimation results reported in Table 8 shows that generally, the signs of the coefficients of all the transfer components are not different from those of the results involving the total transfers, but suggests no clear evidence of flypaper effect. For instance, the results of the sectorial-limited transfer (DACF) shows that the elasticity of expenditure to transfer (0.07) is lower than the elasticity of per capita expenditure to local revenue (0.41). Expenditure per capita has no significant elasticity to general-purpose transfer (goods and services) whilst in the case of specific purpose grants (school feeding transfers), local revenue is inelastic to per capital expenditure.

Table 9 presents system GMM estimation results on the relationship between local revenue and transfer grants. The results show that an increase in grants leads to 0.27 percent decrease in local revenue ceteris paribus, at 1 percent significant level. The negative relationship between

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local revenue and grants shows an evidence of flypaper effect in local government's fiscal decisions. Thus, although central government grants maybe intended to correct vertical and/or horizontal imbalances at the local assemblies, they are perceived as windfall resources, which crowd-out local revenue. Similarly, the coefficient of the goods and services, school feeding and DACF components of the transfer grants are negative although they are not statistically significant. This result is consistent with the popular empirical findings including Rosen (2005), Mogues and Benin (2012) and Taiwo (2020).

This finding corroborates the results of Reinikka and Svensson (2004) who found an evidence of diversion of public funds from specific projects, leading to project delays in developing countries. The District Chief Executives head the district assemblies who presides over district assembly, whom 30 percent is also appointed by the President just as the DCE. Although 70 percent of the assembly members are directly elected based on non-partisan lines, the district assemblies in Ghana are generally perceived as politicized with partisan actors. Williams (2017) noted that an NCCE's survey indicated that 68.6 percent of Ghanaians believed that assemblies were partisan in their operations. This highly polarized political environment provides the incentive for rent seeking behaviours and the tendency on the part of the incumbent to divert resources to win votes. For instance, Auditor-General's report 2022 showed that out of 30 MMDAs audited for the period 2018-2021, 21 paid an amount of GH₵499,671.94 to contractors for no work done.

Additionally, the first lag of revenue promotes revenue mobilization by 0.09 percent, signifying the persistence of the variable. The lag effect of local revenue is strongly significant for all the three components of grants considered under the study. We can therefore deduce that expansion in local revenue in the previous period makes available more resources to augment revenue efforts in the next period. Thus, local revenue in the previous year stimulates more revenue generation in the current year.

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Table 9: Results of System GMM estimation on the revenue equation

Dependent variable: IGF per capita								
Variable	Total transfers	z value	Goods & services	z value	School Feeding	z value	DACF	z value
Constant	2.520** (0.844)	2.99	0.011 (0.818)	0.01	1.142 (0.831)	1.37	0.258 (0.624)	0.41
1st lag of revenue	0.088** (0.036)	2.43	0.116*** (0.035)	3.29	0.156*** (0.034)	4.54	0.147*** (0.029)	5.03
Fiscal balance	0.971*** (0.309)	3.14	2.295*** (0.332)	6.91	0.825*** (0.165)	5.01	0.986*** (0.131)	7.48
Transfers per capita	-0.268*** (0.097)	-2.77	-0.009 (0.027)	-0.34	-0.033 (0.038)	-0.87	-0.022 (0.033)	-0.66
Expenditure per capita	0.327*** (0.092)	3.56	0.513*** (0.097)	5.27	0.277*** (0.102)	2.72	0.415*** (0.071)	5.85
Population density	-4.06e-05*** (1.41e-05)	-2.88	-2.58e-06 (1.09e-05)	-0.24	-2.47e-05* (1.31e-05)	-1.89	-1.14e-06 (1.22e-05)	-0.93
Labour force	-0.137 (0.113)	-1.22	-0.126 (0.121)	-1.04	-0.067 (0.112)	-0.60	-0.006 (0.091)	-0.06
Poor districts dummy	-1.614*** (0.190)	-8.48	-0.735*** (0.161)	-4.56	-1.413*** (0.147)	-9.64	-1.229*** (0.110)	-11.16
Election year dummy	-0.034 (0.066)	0.51	-0.109 (0.076)	-1.44	0.107 (0.133)	0.80	0.049 (0.054)	0.91
Wald chi2 (Prob>chi2)	1267.520		1212.770		1040.210		1729.600	
Arellano-Bond (Pr>chi2)	0.176		0.386		0.710		0.056	
Sargan Test (Prob>chi2)	0.042		0.129		0.005		0.050	
AR2	0.175		0.282		0.129		0.256	
Prob > F	0.000		0.000		0.000		0.000	
No. of observation	364		257		265		362	

*, **, *** denotes significance at 10percent, 5percent and 1percent respectively
standard errors in parenthesis

Also, an increase in fiscal balance leads to 0.97 percent expansion in revenue at 1 percent significant level, holding all other factors constant. The coefficients of fiscal balance for the estimated results involving goods and services, school feeding and DACF transfers are positive and significant at 1 percent, suggesting that improvement in the fiscal balance of the local authorities promotes local revenue efforts. This result conforms to findings of Smoke (2006) who found that enhancing the fiscal balance of subnational governments could provide support for local revenue mobilization.

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Moreover, the outcome of the system GMM in Table 9 shows that 1 percent increase in expenditure promotes local revenue growth by 0.33 percent at 1 percent significant level. Also, results of the revenue model involving goods and services, school feeding and DACF transfers corroborates this result. Moreover, Pooled OLS, Random Effects and Fixed Effects estimation results also show a positive relationship between expenditure growth and revenue growth at 1 per cent, indicating strong significance of expenditure growth in the local revenue mobilization, which is consistent with findings of Caldeira and Grota-Graziosi (2014). For instance, local governments may undertake refurbishment of local markets, which improves the revenue of traders and their willingness to pay more fees to the local authority.

Furthermore, the results show that high population density is associated with low rate of local revenue growth. All things being equal, 1 percent increase population density leads to 4.06e-05 percent reduction in local revenue. Gennari and Messina (2014) argue that local revenue mobilization may improve in localities with high population density since such localities may have high service demand and revenue collectors could easily locate and identify ratepayers. The results from the system GMM estimation is contrary to this argument. Districts with high population density may experience high incidence of tax evasion leading to low revenue mobilization.

The system GMM results show that labour force has a negative coefficient; however, such relationship is statistically insignificant. Neoclassical growth models such as the Solow growth model stressed the importance of labour in the production of goods and services. The labour force within the local government system consists of permanent staff and casual staff who conducts administrative and operational duties including collection of revenues. The negative relationship between the work force and revenue can be attributed to the lack of appropriately trained and resourced staff (Robinson, 2004) leading to revenue leakages.

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The coefficient of deprived-districts dummy is negative and significant at 1 percent, indicating that being a low-income district decreases the district's rate of revenue mobilization by 1.6 percent compared to the high-income counterparts. The estimated revenue models with the decomposition of the three categories of the transfer grants namely goods and services, school feeding and DACF has shown high significance of the deprived-district dummy. The low-income districts are mostly disadvantaged in terms of requisite and competent personnel, logistics, buoyant economic and tax base, good roads infrastructure, markets and job opportunities. The negative coefficient of the low-income district dummy conforms to expectation and also akin to the findings of Masaki (2018).

As expected, election year dummy has a negative coefficient, suggesting that the incentive to mobilize local revenue during election year is lower compared to non-election year. However, the negative coefficient of the election variable is not statistically weighty enough to explain the revenue variations between the election and non-election periods. The negative coefficient could be attributed to the tendency on the part of the central government to directly embark on projects in the localities to win electoral fortunes (see Taiwo, 2020) thereby providing disincentive to the local authorities to mobilize revenue.

4.5 Concluding Remarks

Ghana has adopted gradual approach to devolve political, administrative, and fiscal authorities from the central government to subnational jurisdictions as an alternative development strategy. The arguments for fiscal decentralization rest strongly on the assumption that it would provide local governments with the fiscal autonomy in allocating public resources to competing needs in their localities. Several mechanisms have been adopted to support fiscal decentralization including establishment of grant systems. In many developing countries, local fiscal discretion is highly restricted in the sense that local authorities may have relatively little control even over their own budgets. Against this background, there are concerns about

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whether the local governments can expand their fiscal autonomy by increasing local revenues in view of intergovernmental transfer arrangements.

The theory of flypaper effect predicts that grants to subnational governments reduce incentives on the part of the subnational government to mobilize local revenue (Saruc and Sagbas, 2008). Thus, transfer grants serve as substitutes for local revenue and hence crowds-out local revenue. However, Caldeira and Rota-Graziosi (2014) argues that in developing countries where there is dearth of resources at the subnational level, transfers serve as a complement to local revenue thus crowds-in local revenue. Similarly, empirical literature on fiscal decentralization has provided varied conclusions on grants-revenue nexus. Whilst some studies aver that grants crowds-out local revenue, others claim otherwise. Moreover, earlier studies on grants and revenue differ in terms of statistical approach used, period covered, geographical area and their findings.

Moreover, most empirical studies on the effect of grants on revenue focused on developed economies with very little attention on developing economies. Most of these studies generally sought to investigate the revenue impact of grants by employing only expenditure model (see for instance, Smart, 1998; Bucovetsky and Smart, 2006; Barrand et al, 2004; Fjeldstad and Moore, 2008) or only revenue model (see, Zhuravskaya, 2000; Rajaraman and Vasishtha, 2000; Buettner and Wildasin (2006). Thus, previous studies failed to test the flypaper effect by estimating both revenue and expenditure models. Whilst flypaper effect could be evident in the expenditure decisions, such result should be corroborated with revenue outcomes (Caldeira and Rota-Graziosi, 2014). Thus, the flypaper effect is tested by estimating both the expenditure and revenue models.

Furthermore, very little empirical studies on grants and revenue have been conducted on Ghana with the most recent traceable to Mogues and Benin (2012) whose study covers the periods

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1994-2004. This study examines the effect of grants on local revenue by testing the flypaper effect. The study distinguishes itself from previous studies by estimating both dynamic expenditure and revenue models using more recent local government data (2012-2016). The main estimation technique employed is the system GMM method instead of Pooled Ordinary Least Square, Random Effects, Fixed Effects, Instrumental Variable, and other traditional panel estimation techniques since it has the capacity to overcome biases in panel data.

The outcome of the system GMM estimation shows that the elasticity of local expenditure to grants is greater than the elasticity of expenditure to local revenue, indicating an evidence of flypaper effect in local government expenditure decisions in Ghana. The flypaper effect assumes that expenditure impact of grants is larger than that of equivalent increase in private income (Saruc and Sagbas, 2008). This finding is corroborated by the system GMM estimation results of the revenue model, which shows that transfers negatively affect local revenue. The results show that goods and services, school feeding and DACF transfers have negative relationship with revenue mobilization but such relationships are statistically insignificant.

The evidence of flypaper effect in local government decisions in Ghana can be explained based on the fact transfer grants free up extra resources for the local authorities, which benefit citizens in the form of a lump-sum tax reduction (Bradford and Oates, 1971). This implies that grants erode local revenue autonomy because it serves as substitute for local tax revenue. It is recommended that central governments should rather adopt fiscal policies that would enhance capacity and provide more incentives to the local governments for revenue mobilization.

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Chapter Five
The Effect of Grants and Local Revenue on Poverty in Ghana

5.0 Introduction

Over the past decades, poverty reduction has engaged the attention of global organizations and national governments. Some considerable progress has been achieved in terms of policy formulation, building appropriate structures and institutions to combat poverty around the world. The Government of Ghana launched the Ghana Poverty Reduction Strategy (GPRS) in 2002, which represents the comprehensive policy intervention to support growth and reduce poverty over the three-year period 2002-2004. The Ghana Vision 2020 launched since mid-1990s preceded the implementation of the GPRS. However, the implementation of this policy met several challenges including weak national ownership, inadequate financing and unrealistic implementation strategies (Government of Ghana, 2002).

The main aim of the GPRS is to create wealth by transforming the structure of the economy to achieve growth, accelerate poverty reduction, and protect the vulnerable excluded within the decentralized environment (Government of Ghana, 2002). These goals were to be achieved by ensuring sound economic management, supporting the private sector as engine of growth, promoting sustainable livelihood, direct provision of basic services and human development, providing special programs for the vulnerable, and ensuring good governance.

The GPRS was intended to ensure that Ghanaians irrespective of their place of residence and socioeconomic status, have access to basic social services such as quality education and healthcare delivery, portable drinking water, decent housing security from crime and violence and participatory governance (Asante, 2014). The poverty reduction strategy in the GPRS was anchored on the decentralization process. The policy sought to tackle poverty through strengthening leadership and capacities of MMDAs through elections, traditional authorities, local government service, and assembly financial management roles. According to Asante

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(2014), the local governments collaborated with civil society by establishing working partnership with NGOs and private business sector for local development.

Poverty reduction has become the core objective of the decentralization policy in Ghana, therefore successive governments have introduced programmes over the past years to reduce poverty at the local levels. These programs include the Program of Actions to Mitigate the Social Cost of Adjustment (PAMSCAD), the Productivity and Income Generation Fund known as the District Assembly Poverty Alleviation Fund, and Highly Indebted Poor Countries (HIPC) Funds. District Assembly Poverty Alleviation Fund was intended to provide to the poor, access to credit facilities in job creation investments (Asante, 2014). According to Ayee and Dickovick (2014), although these programmes provided support to vulnerable groups in small-scale industries, it was fraught with implementation challenges.

First, the modalities for the selection of the beneficiaries were not transparent whilst there were widespread of selection bias based on people's political affiliations instead of their levels of deprivation and vulnerability. Second, there were high incidence of diversion and misapplication of the borrowed funds into personal commitments leading to high default rate in the repayment of the loans. Third, aside from the meagre amount paid as loans to beneficiaries, the credit facilities were not disbursed on schedule to ensure effective planning and investments.

Effective poverty reduction strategy is expected to guarantee access to basic public and collective services. Access to health, education, water and sanitation, transport enhances human capital, increases labour productivity and foster access to economic opportunities (Asante, 2014). Thus, these programs were expected to improve the livelihood of the poor. According to Ellis et al (2003), these improvements must reflect in the income, cash and social institutions, gender relations, property rights required to support and sustain a given standard

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of living. Blackwood and Lynch (1994) note that improvement livelihood derived from social and public services such as education and health services, road and water supplies have external benefit that inure to larger community. However, it remains unclear whether these poverty alleviation programmes have contributed to the poverty reduction in the local communities in Ghana.

In the 1980s, waves of decentralization reform occurred throughout Sub-Saharan as part of the general economic policy reforms (Crawford, 2008). The global focus on the adoption of decentralization is based on the development gains from the reform to national governments (Crook, 2003; Blair, 2000) and the direct theoretical link between decentralization and poverty reduction (World Bank, 2000; Jutting et al., 2005). Decentralized governance is seen as an important policy reform towards achieving SDG 1, which aims at eradicating poverty in all forms by 2030. These reconditions call for an empirical investigation into the effect of decentralization policy on poverty for policy decisions.

In development economics, decentralization is considered in the following perspectives: public finance reform (Boex, 2010), governance driven decentralization reform (Asfaw et al, 2007), poverty reduction reform (Falletti, 2013) and strengthening local governance for local participation (Boex, 2010). According to Ahmad and Craig (1997), any form of decentralization policy may fail when these four dimensions are not jointly considered. Similarly, the decentralization reform may not produce the needed results when the policy is not accompanied with the necessary support to the subnational authorities. According to Oates (1999), fiscal decentralization involves the transfer fiscal authority and resources from the central government to support quasi-independent government units.

The fiscal decentralization has the potential to eradicate extreme poverty and increase responsiveness of governments to pro poor (World Bank, 2018). However, financial resource

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constraint remains the main challenge to the local governments. The local government system is backed by legislative provisions such as Section 240 (2c) of the Local Government Act 1993 (Act 462) and Section 245(b) of the 1992 Constitution. For instance, the Local Government Act and the Constitution provides that at least five (5) percent of the annual national revenue be disbursed to the MMDAs in the form of DACF on quarterly basis.

In principle, there is no constraint over the use of the DACF but in practice guidelines are issued to limit the autonomy of the assemblies (Appiah et al., 2000). Since the adoption of the decentralization policy in Ghana, appreciable amount of resources has been transferred from the central government to the MMDAs. However, there are ensuing debates over the effectiveness of those transfers in reducing poverty in Ghana. For instance, whilst von Braun and Grote (2002) referred to the local government grants system as successful, Twum-Baah (2000) asserts that the poor has felt very little impact from the system.

Fiscal decentralization devolves authority to the local authorities to mobilize local revenue to spend on local public services. Additionally, due to the low revenue mobilization capacity in the various assemblies, grants are transferred to support local development efforts. Although grants and local revenue of the local assemblies have declined over the period 2005-2017, poverty has also declined over the same period (see Figure 19). Absolute poverty incidence (headcount ratio) declined from 31.9 percent to 23.4 percent, representing about 8.5 percentage point decline over the period. Additionally, local government grants as a percentage of national domestic revenue declined from 5.1 percent to 3.7 representing 1.4 percentage points. Similarly, over the same period, local revenue as a percentage of domestic revenue declined marginally by 0.10 percentage points.

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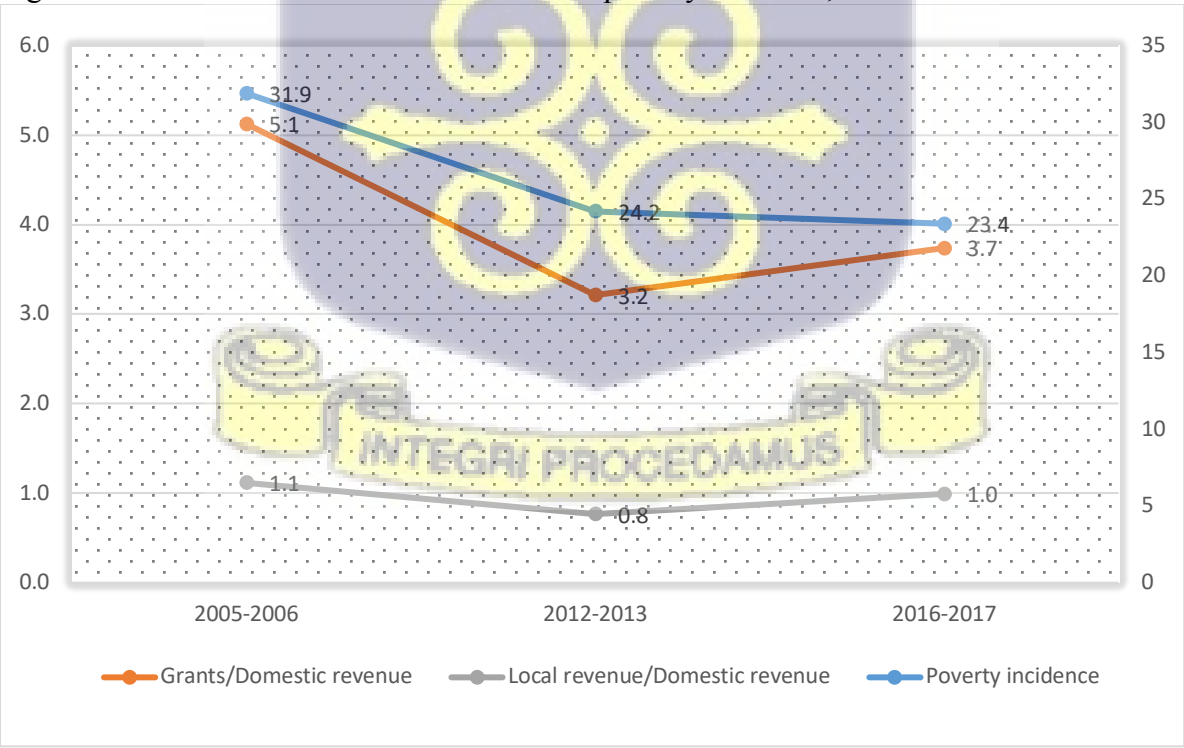
Poverty is considered as a multidimensional phenomenon, but the concept suffers definitional problem. World Bank defines poverty as pronounce deprivation in wellbeing (World Bank, 2000). This wellbeing is measured in terms of multiple human deprivation including economic, social and political opportunities. Similarly, Todaro and Smith (2011) noted that poverty can be considered a cluster of overlapping meaning, depending on the subject area being examined. Thus, poverty description may vary based on values and cultural inclinations of a particular society. Moreover, Moser (2004) and Sen (1999) emphasized the lack of combination of assets, Kanbur and Shaffer (2007) highlights consumption and participatory approach whilst Braathen (2008) emphasized individual and collective poverty in defining poverty. In view of these variations, conditions that define poverty can differ quite significantly across countries and cultures.

Figure 19: Local revenue sources and absolute poverty in Ghana, 2005-2017



Source: Authors computation based on MLGRD and Ministry of Finance & GLSS data
Grants and local revenue as ratios of domestic revenue are averages for the period
Poverty incidence on secondary axis

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Intergovernmental transfer has been an important instrument in Ghana's fiscal policy since the promulgation of the 1992 Constitution. The Acts provides for the flow of central government resources to the MMDAs and also grants them the fiscal autonomy to make decisions at the local level. The financial flows are expected to complement their local revenues to support the provision of social infrastructural projects and income generation (Bossuyt, 2000). However, there exists controversy in the theoretical and empirical literature about the grants-revenue-poverty nexus.

Hayek (1945) aver that subnational governments have better access to local information, which allows them to effectively provide local services. Also, decentralization offers an avenue for effective configuration of political power to the benefit of the poor (von Braun and Grote, 2002). On the other hand, fiscal decentralization can adversely affect poverty. For instance, the central government has superior economic power to produce public goods at lower unit cost because of economies of scale and economies of scope (Faguet, 2014). Moreover, when different localities are at different levels of development and have different capacities in revenue mobilization, devolution of fiscal authorities may exacerbate poverty (Qiao et al, 2008). Local government system can also suffer from local elite capture and further empowerment of the already powerful local officials (Faguet et al, 2014). Thus, the theoretical perspective on the relationship between fiscal decentralization and poverty remains inconclusive.

Most of the empirical studies in developing countries show a negative relationship between decentralization and poverty reduction (Crook and Manor, 2000; and Moore and Putzel, 1999; Bardhan and Mookherjee (2003) thus, fiscal decentralization can have a harmful effect on poverty levels. However, some studies found a positive correlation between decentralization and poverty reduction levels (Habibi et al, 2001; Eskeland and Filmer, 2002; Arze del Granado et al, 2005). Other studies such as Zambok et al (2016), Azila-Gbettor et al (2014), Sepulveda

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and Martinez-Vazquez (2011), Okojie (2009) and Crook (2003) found no relationship between decentralization and poverty. Some empirical studies such as Kim (2018) and Bardhan (2002) have shown that fiscal decentralization promotes poverty reduction only if there is good governance and quality of institutions.

The mixed findings in the literature could be attributed to differences in the measurement of poverty indicators. The empirical literature on poverty reveals a growing interest in the application of non-monetary poverty approaches (Nolan and Whelan, 2010). However, the adoption of income and expenditure measurement (poverty line) in evaluating the impact of decentralization is largely dominant in the developing countries (Ghana Statistical Service, 2018). Vedeld (2003) noted that there is little evidence that decentralization produces gains for the poor. Bossuyt and Gould (2000) found a weak link between poverty reduction and decentralization in Africa, which is consistent with findings of Steiner (2007) in Uganda.

However, some few studies found a positive relationship between decentralization and poverty reduction. For instance, Braathen (2008) found a reduction in poverty at the subnational level with the implementation of fiscal decentralization policy. Similarly, Skira (2006) in a cross-country study found that fiscal decentralization has the potential to reduce poverty through the intergovernmental grant systems. Other countries such as South Africa, West Bengal, Philippines has recorded some relative gains but this reductions in poverty are not substantial (Crawford and Hartmann, 2008). Despite the different methods and measures of poverty, the general conclusion from the literature is that the poverty impact of fiscal decentralization in inconclusive in developing countries.

The primary objective of this chapter is to examine the relationship between fiscal decentralization and poverty. Thus, we estimate the effects of grants and local revenue on poverty at the district and community levels in Ghana. The empirical analysis is conducted in

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two folds. The first part employs OLS regression approach to analyse the effect of grants and local revenue on poverty, using district poverty estimates from the GLSS 7 data, and other socioeconomic data obtained from the Composite Budget. The second part employs Logit and Tobit regression models on GLSS 7 community data to analyse how local public services affect poverty at the community level.

5.1 Transforming grants and local revenue into poverty reduction

To illustrate grants–revenue-poverty nexus in Ghana, a sample of ninety (90) MMDAs are ranked by decile groups with respect to their grants per capita, local revenue per capita, level of inequality and poverty estimates (see Table 9). It could be observed that in many of the MMDAs, grants per capita do not match with corresponding performance in poverty reduction. For example, the [10, 7, 9, 2] vector for Agotime means that the district falls in the 10th and 7th quintile groups for per capita transfer and local revenue respectively, but falls in the 9th and 2nd quintile for inequality and poverty respectively. Thus, Agotime performs rather poorly in transforming grants into poverty reduction although grants are associated with higher local resource mobilization.

Similarly, the efficiency vector for Bole [9, 10, 10, 2], Wa-East [9, 5, 8, 1], Atebubu-Amanti [7, 9, 8, 2] and Zabzugu [8, 3, 10, 1] demonstrate clearly the less efficiency in transforming fiscal resources into poverty reduction in those districts. The districts' poverty performance place them in the bottom quintile in poverty reduction, although they perform better among the top quintile groups in terms of grant receipts, local revenue mobilization and inequality.

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Table 10: Poverty reduction financing efficiency matrix by MMDAs

Assembly	Status	Region	Vector	District	Status	Region	Vector
Abura-Asebu-Kwamankese	District	CR	[2 1 5 5]	Keta	Municipal	VR	[5 2 7 6]
Ada-East	District	GA	[7 8 10 3]	Ketu-North	District	VR	[3 3 6 3]
Adaklu	District	VR	[8 6 5 4]	Ketu-South	District	VR	[6 5 8 8]
Afadzato-South	District	VR	[2 1 5 5]	KMA	Metro	AS	[1 10 3 9]
Afigya Kwabre	District	AS	[2 8 9 8]	Kpando	District	VR	[7 8 4 4]
Agotime	District	VR	[10 7 9 2]	Kpong-Katamanso	District	GA	[4 10 9 10]
Ahafo-Ano-North	District	AS	[3 4 5 3]	Krachi-East	District	VR	[3 6 5 4]
Ahanta-West	District	WR	[4 9 4 3]	Krachi-West	District	VR	[10 5 10 10]
Akatsi-North	District	VR	[8 2 6 4]	Kwabre-East	District	AS	[6 8 10 10]
Akatsi-South	District	VR	[3 4 4 6]	Kwahu-East	District	ER	[5 5 6 8]
Akyemansa	District	ER	[10 2 4 7]	Kwahu-South	District	ER	[6 5 8 8]
AMA	Metro	GA	[1 10 8 9]	Ledzorkuku-Krowor	Municipal	GA	[1 10 3 10]
Amansie-Central	District	AS	[3 6 8 8]	Mfantseman	Municipal	CR	[2 6 7 10]
Amansie-West	District	AS	[1 6 10 9]	Nanumba-North	District	NR	[6 1 2 3]
Aowin	District	WR	[1 6 9 7]	Nanumba-South	District	NR	[4 1 7 1]
Asante-Akim-Central	Municipal	AS	[10 10 8 9]	Nkoranza-North	District	BA	[9 7 9 5]
Asante-Akim-South	District	AS	[4 3 7 4]	Nkoranza-South	Municipal	BA	[7 4 6 5]
Asunafo-South	District	BA	[6 3 6 7]	Nkwanta-North	District	VR	[9 2 1 2]
Atebubu-Amanti	District	BA	[7 9 1 2]	Nkwanta-South	District	VR	[4 2 1 4]
Atiwa	District	ER	[4 7 4 6]	North-Dayi	District	VR	[7 3 8 4]
Atwima-Mponua	District	AS	[3 4 1 9]	North-Gonja	District	NR	[8 2 8 10]
Awutu-Senya-West	District	CR	[2 5 10 9]	North-Tongu	District	VR	[3 4 2 2]
Ayensuano	District	ER	[1 5 10 5]	Nsawam-Adoagyire	Municipal	ER	[10 9 7 7]
Bia-East	District	WR	[10 7 10 9]	Offinso	Municipal	AS	[9 7 2 5]
Biakoye	District	VR	[5 3 6 4]	Saboba	District	NR	[8 1 3 1]
Bia-West	District	WR	[9 2 9 8]	Sagnerigu	District	NR	[1 1 3 6]
Birim-Central	Municipal	ER	[5 9 4 7]	Sawla-Tuna-Kalba	District	NR	[5 2 1 1]
Birim-North	District	ER	[8 10 8 6]	Sekyere-East	District	AS	[10 8 1 7]
Birim-South	District	ER	[6 3 4 5]	Sekyere-South	District	AS	[8 8 5 10]
Bole	District	NR	[9 10 7 2]	Shama	District	WR	[7 7 1 7]
Bosome-Freho	District	AS	[8 4 7 1]	South-Dayi	District	VR	[9 8 1 3]
Bosomtwe	District	AS	[4 4 1 10]	South-Tongu	District	VR	[5 4 5 5]
Cape-Coast	Metro	CR	[1 8 6 9]	Suaman	District	WR	[10 7 6 5]
Central-Tongu	District	VR	[7 3 8 1]	Suhum	Municipal	ER	[5 9 5 7]
Chereponi	District	NR	[5 1 3 1]	Sunyani-West	District	BA	[9 7 7 8]
East-Akyem	Municipal	ER	[1 6 6 7]	Tamale	Metro	NR	[7 6 2 6]
East-Gonja	District	NR	[4 1 2 1]	Tarkwa-Nsuaem	Municipal	WR	[2 10 9 8]
Ejisu-Juaben	Municipal	AS	[7 8 10 10]	Upper-Denkyira-East	Municipal	CR	[9 9 8 10]
Ejura-Sekyedumase	Municipal	AS	[6 7 3 3]	Upper-West-Akim	District	ER	[2 5 9 9]
Ho	Municipal	VR	[6 9 2 8]	Wa-East	District	UW	[9 5 5 1]
Hohoe	Municipal	VR	[4 6 2 4]	Wassa-East	District	WR	[3 9 4 6]
Ho-West	District	VR	[2 2 3 3]	West-Gonja	District	NR	[10 9 2 2]
Jasikan	District	VR	[8 4 3 2]	Yendi	Municipal	NR	[10 10 2 2]
Jomoro	District	WR	[2 5 2 6]	Yilo-Krobo	Municipal	ER	[5 10 4 6]
Kadjebi	District	VR	[6 3 9 3]	Zabzugu	District	NR	[8 3 10 1]

Source: Author's computation based on Ministry of Finance, UNICEF data
Districts (90) were selected based on data availability for all the variables
Fiscal data are in averages (2012-2016)
Efficiency vector has decile ranks as coordinates
For instance, Zabzugu's efficiency vector (8 3 10 1) indicates that the district's decile rank is 8, 3, 10, 1 represents per capita transfers, per capita local revenue, inequality and poverty estimates respectively

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Conversely, poverty reduction in some MMDAs has actually outperformed their grants receipts. For instance, the poverty reduction efficiency vector for Accra Metropolitan Assembly (AMA) is [1, 10, 9, 9], suggesting that the Assembly was in the lowest decile group in terms of grant inflows but highest in local revenue mobilization and ranks in the second highest decile group in terms of poverty reduction. Similarly, MMDAs including Kumasi (KMA), Amansie West, Aowin, Cape Coast, and Upper-West Akim shows efficient transmission from grant and local revenue to poverty reduction. In this efficiency vector, poverty reduction represents a better reflection of the efficient use of grants and local revenue in local development agenda. Per capita grants received would underestimate poverty reduction performance in these local jurisdictions.

Moreover, there are some districts, which performed quite well on all the four coordinates thus translated high per capita grants into high local revenue, to substantial inequality and poverty reduction outcomes. These MMDAs include Asante-Akim Central, Bia-West, Upper-Denkyira East, and Asante-Akim-Central and Sunyani-West. These diversities among the MMDAs in terms of transforming grants into poverty reduction can be attributed to district idiosyncratic characteristics. Thus, the ability of a local authority to transform and expand its social safety nets may depend on the quality of local institution (North, 1990). A typical case of poor quality of local institution in the districts is the increasing spate of misapplication of local public funds and corruption among many local authorities as reported in recent Auditor-General's reports. This incidence among others stifles the capacity of the subnational governments to undertake development programs towards poverty alleviation programs.

Generally, decentralization did not feature prominently in the debate about poverty (Steiner, 2007). Against this background, earlier studies focused heavily on the impact of fiscal decentralization in development in general (Schroeder, 2003) and other aspects of development other than poverty (Arikan, 2004). These focus areas include political manipulation in grants

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distribution (Fumey, 2018) public service delivery (Bardhan and Mookherjee, 2006) and healthcare delivery outcomes (Lieberman et al, 2005). Over the recent past, very little research attention has been paid to the link between fiscal decentralization and poverty (Jütting et al, 2005). However, these studies have reported divergent and contradictory findings on the relationship between decentralization and poverty.

Moreover, most of the studies examine the relationship between decentralization and economic growth whilst some of them focused on the impact of decentralization on governance outcomes. Other studies on decentralization examined its impact on employment (Hammond, and Tosun, 2011) factor productivity (Thieben, 2003), investments (Blochliger and Akgun, 2018) inflation (Martínez-Vázquez and McNab, 2006) growth and level of public goods (Qian and Zhang, 2017; Faguet and Sánchez, 2008), inequality (Kyriacou et al., 2017) and local development index (Tosun and Yilmaz, 2010).

However, there is a dearth of empirical study on the effect of fiscal decentralization on human welfare indicators such as poverty in Ghana. It is worth noting that virtually no comprehensive study has been conducted on the effect of grants and local revenue on poverty in Ghana. This study provides a useful addition to the literature by examining the impact of transfer grants and local revenue on poverty in Ghana, using GLSS 7 data and local government fiscal data. This section uses OLS regression model to examine fiscal decentralization-poverty nexus using the averages of district-level panel data for the period 2012-2017, for 91 MMDAs in Ghana.

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5.2 District-Level Analysis

This section examines the effect of grants and local revenue on poverty in Ghana, using district-level data. The district-poverty is regressed on total local government grant and revenue to ascertain their effects on poverty. In this analysis, we employ multi-variant regression analysis using the mean values of district socioeconomic variables covering the period 2012-2017. The main estimation techniques employed is the Ordinary Least Square method. We first present the theoretical framework and the empirical model used in this study to examine the effect of grants and local revenue on poverty in Ghana. Furthermore, the section discusses the statistical methods, and results of the study.

5.2.1 Methodology

5.2.1.1 Theoretical Perspective

According to the proponents of the basic-need approach to the measure of poverty, an individual is defined as poor when his/her income does not meet basic needs in a given locality (see for instance, Hicks and Streeten, 1979). Moreover, the lower its value, the more likely that income will fall below basic need hence the level of poverty is expected to decrease with rise in income (Fosu, 2009). Conceptually, basic needs are an increasing function of localities' standard of living, defined by income. This study therefore adopts Fosu (2008) basic poverty-reduction function specified in Cobb-Douglas form as:

$$P = P(Y) = AY^{a} \quad \ldots\ldots (10)$$

where, P is the level of poverty and Y represents income. A reflects initial poverty independently of income (expected to be positive) and a is income elasticity of poverty (expected to be negative). The linear differenced version of equation (11) is expressed in the form:

$$p = a_1 + a_2 y \quad \ldots\ldots (11)$$

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where p, y are growth rates of poverty and income respectively, a_1 is the growth of poverty at a constant level of income whilst a_2 denotes elasticity of poverty changes with respect to income growth.

The model assumes that socio-political environment such as the nature of income distribution influences both a_1 and a_2. A more equally distributed income increases the rate at which income growth is transformed to poverty reduction. Thus, districts with a more equally distributed income should exhibit higher rates at which income growth is transformed into poverty reduction, holding other factors affecting poverty constant. Similarly, acceleration in inequality is likely to increase the rate at which poverty rises. However, a situation where income is very low, redistribution towards greater equality would only render more people poor, as the income of those above the poverty line falls (Fosu, 2008). Thus, a_1 and a_2 are expressed parametrically in the linear form as:

$a_1 = a_{11} + a_{12}g$ ..... (12)

$a_2 = a_{21} + a_{22}g$ ..... (13)

Incorporating Equations (12) and Equation (13) into Equation (11) yields

$$\boldsymbol{p = c_1 + c_2 y + c_3 gy + c_4 g} \quad \text{..... (14)}$$

where $c_1 = a_{11}$ is the intercept, $c_2 = a_{21}$ is the independent impact of income growth on poverty when there is no inequality, $c_3 = a_{22}$ denotes the effect of income covariant with inequality, and $c_4 = a_{12}$ represents the independent impact of inequality on poverty when income growth is zero.

According to Equation (14), the intercept is expected to be positive because even at zero level of income and inequality, there would certainly be some poverty. The independent effect of income growth on poverty is assumed to be negative thus, growth should reduce poverty when there is near-perfectly equal distribution of income. Income growth is expected to lead to

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reduction in poverty proportionally. This position is akin to the proposition of Dollar and Kraay (2002) that all income groups benefits proportionately from growth, suggesting no special role of inequality in the poverty-growth nexus.

In contrast, Fosu (2008) argues that the effect of income growth on poverty depends on the level of inequality. The model assumes that the independent effect of inequality on poverty is positive because high inequality shows that nearly everyone is poor. The model assumes that as inequality increases and income distribution becomes less equal, the negative effect of income growth on poverty is reduced. However, where income level is very low, redistribution to greater equality would only render more people poor, as incomes of those above the poverty line are reduced. This specification is similar to empirical specifications of Ravallion (1997) and Easterly (2000) who postulated that inequality would reduce the impact of growth on poverty reduction.

5.2.1.2 Empirical Model Specification

The modified version of Fosu (2008) poverty model used for the empirical analysis incorporates local revenue and central government grant as the main variables of interest to ascertain their effects on district-level poverty in Ghana. Following von Braun and Grote (2002) the poverty model employed for the analysis controls for human capital and institutional characteristics of the districts. This study therefore seeks to investigate the effect of grants and local revenue on poverty, by adopting a modified version of Fosu (2008) poverty function specified as:

$$Pov = \alpha_0 + \alpha_1 Y + \alpha_2 G + \alpha_3 (G^*Y) + \alpha_4 DACF + \alpha_5 RCEX + \alpha_6 DLT + \alpha_7 FB + \alpha_8 POD + \alpha_9 DST + \alpha_{10} SF + \varepsilon \quad \text{.....(15)}$$

where,

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Pov represents natural log of headcount ratio (poverty), **Y** is natural log of local revenue (local income), **G** denotes natural log of Gini coefficient (income inequality), **G*Y** represents the natural log of the interactive term of local revenue and inequality, **DACF** denotes natural log of District Assembly Common Fund (grants or capital), **RCEX** is natural log of recurrent expenditure (administrative cost), **DLT** represents natural log of District League Table score (local institution), **FB** denotes natural log of fiscal balance (revenue capacity), **POD** is natural log of population density (service demand), **DST** denotes natural log of decentralized staff strength (human capital), **SF** represents natural log of school feeding expenditure (social intervention program).

5.2.2 Variable Description

Before embarking on the empirical investigation of the effect of transfer grants and local revenue on poverty in Ghana, description of variables used in the empirical models is outlined below in order to present some preliminary explanation to the relationships between some key regression variables. District-specific factors that are not controlled for in this study are those that are to be explored in future studies to design appropriate district-specific policies for poverty reduction. The natural logs of the variables are used for the estimation of the empirical model hence variables are interpreted in terms of their growth rates.

5.2.2.1 Headcount ratio (poverty)

Generally, poverty is considered as the inability to meet basic needs including physical and nonphysical needs (World Bank, 1993). Moreover, UNDP defines poverty as the denial of opportunity and choices most basic to human development that leads to long healthy, creative life and to enjoy decent standard of living, freedom, dignity, esteem and the respect of other (Cagatay, 1998). However, poverty is conventionally considered as the result of inadequate income to secure basic goods and services. Therefore, an individual is defined as "poor" when his/her income does not meet basic needs in a given locality (Fosu, 2008). The Ghana

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Statistical service defines poverty using economic index that characterizes the poor as those subsisting on per capital income of less than two-thirds of the national average. It also defines hard-core poverty as those with income below one-thirds of the national average (Ghana Statistical Service, 2018).

The dependent variable in the regression analysis is incidence of poverty (headcount ratio), which shows the proportion of people living with consumption per capita below the absolute poverty line. The absolute poverty line is pegged at GH₵1,760.86 during the 2016/2017 survey period (Ghana Statistical Service, 2018). The poverty measure in this study considers household consumption on food and non-food expenditure as reported by the GLSS 7 survey data. The district-level poverty is estimated from the household-level poverty data, using poverty decomposition technique "POVDECO" developed by Jenkins (1998).

5.2.2.1 Local revenue (income)

According to Lin and Liu (2000), growth rate of per capita income has the potential to alleviate poverty. However, it is noted that Ghana's growth performance has not translated into significant decline in poverty (Fosu, 2008 and Fjeldstad, 2014), although some moderate progress has been made over the recent past. The estimation of the district-level poverty equation therefore requires that income growth be controlled for. Previous studies such as Ravallion (1997), Ali and Thorbecke (2000) and Fosu (2008) used GDP growth as a proxy for income growth. However, Ghana's GDP has not been disaggregated at the district level therefore making it impossible to control for economic growth at the district level. Following Caldeira and Rota-Graziosi (2014), local revenue income is adopted to ascertain its growth on poverty. The coefficient of growth in revenue income is anticipated to be negative thus, should reduce poverty growth.

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5.2.2.2 Gini coefficient (income inequality)

Rising inequality has implication for poverty growth since higher inequality means that local income is own by few citizens, thereby making almost everyone's income fall below the poverty line. Ravallion (1997) argue that low inequality increases the share of the poor in the national income. Several studies found that inequality plays an important role in the income growth-poverty relationship. Ali and Thorbecke (2000) and Fosu (2008) found that poverty growth responds positively to inequality growth more than income growth. Datt and Ravallion (1992) and Kakwani (1993) using evidence for single countries, decomposed poverty changes into effects attributable to income growth and changes in income distribution. Following from the previous studies, Gini coefficient is used as a measure of income inequality, whose coefficient is expected to be positive. The Gini coefficient is estimated from the GLSS 7 data, using Jenkins (1998) poverty decomposition technique.

5.2.2.3 Income-inequality interactive term

Bourguignon (2003) and Epaulard (2003) assumed a lognormal distribution of income to estimate poverty model. The authors found that the income growth elasticity depends on the ratio of poverty line to mean income as well as on initial inequality. This implies that rising inequality does not only have implications for poverty, but also the effect of income growth on poverty changes depends on the level of inequality (Fosu, 2009). Also, Adams (2004) and Kalwij and Verschoor (2007) argues that countries with higher levels of inequality exhibits a smaller growth elasticity of poverty. This hypothesis is akin to Ravalion (1997) and Easterly (2000) who postulated that income growth elasticity of poverty is a decreasing function of the level of inequality. Following the findings of Fosu (2008), the coefficient of the income-inequality interactive term is expected to be positive.

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5.2.2.4 District Assembly Common Fund (central government grant)

Neoclassical growth models such as Solow (1956) hypothesized that capital is a crucial determinant of growth. The accelerator model asserts that the amount of net investment required within a given period depends on amount of capital needed to produce a unit of output. Thus, capital has a direct effect on production of goods and services. The District Assembly Common Fund (DACF) is the major source of capital from the central government to the local authorities. The fund has provided the capital resources towards provision of development projects in Ghana and has helped in expanding access to improved public services in health and education in local communities. According to Blochliger and Akgun (2018), transfer flows in the subnational governments serve as the main source of capital for investment, which has the tendency to reduce poverty hence, it is expected to have a negative coefficient.

5.2.2.5 Recurrent expenditure (administrative cost)

Local government's recurrent expenditure comprises expenditures on compensation of employees (salary payments) and goods and services. This expenditure component is made to meet the day-to-day administrative and operational needs of the local governments. Smoke (2015) argued that strengthening decentralization requires a sound backup of fiscal resources, covering both capital and recurrent expenditures of subnational governments. Very limited constraint is placed on the use of goods and salaries component of the MMDAs' budget, thereby providing some level of discretion in the use of the fund. Local administration tasks and activities directly contributes to the local economic and social development (Smoke, 2015). Thus, recurrent expenditure is expected to have a negative relationship with poverty.

5.2.2.6 District league table score (local institution)

According to Bahl and Cyan (2011), decentralization might not have any impact on development outcomes in developing countries because local institutions in those economies are still at their nascent stages. Most country-specific studies on fiscal decentralization used

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panel or cross section data at the local government level, however subnational governments are subjected to same national and local byelaws. This institutional homogeneity makes it difficult to compare the quality of local institutions across different jurisdictions in the same country. Nevertheless, some studies have used some indicators to compare the quality of local institutions. For instance, Enikolopov and Zhuravskaya (2007) argue that the effectiveness of decentralization in addressing local development outcomes depends on the competition in the local government system.

Thus, subnational governments can differ in relevant ways in their targeting performance (Ravallion, 1997) based on the quality of institution. Central government's poverty alleviation programs often rely on local governments institutions to survive (von Braun and Grote, 2002). The Ghana District League Table (DLT) score published by UNICEF and CDD-Ghana as social accountability tool, ranks MMDAs by their level of social development and service delivery. The score ranges between 0 and 100 percent, with higher percentage indicating better local institution and service delivery. Ultimately, the index provides some understanding of the disparity in the institutional quality that result in the variations in district development. Following the new institutional economists (Bates and Block, 2013; Bardhan, 2002; and North, 1990) we control for local institution using the DLT score. Improvement in the quality of district institution is expected to be associated with reduction in poverty.

5.2.2.7 Fiscal balance (revenue capacity)

Fiscal balance variable is used as indicator of revenue capacity thus, ability of local governments to generate their own income to finance at least their administrative cost (Smoke, 2015). Thus, fiscal balance is more related to revenue decentralization because it measures the revenue mobilization capacity of local governments. The fiscal balance is measured as the ratio of local revenue to recurrent expenditure of the local government (Smoke, 2006). According to Akai et al. (2007), even if expenditure shares of the subnational government are small

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relative to total government spending, a fiscally balanced local government can better finance its development programs with limited restrictions. Fiscal balance is therefore expected to reduce the growth of poverty.

5.2.2.8 Population density (service demand)

Population density is measured by the ratio of population to land area of a particular subnational jurisdiction. Local revenue may increase in densely populated area as revenue collectors may easily locate and identify taxpayers. The revenue collected from the individuals would promote the welfare of the ratepayers if those funds are channelled into the provision of local services, but quality of life may be worsened if those funds are misappropriated (Gennari and Messina, 2014). Moreover, the cost per unit of providing services that are demanded in densely populated locality is cheaper compared to sparsely populated area because of the public good attributes of most local services (Musgrave, 1959). Following Smoke (2006), a negative coefficient is expected for population density in the estimated poverty model.

5.2.2.9 School feeding expenditure (social program)

School feeding program is one of the poverty-alleviating programs that has been implemented to reduce the impact of poverty in deprived communities. Bardhan and Mookherjee (2003) opined that poverty-alleviating programs generally targets the poor and hence improves their livelihood. The decentralization policy provides the administrative structure for delivering free meals to poor basic schools in Ghana. This study controls for the school feeding grants and its coefficient is expected to be negative. The choice of the school feeding expenditure as a proxy for social transfer program is based on the availability of district-level data on the variable.

5.2.2.10 Decentralized staff strength (human capital)

Human capital development activities according to Grossman (1980) include investment in education, health, training, and other investments that enhance an individual's productivity.

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Education for instance, is an important tool in providing people with basic knowledge, skill and competencies to improve the quality of life. The entry point of the Ghana's Local Government Service for senior officers is at least first degree from a reputable tertiary institution. This calibre of qualified staff is posted to the various local governments to help them deliver on their core mandates. Following the study of Qian and Zhang (2017), this study employed the number of decentralized workers as a proxy for human capital.

5.2.3 Data Source and Scope

The study uses secondary data mainly drawn from Ghana Statistical Service (GLSS 7) and Ministry of Finance (Composite Budgets). Ghana is made of 261 MMDAs however, due to data unavailability on some important variables considered under the study, the data used for the empirical analysis is obtained on a sample of eighty-five (85) MMDAs in Ghana. Poverty eradication is a developmental phenomenon, which requires long-term sustainable programs and policies to achieve. Thus, impact of fiscal decentralization on poverty should be analysed in panel or time series, capturing the dynamic effect of the reform. However, current data available does allow such comprehensive analysis.

The use of cross-section rather than panel data is due to the fact that usable time series data on poverty is unavailable in Ghana. The available data on the local government's fiscal performance covers the period 2012-2017 whilst the recent poverty data on Ghana was conducted in 2016/2017 period. The cross-sectional analysis uses the average values of the MMDA fiscal data over the period 2012-2017 to capture the medium-term impact of the variables on the district poverty estimates. The district-level poverty rates are estimated from the household-level poverty as reported in the GLSS 7, with the use of poverty decomposition technique developed by Jenkins (1998).

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5.2.4 Results and Discussion

5.2.4.1 Descriptive Analysis

The descriptive statistics considered are mean, standard deviation, maximum and minimum values of the variables. The statistics is based on a sample eighty-five (85) MMDAs out of the total of 261 districts due to the unavailability of data on some key variables for some of the districts. Moreover, the data used for the study covered the period 2012-2017. The mean represents the average values of the variables whilst standard deviation indicates how variables are distributed around their mean values. Table 11 shows the descriptive statistics of the variables.

Table 11: Descriptive statistics of variables

Variable	No. of observation	Mean	Minimum	Maximum	Standard Deviation
Headcount poverty rate (%)	85	32.356	0.849	95.37	24.494
Local revenue per capita	85	42.545	6.389	113.644	17.787
Gini coefficient (%)	85	31.963	17.629	48.385	5.957
DACF per capita (GH₵)	85	14.327	1.458	56.397	9.008
Recurrent expenditure per capita	85	20.263	3.027	69.897	11.913
DLT score (%)	85	58.736	45.072	72.441	6.305
Fiscal balance	85	0.276	0.037	1.597	0.238
Population density (km^2)	85	423.692	7.871	13575.980	1579.87
Decentralized staff (Persons)	85	204.050	134	343	52.191
School feeding grant per capita	85	3.296	0.438	13.084	2.559

Source: Author's Computation using STATA 15
Fiscal variables in GH₵ per capita. [1]measured in per km^2.

Headcount poverty rate for the selected MMDAs used in the empirical analysis averaged 32.36 percent in 2016/2017 period ranging from 0.85 percent to 95.37 percent. This poverty disparity among districts in the country may be attributed to district internal factors and external factors such as the extent to which districts were affected by national poverty-reduction policies. The Gini coefficient averaged at 31.96 percent for the sample of districts under the study period. The rate ranges between 17.63 percent and 48.39 percent with a standard deviation of 5.96 for the same period. The differences among districts in terms of their level of income inequality could be attributed to socio-political environments prevailing in those jurisdictions. Districts

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where the larger share of the local income are owned by very few minority groups, will experience higher income inequality, and the vice versa.

In addition, local revenue per capita ranges between GH₵6.40 and GH₵113.64, with an average of GH₵20.27 and standard deviation of 17.48, for the same period. The revenue disparity among the MMDAs could be attributed to several factors including differences in their revenue effort. Also, the average of DACF per capita is GH₵14.33, and ranges between GH₵1.46 and GH₵56.40 with standard deviation of 9.01 for the same period. The disparity among districts in terms of DACF releases could be attributed to differences in their socioeconomic variables that are used in the DACF allocation formula. Districts with higher need of basic services, and service pressure receives higher allocations whilst those with higher revenue efforts are motivated with higher allocations to undertake more revenue mobilization.

Some districts recorded minimum District League Table (DLT) score of 45.07 per cent whilst others scored 72.45 percent within the period 2012-2017. The average DLT score is 58.75, suggesting that over the period, most of the districts performed above average in the terms of social service delivery. The difference in DLT score among the districts is attributed to disparities in social service delivery such as education, health, sanitation, BECE pass rate, community certification for open defecation, increased in skilled attendants at child delivery.

Fiscal balance averaged 0.28 for the group of districts considered under the study over the period 2012-2017. The standard deviation for fiscal balance stood at 0.24 with the minimum and maximum values of 0.037 and 1.60 respectively. This suggests that some MMDAs could only support 3.7 percent of their recurrent expenditure with their IGF whilst some could raise more than 160 percent through IGF. The differences in the fiscal balance suggests that some jurisdictions have better access to tax bases and higher revenue efforts compared to other jurisdictions.

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The average population density for the districts is 423.70 km^2. It ranges between a minimum of 7.87km^2 and maximum of 13,575.98 km^2 with standard deviation of 1579.87km^2 over the same period. Other demographic factors such as migration and fertility in the districts could explain the differences in population density among the districts. Districts that are economically buoyant are more likely to experience rural-urban migration and be more densely populated compared to other districts.

Over the period 2012-2017, the average of the recurrent expenditure for the sample of eighty-five (85) MMDAs is GH₵20.26. The expenditure value ranges between GH₵3.027 and GH₵69.897 with standard deviation of 11.91 for the period. In the same period, decentralized labour force has an average of 204 persons with a minimum value of 134 persons whilst the maximum stood at 343 persons. The standard deviation for labour force is 7.59. The descriptive statistics table shows that fiscal balance has the least standard deviation of 0.24 whilst population density has the largest standard deviation of 1,579.87. The level of school feeding grant in the districts remains low averaging GH₵3.30 per capita over the period 2012-2016. The minimum level of school feeding grants per person stood at GH₵0.44 with the maximum reaching GH₵13.10.

5.2.4.2 OLS Results of District-Level Poverty

This section presents the outcome of the OLS estimations results on the district-level poverty model. The OLS regression results are based on data collected on a sample of eighty-five (85) MMDAs, covering the period 2012-2017. Table 12 reports the OLS estimation results. The R-squared and F-statistics for the regression result indicates joint significance of the explanatory variables. The basic poverty model (see Fosu, 2008) and the fully specified model as well as the constrained versions of the Equation (6), are estimated using Ordinary Least Square (OLS) estimation technique. For each model, we provide the coefficients alongside with their standard errors in parenthesis, and t ratios.

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We discuss first, the results from the basic poverty model specified in Equation (11) where revenue growth and changes in inequality, and revenue-inequality interactive terms enter into the poverty equation (see Table 12). As expected, the coefficients of revenue growth and changes in inequality (Gini) are negative and positive respectively, implying that a rise in revenue growth by 1 percent (logarithmic increase in revenue) will reduce the rate of poverty incidence by 1.25 percentage points, ceteris paribus. Acceleration in inequality (Gini) by 1 percentage point will exacerbate growth of poverty incidence by 4.28 percentage points. In addition, the result shows that the coefficient for revenue*Gini variable is negative, suggesting that a higher level of inequality will reduce poverty reduction efficiency of revenue at a rate of 0.20 percent per each percentage increase in the Gini. Comparing the results of the basic poverty model to those of Fosu (2008), we observe that our results are similar to his except for the sign of the revenue*Gini variable.

We now turn to the results of restricted model (5A) in Table 12. The first restricted model incorporates central government grant (DACF) into the basic poverty equation. The OLS results show that an increase in DACF inhibits poverty growth at 5 percent significant level. Holding all other things constant, an increase in DACF grant by 1 percent will decrease poverty incidence by 0.70 percentage points. Similar to the results of the basic model, revenue growth reduces poverty incidence by 0.88 percentage points whilst inequality worsens poverty incidence by 2.96 percentage points at 1 percent and 5 percent respectively. The coefficient of revenue-inequality term is negative but statistically insignificant.

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Table 12: Results of OLS estimation on absolute poverty equation

Variables	**Model 5** coefficients	t value	**Model 5A** coefficients	t value	**Model 5B** coefficients	t value	**Model 6** coefficients	t value
Constant	19.091* (3.610)	5.29	22.914* (4.235)	5.41	20.494* (4.395)	4.66	16.296* (4.764)	3.42
Revenue	-1.253* (0.237)	-5.29	-0.880* (0.283)	-3.11	-0.073 (0.320)	-0.23	0.254 (0.335)	0.76
Inequality	4.276* (1.589)	2.69	2.961** (1.548)	1.91	3.520*** (1.860)	1.89	2.958*** (1.741)	1.70
Revenue*inequality	-0.201*** (0.109)	-1.84	-0.131 (0.105)	-1.23	-0.183 (0.119)	-1.54	-0.155 (0.113)	-1.37
DACF transfer			-0.702** (0.269)	-2.60	-0.623* (0.229)	-2.73	-0.603* (0.221)	-2.71
Population density					-0.273* (0.060)	-4.59	-0.203* (0.058)	-3.49
Decentralized staff					-0.629** (0.323)	-1.95	-0.426 (0.314)	-1.35
Recurrent Expend.					-0.336 (0.220)	-1.52	-0.600* (0.213)	-2.81
DLT score					-0.030** (0.013)	-2.39	-0.021*** (0.012)	-1.69
School feeding grants							-0.003 (0.172)	-0.02
Fiscal balance							-0.412* (0.146)	-2.83
Observations	85		85		85		85	
R-squared	0.350		0.385		0.548		0.616	
Mean VIF	1.078		1.259		2.669		3.983	
Root MSE	0.777		0.761		0.668		0.625	

***, **, * represents 1percent, 5percent and 10percent significant levels respectively
Variables are in natural logs

Moreover, by controlling for recurrent expenditure, population density, decentralized staff, and local institution in the poverty model (Model 5B in Table 12), the coefficient of local revenue becomes insignificant whilst DACF remains negative and significant at 1 percent. An increase in DACF by 1 percent will lead to 0.62 percentage point decrease in headcount ratio, ceteris paribus. Income inequality (Gini) positively affects poverty growth at 10 percent significant level. Also, the results show that the quality of district institution reduces poverty at 5 percent significant level. Holding all other things constant, an increase in DLT-score by 1 percentage point leads to 0.03 percentage point reduction in headcount ratio. Moreover, coefficients for decentralized staff strength, population density are negatively significant whilst the coefficient for recurrent expenditure is negative but insignificant.

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We now turn to Model 6 in Table 12 obtained from estimating the fully specified version of the poverty model in Equation 15. The modified versions of the poverty model provide better fit than specifications in the basic model, on the basis of R-squared and the Root Mean Square Error (RMSE). This implies that central government grants (DACF), local institution, fiscal balance, decentralized staff strength, population density and school feeding grant matter. The estimation results show that, central government grant (DACF) decreases poverty incidence at 1 percent significant level whilst local revenue has no significant effect on poverty.

As expected, the results imply that an increase in DACF by 1 percent will lead to 0.60 percentage point decline in headcount ratio, ceteris paribus. Thus, increase in central government grants to district assemblies reduces poverty incidence at 1 percent significant level. This finding is consistent with Blöchliger and Akgun (2018) who found that grants to subnational governments provide investible funds to support local development. The theory of fiscal federalism assumed that decentralization provides the institutional structure for the flow of financial resources, which engenders fiscal autonomy for local development (Feld et al, 2005). Thus, local government grants although with its attendant challenges, helps reduce poverty in Ghana.

The OLS estimation result of the fully specified model shows that the coefficient of local revenue is insignificant. Thus, local revenue has no significant effect on district-level poverty in Ghana. This result is contrary to the findings of Lin and Liu (2000) and Fosu (2008), although differing in the measure of income. According to Lin and Liu (2000), growth rate of per capita income has the potential to alleviate poverty. Income growth that benefits many people ensures that income of many citizens rises above basic need thereby improving poverty (Fosu, 2009). This study employed district revenue as a measure of local income and found no relationship between the variable and poverty. This result is however consistent with

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expectation given the low levels of revenue mobilization at the local government sector in Ghana.

Gini coefficient positively affects poverty growth at 10 percent significant level. The OLS results show that 1 percentage point increase in Gini coefficient leads to 2.94 percentage point increase in headcount ratio, ceteris paribus. This result conforms to expectation and akin to the findings of Ravallion (1997), Ali and Thorbecke (2000) and Fosu (2008). Ravallion (1997) and Fosu (2008) argue that any social and political arrangement that is characterized with high-income inequality, may lead to a decrease in the share of the poor in national income. Thus, inequality exacerbates growth of poverty incidence in Ghana.

The revenue income is interacted with Gini coefficient to capture the intermediating effect of inequality on revenue-poverty nexus. The negative coefficient for revenue*Gini indicates that income inequality reduces the negative impact of revenue growth on poverty by 0.15 percent, for each percentage increase in Gini however, the effect is statistically insignificant. This result suggests no intermediating role of inequality in revenue-poverty nexus contrary to the findings of Kalwij and Verschoor (2007) and Fosu (2008) although differing in the measure of income. Fosu (2008) argue that rising inequality have direct effect on poverty, and indirect effect through income growth.

Moreover, the coefficient for DLT score (local institution) is -0.02 and significant at 10 percent significant level. Thus, a logarithmic increase in the DLT score leads to 0.02 percentage point decrease in headcount ratio (poverty incidence). This result shows that improvement in district-level institution improves poverty situation in the districts, consistent with the findings of Bardhan (2002), Enikolopov and Zhuravskaya (2007), Bates and Block (2013), and North (1990). Enikolopov and Zhuravskaya (2007) found that the effectiveness of decentralization in reducing poverty depends on the quality of local institutions. Therefore, the results

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corroborate previous studies, which emphasizes the need for quality institutions for local development.

Bardhan and Mookherjee (2003) noted that social intervention programs generally improve the livelihood of the poor. The results show that school feeding grants have a negative relationship with headcount ratio. Holding all factors constant, an increase in school feeding grants by 1 percent will lead to 0.003 percentage points reduction in poverty, but the result is not statistically significant. This result is consistent with the findings of Bardhan and Mookherjee (2003), thus the school feeding grants have the potential to reduce poverty at the district level.

Moreover, the OLS estimation results show that an improvement in the fiscal balance reduces poverty incidence. Logarithmic increase in fiscal balance decreases head count ratio by 0.41 percentage points at 1 percent significant level. This result implies that fiscally balanced local governments have the capacity to generate their own income to finance at least their administrative cost, and hence can better finance its development programs with limited restrictions (Smoke, 2015). The results are consistent with the findings of Smoke (2015) and Akai et al (2007) thus, a fiscally balanced district has the tendency to perform better in poverty reduction.

Furthermore, the estimated results of the fully specified model show that decentralized staff has the potential to reduce poverty incidence but the effect is statistically insignificant. Thus, staff strength in the local authorities in Ghana has no significant effect on poverty, as the coefficient is insignificant in the fully specified poverty model. This result is contrary to the findings of Qian and Zhang (2017) who argue that decentralized staff provides the human capital whose skills and competencies are tapped for local development.

According to Smoke (2006), providing public services to localities that are highly populated comes at a cheaper cost compared to sparsely dense locality since most of those services have

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the attributes of public goods (see Musgrave, 1959). Moreover, population density represents more service demand and this is expected to improve the livelihoods when provided. The coefficient for population density is -0.20, suggesting that logarithmic increase in population density leads to 0.20 percentage points decline in headcount ratio, holding constant all other factors. Thus, population density promotes reduction in poverty incidence at 1 percent significant level. This result is consistent with the findings of Gennari and Messina (2014) and Smoke (2006) who found that high service demand is associated with better local development outcomes.

Subnational governments require adequate fiscal resources to defray their recurrent expenditures to strengthen decentralization (Smoke, 2015). The results show that growth of recurrent expenditure promotes poverty reduction at 1 percent significant level. Thus, an increase in recurrent expenditures by 1 percent leads to 0.60 percentage decrease in headcount ratio, ceteris paribus. The negative significant effect of recurrent expenditure on poverty shown in the results is consistent with the findings of Smoke (2006), Akai et al. (2007) and Smoke (2015) who found that administrative expenditure enhances efficiency in service delivery. The Variance Inflation Factor reported in Table 12 shows no case of multicollinearity in the OLS results. As part of robustness check, the OLS results of the poverty models using extreme poverty incidence is reported under Appendix 2, which are not much different from the results of the absolute poverty incidence.

5.3 Community-Level Analysis

The provision of local public services such as agricultural advisory services, education, health, rural infrastructure is at the centre of decentralization reform in SSA countries (Bashaasha et al., 2011). Empirical study on fiscal decentralization and poverty in Ghana are very scanty. Most of the existing literature focuses on the political economy of grants, quality of local service delivery, and revenue mobilization (Inanga and Osei-wusu, 2004). This section

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analyses the effect of fiscal decentralization on poverty by tracing its impact through local services, using community-level data from the GLSS 7.

One of the objectives of fiscal decentralization is to ensure that people living in the remote communities have access to basic services. In this context, MMDAs have undertaken development projects such as construction and maintenance of classroom blocks, clinics, feeder roads, public toilets, markets, streetlights among others. Some of these projects are undertaken in collaboration with central government or nongovernmental organizations. The improved infrastructure such as health and sanitation largely removed the bottleneck to social and economic development (DACF, 2014). However, the rural communities have not received the fair share of these investments (Ayee and Dickovick, 2014) since most of these projects are concentrated in the district capitals to the detriment of the rural areas.

The individual Legislative Instruments establishing each of the MMDAs and the Local Government Act (Act 462) mandates the local authorities to deliver some specific responsibilities to their localities. These statutory responsibilities include:

- constructing and maintaining feeder roads, streets, parks and public utilities
- building, equipping and maintaining primary, middle, secondary and special schools
- promoting and safeguarding public health
- monitoring any condition likely to be injurious to health
- building, maintaining and controlling public latrines, lavatories and urinals
- providing and managing abattoirs

The objective of conducting this regression analysis is to complement the OLS results on the poverty model estimated using the district level data. The OLS regression assumes a direct relationship between grants, local revenue and poverty. This community-level analysis assumes an indirect effect based on the assumption that local fiscal resources are channelled

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into the provision of pro-development services. Thus, local resources are therefore channelled into the provision of social services such as education and health to reduce poverty.

Devolution of fiscal policy to the subnational levels is basically aimed at providing the financial resources for the local authorities to provide basic public services to their localities. Thus, grants may indirectly affect poverty (Inanga and Osei-wusu, 2004) through the provision of community services. These community-based services include education and health services, water and sanitation service delivery, market facility, adult education, and road infrastructure.

The most meaningful effect of decentralization on the poor ultimately occur at the community level (Ayee and Dickovick, 2014), where local investments are channelled into human capital development. So far, empirical analysis on the fiscal decentralization policy focuses on specific districts since very little information is available on the decentralized bodies at the community level. To complement the district-level analysis, the Probit and Logit regression analysis are conducted using the community-level data extracted from the GLSS 7 to assess citizens' perception on the impact of community services in Ghana.

5.3.1 Methodology

5.3.1.1 Theoretical Perspective

The Logit Model is a univariate or multivariate technique, which is used to estimate the probability that events occur or not by predicting from a set of explanatory variables, binary explained variable (Y), having a Bernoulli distribution. This could be specified mathematically as:

$$Y \sim (1, \Pi(X))$$

Where Y assumes only values (0 or 1) with the probabilities $\Pi(X)$ or $1-\Pi(X)$. $X \epsilon R^n$ is a vector of n independent variables and $\Pi: R^n \Rightarrow [0, 1]$ a function of real values. Also, $\Pi(X)$ represents the probability of Y=1 if P(Y=1/x), when x is known or given. By letting $h = Y-\Pi(x)$ and

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rewrite the logit model in the form Y = Π(x) + h and taking expectation of h gives the expression.

E(h) = E (Y-Π(x))= E(Y) – Π(x) = Π(x) – Π(x) = 0

The variance of h is therefore given as: Var (h) = Var (Y) = Π(x)(1-Π(x))

In addition, the poverty equation could be represented in the following expression such as:

$$\boldsymbol{P_i = (Y = 1|\ X) = \frac{1}{1+exp\ [-(\beta 1+\beta 2 Xi\ )]} + \frac{1}{1+exp\ [-Zi)]}} \ldots\ldots\ldots\ldots\ldots\boldsymbol{(16)}$$

where $Z_i = \beta_1 + \beta_2 X_i$ and Equation 16 is the logistic distribution function. It is assumed in the logistic equation that the value of Z_i ranges between -∞ and +∞ whiles P_i falls between 0 and 1, and not linearly related to Z_i hence satisfying the two main required conditions for a probability model.

In equation 16, P_i is the probability of a community being poor and is represented by $\frac{1}{1+exp\ [-Zi)]}$ while 1-P_i is the probability of a community not being poor. This can be represented by $\frac{1}{1+exp\ [Zi)]}$

We can therefore write the ratio of the probability that a particular community will experience improvement in poverty as a ratio of the probability that same community will not experience any improvement in poverty as follows:

$$\frac{Pi}{1-Pi} = \frac{1+exp\ [Zi)]}{1+exp\ [-Zi)]}$$

Taking natural log of the above equation gives

$L_i = \ln [P_i/ (1-P_i)] = Z_i = \beta_1 + \beta_2 X_i$

This expression therefore renders the odds ratio linear in both X and the parameter.

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5.3.1.2 Empirical Model Specification

The community respondents provided information about whether their communities experienced improvement in living conditions in 2016/2017 compared to 2012/2013, which assume a binary nature. The dependent variable hence takes two values: one (1) implying that the community respondent answered that condition of living improved, and Zero (0) suggesting no or deterioration in the standard of living in the community. Following previous studies, this session employs the Logit Model to ascertain the impact of local government service delivery on living condition in the Ghanaian communities. The Logit model is specified as below:

$$\boldsymbol{LC = \beta Xi + \mu_i \ \forall i = 1....n} \quad \text{..... (17)}$$

Where, LC represents living condition, which is a binary response of the ith community respondent, X is the row vector of explanatory variables, β is a vector of unknown parameters to be estimated and μ_i is the stochastic error term.

The empirical model to be estimated is specified as:

$$\textbf{Logit } (LC_t) = \ln\left[\frac{Pi}{1-Pi}\right] = \beta_0 + \beta_1 \text{lnPop} + \beta_2 \text{Water} + \beta_3 \text{Health} + \beta_4 \text{Project} + \beta_5 \text{AdultEduc} + \beta_6 \textit{Pri}\text{mEduc} + \beta_7 \text{JHSEduc} + \beta_8 \text{SHSEduc} + \beta_9 \text{Electricity} + \beta_{10} \text{Road} + \beta_{11} \text{FinInst} + \beta_{12} \text{Migrat} + \beta 13 \text{MarketDist} + \beta 14 \text{Job} + \beta 15 \text{Agric} + \mu \quad \text{..... (18)}$$

where, lnPop represents the natural log of population, Water denotes portable water, Health is health facility, Project is local development project, AdultEduc represents adult education, *Pri*mEduc denotes primary school, JHSEduc is Junior High School, SHSEduc represents Senior High School, Electr is electricity, Road denotes tarred road, FinInst represents financial institution, Migrat denotes migration, MarketDist is distance to the nearest market, Job is improvement in job prospects, Agric denotes agrarian economy, β_0 to β_{15} are coefficients, and μ is the stochastic error term.

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In an attempt to examine the indirect effect of grants and local revenue on poverty at the community level, the "pseudo" poverty model specified in Equation (18) is estimated using the Logit estimation technique. The study seeks to examine the effect of community services on citizens' perception on welfare in the communities in Ghana. Thus, the dependent variable is a qualitative choice variable with one (1) representing improvement in living condition, zero (0) representing no improvement or/and deterioration in living condition. Thus, the dependent variables in the community-level model is binary hence the Logit model seems fit for the econometric analysis.

5.3.2 Variable Description

The empirical investigation of the indirect effect of local resources on welfare is preceded by description of variables included in the model in order to present some preliminary explanation to the relationships between some key regression variables. The dependent variable is binary, which assumes the value of one (1) or zero (0) whilst the independent variables are categorical and continuous in nature. The choice of these variables is grounded on the review of both theoretical and empirical literature.

5.3.2.1 Improvement in welfare

The measure of multidimensional poverty reflects citizens' access to public services such as education, health, civic services including safe drinking water and sanitation (Naveed, 2017). Fiscal decentralization provides the institutional framework for the provision of services that could enhance welfare at the local level. According to World Bank (2020), non-poor households have better-quality housing and more access to public services. During the 2016/2017 survey period, community representatives were asked whether they think that living conditions in their communities have improved or not compared to the last five years ago, thus the 2011/2012 survey period. The responses to this question, assumes a value of one (1) when respondent reports improvement and zero (0) when he/she reports no improvement or

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deterioration in welfare. The aim is to evaluate the effect of locally financed public services on welfare at the community level.

5.3.2.2 Population growth

Malthusians argue that high fertility rate and population growth renders societies to permanent state of underdevelopment and poverty. Marxists on the other hand argue that high fertility is rather a symptom but not a cause of poverty. Thus, in development economics, the population-poverty nexus hardly represents a consensus among economists. However, most of the empirical studies found that high population growth is associated with high poverty growth. Canning and Schofield (2007) in Indonesia found that one birth on average reduces the likelihood of female labour force participation by 20 percent leading to a decline in household income. Similarly, Das Gupta et al. (2014) noted that there is broad consensus among researchers that low fertility creates windows of opportunity for savings, investment and productivity that enhances welfare and development. Following from the previous empirical studies, low population growth is expected to be associated with improved welfare.

5.3.2.3 Construction of development project

The DACF provides capital for MMDAs to construct basic infrastructure in the sectors of education, health, water and sanitation. Development partners have also contributed significantly to the construction of basic infrastructural facilities in the deprived communities of Ghana (Asante, 2014). However, the DACF remains the major source of grants to the local governments, which have facilitated increase in access to local services and infrastructure growth in the rural communities (Asante, 2014). Over the period 2012/2013-2016/2017, communities that received construction of development projects are assigned one (1), otherwise zero (0). In this study, it is expected that communities that received construction of

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development projects over the period are better-off in terms of welfare compared to their counterparts that received none.

5.3.2.4 Availability of human capital development services

A comprehensive poverty reduction policy encompasses programs that enhances productivity of the poor. Thus, basic social services are crucial in the fight against poverty therefore public investments that enhances human capital development should benefit the poor (Baskaran and Feld, 2013). In addition, Steiner (2007) argues that decentralization promotes efficiency in the provision of public services such as education and health through increased participation in local decision-making. Thus, decentralization helps to reduce poverty by building human capital and empowering the poor. According to Baskaran and Feld (2013) human capital development promotes labour productivity growth and given that labour is paid its productivity, higher productivity suggests higher labour returns and low poverty. Access to health and education services is important in building human capital.

Following Qian and Zhang (2017) and Abdur et al. (2017), this study considers the availability of health and education facilities in a particular community as crucial for human capital development. We therefore control for access to adult education, primary school, junior high school and senior high school and health facility as indicators for human capital development and expect access to those services to enhance living condition. There have been favourable changes in public health expenditures mix towards the rural communities and this can be attributed to current health reform policy that entrust health management in the hands on the District-Based Health Teams (Asante, 2014). Communities that have each of these education and health services are assigned one (1), otherwise zero (0).

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5.3.2.5 Access to road infrastructure

Kwon (2005a) argues that access to road directly improves the wages and employment opportunity of the poor since it enhances the productivity of their resources. In the rural localities where agriculture remains the main source of living, access to road infrastructure lowers the cost of inputs, promotes access to extension services, and most importantly access to output market with better prices (Kwon, 2005a). Thus, road infrastructure boosts transportation and marketing as well as reduces post-harvest loses among farmers. Following the study of Setboonsarng (2005) and Qian and Zhang (2017), we expect that access to motorable road lowers the cost of services to the poor and hence improves living condition. A community with access to motorable road assumes the value one (1), otherwise zero (0).

5.3.2.6 Access to electricity/power

Electrification has a positive relationship with productivity through the increase in income generated from existing activities and through the creation of new income-generating activities at home (World Bank, 2008). Thus, access to electricity may lead to establishment of small-scale firms that provides income and employment to the local citizens. Moreover, due to the increase in time under light, people might increase their working hours, diversify income opportunities and become more productive. Moreover, access to electricity can contribute to human capital growth by promoting children's and adult's education and health by facilitating the use of modern equipment and learning tools such as audiovisual systems (Alam and Ullah, 2021). Communities who have access to electricity are coded one (1) whilst those without electricity are assigned zero (0). Following Diallo and Moussa (2020), access to electricity or generators/solar is expected to be associated with improved welfare.

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5.3.2.7 Access to portable water

The Sustainable Development Goal 6 targets ending open defecation, universal access to basic services including safe water supply and sanitation to reduce water-induced health consequences. This global agenda suggests that access to portable water and good sanitation enhances the human capital development. Improved access to good sanitation and portable water provides the opportunity to the poor to engage in productive activities (Asante, 2014). Thus, inadequate water and sanitation services increases cost of living, lower income earning potentials. Also, Wijk-Sijbesma (2001) argues that access to potable water improves the living condition of the poor. In this empirical analysis, access to portable water is controlled for by assigning the value one (1) to communities with access to pipe-borne water/borehole, and zero (0) those that do not have access to portable water.

5.3.2.8 Availability of financial services

Robinson (2004) showed that financial institutions play important role in poverty eradication by increasing consumption and income of poor families through administration of loans. The financial institution also facilitates financial training among newly formed localities (Ramnath et al, 1998). In Ghanaian communities, microfinance institutions, "susu" collectors serves as the main intermediaries between the rural banks and the informal sector. However, Naveed and Mahmood (2019) argues that the utility of banking services is higher in the districts of low poverty compared to district with high poverty rates. Given the high level of poverty in the communities it expected that availability of financial institutions has no association with improvement in welfare. Communities that have financial institution are assigned one (1), otherwise zero (0).

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5.3.2.9 Distance to the nearest market

Availability of markets are important for driving local development and improvement in welfare. The livelihood of most poor people depends directly on their involvement in markets as producers, consumers or workers (Fletschner and Kenny, 2014). Thus, the market serves as a crucial platform for promoting economic efficiency, by facilitation exchange and the coordination of many different kinds of resources, goods and services. Markets can protect the poor people from local food production shocks (Fletschner and Kenny, 2014). Therefore, nearness to markets is expected to reduce transport cost to the poor household in production, selling of labour, learning new technologies and obtaining consumption goods. Distance to nearest market is measured in kilometers. It is expected that long distance to market worsens local welfare and development in the communities.

5.3.2.10 Incidence of migration

Migration can become important choice for the poor when pre-existing social networks are strong, or when incomes or employment opportunities are higher compared to those in the localities of origin. Migration has the potential to improve welfare because remittances create multiplier effect in rural communities (Siddiqui, 2012). According to Tacoli (2004), rural-urban migration can create vicious cycle of economic development by increasing demand for local agricultural produce, stimulating non-farm economy and absorbing surplus labour. Moreover, Oates (2006) argue that migration reduces the cost of providing public goods to other residents by the amount of entrant's tax payment, but also drives down marginal product of labour and wages. A community in which people leave temporarily during certain times of the year to look for work are coded one (1), otherwise zero (0). Following Siddiqui (2012), migration is expected to be associated with improved welfare.

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5.3.2.11 Improvement in employment opportunity

According to ILO (2008), poverty can be traced to lack of employment opportunities to accommodate huge number of jobseekers. Most of the poor in the urban and rural communities work long hours in the informal sectors but earn less to meet their basic needs (ILO, 2008). Thus, poverty incidence is associated with unequal access to employment opportunities in the labour market. As part of the decentralization reform, local governments in the various localities are mandated to design programs and policies to develop, protect and sustain livelihoods in their various jurisdictions. Following Hammond and Tosun (2011), this study controlled for the dynamics of employment opportunities in localities by assigning one (1) to responses that affirmed that it is easier to find work, compared to the last five years otherwise zero (0).

5.3.2.12 Agrarian economy

The major economic activities of the people of a particular community largely determines welfare levels (Canare and Francisco, 2019). Generally, farming and fishing communities are characterized with relatively high level of poverty in Ghana. According to International Food for Agriculture Development (2007), poverty is more pervasive among farmers compared to people in other economic activities. Moreover, fishing communities generally face problems of low education, limited capital and low managerial skills hence tends to remain poorer and underdeveloped (Karyani, 2012). The major economic activities of the people in the various communities were classified under agrarian (including fishing) and non-agrarian economy. This dummy variable assumes one (1) for agrarian economy, and zero (0) for non-agrarian economy. Following the previous studies, agrarian economy is expected to be associated with less improvement in welfare relative to non-agrarian economy.

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5.3.3 Data Source and Scope

The study employs secondary data mainly drawn from the Ghana Living Statistical Survey Seven (GLSS 7) data. The data used for the empirical analysis comprising eight hundred and eighty-nine (889) community respondents in Ghana. The use of cross-section analysis fits the available community-level data for Ghana. The current available community data in Ghana was conducted in 2016/2017 period. The poverty equation is estimated using Logit estimation techniques and the community data reported in the GLSS 7.

5.3.4 Results and Discussion

5.3.4.1 Descriptive Analysis

The descriptive statistics reported are mean, standard deviation, maximum and minimum values of the variables used in the empirical analysis. The statistics is based on selected 891 community representatives, interviewed in the Ghana Living Statistical Survey. The data used for the study covered the period 2016/2017 (GLSS 7). The standard deviation represents how variables are distributed around their mean values whilst the mean represents the average value of the variables. Most of the variables are dummies and Table 13 shows the descriptive statistics of the variables.

Table 13: Descriptive statistics of variables

Variable	No. of observation	Mean	Minimum	Maximum	Standard Deviation
Improvement in living condition	891	0.328	0	1	0.470
Population (number of persons)	886	10,962.58	10	350,000	31,847.04
Access to portable water	891	0.854	0	1	0.353
Access to health facility	891	0.323	0	1	0.468
Access to development projects	891	0.544	0	1	0.498
Availability of adult education	889	0.126	0	1	0.335
Availability of primary school	891	0.870	0	1	0.337
Availability of JHS	891	0.246	0	1	0.431
Availability of SHS	891	0.692	0	1	0.462
Access to electricity	891	0.834	0	1	0.373
Access to tarred road	891	0.089	0	1	0.284
Availability of financial institution	891	0.345	0	1	0.475
Incidence of migration	891	0.676	0	1	0.468
Improvement in job opportunity	891	0.144	0	1	0.351
Distance to nearest market (km)	576	9.378	0	246	13.413
Agrarian economy	891	0.795	0	1	0.404

Source: Author's Computation using STATA 15

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Improvement in living condition for the selected communities used in the empirical analysis averaged 0.33 in 2016/2017 period, ranging from zero (0) to one (1) with standard deviation of 0.47. The statistics suggests that majority of the communities reported no improvement in living conditions over the period 2012/2013-2016/2017. The population variable averaged at 10,962.58 for the sample of communities under the study. The value ranges between 10 persons to 350,000 persons with a standard deviation of 31,847.04. The variation in population among communities could be attributed to several factors including the differences in infertility rates in those communities, the number of towns and villages in the community. Communities with higher fertility rates or more villages will have higher population compared to those with low fertility rates and few villages.

The average of access to portable water is 0.854, and ranges between dummies of zero (0) and one (1), with standard deviation of 0.35. This shows that most of the communities have access to portable water. The increasing access to portable water in rural communities reflects the government commitment towards enhancing access to water and sanitation services in the rural areas. Moreover, the mean for access to health facilities is 0.32 with the standard deviation of 0.47. The health facility variable is a dummy assuming a minimum of zero (0) and maximum of one (1). Thus, majority of the communities have no available health facility to seek medical treatment upon falling ill.

Access to development projects averaged 0.54 for the group of communities considered under the survey period 2016/2017. The standard deviation for access to development projects is 0.50 with a minimum of zero (0) and maximum one (1). This suggests that majority of the communities received development projects during the period 2012/2013-2016/2017, financed by central government or the local government. Moreover, access to education services at different levels differ among the various communities. The means for availability of adult education, primary education, JHS education and SHS education are 0.13, 0.87, 0.25 and 0.69

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respectively suggesting that most of the communities have access to primary and SHS education whilst few communities have access to adult education and JHS education. These variables are dummies ranging from a minimum of zero (0) and maximum of (1).

Moreover, access to electricity remained high among the communities averaging 0.83 over the period with a standard deviation of 0.37. The mean value of the variable shows that the most of the communities have access to electricity. In the same period, availability of tarred road averaged at 0.09 with a standard deviation of 0.28. Similarly, availability of financial institution has a mean of 0.35 with a standard deviation of 0.48. The descriptive statistics on the variables shows that majority of the communities in Ghana has no access to tarred road and financial institutions. The variables range between a minimum value of zero (0) and maximum of (1).

Furthermore, the variable for migration has a mean of 0.68 over the period with a standard deviation of 0.47. This implies that most of the communities experienced movement of people out of their jurisdictions in search of greener pastures. Improvement in the job opportunity averaged at 0.14 with a standard deviation of 0.35 whilst the variable agrarian economy has a mean value of 0.80 with a standard deviation of 0.40. Migration, improvement in job opportunities, and agrarian economy variables are dummies, assuming a minimum value of zero (0) and maximum of (1). These statistics show that more of the communities experienced migration of citizens whilst most of the communities are economically agrarian in nature.

The distance to the nearest permanent market ranges between 0 km and 246 km, averaged at 9.38 with standard deviation of 13.41 for the same period. The disparity in distance to the nearest market could be attributed to the fact some communities have markets situated within their jurisdictions while for some, access markets in the nearest community. We now discuss the Logit results of the community-level poverty model specified in Equation 18 as presented in Table 14 below.

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5.3.4.2 Logit Results of Community-Level Poverty

The logit regression seeks to examine the indirect effect of local fiscal resources on development and welfare at the community level. Thus, we examine how local public services affects living conditions in the various communities in Ghana. The Logit regression results are based on 891 communities whose data are extracted from the GLSS 7 data. Fiscal decentralization as a poverty alleviation policy aims at increasing resources at the local level towards the provision of public goods. It is assumed that access to essential goods and service by the poor would therefore help to improve welfare in the local communities. The logit regression technique helps to ascertain whether the local services contributes to improvement in the living conditions. The marginal effect of each variable computed as a discrete change in the independent variable is presented in Table 14 below.

From Table 14, Model 9A is obtained by regressing living conditions on basic community needs such as access to portable water, health and education as well as development projects and community population size. The logit regression results show that communities in which developmental projects were constructed within the GLSS survey periods 2012/2013-2016/2017 are more likely to experience perceived improvement in welfare by 0.12 percent compared to their counterparts with no developmental projects, at 1 percent significant level. Ceteris paribus, communities with access to adult education and primary education are more likely to report improvement in welfare by 0.22 and 0.17 at 1 percent significant levels respectively. Population growth, portable water and health facility have no significant effects on citizens' perception on welfare.

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Table 14: Results of Logit estimation on poverty equation (Marginal Effects)

Variable	(Model 9A) Marginal effect	z value	(Model 9B) Marginal effect	z value	(Model 9C) Marginal effect	z value
Ln of population	-0.0121	-1.13	-0.0043	-0.24	-0.0093	-0.51
	(0.0107)		(0.0180)		(0.0181)	
Portable water	0.0128	0.26	-0.0756	-1.22	-0.0766	-1.24
	(0.0485)		(0.0618)		(0.0618)	
Health facility	-0.0248	-0.69	0.0041	0.10	0.0009	0.02
	(0.0358)		(0.0432)		(0.0431)	
Local development project	0.1322***	4.05	0.1235***	3.01	0.1258***	3.05
	(0.0326)		(0. 0411)		(0.0411)	
Adult school	0.2238***	4.53	0.1625***	2.42	0.1591***	2.37
	(0.0494)		(0. 0671)		(0.0670)	
Primary school	0.1732***	3.80	0.1553***	2.79	0.1565*	2.81
	(0.0456)		(0.0556)		(0.0557)	
JHS school			-0.0155	-0.28	-0.0123	-0.22
			(0.0561)		(0.0561)	
SHS school			-0.0953	-1.48	-0.0826	-1.27
			(0.0645)		(0.0651)	
Electricity			0.0323	0.58	0.0334	0.59
			(0.0572)		(0.0570)	
Tarred road			-0.0067	-0.09	-0.0032	-0.04
			(0.0774)		(0.0770)	
Financial institution			-0.0977*	-1.72	-0.1217**	-2.19
			(0.0570)		(0.0555)	
Migration			0.0149	0.34	0.0232	0.53
			(0.0435)		(0.0435)	
Job availability			0.3065***	4.56	0.3047***	4.47
			(0.0672)		(0.0682)	
Distance to Market			-0.0038*	-1.71	-0.0034	-1.59
			(0.0023)		(0.0022)	
Agrarian economy					-0.1163	-1.53
					(0.0762)	
No. of observation	889		889		889	
Wald Chi^2	53.30***		55.76***		57.00***	
Pseudo R^2	0.0541		0.1030		0.1066	
Log pseudolikelihood	-531.6704		-323.6730		-322.3814	

***, **, * represents 1percent, 5percent and 10percent significant levels
Figures in parenthesis under coefficients, odd ratios and z value represents robust standard errors and percentage respectively

In addition, Model 9B in Table 14 controls for human capital development services such as availability of junior and senior high education, job opportunities, electricity, tarred road, financial institution, incidence of migration, and distance to the nearest market. The Logit results show that local development projects, adult education and primary education all have positive and significant coefficients. Thus, communities that received developmental projects, have access to complementary and primary education are more likely to experience improvement in their welfare compared to those communities without those services.

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Moreover, communities that have financial institutions are less likely to experience improvement in welfare perception by 0.10 compared to their counterparts without financial institution at 10 percent significant level, ceteris paribus. The coefficient for job availability is 0.31, suggesting that communities with improved job opportunities are more likely to experience improvement in welfare perception relative to communities without any improvement in job availability. Also, the farther a community is from the nearest permanent market, the less likely its perception on welfare improves, at 10 percent significant level. The results show that availability of Junior High School (JHS), Senior High School (SHS), electricity, tarred road and migration have no statistically significant effect on welfare.

The estimated Logit results of the full model specified in Equation 18 is reported as Model 9C in Table 14. Based on the strength of the pseudo squared, Model 9C performs better compared to Model 9B and Model 9A, implying that the nature of economic activity in the community level matters. The Logit results shows that, construction of local development projects is associated with better living condition. Ceteris paribus, communities that receive development projects are more likely to experience improvement in welfare perception by 0.13 relative to their counterparts that receives no development projects, at 1 percent significant percent. This result is consistent with the findings of Asante (2014) who found that infrastructure growth enhances access to local services and improves welfare.

The concept of multidimensional poverty and deprivation espoused by Sen (1999) represents welfare in terms of capabilities. Human capital development through access to education and health enhances capability and hence reduces poverty. As expected, the Logit results show that communities that have complementary education programme are more likely to experience improvement in welfare perception by 0.16 compared to communities that have no school for adults, ceteris paribus. Similarly, communities that have primary education experience better welfare perception by 0.16 more, relative to communities with no primary education at 1

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percent significant level. This study corroborates the findings of Baskaran and Feld (2013), Qian and Zhang (2017), and Abdur et al. (2017) who found that education enhances labour productivity growth and welfare. However, human capital development services such as availability of JHS and SHS education, as well as health facility have no significant effects on welfare perception in the communities.

The estimation result shows that, welfare perception is less likely to improve in communities that have financial institution compared to communities that have no financial institution by 0.12, holding all other things constant. Thus, availability of financial institution is associated with deterioration in welfare, at 5 percent significant level. This result does conform to expectation and contrary to the findings of Robinson (2004) and Ramnath et al (2008). Robinson (2004) argue that financial institutions enhances consumption and income of poor families by administering credit facilities. This result is however consistent with the findings of Naveed and Mahmood (2019) who found that, banking services yields lower utility in districts with high poverty rates, perhaps due to the high charges associated with those services.

Furthermore, lack of employment opportunities to accommodate jobseekers in many communities largely account for poverty (ILO, 2008). The Logit results indicates that in communities where job opportunities were perceived as improved, they are more likely to experience improvement in welfare perception by 0.30 compared to those communities where perception on job opportunities did not improve. The coefficient of job availability variable is significant at 1 percent, suggesting that improvement in job opportunities enhances perception of welfare in Ghana. This result conforms to expectation and akin to the findings of Hammond and Tosun (2011) who indicated that the dynamics of employment opportunities affects the level of welfare.

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The coefficient of the natural log of population growth is negative, suggesting that high population adversely affects welfare perception, but the coefficient is statistically insignificant. The negative relationship between population and welfare perception although insignificant, is consistent with Malthusian hypothesis, which states that high population growth perpetuates poverty. This result corroborates the findings of many empirical studies including Canning and Schofield (2007) and Das Gupta et al., (2014) who found negative relationship between population growth and household poverty. Similarly, the coefficient for distance to nearest market is negative and insignificant. Thus, nearness to markets has the potential to improve welfare perception, consistent with the findings of Fletschner, & Kenney (2014) who argue that nearness to market reduces the transport cost of supplying labour input and buying consumption goods.

Moreover, the Logit estimation results show that access to electricity has a positive but insignificant coefficient of 0.03, suggesting that access to electricity has the potential to improve welfare. Alam and Ullah (2021) noted that access to power increases working hours, and help households diversify their income opportunities. Although statistically insignificant, the positive coefficient of electricity is consistent with the findings of Diallo and Moussa (2020) and Alam and Ullah (2021) who found that access to electricity enhances welfare. Also, migration has the potential to improve welfare perception, albeit statistically insignificant. According Siddiqui (2012), migrant remittances create multiplier effect in rural communities.

Contrary to the findings of Asante (2014), the results show that water services do not improve poverty. Thus, access to portable water has no significant relationship with perception on welfare in the communities. Access to road directly improves the wages and employment of the poor since it opens up opportunity to raise the productivity of resources (Kwon, 2005a). Availability of transport infrastructure lowers the cost of inputs, and facilitates easy access to

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output market with better prices. However, the Logit result shows that access to motorable road has no significant relationship with welfare perception contrary to the findings of van Wijk-Sijbesma (2001) and Kwon (2005a).

Furthermore, the estimated results of the Logit model show that a community being agrarian is less likely to experience an improvement in welfare perception compared to a non-agrarian community but the effect is statistically insignificant. The negative sign of the coefficient is consistent with the findings of Canare and Francisco (2019) and Karyani (2012) who found that local economies that are predominantly agrarian in structure are usually characterized with high incidence of poverty. The Tobit econometric technique is employed to estimate the community-level poverty model as a form of robustness check. The results as presented in Appendix V are not significantly different from the results of Logit model except that the marginal effects of the Tobit results are smaller than those of the Logit results, and agrarian economy variable is weakly significant.

5.3.5 Concluding Remarks

This chapter examines the effect of decentralization on poverty in Ghana. Local revenue and grants represent the main source of fund for the provision of local development projects. However, very little empirical investigation has been conducted to ascertain the effect of grants and local revenue on poverty. This study employed cross sectional data for the empirical analysis at the district and community level. This suggests that the use of Ordinary Least Square (OLS) and Logistic regression models for the estimations fits the empirical analysis. The District-level headcount poverty ratio was estimated from the GLSS 7 household poverty data using Jenkins (1998) poverty decomposition approach.

The OLS regression results show that central government grant for capital projects (DACF) reduces poverty incidence whilst local revenue has no significant effect on poverty. Control

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variables such as income inequality exacerbates poverty incidence whilst quality of local institution, fiscal balance, service demand, and recurrent expenditure reduces poverty growth. Moreover, results from the Logit estimation show that fiscal decentralization improves perception on welfare in the local communities through the provision of development projects, and improvement in job opportunities. Additionally, findings of the study show that human capital development services such as complementary and primary education enhances perception on welfare in the communities in Ghana. It is therefore recommended that Government increases investment in DACF, development projects and education to alleviate poverty.

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Chapter Six
The Effects of Political Consideration on Grant Allocation in Ghana

6.0 Introduction

According to Litvack and Seddon (1999), the impact of decentralization on interregional equity vary greatly and it depends on institutional arrangement and policy designs. Fiscal decentralization will result in growing disparities, if central government makes no effort to redistribute resources to deprived areas. Similarly, at the subnational level, if districts do not redistribute within their jurisdiction, poor areas may lack access to public services. Thus, ensuring some level of equity in the ability to provide public services can be achieved through intergovernmental transfer mechanism that include equalization components.

Three strands of the literature explain factors that affect the distribution of central government resources across local governments. First, the normative dictate in public finance on intergovernmental transfer is that fiscal grants should be designed to achieve equity and efficiency. In this case, the central government acts as benevolent entity with the motive of maximizing social welfare (Oates, 1972 and Musgrave, 1989). Thus, grants should compensate the uneven access to local public goods and services generated by uneven distribution of resources whilst allocation of resources creates a minimum distortion in the economy.

Second, the literature on resource distribution distinguishes between patronage that comprises rewarding political supporters, and tactical redistribution, which aims at achieving electoral success. The Core Supporter Model hypothesizes that greater political support for a central government can be rewarded with greater transfers. Indeed, Cox and McCubbins (1986) argue that the optimal strategy for risk-averse opportunistic politician is to favour partisan jurisdictions to maintain existing political support. Moreover, the Swing Voter Model developed by Dixit and Londregan (1998) hypothesizes that voters have preferences for political parties, which they are willing to compromise for economic benefits. The implication

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of Swing Voter Model is that grants will be targeted to districts with relatively more swing voters.

Third, aside from electoral considerations, powerful interest groups could capture resource distribution decisions. Assuming that local officials have the influence to extract as much resources as possible from the central government, those with higher bargaining power may receive higher grants. One of the most robust empirical findings in this regard is that local authorities with higher political representation benefit from higher grants (Khemani, 2010). Likewise, smaller jurisdictions with greater lobbying powers are also expected to receive greater per capita transfers. In the context of developing countries, Caldeirra (2012) noted that transfer systems could be used to resolve social conflicts.

The 1992 Constitution and the Local Government Act, 1993 (Act 462) acknowledges a system of intergovernmental transfers for the local government system in Ghana that seeks to address disparities in service delivery among the MMDAs. The transfers could be categorized into DACF, recurrent expenditure transfers, and ceded revenue. The DACF constitute about 80 percent of revenue to the district assemblies (Fumey, 2018), which is distributed by formula-based strategy of allocation to prevent political manipulations. Ceded revenue such as DDF and UDG are distributed based on FOAT criteria whilst the recurrent component of the transfers is distributed based on district assemblies' budget vis-a-vis the expenditure ceilings of the central government.

One of the strategies, which is widely adopted to mitigate the impact of politicization of grant is by entrusting the distribution of pool of national resources into an independent agency. Khemani (2010) in India found evidence of partisan influence in transfers made by a political body (Planning Commission) whilst grants supervised by independent body (Finance Commission) rather counteracts the impact of politically disadvantaged grants. Some countries

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adopted formulaic sharing mechanisms to minimize political incentives. According to Smoke (2001), adoption of welfare and economic indicators in grant allocation formula minimizes political manipulations and discretionary decisions that distorts the allocation process.

In 1994, Ghana created a pioneering formula-based system of grant (DACF) allocation in SSA in an attempted to overcome political considerations in its allocation. The DACF Act, 2003 provides that the annual formula is proposed by the Administrator of the Fund, which is approved by Parliament. However, the Administrator of the DACF is appointed by the Executive President and hence make the office susceptible to political manipulations. Although, the formula is referred to the House of Parliament, the committee is chaired by a Member of Parliament from the majority side of the House for consideration and approval.

According to Banful (2011), the DACF constitutes about 25 percent of the central government's total domestic development budget in a fiscal year. This implies that the Fund provides a direct link between the welfare of the people and government influence, which creates the opportunity for central governments to manipulate the DACF for political gains. The Office of the Administrator of the DACF therefore distributes Fund to the local governments based on the formula propose to parliament using indicators, which largely measures resource needs. This institutional arrangement however creates potential opportunity for political manipulations of the indicators and respective weights assigned to achieve political gains.

The three main overarching categories of indicators comprising "Need", "Responsiveness" and "Service Pressure" have been assigned weights in calculating districts' shares of the DACF. Each category of the indicators consists of several district characteristics that are transformed by various functions. However, the formula has been reviewed almost every year since its inception in 1994. Table 15 shows the indicators that constituted each of the formula categories

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and the respective weights attached to their transformations, over the period 1994-2021. The table shows that the broad categories of variables used in the formula have not changed but the composition of the categories and their weights have changed almost each year.

The need category generally measures districts' lack of public goods and services compared to other districts in the country. Under the need category of the DACF formula, a district's share of the Fund is an increasing function of population, population per doctor, population per nurse, pupil per teacher, and dilapidated schools. However, DACF shares are decreasing in per capita GDP, health facilities, education facilities, water coverage, and mileage of tarred roads.

The need category of the indicators has seen the most frequent changes in its composition. For instance, in 1994, the 1992 per capita district GDP and population were used as need indicators and by the year 2000, the variables were dropped whilst health and basic education facilities, population per doctor and pupil per teacher were included. In 2002-2004, access to safe drinking water and mileage of tarred roads were added whilst health facility/population and classroom facility were newly introduced in 2019 and 2021 respectively. The weight assigned to education facility/population was doubled by 2020 and later reduced by half in the subsequent year (see Table 15).

In addition, responsiveness category of the DACF formula seeks to motivate the districts to generate local revenue. Thus, the indicators under the responsiveness category are indicators that reflects the assemblies' effort in local revenue mobilization. These indicators include level of local revenue, percentage increases in revenue and revenue per capita. The share of DACF allocations to districts is an increasing function of those variables. However, the responsiveness indicator was eliminated from the DACF formula since 2019.

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Table 15: Indicators and weights for DACF sharing formula, 1994-2021

FACTOR	1994	1995	1996	1998	1999	2000	2002	2003	2004	2005	2019	2020	2021
Need	**35**	**35**	**35**	**35**	**35**	**40**	**50**	**55**	**35**	**35**	**35**	**35**	**35**
GDP per capita (1992)	30	30	15	10	5								
Population	5	5											
Health facilities			10	12.5	15	12.5	12.5	12.5	5	5			
Health facility/population											5	5	5
Population/Doctor						7.5	7.5	7.5	5	5	6	6	5
Population/Nurse									5	5			
Education facilities/population			10	12.5	15	12.5	12.5	12.5	5	5	11	11	6
Classrooms facility/population													7
Pupils/Teacher						7.5	7.5	7.5	5	5	6	6	6
Water coverage							10	10	5	4	4	4	3
Tarred road mileage									5	6	3	3	3
Dilapidated school								5					
Responsiveness	**20**	**20**	**20**	**20**	**20**	**15**	**5**	**5**	**2**	**3**			
Revenue per capita	20	20	15	15	15	10							
Increase in revenue per capita			5	5	5	5	5						
Increase in revenue								5	2	3			
Service pressure	**15**	**15**	**15**	**10**	**10**	**10**	**10**	**5**	**3**	**2**	**5**	**5**	**5**
Population density	15	15	15	10	10	10	10	5	3	2	5	5	5
Equality	**30**	**30**	**30**	**35**	**35**	**35**	**35**	**35**	**60**	**60**	**60**	**60**	**60**

Source: DACF Reports

Moreover, the service category measures the intensity of the use of public services in a given district and population density is the sole indicator of service pressure. The share of a district in the DACF allocation increases with a rise in population density. The service pressure factor seeks to compensate for population pressure on facilities in the local communities. In 2003, poverty category was included in the DACF formula, measured by the proportion of schools that are dilapidated. The poverty factor was introduced with the adoption of the Ghana Poverty Reduction Strategy (GPRS) to make the DACF allocation more pro-poor. Thus, the poverty factor allocates more resources to the deprived districts.

Another important category of indicators considered in the DACF formula is the equality category. The equality indicator stipulates the percentage of the DACF allocation to be distributed evenly among the local authorities. The weight for the equality category has increased from 30 percent to 60 percent from 1994 to 2021, indicating the commitment of the central government to improve the fiscal balance among the assemblies. Before the DACF endowment is shared according to the formula, a proportion referred to as reserve or

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contingency, which was 25 percent in 2005 is deducted for bulk purchases for the assemblies. Also, part of the reserve is used to support the office of the DACF Administrator, the Regional Coordinating Councils in their monitoring roles, and members of parliament for development projects in their constituencies.

The choice of the indicators and the weights assigned to them have been reviewed almost every year. This variations and unreliability of the DACF formula has implications for revenue forecast and hence planning in the local authorities. This suggests that the MMDAs essentially have no capacity to influence their future allocation by changing the level of a particular indicator. Moreover, the data on the variables used in the formula are obtained from relevant sector ministries with a lag of two to three years (Banful, 2011). The predictability of an indicator and its weights would be relevant and important, especially for the responsiveness category to encourage local revenue mobilization.

The formula-based approach to grant disbursement makes it difficult to ascertain whether grants are influenced by political considerations, especially when there is a common need for resources across various jurisdictions. Alesina and Weder (2002) notes that the evidence of central government targeting certain public goods with areas of certain political characteristics does not represent unfair advantage due to the existence of mitigating factors such as regional differences. However, empirical evidence on fiscal decentralization confirms the prevalence of politically motivated targeting of grants with most findings on tactical considerations of grants (see Dahlberg and Johansson, 1998; Ansolabehere and Snyder, 2006 and Veiga and Pinho, 2007).

The recent studies on the political economy of grants tend to focus more on ideological considerations of voters and nature of political manoeuvring of transfers. The evidence from these studies shows a strong relationship between grants and political considerations such as

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voting patterns, timing of elections, geographical locations and lobbying activities, among other. For instance, Johansson (2003) and Arulampalam et al (2009) supports the claim that design of intergovernmental transfer favours swing-voters whilst Levitt and Snyder (1995) and Ansolabehere and Snyder (2006) found that large transfers go to areas where the incumbent party have strong support base.

The evolution of political-economy model shows that in partisan politics, resource sharing may reflect patronage in favour of loyal political followers. In contrast, Dixit and Londregan (1998) argue that opportunistic politicians who wishes to increase their chances of re-election may design allocation programmes in favour of non-loyal supporters known as the swing voter. In view of the above considerations the empirical evidence is inconclusive with respect to whether social welfare maximization or political manoeuvring is the major consideration in the allocation of grants.

Most of the empirical studies on the political economy of grants in developing economies show evidence of targeting politically swing jurisdictions. Caldeira (2012) in Senegal analysed the redistributive effects of transfer grants by using Fixed Effect model on a micro-level public finance data for the period 2007-2015. The authors found that Senegalese system of redistribution is tactical as grants allocation targets swing communes. Maystadt and Salifu (2015) in Nigeria examined the relationship between VAT transfers and electoral performance in Nigeria using Instrumental Variable approach. They found that an increase in VAT transfers improves electoral fortunes of incumbent government.

Banful (2011) in Ghana adopted Tactical Redistribution model and the Political Budget Cycles to analyse the factors determining transfers in Ghana for the period 1994-2005. The study revealed that per capita grants are higher in districts where vote margins are lower in previous election. Similarly, Fumey (2018) in Ghana used a panel data covering the period 1994-2004

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on 167 districts to test the predictions of Core Supporter and Swing Voter models. He found that government generally targets urban swing districts than rural aligned districts. Following from the previous studies, this study examines the extent to which disbursement of grants in Ghana is influenced by political considerations using more recent district-level panel data on 72 MMDAs for the period 2012-2016.

6.1 Methodology

6.1.1 Theoretical Perspective

The theoretical framework employed in this study draws on the models of redistributive politics by Dixit and Londregan (1998). The model assumes a country comprising *N* local governments, and the central government has the sole responsibility to transfer grants to the local authorities out of financial resource pool noted by *Y*, which is exogenously given. The amount of transfers may differ across districts but per capita transfers remains same in each district. It is assumed further that the government consists of one president who has agenda-setting power on the distribution of *Y*, and *N* members of parliament, one each from each district who can accept or reject the proposed distribution of *Y* through their legislative votes.

Moreover, there are two political parties competing for power. Party *A* represents the party of the incumbent president and Party *B* denotes the opposition party. The President is elected by winning a national majority votes at a presidential election and a member of parliament is elected by winning majority votes at a parliamentary election held in the districts. Voters have ideological preferences over the parties and decide which party to vote for, taking these ideological preferences into considerations. Also, the voters consider the amount of transfers the incumbent government offers to each district and the amount the opposition party promises to offer if elected into office.

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In each district, there is a distribution of ideological preferences, and given a certain threshold of a district's transfer, there is a critical value that divides voters into those voting for Party *A* and those for Party *B*. The ultimate objective of the parties is to increase their vote shares by increasing the critical value (cut-point). It is assumed that the amount of transfers a district receives positively correlates with the density at the cut-point. The theory further predicts that transfers are targeted at districts with low income, since voters with low income have higher marginal utility of money and thus can be more easily persuaded to vote for party promising higher transfers. Given the parties' objective functions, and assuming that the distribution function is asymmetric and single peaked, then there exists a one-to-one correspondence between the density at the cut-point and the closeness of the previous election.

The formal representation of the theoretical framework is specified as follows: *A* and *B* represents two parties whose objective is to maximize the number of votes in each district. The utility of a voter in district *i* is given by $U_i(yi + G_i)$ where y_i is the income of a voter in district *i*, G_i is the transfer received and U_i is utility function such that $U'_i > 0$ and $U''_i < 0$. A voter located in district *i*, with the preference *X* for Party *A* over Party *B*, will vote for Party *B* if:

$$U_i(y_i + G_iB) - U_i(y_i + G_iA) > X \quad \ldots\ldots (19)$$

The critical value or cut-point for district *i* whereby all citizens of district *i* with values of *X* less than X_i will vote for Party *B* and all the rest votes for Party *A* is defined as:

$$X_i = U_i(y_i + G_iB) - U_i(y_i + G_iA) \quad \ldots\ldots (20)$$

In each district, there is a distribution of *X* given by $\Phi i(X)$, with density $\phi_i(X)$. The vote share for party *B* (VP_B) is then given $VP_B = \sum_{i=1}^{N}[P_i\phi_i(X_i)]$ where P_i is the share of the population living in district *i*. This is maximized by the party by choosing the amount of transfers to distribute to each district, thus G_{ip}, where p represents *A*, *B* subject to $\sum_{i=1}^{N}[P_iG_{ip}] = Y$, where

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Y is the available endowment. In equilibrium, both parties choose the same transfers and promises given by the condition specified as:

$$U_i(y_i + G_{ip})\phi_i(X_i) = U_j(y_j + G_{jp})\phi_i(X_j) \quad \text{.....(21)}$$

This equilibrium condition in Equation 21 suggests that transfers is an increasing function of the density at the cut-point $\phi_i(X)$, and a decreasing function of income as higher income means lower marginal utility of income.

6.1.2 Empirical Model Specification

The study employs a panel data on 91 MMDAs from all the formerly ten (10) regions of Ghana to examine the effect of the political considerations on local government grant in Ghana. Based on the theoretical model, the basic empirical model is expressed in a dynamic specification form as:

$$y_{it} = \sum_{j=1}^{k} \delta_j y_{i,t-j} + \beta' P_{it} + \gamma' X_{it} + v_i + \lambda_i + \varepsilon_{it} \quad \text{.....(22)}$$

where the dependent variable y_{it} is the per capita transfers that district i receives from the central government in year t, P_{it} is a vector of political variables including political align, political swing and election year, which may influence distribution, X_{it} denotes a vector of control variables, δ_j is a parameter to be estimated, β' and γ' are vectors of parameters to be estimated, v_i represents unobserved district-specific effect and λ_i time effects respectively, ε_{it} denotes the error term. The empirical model includes the lags of the dependent variable ($y_{i,t-j}$) in other to account for the persistence of the variable.

According to Arulampalam et al (2009), the theory of Opportunistic Political Budget Cycle predicts that aligned and swing districts obtain higher transfers compared to non-aligned and non-swing districts. To account for the influence of political considerations on grants, we argue that transfers vary according to party and electoral dynamics in the country. Also, Rogoff and Sibert (1988) predicts that central government transfers larger resources to local governments

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in election year to raise their electoral fortunes. Following from the political economy argument of grants, Banful (2011) specified the transfer model with a vector of election year and political variables are expressed in the form of interacted regressors respectively as:

$$\acute{\alpha}P_{it} = \acute{\alpha}_0 ELYDum + \acute{\alpha}_1 PAL + \acute{\alpha}_2 PSW + \acute{\alpha}_3(ELYDum*PAL) + \acute{\alpha}_4(ELYDum*PSW) + \acute{\alpha}_5[ELYDum*(1-PAL)] + \acute{\alpha}_6[ELYDum*(1-PSW)] \quad (23)$$

$$\beta' P_{it} = \beta_1 PAL_{it} + \beta_2 PSW_{it} + \beta_3(PAL_{it}*PSW_{it}) + \beta_4[(1- PSW_{it})*PAL_{it}] + \beta_5[(1-PAL_{it})*PSW_{it}] + \beta_6[(1-PAL_{it})*(1-PSW_{it})] \quad (24)$$

where, PAL_{it} is an indicator variable for political alignment that equals one (1) if the same party rules at national and district level, and zero (0) otherwise. PSW_{it} is the political swing variable, which is a dummy that equals one (1) when a district is identified as swing otherwise zero (0), *i* and *t* represent a particular district and year respectively, *ELYDum* denotes election year dummy, which is equal to one (1) in election years, otherwise zero (0).

The PSW_{it} measures the difference in vote shares expressed in percentage terms between the incumbent party at the centre and its main opponent in the last parliamentary elections in each district. This variable reflects the closeness of the last parliamentary elections at the district level. Following Dahlberg and Johansson (1998), and Veiga and Pinho (2007) the vote difference is used to measure the number of swing voters. It is computed using the results of the previous presidential and parliamentary elections in a particular district. Assuming there is a multi-party democratic system with *N* contesting parties in electoral constituency *c* in district *i*, one of the parties, *A* gains the highest share of total vote cast (*Va*) in district *i*, and other party, *B* is the second placed party with total vote shares (*Vb*), the vote difference is calculated as = $\frac{Va-Vb}{\sum_{k=1}^{N} Vk}$, where *Vk* is the total valid vote cast.

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Based on the computed value of the vote difference, a particular district is classified as swing if the vote difference between the central government's party and the second placed party is weakly less than the threshold of 67 percent, otherwise it is considered as non-swing when the vote difference is strictly more. This threshold was chosen based on the theoretical requirement that the swing measure should be a relative measure (Veiga and Pinho, 2007). Moreover, the threshold of 67 percent fits into the constitutional requirement under Article 291(3) of the 1992 Constitution of Ghana, that at least two-thirds of all parliamentarians is needed to pass a resolution on a bill to become a binding law (Fumey, 2018). Based on this constitutional requirement, every party in government desire to win two-thirds majority in every parliamentary election to enable them unilaterally enact and amend laws without bargaining with rival parties.

Fumey (2018) estimated two different transfer models that incorporates election year and interactive vector as well as politically swing and aligned variables to examine their independent effects on DACF transfer grants in Ghana. Following Banful (2011) and Fumey (2018), the empirical model to be estimated incorporates election year and political election dynamics into the model with other socioeconomic characteristics of the districts. The inclusion of the election year and political election dynamics into the transfer model allows us to examine the joint effects of those factors. The empirical dynamic transfer model to be estimated is specified as:

$$DACF_{it} = \phi_1 DACF_{it-1} + \phi_2 ELYDum + \phi_3 PAL_{it} + \phi_4 PSW_{it} + \phi_5 (ELYDum*PAL) + \phi_6 (ELYDum*PSW) + \phi_7 (PAL_{it}*PSW_{it}) + \phi_8 IGF_{it-1} + \phi_9 POD_{it} + \phi_{10} FIB_{it} + \phi_{11} EXP_{it} + \phi_{12} LAF_{it} + v_i + \lambda_i + \varepsilon_{it} \quad \text{.....(25)}$$

where DACF is natural log of DACF per capita, ELYDum represents election year dummy, PAL denotes political align district, PSW represents political swing district, ELY*PAL is the

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interactive term for election year dummy and political align dummy, ELY*PSW represents the interactive term for election year dummy and political swing dummy, PAL*PSW is the interactive term for political align dummy and political swing dummy, IGF is the natural log of IGF per capita, POD is population density, FIB represents fiscal balance, EXP denotes the natural log of expenditure per capita, LAF is labour force, v and $\boldsymbol{\lambda}$ are jurisdiction-specific idiosyncratic characteristics and time effects respectively, ε is the random error term, $\boldsymbol{i}$ is specific district and $\boldsymbol{t}$ specific year.

6.1.3 Econometric Technique

The main estimation technique employed to analyse the effect of political considerations on grants in Ghana is dynamic panel regression technique. Given the district specific-effects in the model, Ordinary Least Square (OLS) estimation with the lagged dependent poses potential dynamic bias as a result of the correlation between lagged dependent variable and the error term. Pooled OLS estimation will also produce inconsistent results because of the assumption of constant slope and intercept across districts, which is unrealistic in this analysis. Thus, by using OLS, biases in panel regression analysis may render coefficient estimates inconsistent.

Additionally, the Fixed Effects (FE) or Random Effects (RE) model is considered to be appropriate as it allows the intercept term to vary, thereby correcting for both cross-sectional and contemporaneous correlations. However, even if there exist no serial correlations between the lagged dependent variable and the error term, the bias would still occur because of the dominance of the cross section (91) over the time component in the data set (see Kumar and Woo, 2010). To overcome this bias problem, the study uses system Generalized Method of Moments (GMM) estimator developed by Arellano and Bond (1995) as it controls for both district specific effects and biases from the lagged dependent variable.

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The system GMM uses the lagged differences of the variables as instruments for the endogenous variables in the level equations. These values become the suitable instruments in view of additional moment conditions that are based on the assumptions that there may be a correlation between the district-specific fixed effects and the predetermined variables in the equation, and there are no correlations between the lagged differences and the district-specific fixed effects. Roodman (2009) and Hauk and Wacziarg (2009) argue that dynamic panel GMM estimator solves most of the biases and errors within panel OLS estimation but portrays weak instrument problem. However, the system GMM is the most preferred technique for panel dynamic estimation (Kumar and Woo, 2010). Hausman Test, Sargan Test of over-identification and Arellano-Bond Test are conducted to determine robustness of the System GMM results. The justification for use of system GMM technique for panel analysis is thoroughly discussed under chapter four (4) of this thesis.

This section first explores the data on DACF transfers by using Blinder (1973) and Oaxaca (1973) decomposition approach. The purpose in this exercise is to analyse the extent to which district characteristics explain grant inequality compared to other considerations. The Blinder-Oaxaca decomposition techniques was originally employed to decomposed wage disparity among different socioeconomic groups. This study adopts the technique to decompose the inequality in transfer grants between low-income and high-income districts in Ghana.

Since the study uses a panel data, the decomposition coefficients can be estimated from the panel regression model. Panel regression model have time-invariant individual error terms hence a decomposition regression analysis must account for the group differences in these time-invariant, and unobserved variables (Kröger and Hartmann, 2020). This implies that, the time constant individual error term becomes part of the decomposition of group-level differences. To decompose the transfer inequality, the linear regression equation of district transfer inflows could be specified as follows:

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$$Y_t^l = X_t^{l\prime}\beta_t^l + u^l + \in_t^l, E(\in_t^l) = 0, cov(X_t, \in_t) = 0, l \in [A, B]$$

Where Y represents transfers, X is the matrix of covariates including unity vector, β contains the k-1 coefficients and the constant, u denotes time-constant error term, A is the low-income district, B denotes the high-income district, $\in$ is the stochastic error term, l is the specific district, t denotes specific time period.

The basic decomposition divides the mean outcome difference between two groups into a part that is explained by differences in the districts' characteristics, and the unexplained part. The transfer difference is therefore specified as:

$\Delta Y_t = E(Y_t^A) - E(Y_t^B)$

This can be expressed as

$\Delta Y_t = E(X_t^A)'\beta_t^A - E(X_t^B)'\beta_t^B$ and given that $E(X_t^{l\prime}\beta_t^l + \in_t^l) = E(X_t^{l\prime}\beta_t^l)$, the grant difference can be decomposed into $\Delta Y_t = E_t + C_t + I_t + U$

where,

$E_t = [E(X_t^A) - E(X_t^B)]'\beta_t^B$

$C_t = E(X_t^B)'(\beta_t^A - \beta_t^B)$

$I_t = [E(X_t^A) - E(X_t^B)]'(\beta_t^A - \beta_t^B)$

$U = [E(u^A) - E(u^B)]$

E_t is defined as the part of the difference that is due to differences in the districts' characteristics at time t (endowment effect), C_t is the part of the difference that is attributable to differences in the coefficients at time t, I_t represents the part of the difference at time t that is attributed to interactions of the districts' different characteristics and coefficients. As a result of the incorporation of the time-invariant error term into the specification, the difference in u^l is added as a fourth component U to the decomposition, which is not time-dependent. This

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component captures the differences between the districts in the time-invariant error terms. Accordingly, the decomposition based on the panel regression results attributes parts of the differences in grants between groups to unobserved factors that remain unchanged within the period under study (Kröger and Hartmann, 2020).

Using a nationally representative district-level data in Ghana covering the period 2012-2016, the study employs the decomposition method proposed by Blinder (1973) and Oaxaca (1973) to decompose the differences in district grants between low-income and high-income MMDAs into endowment effects and coefficient effects. The endowment effect relates to differences in district transfers attributed to differences in the mean levels of observable district characteristics whilst coefficient effect measures the differences that are attributed to the differential marginal effects of observable district characteristics. The effectiveness of the district programmes can be better understood if we know how the differences in district characteristics contribute to the overall grant inequality among the local governments.

6.2 Variable Description

The data for the empirical analysis were extracted from the Composite Budget of the Ministry of Finance. The fiscal data include local revenue, grants, and expenditures whilst socio-demographic variables include decentralized staff, population estimates and district land size covering the period 2012-2016. In this analysis, low-income districts are those MMDAs whose IGF per capita falls below the sample average of GH₵4.70 per annum for all the five-year period, whilst districts whose IGF per capita is at least equal to the sample average over the 2012-2016 is considered as high income. For the total sample of 72 MMDAs, low-income districts as per our definition are 40.3 percent and 59.7 percent are high-income districts.

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6.2.1 Grants

According to Boex and Martinez-Vazquez (2005), various factors influence the flow of grants from the central to the subnational governments. These include electoral considerations, political economy, and economic considerations. To examine whether the grant allocation system of Ghana largely conforms to the theories of political economy, per capita DACF received by local governments are regressed on a set of political and economic variables. We control for the socioeconomic indicators, fiscal capacity and expenditure needs of the local authorities.

6.2.2 Election year dummy

The model of Opportunistic Political Budgetary Cycles (OPBC) hypothesize that generally, central governments are expected to transfer more resources in election years to increase the likelihood of their re-elections. Arezki and Gylfason (2013) noted that in developing countries, the central government may engage in pork-barrel expenditures in election years to win political favours. Moreover, according to Worthington and Dollery (1998), grants in local election years would be more productive as a result of heightened awareness. Thus, grants in election years are expected to increase as a result of political patronage. A qualitative dummy variable is included to account for election year, which allow us to test the existence of the OPBC model. Following from the predictions of Arezki and Gylfason (2013) election years should exhibit a positive coefficient.

6.2.3 Political variables

The swing and alignment variables are constructed political variables to allow for political considerations on the DACF to vary according to the party and electoral dynamics in the country. Following Banful (2011) and Fumey (2018), the vector of political variable is specified in the form interacted regressors. District *i* is considered as politically aligned if the same party rules at national and the particular district, otherwise such district is considered

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non-aligned. Following Veiga and Pinho (2007) and Dahlberg and Johansson (1998), district *i* classified as politically swing when the difference in vote shares between the incumbent party at the centre and its main opponent in the last parliamentary election is weakly less than 67 percent of the total valid votes cast. In addition, the district should not be dominated by one party since 1992, otherwise non-swing.

The political swing and political align variables are interacted with election year variable to ascertain whether aligned or/and swing voters benefit more in election years. Also, the interaction between swing and align variable allows us to examine how political considerations on transfers vary according to electoral dynamics in the districts. When politicians seek to maximize votes by targeting swing districts, this implies that the amount of fund allocation available for politically aligned districts reduces, and the vice versa. Given the high polarization of the Ghanaian political system, politicians may target both the swing and aligned districts.

6.2.4 Expenditure

We control for expenditure per capita in the econometric model as a measure of fiscal need. The variables that are generally used to measure local expenditure needs comprises size of school-aged population, economically dependent population, urbanization, previous expenditure levels, among other (Meyer and Naka, 1999 and Wallis, 1998). In order to curb incentive problems in grants allocations, the use of physical infrastructure measures such as the number of hospital beds, the number of schools building, and among others, are discouraged. Preferably, the use of need measures such as infant mortality, school-aged population are encouraged (Caldeira, 2012). It is expected that districts in high need receive more grants from the central government. Following Wallis (1998), we use previous district expenditures as proxy for resource need in the local jurisdictions.

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6.2.5 Local revenue (IGF)

The responsiveness factor in the DACF transfers formula serves as rewarding factor for MMDAs that have done well in terms of per capita revenue collected in the preceding year. Smoke (2006) notes that responsiveness factor provides incentives to subnational governments to mobilize local revenues. Thus, high-income districts will attract more DACF compared to their low-income counterparts, as a form of incentive. Moreover, revenue management and fiscal capacity indicators are assigned the highest weights in the criteria used in accessing UDG and DDF, suggesting that high revenue performance attracts more transfers to the local governments.

6.2.6 Fiscal balance

Fiscal balance is measured by the ratio of local revenue to recurrent expenditure. One of the fiscal mandates of the central government is to redistribute wealth from wealthier to poorer jurisdictions (Smoke, 2015). Intergovernmental transfers usually have equalizing element with higher per capita transfers going to jurisdiction with lower capacity. Thus, fiscally balanced jurisdiction requires low transfers grants from the central government (Boadway and Shah, 2009). We therefore expect a negative relationship between grants and fiscal balance.

6.2.7 Population density

The population density is commonly used to measure the per capita cost of providing public goods and services thus, service demand. Presumably, the lower the population density in a jurisdiction, the higher the cost of providing delivering social services, since the provision of public services increases with a more dispersed population. It may also be costlier to deliver public services across larger land area (Caldeira, 2012). In this analysis, it is expected that high population density is associated with low grants since cost of public service will be low in those jurisdictions and the vice versa.

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6.2.8 Labour force

One of the economic factors included in the model as a control variable is the number of local government staff. The staff strength is expected to be positively associated with high cost of wages and salary payments. Compensation of employees' budget of the local assemblies forms the largest share of the annual budget, thereby leaving insufficient fiscal space. This situation creates vertical imbalance at the subnational level, which requires an effective transfer system to equalize (Smoke, 2006). Following from the predictions of Smoke (2006), it is therefore expected that labour force has a positive relationship with transfers.

6.2.9 Low-income district dummy

The Blinder-Oaxaca decomposition analysis is employed to separate the differences in transfers between low-income and high-income districts into endowment and coefficient effects. According to Smoke (2001), differences in resource endowments among different jurisdictions requires that transfer allocations are designed to bridge the horizontal imbalances. Thus, if equity is considered in the allocation of transfers, we should find a positive coefficient associated with low-income districts dummy. MMDAs whose per capita local revenue is below GH₵4.70 per annum (sample average) are classified as low-income district, otherwise same is considered as high-income district.

6.3 Data Source and Scope

Following the specification of the transfer equation of previous studies (for instance, Stewart and Yen, 2004 and Fumey, 2018), DACF is used as the dependent variable. The empirical specification of the exogenous determinants of transfer is based on economic theory and the findings of the previous studies. Several categories of exogenous variables reflecting the socioeconomic and demographic characteristics of the local governments, fiscal circumstances, and geographical heterogeneity are incorporated. The financial strength of a subnational government to support its basic expenditure needs is reflected by fiscal balance, which is

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represented by the ratio of local revenue to recurrent expenditure. Finally, to accommodate geographic heterogeneity and service pressure, the land size of the MMDAs are incorporated into the model.

The study uses secondary data extracted from the Ministry of Finance's Composite Budgets. Due to data unavailability on some important variables for some of the MMDAs, a sample of seventy-two (72) MMDAs are used for the analysis. The sample of districts used in the study comprises MMDAs whose jurisdiction at the same time constitutes an electoral constituency. The available data on the local government covers the period 2012-2016 and we employ panel analysis to examine the political economy of DACF transfer in Ghana. Moreover, the 2012 election results were used to generate the politically swing or aligned district variables for the analysis.

6.4 Presentation and Discussion of Results

6.4.1 Descriptive Analysis

We first employ the Blinder-Oaxaca decomposition method to analyse the extent to which district socioeconomic characteristics influence transfer inequality between low-income and high-income districts. Secondly, the system GMM technique is employed to examine the influence of political considerations in local government transfer grants. The data used for the empirical analysis is extracted from the Composite Budgets, and covers the period 2012-2016 on a sample seventy-two (72) Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana.

Table 16 shows the descriptive statistics of the variables used for the empirical analysis. Per capita DACF to the MMDAs averaged GH₵15.27 per annum for the sample of MMDAs considered under the study. Whilst Some MMDAs received DACF per capita as low as GH₵0.70, others received as high as GH₵107.54 within the same period. District characteristics may explain the disparity in grants among the MMDAs. The maximum amount

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of IGF per capita generated over the period was GH₵54.07, whilst the lowest IGF per capita mobilized was less than five pesewas, thus GH₵0.04 within the same period. Ability to enforce tax payments and structure of the local economies are one of the factors that could explain the variations in local revenue performances.

Table 16: Descriptive statistics of variables

Variable	Observation	Mean	Minimum	Maximum	Standard Deviation
DACF per capita	360	15.274	0.704	107.536	14.896
IGF per capita	360	4.752	0.036	54.074	5.423
Population density[1]	360	244.519	11.853	5,231.42	642.648
Fiscal balance	360	0.300	0.002	3.756	0.397
Percentage vote difference	360	35.816	0.684	94.838	28.197
Expenditure per capita	360	38.386	1.130	188.298	27.827
Labour force	360	202.261	115.000	428.000	54.398
Political align	360	0.694	0.000	1.000	0.461
Political swing	360	0.388	0.000	1.000	0.488
Election year dummy	360	0.400	0.000	1.000	0.490

Source: Author's Computation using STATA 15
Fiscal variables in GH₵ per capita. [1]measured in per km^2

Additionally, the average local expenditure per capita is GH₵38.39 and it ranges between GH₵1.13 and GH₵188.30 with standard deviation of GH₵27.83. The higher expenditure levels compared to the low local revenue generation suggests that the local authorities heavily depend on grants to finance their expenditure needs. Fiscal balance averaged at 0.30 and ranges between 0.002 and 3.76 with standard deviation of 0.37 for the period 2012-2016. Thus, some MMDAs could only defray 0.2 percent of their current expenditures with their IGF whilst some could raise more than 300 percent of their current expenditures through IGF.

Moreover, population density has an average of 244.52 per km^2 and ranges between 11.85 per km^2 and 5,231.42 per km^2 for the period under study. Population density has the highest standard deviation of 642.65 on the descriptive statistics table. The urban MMDAs tends to have higher population density compared to their rural counterparts, a phenomenon that could be attributed to the high incidence of rural-urban migration in Ghana. Labour force has a mean value of 202 persons with a standard deviation of 54.40. Whilst some MMDAs have decentralized staff of 115 persons, others have as much as 428 persons for the selected sample

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of the MMDAs over the period under study. Due to the operational needs of the Metropolitan and Municipal Assemblies, they tend to have relatively larger number of staff compared to the District Assemblies.

In the same period, the percentage vote difference between the central government party and the second best-performed political party in the 2012 parliamentary elections averaged at 35.82 percent per. The percentage vote difference ranges from 0.68 to 94.84 with standard deviation of 28.20 percent within the same period. Also, the dummy variable for political align districts ranges between zero (0) and one (1), with a mean of 0.70 suggesting that most of districts in the sample are politically aligned to the central government. Also, political swing district dummy has a mean value of 0.39 with standard deviation of 0.48 suggesting that the number politically swing districts in the sample is less than their non-swing counterparts. The dummy variable for election year assumes 1 for an election year and zero for non-election year. It has a mean of 0.4 and a standard deviation of 0.49, which suggests that the years under study is dominated by nonelection years.

6.4.2 Blinder-Oaxaca decomposition results

We first employ The Blinder-Oaxaca method to decompose grants inequality between low-income and high-income districts into endowment effects and coefficient effects. The results of the grant decomposition are presented in Table 17. The table summarises the results of the total effects into endowment effects, and coefficient effects. Over the period 2012-2016, the total effect ranges between 0.056 and -0.171. Consistently, endowments effects explained the larger share of the total transfer inequality from 139.6 percent in 2012 to 86.9 percent in 2016. The highest proportion of the endowment effects (154.3 percent) occurred in 2014.

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Table 17: Oaxaca-Blinder panel decomposition results

	2012	2013	2014	2015	2016
Total Effect	0.056	0.067	0.041	-0.248	-0.171
Endowments	0.079	0.089	0.064	-0.226	-0.149
	(139.598)	(133.456)	(154.327)	(90.986)	(86.926)
Coefficients	-0.022	-0.022	-0.022	-0.022	-0.022
	(-39.598)	(-33.456)	(-54.327)	(9.014)	(13.074)
Endowment Effect					
IGF per capita	0.001	0.001	0.002	0.002	0.003
	(2.435)	(1.618)	(4.184)	(-0.857)	(-1.744)
CAPEX per capita	0.015	0.055	0.005	-0.119	-0.069
	(27.849)	(81.979)	(12.682)	(47.993)	(40.317)
GSEX per capita	-0.018	-0.015	-0.026	-0.033	-0.049
	(-31.269)	(-22.361)	(-63.051)	(13.435)	(28.629)
COMPEX per capita	-0.023	-0.036	-0.009	-0.128	-0.106
	(-39.830)	(-54.422)	(-22.597)	(51.392)	(61.900)
Fiscal balance	0.057	0.027	0.038	0.025	0.033
	(100.158)	(40.874)	(92.411)	(-10.034)	(-19.131)
Population	0.044	0.044	0.044	0.044	0.044
	(77.677)	(65.629)	(106.571)	(-17.683)	(-25.646)
Land size	0.015	0.015	0.015	0.015	0.015
	(25.952)	(21.927)	(35.605)	(-5.908)	(-8.568)
Administrative Staff	0.003	0.003	0.003	0.003	0.004
	(5.870)	(4.271)	(8.162)	(-1.404)	(-2.135)
DACF*Population	-0.016	-0.004	-0.008	-0.035	-0.023
	(-28.518)	(-6.055)	(-19.640)	(14.051)	(13.305)
Intercept	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Coefficient Effect					
IGF per capita	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX per capita	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GSEX per capita	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
COMPEX per capita	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fiscal balance	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Land size	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Administrative Staff	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DACF*Population	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	-0.022	-0.022	-0.022	-0.022	-0.022
	(-39.598)	(-33.456)	(-54.327)	(9.014)	(13.074)

Source: Author's Computation using STATA 15
CAPEX is Capital expenditure
GSEX represents goods and services expenditure
COMPEX is compensation of employees

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The coefficient effects contributed 39.6 percent reduction in the transfer inequality and 13.1 percent increase in the same periods. The contribution of the coefficient effects to the overall differences in transfers between these two groups revealed a reduction between 2012 and 2014 but contributed to the increase in the disparity thereafter. It is noteworthy to indicate that the coefficient effect is virtually explained by the intercept. Thus, the efficiency of district characteristics, which is beyond the variables captured in the transfer model, explains some variation in grants among the local authorities. The lower part of Table 17 displays the relative contribution of the decomposition effects to the overall gap. For the observed data, whilst the transfer gap between low-income and high-income increased between 2012 and 2014, it decreased between 2015 and 2016 by 0.077 log transfers.

Internally Generated Funds contributed to increase in transfer gap between 2012 and 2014 whilst the variable helped narrow the gap between 2015 and 2016. The decline in the gap could be attributed to improvement (decline) in the revenue of low-income (high-income) districts. Whilst capital expenditure contributed to the widening of the transfer gaps (except in 2015 and 2016), goods and services, and compensation of employees accounted for the decline over the period.

Fiscal balance represents a significant endowment effects to the total differences in district per capita transfers. The variable contributed to more that 100 percent increase in the inequality gap in 2012. This result reflects the possibility that improvement in fiscal balance has the potential to bridge the transfer gap between low-income and high-income districts. Similarly, population growth has led to increase in the differences in grants over the period 2012-2014 whilst the variable contributed to the decline in the gap between 2015 and in 2016.

Geographical land size accounted for the surge in the transfer gap from 2012 to 2014. However, the variable has contributed to decline in the transfer gap in 2015 and 2016. In addition,

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decentralized staff has also shown a positive influence on the total transfer gap between the districts except for the two recent years. We conclude that the endowment effects mainly drive the inequality gap between the district groups over time. The interaction of population and DACF shows that the variable contributed to a decline in grants except for the period 2015-2016.

6.4.3 Econometric results

Appendix VI presents results of Pooled OLS, Random Effects and Fixed Effects estimations for transfer model as specified in Equation 25. The results of the pooled OLS and Fixed Effects estimation techniques on transfer equation show that election year has a positive and significant relationship with on per capita DACF at 1 percent significant level, whilst the coefficient of the election year variable is positive but statistically insignificant in the Random Effect Model. This preliminary result suggests that transfers tends to increase more in election year, compared to nonelection year, consistent with predictions of the Opportunistic Political Budgetary Cycles (OPBC) model.

The preliminary results of the OLS and Random Effects shows that the coefficients of political align and political swing variables are positive and negative respectively, but are statistically insignificant. Also, the interaction of the political align and swing variables has a negative coefficient but insignificant. The variables in the Fixed Effect model are dropped due to the presence of collinearity in the data. In addition, the first lag of the DACF per capita is positive and significant at 1 percent, except for Fixed Effect model where the variable has a positive but insignificant coefficient. This result suggests the persistence of the variable in the model.

Moreover, results of the Fixed Effects and Random Effects models show that local revenue generated in previous year have a positive relationship with transfer per capita whilst the OLS results shows a negative. This implies that DACF transfers respond to the growth of local

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revenue as envisaged in the design of DACF allocation formula. Additionally, expenditure per capita positively affects transfers at 1 percent significant level, for the results of the OLS, Random Effects and Fixed Effects. Thus, higher expenditures in a district is expected to attract more DACF grants possibly to finance unfinished development projects.

The results show that the coefficient for fiscal balance is positive and significant at 1 percent significant level. Similarly, Fixed Effects result shows a positive relation between labour force and DACF per capita transfers at 1 percent significant level. The stability of the regression functions over time and the significance of district heterogeneity effect were tested on the Pooled OLS and Random Effect models respectively. The time dummies tests jointly significant at 1 percent while the Breusch-Pagan Lagrange Multiplier (LM) Test suggests there are significant idiosyncratic differences among the local governments. Therefore, we conclude that the model with time effects is more appropriate.

The existence of significant heterogeneity among the MMDAs has the potential to affects their grants inflows. Thus, the assumption of Fixed Effects model and Random Effects, which state that unobserved specific effects vary across MMDAs is valid. Whilst the Random Effects Model assumes that the heterogeneity effects are not correlated with the regressors, the Fixed Effects Model assumes that the heterogeneity effects are correlated with the regressors. We therefore employ the Hausman test to ascertain whether the data fits Random Effects or Fixed Effects model. Appendix VII, which presents the results from the Hausman test shows that the null hypothesis is rejected in favour of the alternate hypothesis. We therefore conclude that the data for the empirical analysis conforms to Fixed Effects model, therefore the use of system GMM is appropriate.

Table 18 shows the results of the system GMM estimations for the transfer model. The results of Models (1)-(3) is obtained by imposing some restrictions on the fully specified empirical

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model in Equation 25. Model (1) assumes that the impacts of district's political party affiliation on DACF grants are zero. This restriction is imposed to ascertain the independent effect of election year on transfer grants, whilst controlling for lagged value of DACF, population density, fiscal balance, local revenue, expenditure, and labour force.

Cox and McCubbins (1986) Opportunistic Political Budget Cycle Model predicts that central government transfer to subnational governments in election years are larger in election years compared to nonelection years. According to the authors, opportunistic politicians use grants systems in election years to raise their electoral fortunes. The results of the GMM estimation shows that growth of DACF per capita are higher in election years by 0.12 percent more, compared to nonelection years. This result conforms to the prediction of the Opportunistic Political Budget Cycle Model and the finding of Banful (2011) and Fumey (2018). Banful (2011) found that transfers are higher in election years by 25 percent more, compared to nonelection years.

Additionally, Model (2) incorporates political align and its interaction with election year into the transfer model. We seek to examine the impact of transfers on politically aligned and nonaligned, and the influence of election years on grants-align nexus. Although political align variable and election year coefficients are positive, they are statistically insignificant. To ascertain if the political budget cycles favour politically aligned districts or not, the results suggests the contrary in the sense that neither of the alignment groups is supported with more transfers in election year. This is evident in the statistically insignificant coefficients of the interaction variable between election year and political alignment. This is consistent with the findings of Fumey (2018), Dahlberg and Johnsson (2002) and Veiga and Pinho (2007) who found no evidence of the Core supporter model.

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Moreover, the Swing Voter Model predicts that political influence in grants allocation would target districts with more swing voters (Dixit and Londregan, 1998). The results in Model (3) shows that political swing variable is weakly significant at 10 percent significant level, suggesting that there is some evidence of tactical manoeuvring in the DACF allocation. This result confirms the proposition of Dixit and Londregan (1998), and consistent with the finding of Fumey (2018). The results also show that the interaction between election years dummy and political swing is statistically insignificant.

We now turn to the fully specified model, whose GMM results are reported as Model (4) in Table 18. The results show that at 5 percent significant level, DACF transfers in election years are higher compared to nonelection years by 0.21 percent, holding all other factors constant. The finding therefore confirms the theoretical prediction by Rogoff and Sibert (1988) that the incumbent government tends to increase grants to improve its chances of re-election.

According to Brender and Drazen (2005), political budget cycles may occur because democracy is far more likely to collapse in an election year than any other year. Therefore, election years are considered critical periods for the survival of democracy because it is the period in which many citizens tend to strongly register their dissatisfaction with the system in various forms including violent protests. Thus, election years become technical period of disruption in democratic dispensations. This is usually common in developing countries where democratic and political institutions are weak. Against this background, governments tend to provide more grants in election years ostensibly to consolidate democratic gains.

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Table 18: Results of System GMM estimation on transfer equation

Dependent variable: DACF per capita								
Variable	**Model (1)** Coefficient	z value	**Model (2)** Coefficient	z value	**Model (3)** Coefficient	z value	**Model (4)** Coefficient	z value
First lag of DACF	0.052*** (0.026)	15.39	0.639*** (0.093)	6.85	0.648*** (0.103)	6.27	0.277*** (0.077)	3.59
Population density	-9.59e-05** (3.68e-05)	-2.60	-0.001*** (5.86e-05)	-3.63	-0.001*** (5.61e-05)	-3.14	-0.001 (8.60e-05)	-1.41
Second lag of IGF per capita	0.052** (0.026)	1.96	0.135** (0.064)	2.10	0.109** (0.055)	1.95	0.360** (0.065)	5.51
Expenditure per capita	0.247*** (0.038)	6.38	0.528*** (0.151)	3.48	0.500*** (0.125)	3.99	0. 354*** (0.076)	4.62
Labour force	-0.082 (0.105)	-0.78	-0.769*** (0.261)	-2.94	-0.705*** (0.210)	-3.35	0.856*** (0.287)	2.98
Fiscal balance	0.320*** (0.079)	4.05	2.910*** (0.834)	3.49	3.138*** (0.720)	4.36	0.087 (0.163)	0.53
Election year dummy	0.120** (0.055)	2.20	0.018 (0.130)	0.14	0.088 (0.164)	0.54	0.205** (0.096)	2.12
Political Align dummy			0.143 (0.139)	1.02			2.200*** (0.644)	3.42
Election*Align			0.073 (0.116)	0.63				
Political swing dummy					-0.174* (0.105)	-1.65	1.713** (0.711)	2.41
Election*Swing dummy					0.050 (0.220)	-0.23		
Political Align*swing							-3.489*** (0..890)	-3.92
Constant	0.602 (0.039)	1.01	2.386 (1.403)	0.93	2.274** (1.077)	2.11	-5.540*** (1.685)	-3.29
Wald chi2 (Prob>chi2)	30065.95		4186.48		6822.68		4160.58	
Arellano-Bond (Pr>chi2)	0.032		0.970		0.896		0.620	
Sargan Test (Prob>chi2)	0.072		0.148		0.017		0.003	
AR2	0.385		0.117		0.539		0.387	
Prob > F	0.000		0.000		0.000		0.000	
No. of observation	288		288		288		288	

*, **, *** denotes significance at 10percent, 5percent and 1percent respectively
standard errors are robust and are in parenthesis

The Core Supporter Model predicts that risk-averse politicians will allocate more grants to areas in which their political support is concentrated (Cox and McCubbins, 1986). The GMM results show that politically aligned districts are likely to receive DACF per capita grants by 2.2 percent more compared nonaligned districts, ceteris paribus. The result is significant at 1 percent significant level. The findings support the assertion of Cox and McCubbin's (1986) that politicians favour their supporters in resource distribution. However, this result is contrary to the findings of Fumey (2018) who found no evidence of the Core Supporter Model.

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Moreover, the result reveals that not only politically aligned districts are targeted in the distribution of DACF but also swing districts are given more support than non-swing districts. The results show a statistically significant and positive coefficient of the political swing dummy variable. Holding other things constant, DACF transfers to swing districts are higher by 1.71 percent relative to the transfer to non-swing districts, at 5 percent significant level. Thus, swing districts are tactically targeted in the transfer process. This evidence confirms Dixit and Londregan (1998) proposition that politicians tend to target swing voters to increase their votes in elections. This finding is consistent with expectation, given the legislative constraint that requires parties to obtain two-thirds majority in parliament in order to unilaterally enact laws. Thus, political players manipulate the DACF transfer to reward loyalty for assured vote returns (Cox and McCubbins, 1986) and also engage in tactical redistribution to convince swing voters to maximize votes.

The interaction for political align and political swing variables is negative and significant at 1 percent significant level. Whilst the Core Supporter Model hypothesizes that greater political support can be rewarded with higher transfers for assured votes, the Swing Voter Model predicts that political manipulations in the allocation of transfers would target districts with relatively more swing voters. The negative coefficient of the interaction variable suggests that as resources are shifted towards winning more swing seats, it reduces the grants available for rewarding politically aligned districts. Thus, targeting swing voters reduces the positive effect of politically aligning to the ruling government. This result reflects the fact that the fiscal constraint (limited DACF resource pool) and constitutional constraint (two-thirds majority), which could be referred to as the twin constraint is binding on the central government.

The GMM estimate of the transfer model controlled for other socioeconomic characteristics of the districts that may affect DACF distribution. The coefficient of the first lag of per capita

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grants is positive and significant at 1 percent. Thus, the previous grant stimulates the growth of transfers by 0.28 percent, suggesting the persistence of the variable. We can therefore posit that higher grants in the previous year attracts more grants in the current year, possibly to finish uncompleted projects.

The system GMM results shows that fiscal balance has a positive but statistically insignificant coefficient. Fiscal imbalances reflect the gap between district expenditure needs and local government fiscal resources. Low fiscal balance at a district therefore suggests dire resource need and it is expected to attract more resource grants from the centre. The system GMM result shows a positive relationship between fiscal balances and transfers although the result is weighty enough to explain the total variations in DACF in Ghana.

Smoke (2001) opined that high population density indicates high service demand and thus requires adequate resource flows. However, the cost of providing public goods in high population area is low due to non-rivalries and non-excludability characteristics (Samuelson, 1954). Although the coefficient of population density is negative, the results suggests that 1 percent increase in the population density reduces growth of per capita DACF by -0.001 percentage points. This result contradicts the DACF allocation formula that established a positive association between population density and DACF transfers. Perhaps, the high growth of population erodes the transfers that are allocated to the districts.

Labour force in the district assemblies helps in the mobilization of resources. However, low revenue low revenue performance creates vertical imbalance at the local government levels, which requires an effective transfer system to correct (Smoke, 2015). The outcome of the system GMM shows that 1 percent increase in labour force promotes transfer growth by 0.86 percent at 1 percent significant level. Thus, decentralized staff strength attracts more grants,

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holding all things constant. This result confirms the findings of Robinson (2004) who opine that grant is an increasing function of staff level.

Furthermore, the results show that the first lag of local revenue leads to an increase in per capita DACF transfers by 0.36 percent, ceteris paribus, at 5 percent significant level. The positive relationship between previous year's revenue and transfer growth is consistent with the DACF formula that uses previous year's revenue as responsiveness factor to provide incentive for local revenue effort (DACF, 2014). Similarly, the coefficient of expenditure is positive and significant at 1 percent. The system GMM results shows that an increase in district expenditures by 1 percent leads to 0.35 percent growth in DACF per capita, ceteris paribus. This result is consistent with the findings of Wallis et al (1998) who indicated that subnational expenditures are proxy for resource need, which positively affects transfer grants.

6.5 Concluding Remarks

Fiscal decentralization framework assigns local expenditure and revenue responsivities to the subnational governments. However, disparities in population size, revenue base, level of urbanization implies that the distribution of responsibilities differ extensively across local governments. Ghana's fiscal decentralization framework outlines the transfer mechanism that addresses the disparity in service delivery among the districts.

However, the influence of political considerations on distribution of grants has gain some attention in the recent past, which is amply demonstrated in many studies. Evidence from the evolution of political economy models reveal how politicians use transfers as tactical instruments to achieve certain political objectives. Cox and McCubbins (1986) political-economy models predict that in partisan politics, resource sharing may reflect patronage objectives in favour of loyal political constituents. In contrast, Dixit and Londregan (1996)

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argue that opportunistic politicians who seeks to increase their chances of re-election could design allocation programs in favour of swing constituencies.

Given the two ideological positions, the empirical literature remains inconclusive on the kind of political considerations in the allocation of transfer grants in developing. Johansson (2003) and Arulampalam et al (2009) found that transfer systems are design to favour swing voters whilst Levitt and Snyder (1995) and Ansolabehere and Snyder (2006) found that larger transfers go to areas where the incumbent party have a strong support base. Banful (2011) and Fumey (2018) in Ghana examined the political influence of DACF transfer system in Ghana and found evidence in support of Swing Voter Model. These studies however did not control for other important socioeconomic characteristics of the districts that may explain grant inequality.

This study distinguishes itself from previous studies by using more recent data (2012-2016) to analyse the effect of political considerations on DACF allocation in Ghana. We first examine the extent to which district socioeconomic characteristics influence grants inequality, by decomposing the transfer inequality into differences in exogenous characteristics (endowment effect) and the effects of these characteristics on transfers (coefficient effects). The Blinder-Oaxaca decomposition results show that the observed socioeconomic characteristics of the districts explains most of the differences in transfer inequality between low-income and high-income MMDAs. The system GMM result reveals that not only politically aligned districts are targeted in the distribution of DACF but also swing districts are targeted. Thus, given the fiscal constraint (DACF allocation) and the constitutional requirement (two-third of parliament), political players manipulate the DACF transfer to reward loyalty for assured vote returns and also engage in tactical redistribution to convince swing voters to maximize votes.

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Chapter Seven
Summary, Conclusions and Policy Recommendations

7.0 Introduction

This chapter presents the summary, conclusions and policy recommendations based on the findings from the study. Summary and conclusion from the estimated results is presented in the next section whilst section 7.2 presents policy recommendations on the basis of the findings. Section 7.3 presents the limitations of the study and recommendation on areas for further research. This study sought to analyse the effect of grants on local revenue, and poverty in Ghana using fiscal data on ninety-one (91) selected Metropolitan, Municipal and District Assemblies (MMDAs) for the period 2012-2016, and GLSS 7 data on eighty-five (85) and eight hundred and eighty-nine (889) communities in Ghana.

The study employed the system GMM as the main estimation technique on a dynamic revenue and expenditure models adopted from Gennari and Messina (2014) and Caldeira and Grota-Graziosi (2014) to investigate the effect of transfer grants on revenue mobilization based on the flypaper hypothesis. Additionally, the study employed Ordinary Least Square (OLS) and Logit regression methods on von Braun and Grote (2002) poverty model to examine the direct effect of grants and local revenue on poverty in Ghana. The indirect effect of fiscal decentralization on poverty at the community level is examined through the provision of local services. We also examine the effect of political consideration on grant allocation to local governments in Ghana.

7.1 Summary of Key Findings

As part of the Structural Adjustment Program (SAP), Ghana has adopted decentralization policy since the 1980s as alternative development. The decentralization policy largely thrives on transfer grants and mobilization of locally-sourced revenue for local development. Development partners and donors advocate for fiscal decentralization based on the assumption

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that subsidization would ensure equity and efficiency in the provision of local service, which will alleviate poverty (Smoke, 2015). However, this theoretical position remains unexamined empirically in Ghana.

Additionally, in development economics, theories of federalism hypothesize that allocative efficiency at the lower-tier government ensure efficient provision of local goods. Also, social welfare school of thought holds the view that subnational governments have better access to local information that allows them to provide public goods that matches local preferences (Hayek, 1945). Although fiscal decentralization ensures appropriate assignment of tax revenue and expenditure responsibilities towards social welfare maximization (Oates, 1972; Musgrave, 1959), transfer grants may be susceptible to political patronage, and discourage revenue mobilization efforts and local development (Turnbull, 1998; Rosen, 2005).

The theory of fiscal federalism propounded by Musgrave (1959) and Oates (1972) hypothesizes that devolution of tax and expenditures authority to local governments improves social welfare. The theory is based on assumption that subnational governments have better information on local preferences compared to central government. Thus, local governments may be more accountable and responsive to the needs of the poor (Hayek, 1945). Also, decentralization can offer the institutional framework for effective configuration of political power, and facilitate the process of resource distribution (von Braun and Grote, 2002). Thus, devolution of fiscal authority is expected to enhance governance, resource distribution for local development.

Moreover, the literature on fiscal decentralization emphasizes the political economy of grants systems. Targeted redistribution theory distinguishes between patronage that involves rewarding political loyalty, and tactical redistribution which aims at convincing swing voters to maximize votes. Greater political support for a central government in a particular jurisdiction can be rewarded through greater transfers. Thus, risk-averse opportunistic politician may manipulate the resource allocation formula in favour of partisan jurisdictions to

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maintain existing political support (Cox and McCubbins, 1986). However, the swing voter models hypothesizes that voters have preferences for political parties, which they willing to compromise for economic benefits (Dixit and Londregan, 1996). The swing voter model thus assumes that grants will be targeted to districts with relatively more swing voters.

There are several constraints on local governments in Ghana to raise revenue. These challenges include the scope of local governments' revenue assignments, revenue collection capacity, discretion in setting rates on their tax and fee bases, and enforcement of revenue-collection practices (Mogues and Benin, 2012). Due to the low levels of local revenue, substantial share of local government revenue is made up of grants from central government and donors. These funds are meant to correct the fiscal imbalances in the local government budget but are usually tied to specific programs and sectors with very limited discretions.

The flypaper hypothesis predicts that unconditional transfers to subnational governments reduce incentives on the part of the subnational government to mobilize own-source revenue (Saruc and Sagbas, 2008). Thus, intergovernmental transfers serve as substitutes for local revenue and hence crowds-out local revenue. However, Caldeira and Rota-Graziosi (2014) noted that anti-flypaper hypothesis holds in developing countries. The author argues that in developing countries where there is dearth of resources at the subnational level, transfers serves as a complement to local revenue and thus crowds-in local revenue.

Empirical literature has provided varied conclusions regarding the relationship between fiscal decentralization and revenue, and poverty. Whilst most studies found that fiscal decentralization is detrimental to revenue efforts (Hines and Thaler, 1995; Zhuravskaya; 2000; Mogues and Benin, 2011; Kakamu et al, 2014; Muinelo-Gallo and Dufrechou, 2018; Taiwo, 2020) others claim that decentralization enhances revenue efforts (Jin et al, 2005; Dahlberg et al. 2008; Caldeira and Rota-Graziosi; 2014, Nangoli et al, 2015; Masaki, 2018), whilst other

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found no relationship between the variables (Amusa et al, 2008). Thus, empirical evidence on the effects of central government grants on local revenue has not been conclusive. Most of these studies generally sought to investigate the revenue impact of grants by employing only expenditure or only revenue model. Whilst flypaper effect could be evident in the expenditure decisions, such result should be corroborated with revenue outcomes (Caldeira and Rota-Graziosi, 2014). Thus, in this study, the flypaper effect is tested by estimating both the expenditure and revenue models.

Similarly, there exist ensuing debate about the effect of fiscal decentralization on poverty. Some studies found that fiscal decentralization reduces poverty (see De Mello, 2002; Agyemang-Duah et al, 2018; Hanif et al, 2020) whilst others found that fiscal decentralization exacerbates poverty (Crook, 2003; Fisman and Gatti, 2002a; Foster and Mijumbi, 2001; Faguet, 2008; Baskaran and Feld (2013). However, some studies found no relationship between fiscal decentralization and poverty (Thorton, 2007, Okojie, 2009; Azila-Gbettor et al, 2014). Thus, the empirical suggests no consensus on the relationship between fiscal decentralization and poverty. This study examines the fiscal decentralization-poverty nexus, by tracing such impact through local revenue, grants and local services.

Most of the empirical findings suggests that transfer system, which forms the major source of resource for decentralized governments is used to manipulate political incentives and outcomes (Veiga and Pinho, 2007; Banful, 2011; Caldeira, 2012; Maystadt and Salifu, 2015; Fumey, 2018). This study examines whether there exists any evidence of political manoeuvring of grants for political advantage in Ghana. Earlier studies on decentralization-revenue-poverty nexus differ in terms of statistical method used, time period and geographical area covered as well as in their findings. The ensuing controversy in the literature about the decentralization-revenue-poverty nexus and the very limited studies on Ghana has been the inspiration for this study.

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Moreover, most empirical studies on decentralization and local development outcomes focused on developed economies whilst those on Less Developed Countries (LDCs) concentrated on Latin America and Asia. Still, most of these studies generally sought to investigate how fiscal decentralization indirectly affects poverty through economic growth (see for instance, Hanif et al., 2020; Akai et al., 2007; and Qiao et al., 2008) but very little attention has been given to examining the effect of financial resource flows on poverty at the subnational level. Similarly, very little empirical studies on fiscal decentralization, revenue effort and poverty have been conducted on SSA.

Besides, the study used GLSS 7 and local government fiscal data to analyse the fiscal decentralization-revenue-poverty nexus in Ghana, considering the renewed international and national attention on fiscal decentralization as alternative development strategy over the recent past. The study employs system GMM, Ordinary Least Square, and Logit regression models in the empirical analysis since they have the capacity to overcome biases in the respective data employed.

The first empirical chapter examines the effect of grants on local revenue in Ghana. According to the flypaper hypothesis, transfer grants leads to greater local public spending greater than an increase in the private revenue of the local population (Hines and Thaler, 1995; Saruc and Sagbas, 2008). The outcome of the system GMM estimation shows that there is an evidence of flypaper effect in local government expenditure decisions in Ghana. Thus, the results show that per capita transfers (aggregate) negatively affect local revenue mobilization despite the inbuilt incentive in the DACF allocation formula. However, the disaggregated components such as goods and services (unconditional) transfer, school feeding (conditional) transfer and DACF (sectorial-limited) transfer have negative but statistically insignificant effect on local revenue. Thus, transfer grants serve as disincentive to revenue mobilization effort and hence crowd-out local revenue at the local government level. This finding satisfies the first objective of the study

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thus to analyse the effect of transfer grants on revenue performance of the local governments in Ghana.

Moreover, Chapter five of the thesis examines the effect of grants and local revenue on poverty in Ghana. The OLS regression results shows that central government grants (DACF) positively affects poverty reduction whilst local revenue has no effect on poverty. Transfer flows to subnational governments provides the investible fund for local development (Blochliger and Akgun, 2018; Thieben, 2003). Moreover, Logit regression results show that local services such as adult education, primary education, construction of development projects, and improvement in job opportunities improves living condition in local communities. This result is traceable through the technocratic and institutional approach to poverty reduction. Technocratic approach to poverty alleviation advocates pro-poor targeting whilst institutional approach emphasizes changing the institutional structures to favour the poor. Thus, the poor lacks both economic and political power and decentralization provides an institutional framework to implement pro-poor programs (von Braun and Grote, 2002). This finding fulfils the second objective of the study, thus to examine the effect of grants and local revenue on poverty in Ghana.

Furthermore, Chapter six of the thesis assess the extent to which political considerations influence transfer allocations in Ghana. The system GMM result reveals that not only politically aligned districts are targeted in the allocation of DACF but also swing districts are well targeted. Thus, political players manipulate the DACF transfer to reward loyalty for assured vote returns and also engage in tactical redistribution to convince swing voters to maximize votes. However, targeting swing voters reduces the benefit of politically aligning to the ruling government on the DACF transfer grants.

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7.2 Policy Recommendations

Empirical facts have clearly shown support for theoretical predictions of the theory of flypaper effect. The major conclusions drawn from the outcome of the GMM estimations are that transfer grants have negative effect on revenue mobilization at the districts in Ghana. Transfer grants to local governments produces disincentive for revenue mobilization, suggesting the presence of flypaper effect in local government fiscal decisions. Local revenue mobilized in the previous year (first lag of IGF per capita) significantly promotes revenue mobilization in the current year. The positive first lag effect of local revenue can be attributed to the fact that higher revenue in the previous year makes resources available for higher mobilization in the next year. The estimation result confirms the proposition that enhancing the fiscal balance of the MMDAs could be helpful for revenue mobilization.

The situation where local revenue mobilization is negatively affected by transfer grants in Ghana could be explained within the theory of flypaper effect hypothesized by Bradford and Oates (1971). The flypaper theory assumes that fiscal transfers from central government crowd out local revenue since the local government may consider those transfers as windfall resources. Thus, unconditional grants free up extra resources for local governments and benefit citizens in the form of a lump-sum tax reduction, thus crowding-out efforts to mobilize revenues. Because of informational asymmetries, central governments grants may challenge the fiscal discipline of local authorities by raising a moral hazard problem (Pisauro, 2001; Kornai et al., 2003). Thus, transfer grants may alter local government's behaviour in relation to expenditures and revenue decisions. For instance, an increase in grants may leads to greater local public spending than an increase in the private revenue (Hines and Thaler, 1995). Most of the MMDAs in the country heavily rely on transfer grants as the main source of revenue to for the provision of public services in their jurisdictions.

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The policy implication for the existence of flypaper effect in local government fiscal decision is that transfer grants cannot be depended upon to enhance local revenue mobilization. It would be in the best interest of the central government to provide more incentive packages to the MMDAs to mobilize own-source revenue. One can argue that the necessary condition for consolidating the gains of fiscal decentralization is that local governments are fiscally balanced and autonomous. The primary objective of central government grants to local governments is to support them to undertake local development programmes. This could be achieved through digitalization of local revenue collection and building their fiscal capacities in revenue mobilization. Thus, central governments should adopt fiscal policies that would provide more incentives to the local authorities in revenue generation. For instance, higher weight should be assigned to the incentive factor in the DACF allocation formula to boost motivation for revenue collection.

Currently, the widespread practice whereby local governments contracts third parties to collect the property rates in unfavourable revenue sharing ratio does not augur well for deepening the revenue decentralization process. Since the Assemblies have problem of limited Internally Generated Fund due to their deprived nature, innovative ways of mobilizing more revenues should be adopted. Thus, decentralizing revenue generation should not only involve transferring collection responsibilities, but equally important is building the local governments' capacity to mobilize revenues. Decentralizing revenue collection functions to local governments with weak capacity could adversely affect collection effectiveness and efficiency. Shen et al (2012) noted that the lack of revenue mobilization capacity has largely rendered some decentralization policies in developing countries ineffective. In view of the above, the Tax Revenue for Economic Enhancement (TREE) program could be rolled-out to cover all districts to enhance revenue collection. The negative impact of Covid-19 pandemic on national

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revenue requires that local governments improve their revenue mobilization efforts to support local development.

Furthermore, the OLS regression results shows DACF positively affects poverty reduction whilst local revenue has no effect on poverty. The theory of fiscal federalism hypothesizes that appropriate assignment of tax revenue to the various government levels, improve social welfare (Oates, 1972). According to Thieben, (2003) and Blochliger and Akgun (2018) grants provide the main source of capital for local infrastructural investments. Ghana's decentralization milieu is characterized by very small local budget relative to central government spending in the MMDAs. The Logit regression results show that fiscal decentralization improves poverty through the provision of adult and primary education, construction of development projects, and improvement in job opportunities in the local communities.

Policymakers should enforce the various provisions guiding the DACF transfer system, consistent with the provisions of the intergovernmental fiscal framework. The framework requires a timely release of the grants to the local governments to fully achieve the principle of subsidiarity. The 1992 Constitution requires that not less than 5 percent of the total national revenue be allocated to the DACF for disbursement to the local governments. Since the inception of the Fund in 1994, allocations and actual disbursement to the DACF has not exceeded the lower-bound threshold, suggesting no upward adjustment. The central government should review the threshold to 10 percent to accommodate the rising cost of living, thus rising inflation that averaged at 13.2 percent for the period 2012-2022. Also, the 10 percent adjustment will enable the MMDAs leapfrog their counterparts in SSA such Kenya that allocates about 15 percent of national revenue to its local authorities.

Based on the findings from the community-level results, local governments should lobby for more development projects from donors and the central governments to reduce poverty in their communities. In addition, the subnational government should create more employment

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opportunities in their jurisdictions by taking advantage of the government flagship programs including One-District-One-Factory and Planting for Food and Jobs. Moreover, more resources should be allocated to human capital development expenditures especially primary education whilst local authorities need to revive the non-formal education system to enhance the human capital of the population that have dropped out of the formal education system.

Local revenues are small relative to other sources of revenues to the local authorities, which likely explains the insignificant effect of local revenue on poverty. In this regard, guidelines on revenue decentralization function as envisaged in the intergovernmental fiscal framework should be clearly followed to enhance local revenue mobilization. For instance, collection of property rates falls under the mandate of the local governments but the collection process currently remains uncoordinated, promoting duplication of this function between the central government and local authorities. Government should fully cede the collection of property rates to the MMDAs whilst local capacity is built to collect these taxes.

Additionally, the Blinder-Oaxaca decomposition results suggest that the inequality in grants among the local assemblies is largely determined by the socioeconomic and demographic characteristics of the local jurisdictions. However, the Core Supporter Model and Swing Voter Model assume that determination of transfers is predominantly based on political incentives of the allocating entity, resulting in inefficient allocation of resources across geographic regions (Oates, 1999 and Musgrave, 1959). The GMM results of the transfer model show that DACF allocation is influenced by political considerations.

These results have implications on the fiscal decentralization policy being implemented in Ghana. Since it is the endowment factor that matter more in transfer inequality, especially the expenditure needs and fiscal balance of the local government, policies for reducing the differences in the wellbeing of low-income and high-income assemblies are naturally more effective when they can improve the expenditure needs and fiscal balance of the local

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authorities. The proposed policy on the MMDAs to float municipal bonds to augment their revenue sources will help improve their fiscal balances. Moreover, district expenditure-rationalization programs may facilitate reduction in frivolous expenditures and elimination of wastage.

The empirical results reveal political manoeuvrings of the DACF allocation formula for political gains. The system GMM results shows that election years tends to be characterized by higher transfer relative non-election years. More importantly, increase in transfers favour both loyal and swing districts. For the purposes of formulating a policy to insulate the DACF sharing formula from political influence, it is recommended that a committee of experts is formed to design the DACF allocation formula in consultation with Non-Governmental Organizations (NGOs), Civil Society Organization (CSOs) and the MMDAs. This will engender separation of power between those who design the formula and those responsible for its implementation. Since the DACF formula is susceptible to changes almost every year, it recommended that these changes are made at least every five years following comprehensive review of the existing one. These measures will help minimize the political manipulation of the Fund.

7.3 Limitations of the Study and Areas of Further Research

The main pillars of support for the fiscal decentralization policy in Ghana is grants and local revenue. The study sought to analyse the effect of grants on revenue, and poverty and welfare using samples of Metropolitan, Municipal and District Assemblies (MMDAs), and communities respectively from 2012 to 2017. The study is limited by data unavailability on some important variables such as GDP, rates compliance or enforcement at district level, thereby making the revenue and expenditure models parsimonious.

The study did not control for political decentralization since that aspect of governance has not been fully decentralized in Ghana. Analysing the different forms of decentralization in

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conjunction with fiscal decentralization would be a useful contribution since all the pillars of decentralization jointly contributes to local development. Further studies could investigate what kind of decentralization combination could be effective in the alleviation of poverty. Another contribution to the literature would be the construction of decentralization index using decentralization indicators that would include fiscal, administrative and political decentralization.

Decentralization in this study is considered by the local government fragmentation of the devolve units in Ghana. The literature suggests that accounting for all fragmented devolved units captures all the aspects of decentralization simultaneously. For instance, the local units at the lowest tier of Ghana's local government system is considered to comprise local government agents at the unit committee level. However, changes that have occurred at these lower tiers of the local government system were not considered in this study. Unavailability of relevant information and data limits the scope to construct robust indicators of decentralization to cover the lowest tier level. Future studies could use composite indicators such as district authority index, which are useful to capture all pillars decentralization comprehensively to avoid such problems.

Additionally, the concept of poverty has expanded over the years from the notion of minimum level of subsistence to the idea of relative deprivation. This study investigated the effect of fiscal decentralization on only expenditure poverty. By focusing on only the minimum level of household expenditure, there is the risk of underestimating complexity and coverage of poverty. This is due to the fact that in Ghana, only expenditure poverty data that is representative at the household level is available for econometric analysis.

This thesis employed monetary incidence of poverty at the district level but alternative measures and forms of poverty such as multidimensional poverty could be applied to validate

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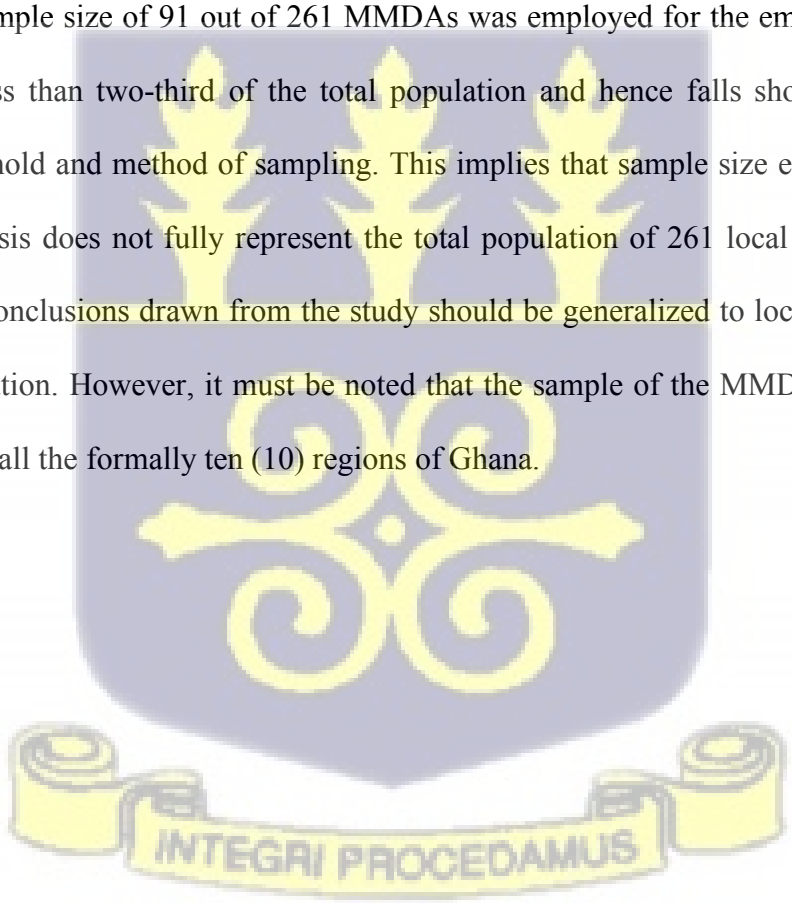
the results since literature suggests that the relationship between decentralization and poverty depends on how they are measured empirically. Lack of representative data stands as a major obstacle to investigate comprehensively the relationship between decentralization and poverty. Therefore, future studies could explore this relationship at different tiers of local government system by collecting new data and constructing alternative indicators of decentralization and poverty.

Moreover, a sample size of 91 out of 261 MMDAs was employed for the empirical analysis, representing less than two-third of the total population and hence falls short of Yamane's statistical threshold and method of sampling. This implies that sample size employed for the empirical analysis does not fully represent the total population of 261 local governments in Ghana. Thus, conclusions drawn from the study should be generalized to local assemblies in Ghana with caution. However, it must be noted that the sample of the MMDAs used for the analysis covers all the formally ten (10) regions of Ghana.



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Appendix

Appendix I: Results of Pooled OLS, Random Effect and Fixed Effect Estimation on the Expenditure Equation

Dependent variable: Expenditure per capita	**Pooled OLS**		**Random Effects**		**Fixed Effects**	
Variable	coefficient	t value	coefficient	z value	coefficient	t value
Constant	0.818 (0.724)	1.13	0.939 (0.690)	1.36	1.909 (1.981)	0.96
1st lag of expenditure	0.320*** (0.043)	7.37	0.299*** (0.037)	8.04	0.107** (0.043)	2.49
Fiscal balance	-0.973*** (0.178)	-5.44	-1.006*** (0.119)	-8.44	-1.228*** (0.147)	-8.32
Transfers per capita	0.381*** (0.056)	6.78	0.366*** (0.053)	6.90	0.482*** (0.069)	6.93
IGF per capita	0.312*** (0.072)	4.32	0.306*** (0.057)	5.38	0.091 (0.096)	0.93
Population density	7.77e-06 (7.87e-06)	0.99	-8.30e-06 (1.43e-05)	0.58	Omitted	omitted
Staff strength	0.028 (0.127)	0.22	0.008 (0.119)	0.07	-0.043 (0.377)	-0.11
Poor districts dummy	0.059 (0.077)	0.77	-0.057 (0.081)	0.70	-0.186*** (0.097)	-1.95
Election year dummy	-0.194** (0.060)	-2.52	0.071 (0.061)	1.15	0.007 (0.064)	0.17
Wald ch2 (Prob>chi2)			443.23		729.49	
R-squared	0.577					
Breusch and Pagan LM test (chibar2)			11.03			
Endogeneity (P-value for Chi2)					0.023	
Prob > F	0.000		0.000		0.000	
Number of observations	364		364		364	

*, **, *** denotes significance at 10 percent, 5 percent and 1 percent respectively
standard errors are robust and are in parenthesis
year dummy included in the Pooled OLS regression tests significant at 5 percent

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Appendix II: Results of Pooled OLS, Random Effect and Fixed Effect Estimation on the Revenue Equation

Dependent variable: IGF per capita	Pooled OLS		Random Effects		Fixed Effects	
Variable	coefficient	t value	coefficient	z value	coefficient	t value
Constant	-1.299*** (0.455)	-2.86	-0.996* (0.569)	-1.75	-1.820 (1.258)	-1.45
First lag of IGF per capita	0.359*** (0.041)	7.02	0.283*** (0.026)	10.78	0.049* (0.029)	1.72
Fiscal balance	0.817*** (0.116)	5.90	0.813*** (0.089)	9.14	0.513*** (0.100)	5.13
Transfers per capita	0.081* (0.044)	1.83	0.087** (0.043)	2.05	0.195*** (0.046)	4.16
Expenditure per capita	0.210*** (0.035)	5.94	0.205*** (0.035)	5.82	0.556 (0.039)	1.41
Population density	6.12e-06 (7.84e-06)	0.78	9.75e-06 (1.23e-05)	0.79	Omitted	omitted
Labour force	0.144* (0.083)	1.74	0.209** (0.101)	2.07	0.459** (0.238)	1.93
Poor district dummy	-0.541*** (0.043)	12.60	-0.566*** (0.053)	-10.70	-0.534*** (0.053)	-10.10
Election year dummy	Omitted	Omitted	-0.030 (0.043)	-0.69	-0.121*** (0.041)	-2.98
Wald ch2 (Prob>chi2)			1032.52		47800.56	
R-squared	0.804					
Breusch and Pagan LM test (chibar2)			20.04			
Endogeneity (P-value of Chi2)					0.049	
Prob > F	00		0.0000		0.000	
Number of observations	364		364		364	

*, **, *** denotes significance at 10percent, 5percent and 1percent respectively
standard errors are robust and are in parenthesis
year dummy included in the Pooled OLS regression tests significant at 5 percent

Appendix III: Hausman Test for Fixed and Random Effects

Expenditure Equation	Revenue Equation
Ho: Difference in coefficients not systematic (Random effect) chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 567.30 Prob > chi2 = 0.0000	Ho: Difference in coefficients not systematic (Random effect) chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 40.76 Prob > chi2 = 0.0000

Source: Author's computation using STATA 15

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Appendix IV: Results of OLS Estimation on Extreme Poverty Equation

Variables	**Model 5** coefficients	t value	**Model 5A** coefficients	t value	**Model 5B** coefficients	t value	**Model 6** coefficients	t value
Constant	16.288*	2.66	24.208*	3.19	19.050*	2.27	11.113*	1.56
	(6.131)		(7.598)		(7.469)		(7.349)	
Revenue	-1.128*	-2.74	-0.494	-0.87	-0.143***	-2.51	0.660	1.04
	(0.411)		(0.570)		(0.057)		(0.633)	
Inequality	4.006	1.38	2.121**	0.70	0.457	1.46	1.213	0.48
	(2.906)		(3.023)		(0.312)		(2.521)	
Revenue*inequality	-0.164	-0.76	-0.059	-0.27	-0.027	-1.25	-0.601	-0.33
	(0.215)		(0.217)		(0.021)		(0.184)	
DACF transfer			-1.286*	-1.80	-0.133*	-1.87	-0.568	-1.02
			(0.715)		(0.071)		(0.556)	
Population density					-0.040*	-3.29	-0.409***	-2.62
					(0.012)		(0.156)	
Decentralized staff					-0.113**	-1.86	-1.088	-1.66
					(0.060)		(0.658)	
Recurrent Expend.					-0.065	-1.67	-0.672*	-1.90
					(0.039)		(0.354)	
DLT score					-0.009**	-3.16	-0.043*	-1.74
					(0.003)		(0.025)	
School feeding grants							0.271	0.96
							(0.283)	
Fiscal balance							-0.333	-1.32
							(0.256)	
Observations	57		57		57		57	
R-squared	0.146		0.211		0.378		0.477	
Mean VIF	1.492		1.973		2.910		3.201	
Root MSE	1.219		1.183		0.134		1.024	

***, **, * represents 1percent, 5percent and 10percent significant levels respectively
Variables are in natural logs

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Appendix V: Results of Tobit estimation on Poverty Equation (Marginal Effects)

Variable	**(Model 9A)** Marginal effect	z value	**(Model 9B)** Marginal effect	z value	**(Model 9C)** Marginal effect	z value
Ln of population	-0.0116	-1.11	-0.0043	-0.25	-0.0092	-0.54
	(0.0105)		(0.0169)		(0.0171)	
Portable water	0.0111	0.25	-0.0640	-1.24	-0.0638	-1.24
	(0.0448)		(0.0518)		(0.0516)	
Health facility	-0.0246	-0.72	0.0035	0.09	3.63e-06	0.00
	(0.0343)		(0.0392)		(0.0392)	
Local development project	0.1297***	4.04	0.1191***	3.09	0.1201***	3.13
	(0.0321)		(0. 0385)		(0.0384)	
Adult school	0.2197***	4.81	0.1478***	2.69	0.1431***	2.61
	(0.0457)		(0. 0550)		(0.0549)	
Primary school	0.1551***	3.02	0.1316***	2.19	0.1332***	2.22
	(0.0514)		(0.0602)		(0.0601)	
JHS school			-0.0184	-0.35	-0.0159	-0.30
			(0.0532)		(0.0531)	
SHS school			-0.1035	-1.80	-0.0910	-1.58
			(0.0575)		(0.0578)	
Electricity			0.0262	0.50	0.0266	0.51
			(0.0527)		(0.0526)	
Tarred road			-0.0047	-0.08	-0.0016	-0.02
			(0.0631)		(0.0630)	
Financial institution			-0.0984*	-1.66	-0.1282**	-2.09
			(0.0593)		(0.0614)	
Migration			0.0186	0.46	0.0274	0.67
			(0.0407)		(0.0409)	
Job availability			0.2872***	5.41	0.2837***	5.35
			(0.0531)		(0.0530)	
Distance to Market			-0.0023*	-1.64	-0.0021	-1.52
			(0.0014)		(0.0014)	
Agrarian economy					0.1136*	1.79
					(0.0636)	
No. of observation	889		889		889	
LR Chi^2	60.70***		76.62***		57.00***	
Pseudo R^2	0.0515		0.1014		0.1066	
Log pseudolikelihood	-558.4335		-339.5068		-322.3814	

***, **, * represents 1percent, 5percent and 10percent significant levels
Figures in parenthesis under coefficients, odd ratios and z value represents robust standard errors and percentage respectively

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Appendix VI: Results of OLS, Random Effects and Fixed Effects on Transfer Equation

Dependent variable: Transfers per capita	**Pooled OLS**		**Random Effects**		**Fixed Effects**	
Variable	coefficient	t value	coefficient	z value	coefficient	t value
1st lag of DACF	0.522*** (0.061)	8.45	0.563*** (0.060)	9.36	0.029 (0.087)	0.34
Population density	-8.15e-05 (3.90e-05)	-2.09	-9.61e-05 (6.27e-05)	-1.53	1.056 (4.245)	0.25
1st lag of IGF per capita	-0.087*** (0.040)	-2.16	0.002 (0.048)	0.06	0.258*** (0.070)	3.65
Expenditure per capita	0.194*** (0.042)	4.58	0.201*** (0.056)	3.57	0.279*** (0.081)	3.42
Labour force	-0.074 (0.132)	-0.56	0.057 (0.166)	0.34	1.807*** (0.558)	3.24
Fiscal balance	0.247** (0.107)	2.31	0.178 (0.155)	1.15	0.323 (0.244)	1.32
Election year dummy	0.644*** (0.097)	6.59	0.174 (0.108)	1.61	0.447*** (0.129)	3.44
Political Align dummy	0.083 (0.084)	0.99	0.158 (0.112)	1.41		
Political swing dummy	-0.088 (0.107)	-0.82	-0.052 (0.139)	-0.37	Omitted due to collinearity	
Political Align*Swing	-0.126 (0.139)	-0.91	-0.197 (0.172)	-1.15		
Constant	0.705 (0.746)	0.94	0.163 (0.910)	0.18	-2.86 (10.15)	-0.26
Wald ch2 (Prob>chi2)			248.14		248.14	
R-squared	0.666					
Breusch and Pagan LM test (chibar2)			47.60			
Endogeniety (P-value for Chi2)					0.053	
Prob > F	0.000		0.000		0.000	
No. of observation	288		288		288	

***, **, * denotes significance at 1percent, 5percent and 10percent respectively
standard errors are robust and are in parenthesis
time effects controlled for the OLS model

Appendix VII: Hausman Test for Fixed and Random Effects

Transfer Equation
Ho: Difference in coefficients not systematic (Random effect) chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 95.12 Prob > chi2 = 0.0000

Source: Author's computation using STATA 15
Data fits Fixed Effect Model