

UNIVERSITY OF GHANA



(College of Humanities)

**EXAMINING THE DRIVERS AND EFFECTS OF FINANCIAL
IRREGULARITIES IN GHANA'S METROPOLITAN, MUNICIPAL AND
DISTRICT ASSEMBLIES**

BY

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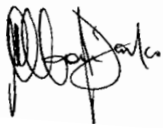
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DECLARATION

I, William Ofori Darko, hereby declare that this thesis is the result of my research conducted under the supervision of Dr Francis Aboagye-Otchere and Prof. Godfred Matthew Yaw Owusu of the Department of Accounting, University of Ghana Business School. I attest that this thesis has not been presented either in whole or in part for any award in any other institution. All references cited in this thesis have been duly acknowledged. I bear the responsibility for any errors, omissions and lapses that might appear in this thesis.



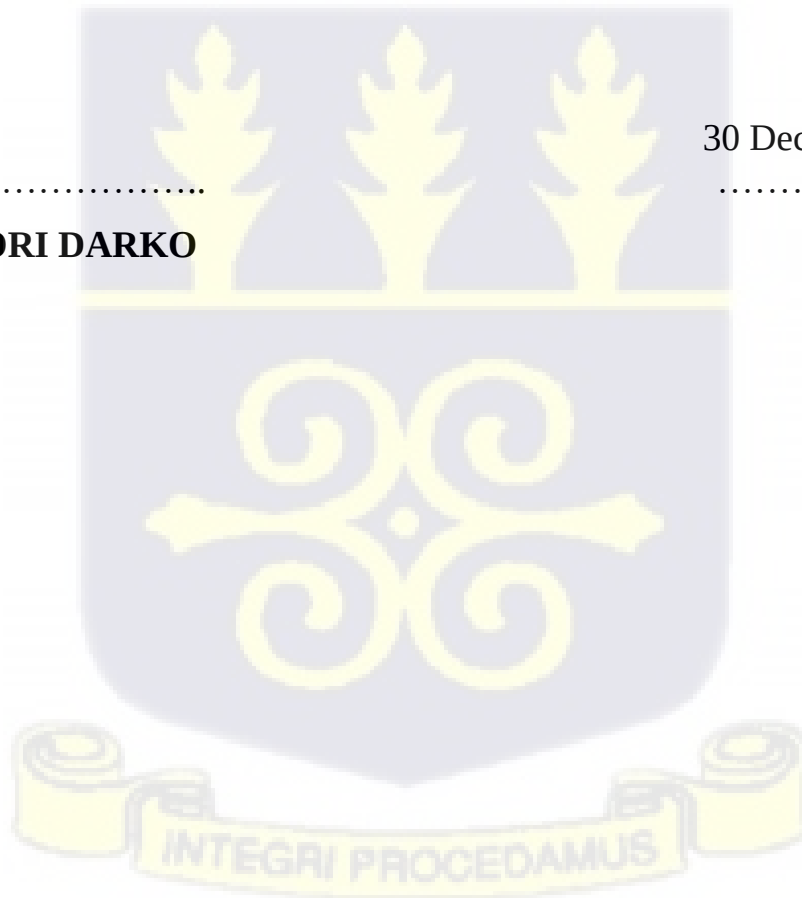
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CERTIFICATION

I, the undersigned, do hereby certify that this thesis was supervised in accordance with the guidelines laid down by the University.



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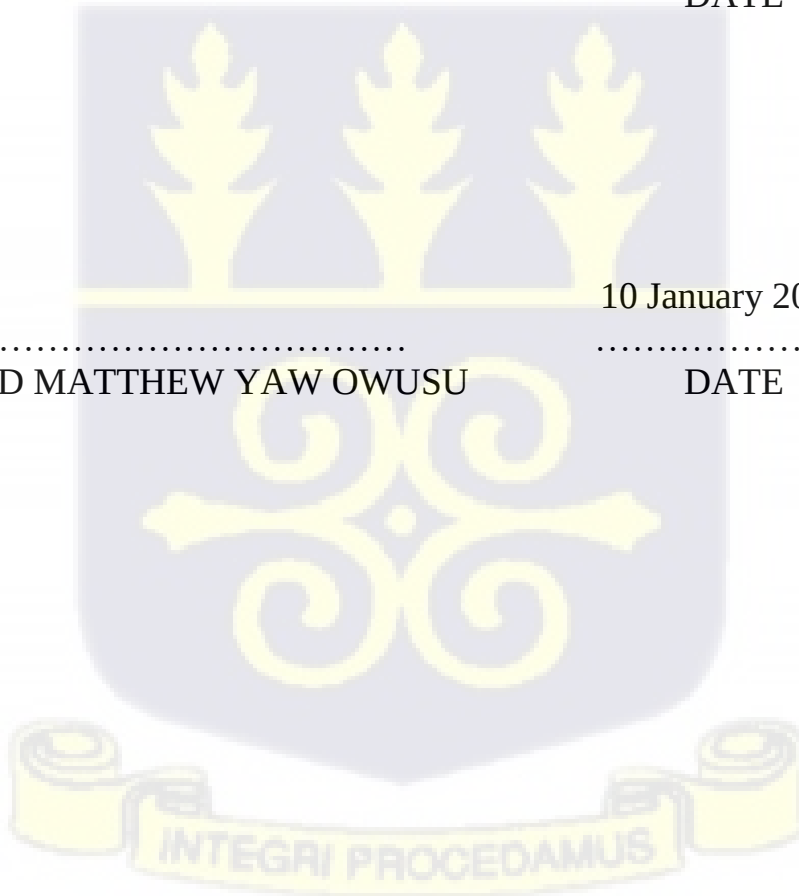
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DEDICATION

With heartfelt thanks to the Almighty God, I dedicate this work to my wife, Vida Ofori Darko, and my children, Michael and Victoria Ofori Darko, for their unwavering support throughout my journey.



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I express my eternal thanks to the Almighty for the precious gifts of life, strength, and wisdom that enabled me to complete this work. To God be the glory for the remarkable achievements.

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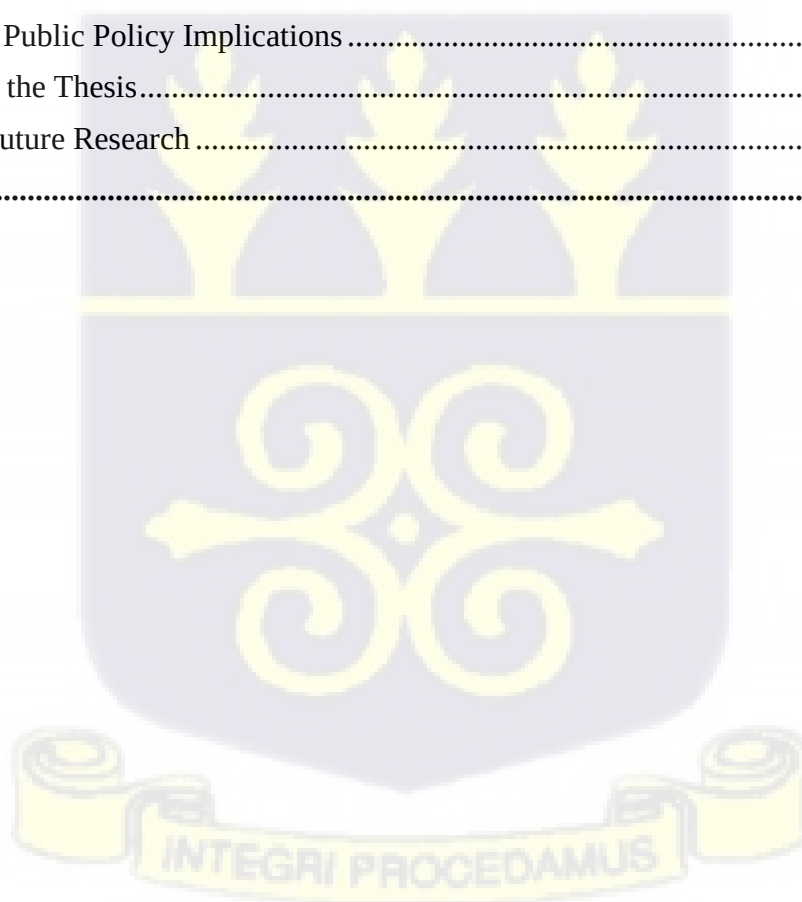
Lastly, I acknowledge the unwavering support from my wife and children throughout this journey.



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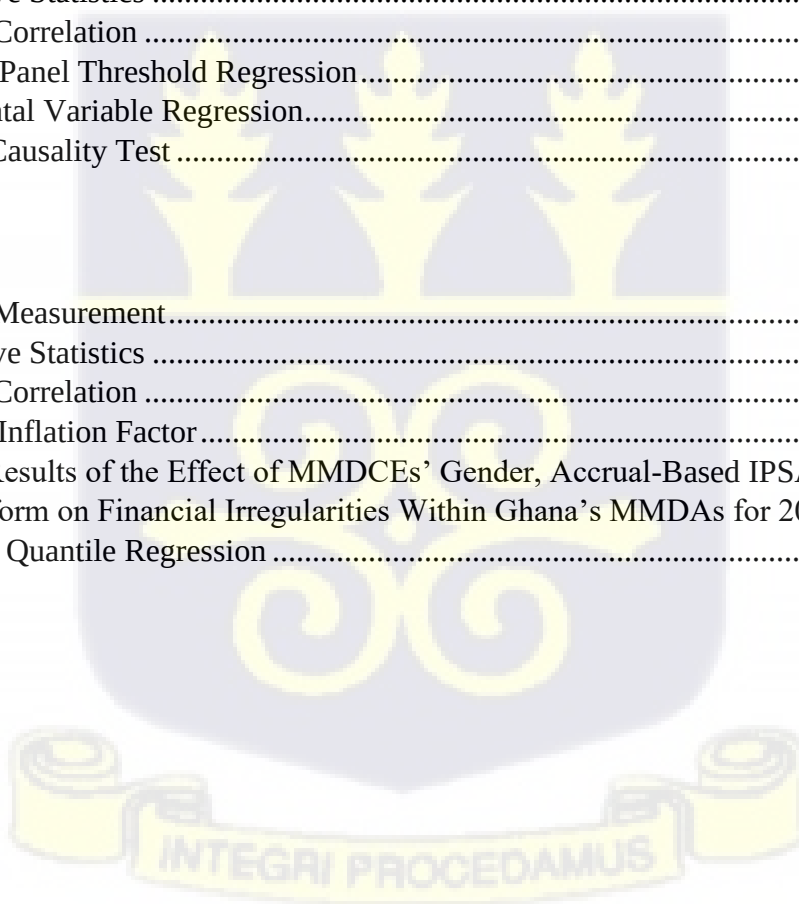
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ABSTRACT

Financial irregularities within subnational governments are prevalent worldwide, transcending varying stages of development. These irregularities impede the effective delivery of public services, erode trust in subnational governments, inflate the costs of public transactions, and mostly result in financial losses to states. This thesis aims to address this pressing concern by examining the nexus between reported financial irregularities within Ghana's Metropolitan, Municipal and District Assemblies (MMDAs) and the underlying factors driving them. Furthermore, it seeks to identify the thresholds at which these financial irregularities significantly affect the fiscal autonomy of MMDAs. Employing methodology including the method of moments quantile regression, dynamic panel threshold regression analysis, and Granger causality analysis, this study analyses a dataset spanning 216 MMDAs for a 10-year period (2012-2021). The findings indicate that successive increases in revenue, asset, and liability levels exhibit statistically significant and positive relationships with financial irregularities in Ghana's MMDAs. Moreover, female chief executives exhibit a statistically significant relationship with lower levels of financial irregularities. However, this association is not statistically significant at higher levels of financial irregularities. Contrary to expectations, the adoption of regulatory frameworks appears to have limited influence on mitigating financial irregularities. Moreover, contract and procurement/store irregularities impede fiscal autonomy above a threshold of 6% of total financial irregularities, whereas cash management irregularities consistently undermine fiscal autonomy irrespective of the threshold level. These findings underscore the necessity of implementing strong financial management practices and reliable accountability measures within Ghana's MMDAs, especially as their revenues, assets, and liabilities grow. The research recommends strengthening internal control mechanisms, fostering transparency and accountability, embracing technological advancements, and broadening revenue sources to mitigate financial irregularities and boost the fiscal independence of MMDAs. Furthermore, efforts should be made to tackle gender-specific leadership challenges to improve the effectiveness of female chief executives in MMDAs. Additionally, policymakers should conduct regular and comprehensive assessments of regulatory frameworks to address shortcomings in their implementation

CHAPTER ONE

INTRODUCTION



1.1 Background of Study

The issue of financial irregularities presents a major global challenge, affecting every country irrespective of the level of development (Bellido et al., 2021; Allen & Koshima, 2018). These irregularities are more prevalent in developing countries, primarily because public officials often tend to abuse their authority and bypass internal control systems established to guide their conduct (Auditor-General, 2019a; Shariman et al., 2017). Additionally, developing countries commonly have weak public institutions, including those responsible for overseeing financial accountability in the public sector (Russell & Brock, 2015). The situation is further compounded by a lack of political will to enforce financial administration laws and regulations, particularly in imposing proportionate sanctions for breaches (Allen & Koshima, 2018; Hope, 2017; Abdulai, 2009). Hope (2017) posited that mitigating financial irregularities requires unwavering commitment from the highest level of leadership.

The growing prevalence of financial irregularities worldwide has led to a notable surge in scholarly investigations since the mid-1980s (Cheliatsidou et al., 2023). Researchers continue to investigate the nature and underlying factors contributing to these irregularities, aiming to devise effective mitigation strategies to prevent their reoccurrence and save governments the resultant losses (Cheliatsidou et al., 2023).

The concept of financial irregularities encompasses a broad spectrum of issues, including corruption, fraud, non-compliance with laws and regulations, operational inefficiencies, internal control weaknesses, and errors in financial records. However, unlike corruption and fraud, financial irregularities do not always result in personal gains (Allen & Koshima, 2018). Thus, while all instances of corruption and fraud fall within the scope of financial irregularities, not all financial irregularities involve corruption or fraud. For example, in Ghana, instances such as payments made outside the Ghana Integrated Financial Management Information System (GIFMIS), abandoned or delayed projects, completed projects not put to use, delays in banking collected cash, and inadvertent errors in recording transactions are all classified as financial irregularities even though they do not necessarily involve corruption or fraud.

Financial irregularities are avoidable losses that would be saved if public officials comply with the laws and regulations governing their conduct (Auditor-General, 2019a). To illustrate, the Auditor-General of South Africa reported a total of ZAR65.5 billion (US\$4.8 billion) as irregular and wasteful expenditures across the central, provincial, and local governments in the 2015/2016 consolidated audit reports (Tickle, 2018). Similarly in Ghana, the Auditor-General reported a total of GH¢5.9 billion (US\$1.5 billion) as financial irregularities in the public accounts from 2012 to 2014. This figure rose to GH¢12.85 billion (US\$2.30 billion) in 2020 (Yeboah, 2021) and further increased to GH¢17.40 billion (US\$3.00 billion) in 2021 (Ackah-Blay, 2022). Additionally, Ghana incurred a total of GH¢1.9 billion (US\$939.17 million) in judgment debts from 2000 to 2019, of which GH¢1.4 billion (US\$692.02 million) emanated from contract breaches by governments and their agencies (Ngnenbe, 2021).

The problem of financial irregularities in Ghana's public sector dates back to the colonial era and has persisted through successive political and economic transitions. The limited financial infrastructure during the colonial period undermined effective accountability, creating opportunities for financial irregularities to thrive, despite British auditors and accountants overseeing public finances at the time (Hymer, 1969).

Following Ghana's independence in 1957, the country encountered challenges in managing public finances. State-controlled enterprises and large-scale infrastructural projects became the hotspots for financial mismanagement. Allegations of financial irregularities were common during the First Republic and served as a justification for the government's overthrow in 1966 (Le Vine, 1975). Subsequent governments, including military regimes in the 1970s and 1980s, faced similar allegations, often involving high-ranking officials and substantial public funds.

The introduction of the Structural Adjustment Programme in the 1980s sought to improve financial governance in Ghana's public sector. However, the reforms largely failed to resolve the underlying systemic weaknesses, as evidenced by persistent financial irregularities, manifesting in various forms such as procurement fraud, over-invoicing, and mismanagement in state-owned enterprises (Konadu-Agyemang, 2000; Loxley, 1990).

To uphold financial accountability in Ghana's public sector, the Auditor-General is mandated to audit and report on the public accounts of all public institutions in Ghana, including the Metropolitan, Municipal, and District Assemblies (MMDAs). This mandate includes assessing the effectiveness of policies and procedures established to safeguard public funds and assets [Audit Service Act, 2000 (Act 584), s.13]. The Ghana Audit Service serves as the primary instrument for the execution of this mandate, as stipulated under Article 187 of the 1992 Constitution of Ghana.

Audit reports prepared by the Auditor-General are submitted to Parliament in compliance with Article 187 of the Constitution. These reports are subsequently referred to the Public Accounts Committee, a constitutionally established body tasked with overseeing the management of public finances. The Committee then conducts investigations into reported infractions, summoning individuals implicated in financial irregularities to appear before it. These hearings, often publicly televised, involve thorough questioning and directives from the Committee, which may include the imposition of sanctions.

In the late 1980s, Ghana embarked on a major programme of decentralisation as an alternative development strategy and devolved fiscal, political, and administrative powers from the national government to MMDAs (Cofie-Agama, 2003). Subsequently, the 1992 Constitution and Local Government Act, 2016 (Act 936), empowered MMDAs to autonomously manage local resources, deliver essential public goods and services, foster community development, and implement government initiatives at the grassroots level (Bawole, 2017; Van Gyampo, 2017; Awortwi, 2010; Cofie-Agama, 2003). To this end, MMDAs are expected to design and implement a public financial management system that enhances their capacity to autonomously generate and allocate resources (Cofie-Agama, 2003).

Consequently, the government enacted governance frameworks, including the Public Procurement Act, 2003 (Act 663) and the Internal Audit Agency Act, 2003 (Act 658), to enhance transparency and accountability in public financial management. The decentralisation framework grants MMDAs the authority to generate their own revenue, known as internally generated funds (IGF), to support their

operations. In addition, they receive funding from the central government, mainly through the District Assemblies Common Fund (DACF), for designated programme activities. Thus, the effective management of these funds aligns with national development goals, including poverty alleviation, infrastructure development, and improving the welfare of citizens.

While these measures represent significant progress in financial management within MMDAs, they have not fully addressed the persistence of financial irregularities, as highlighted in the Auditor-General's reports. MMDAs nationwide grapple with financial irregularities that undermine their service delivery, erode public trust in the local governance system and usually result in financial losses (Auditor-General, 2019b). To illustrate, the Auditor-General reported a total of GH¢874.59 million (US\$234.90 million) as financial irregularities within MMDAs from 2012 to 2021. These avoidable losses represent funds that could have been utilised for other projects (Auditor-General, 2019b). For instance, this could have constructed about 135 to 175 community E-block school buildings across the country at the estimated cost between GH¢6.5 million and GH¢5.0 million respectively (Gyamfi, 2014). It could have also constructed 14 Agenda 111 hospital buildings at the estimated cost of US\$16.88 million per building (Acheampong, 2022).

The relationship between financial irregularities and the factors driving them are notable and contribute to the prevalence of such irregularities within MMDAs (Auditor-General, 2019b). Thus, understanding this relationship is vital in formulating effective control measures for remediation. This study aims to systematically investigate the interplay between these driving factors and the prevalence of financial irregularities within MMDAs.

1.2 Problem Statement

The devolution of fiscal, political, and administrative powers from the national government to MMDAs in Ghana has not been without challenges (Cofie-Agama, 2003). Although Ghana remains committed to democratic governance, decentralisation, and financial accountability, MMDAs nationwide continue to

grapple with financial irregularities that are consistently highlighted in the Auditor-General's reports. The recurring nature of these irregularities underscores the need for an investigation into the underlying factors driving them to devise effective mitigation strategies for redress.

However, prior studies have predominantly concentrated on corruption (Owusu-Nantwi & Owusu-Nantwi, 2023; Ibrahim, 2020; Nur-tegin & Jakee, 2020) due to its explicit economic, social, political and legal impacts, as well as international pressures to combat corruption, while overlooking the other forms of financial irregularities.

Moreover, while previous studies have offered valuable insights into financial irregularities (Jaswadi et al., 2022; Yang & Cai, 2022; Soepriyanto et al., 2021; Adjei et al., 2017; Li & Li, 2020; Allen & Koshima, 2018; Chin & Tan, 2012; Blundell, 1986), they have not sufficiently explored the relationship between these irregularities and the underlying factors driving them. Furthermore, a considerable portion of the literature remains theoretical with limited empirical investigation into both financial irregularities and the pertinent variables driving them (Maama & Marimuthu, 2021; Yao et al., 2017; Acquah, 2017; Akeem, 2015). Additionally, prior studies mainly relied on mean-based estimation techniques in their models (Xia et al., 2023; Ibrahim, 2020; Krieger & Meierrieks, 2020). These techniques assume a static relationship between financial irregularities and the variables of interest. However, similar to many economic variables, the relationship between financial irregularities and the driving factors exhibits dynamic characteristics. This relationship entails nonlinearities with extreme tail dynamics, necessitating careful consideration for policy implications.

Financial irregularities within Ghana's MMDAs arise from a combination of financial and governance factors. The financial factors include revenue, assets, and liabilities, which are inherently vulnerable to mismanagement and often result in irregularities. Revenue is recognised as the most important financial item enabling MMDAs to provide essential public services and support community development (OECD, 2013). However, the mobilisation and management of revenue frequently result in financial irregularities,

such as uncollected revenue, unaccounted revenue, and inefficient revenue collection (Auditor-General, 2021; Auditor-General, 2019). Assets are equally vital to the operations of MMDAs but can contribute to financial irregularities through their acquisition, use, and disposal. Procurement of fixed assets is often marred by favouritism, bribery, and corruption, leading to the selection of suppliers based on personal relationships rather than merit. Furthermore, the improper or unauthorised use of assets for personal gain presents additional risks. Some of the asset-related financial irregularities include misappropriated cash, unretired imprest, unrecovered loans and advances, abandoned or delayed projects, completed projects not put to use, and Assembly motorbikes registered in the name of Assembly members. MMDAs also encounter a range of financial irregularities related to their liabilities, such as unapproved contracts, unauthorised variations in contract sums, payments for unexecuted contracts, overpayments to suppliers, and non-compliance with tax and other statutory obligations (Auditor-General, 2021).

On the other hand, governance factors, such as chief executives' gender (Saeed and Riaz, 2022; Bonny et al., 2015) and regulatory frameworks (Ratmono & Darsono, 2022; Alozie, 2020; Mnif Sellami & Gafsi, 2019; Lodhia & Burritt, 2004) can potentially influence financial irregularities within MMDAs.

In this context, gender is conceptualised as the social, cultural, and psychological characteristics, roles, and expectations associated with being a man or a woman within Ghanaian society. The influence of chief executives' gender on financial irregularities is an issue that demands careful examination (Resnick, 2022). This stems from the varied perspectives on gender, encompassing social, economic, and psychological dimensions. Additionally, there are individual differences within each gender group, rendering broad generalisations insufficient to fully capture the intricacies of human behaviour. Consequently, attributing financial irregularities solely to the gender of chief executives risks oversimplifying the matter, and any conclusions drawn should be done with caution.

Generally, effective leadership depends on an individual's knowledge, skills, and abilities rather than gender (Powell, 2018; Gurian, 2008; Kouzes & Posner, 2006). However, some links between chief executives' gender and financial irregularities merit attention. Some studies have found that female leaders

often adopt transformational styles emphasising collaboration, communication, and ethical behaviour, while male leaders may exhibit more negative leadership tendencies (Babiak & Bajcar, 2019; Rosener, 2011). These styles can influence organisational culture and transparency, potentially affecting financial irregularities. Furthermore, research suggests that women tend to internalise moral values and emphasise integrity, while men prioritise fairness (Kennedy et al., 2017; Glover et al., 2002). This difference in ethical decision-making may influence the likelihood of financial irregularities. Moreover, studies indicate that men usually take greater risks, while women show more risk aversion, particularly in financial and social matters (Friedl et al., 2020; Byrnes et al., 1999). This divergence may influence financial decision-making and irregularities within MMDAs.

Ghana is dedicated to fostering women's participation in politics and public administration and promoting them to leadership positions (Boateng, 2022; Adusah-Karikari & Ohemeng, 2014; Aina & Olayode, 2011; Abdulai & Crawford, 2010). While the appointment of Metropolitan, Municipal, and District Chief Executives (MMDCEs) is perceived as gender-neutral, it often carries implicit gender-related implications that impact financial management within MMDAs (Sabbi & Stroh, 2020; Debrah, 2016). Prior studies on gender in public administration have underscored the importance of achieving gender parity in leadership positions (Velte, 2021; Chijoke-Mgbame et al., 2020). Moreover, despite the dearth of empirical research directly examining the link between gender and financial irregularities, various relevant sources offer valuable insights into related aspects, which could enrich the understanding of potential influences (Bilwani & Anjum, 2022; Babiak & Bajcar, 2019; Paustian-Underdahl et al., 2014; Rosener, 2011; Kennedy et al., 2017; Glover et al., 2002). These insights contribute to a broader understanding of the potential influence of gender on leadership and financial outcomes.

However, the influence of gender on financial management, particularly within local government entities, remains largely unexplored (Rauhaus & Carr, 2020; Mastracci & Bowman, 2015; Caceres-Rodriguez, 2013). This study aims to address this gap in the literature by exploring the relationship between the gender of MMDCEs and financial irregularities within MMDAs, using the method of moments quantile

regression (MMQR) technique. This statistical technique provides a framework for delving into the asymmetric and non-linear nature of this relationship while also acknowledging the potential variability of gender influence across diverse contexts and circumstances (Halidu et al., 2023).

Another governance factor that can influence financial irregularities in MMDAs due to non-compliance with established rules and regulations is the regulatory frameworks (Ratmono & Darsono, 2022; Alozie, 2020; Mnif Sellami & Gafsi, 2019; Lodhia & Burritt, 2004). These are structured rules, guidelines, standards, and processes set by the government to oversee and regulate the activities of the MMDAs can also influence financial irregularities within MMDAs. For example, payments made outside the GIFMIS platform, a practice prohibited under the Public Financial Management Act, 2016 (Act 921), are flagged as financial irregularities in the Auditor-General's reports. Moreover, various implementation challenges of regulatory frameworks can potentially result in financial irregularities within MMDAs. These challenges include the inherent complexities of the regulations, limitations in the capacity and expertise of personnel, inadequate training initiatives, delays in implementation, potential resistance to change within the entities, and weaknesses in internal control and oversight mechanisms.

This study specifically focuses on the accrual-based International Public Sector Accounting Standards (IPSAS) and Public Financial Management (PFM) reforms that govern the operations of MMDAs in Ghana. Although the global trend towards accrual-based IPSAS adoption and PFM reforms is perceived as transformative in improving financial transparency, accountability, and financial reporting, their specific influence in mitigating financial irregularities in the Ghanaian context, especially at the local government level, remains uncertain.

Existing literature offers valuable insights into the link between regulatory frameworks and financial irregularities (Bentley et al., 2013; Laughlin, 2008; Ball, 2006; Hemraj, 2003), particularly in the context of IPSAS and corruption (Tawiah, 2023; Hamed-Sidhom et al., 2022; Hamed-Sidhom & Loukil, 2021). However, to the best of the author's knowledge, no study has examined the asymmetrical and non-linear relationship between regulatory frameworks and financial irregularities. This is particularly true for

studies using empirical data from local government entities in Ghana. Hence the effectiveness of these regulatory frameworks in mitigating financial irregularities remains an ongoing challenge in Ghana's MMDAs and represents a critical yet relatively unexplored area for inquiry (Schuler et al., 2023).

Financial irregularities hinder the operational efficiency of MMDAs, notably by impeding their fiscal autonomy, which is the primary focus of this study. In line with extant literature, including studies by Asare et al. (2020), Psycharis et al. (2016), and Arthur & Dawda (2015), local government fiscal autonomy is defined as the proportion of internally generated revenue to total revenue. It is widely accepted that an FA of at least 50% indicates a significant level of self-sufficiency and reduced dependency on external funding (Ivanyna & Shah, 2014). In Ghana, the Auditor-General's reports from 2012 to 2021 indicate that MMDAs have an average FA of 20%, indicating low FA and overdependence on the central government.

Overall, the interplay between financial irregularities, the array of financial and governance factors driving them, and their effect on the MMDAs' fiscal autonomy, form a complex network of influences within Ghana's local governance system. These nuanced and dynamic relationships necessitate thorough investigations to uncover the nature of these relationships to develop effective remediation strategies. Addressing these challenges is crucial not only to foster an environment conducive to transparent, accountable, and sustainable local development but also to restore public trust in the local governance system. Through this exploration, the research endeavours to offer actionable insights for policymakers, practitioners, and scholars interested in advancing effective governance in Ghana's MMDAs.

1.3 Objectives of Study

The purpose of this thesis is to investigate the relationship between financial irregularities and the factors driving them within Ghana's MMDAs. Specifically, the thesis has the following objectives:

- i. To conduct empirical analysis on the nexus between revenue, asset, and liability levels and financial irregularities within Ghana's MMDAs.

- ii. To empirically identify the thresholds at which various types of financial irregularities begin to significantly influence the fiscal autonomy of Ghana's MMDAs.
- iii. To empirically investigate the relationship between the gender of MMDCEs and financial irregularities in Ghana's MMDAs.
- iv. To empirically assess the effectiveness of accrual-based IPSAS adoption in mitigating financial irregularities within Ghana's MMDAs.
- v. To empirically evaluate the effectiveness of PFM reforms in mitigating financial irregularities within Ghana's MMDAs.

1.4 Significance of Study

The first paper (Chapter Two) examines the relationship between successive increases in revenue, asset, and liability levels and financial irregularities within Ghana's MMDAs. The study is motivated by concerns that the growth in local populations, and the corresponding growth in revenue, assets, and liabilities, could worsen existing financial irregularities. This is because increases in financial activities add complexities that could aggravate existing financial irregularities. Moreover, higher volumes of financial transactions increase the likelihood of errors, fraud, and breaches of laws and regulations.

Recognising that financial irregularities cannot be entirely eradicated, the study emphasises prioritising high-risk activities through targeted policies, strategies, and resources for effective mitigation (Acemoglu & Verdier, 2000). The study seeks to answer the question: Do successive increases in revenue, asset, and liability levels affect financial irregularities in Ghana's MMDAs?

The study offers diverse contributions to the literature. Firstly, it provides empirical evidence on the relationship between revenue, asset and liability levels and financial irregularities in the MMDAs. This establishes a foundation for further research. Secondly, it contributes to methodological advancement through the application of the method of moments quantile regression (MMQR) technique developed by Machado & Silva (2019). This statistical technique enables an examination of the potentially asymmetrical

and non-linear relationships between revenue, asset, liability levels, and financial irregularities. By identifying the nature of these relationships, the study informs the design and implementation of policies aimed at strengthening financial accountability, transparency, and overall governance within these entities. Thirdly, the study makes a theoretical contribution by investigating the application of agency theory in the context of local government.

The second paper (Chapter Three) explores the threshold levels at which financial irregularities significantly impede the fiscal autonomy of Ghana's MMDAs. This study is driven by the effects of financial irregularities on the MMDAs' fiscal autonomy (FA), as they strive to become more self-reliant and reduce their dependence on the central government. The study seeks to answer the question: At what thresholds do financial irregularities impede the FA of Ghana's MMDAs?

This study makes several contributions to the literature. First, it enriches the literature by providing empirical evidence on the effects of financial irregularities on the fiscal autonomy of Ghana's MMDAs. This informs future research and policymaking endeavours. Second, this research establishes the thresholds at which financial irregularities significantly impede the fiscal autonomy of MMDAs, providing policymakers with evidence-based insights to implement early warning systems and targeted mitigation strategies. Third, the study demonstrates the applicability of the dynamic threshold panel data model, to examine the asymmetric and non-linear relationship between financial irregularities and fiscal autonomy in local government contexts. Fourth, the study contributes to broader discussions on sustainable development by emphasising the fundamental role of sound financial practices and fiscal autonomy in fostering good governance and advancing the long-term well-being of communities. Fifth, it extends the critique of fiscal federalism theory by applying it to financial irregularities in local governments, thereby providing a deeper understanding of the interplay between financial accountability and fiscal autonomy of local government entities.

The third paper (Chapter Four) explores the influence of MMDCEs' gender and regulatory frameworks, specifically the accrual-based IPSAS and PFM reforms in Ghana, on financial irregularities within

MMDAs. The study addresses three core research questions: (1) What is the connection between Chief Executives' gender and financial irregularities within Ghana's MMDAs? (2) How does accrual-based IPSAS adoption in Ghana influence financial irregularities within MMDAs? (3) How do PFM reforms in Ghana influence financial irregularities within MMDAs? Additionally, the study seeks to evaluate the effectiveness of these regulatory frameworks in mitigating financial irregularities within MMDAs.

The study contributes to the broader understanding of financial irregularities in the local government context. Firstly, the investigation into the relationship between MMDCes' gender and financial irregularities within Ghana's MMDAs offers empirical evidence to inform the analysis. This lays the groundwork for further inquiry into the nuanced relationship between chief executives' gender and financial management in local government entities. Moreover, it informs policymakers in planning initiatives to address gender-specific leadership challenges and foster effective financial management in local government. Additionally, it assists in the development of policies and reforms that address gender-related challenges and ultimately result in the implementation of proactive, gender-responsive measures in vulnerable areas.

The investigation into the interplay between regulatory frameworks and financial irregularities within Ghana's MMDAs contributes to the ongoing academic discourse on the role of regulations in fostering transparency and accountability within public entities. This lays a foundation for further scholarly exploration in the domain. Moreover, the study provides empirical evidence on the effectiveness of accrual-based IPSAS and PFM reforms in strengthening financial management systems and mitigating financial irregularities within the public sector. The pre-and post-implementation comparative analysis assesses the effectiveness of these regulatory frameworks in mitigating financial irregularities within local government settings. This approach could assist policymakers in pinpointing critical areas necessitating targeted capacity-building initiatives and supplementary support programmes to ensure the optimal efficacy of the regulations.

Collectively, the chapters are interrelated through their shared focus on understanding, analysing, and mitigating financial irregularities within Ghana's MMDAs. Each chapter examines distinct yet interconnected dimensions of financial management, contributing to a cohesive framework for addressing the complexities of financial irregularities in local government settings. Chapter Two establishes the foundation by examining how successive increases in revenue, asset, and liability levels influence financial irregularities. Chapter Three builds on this by analysing the threshold effects of financial irregularities on the MMDAs' fiscal autonomy, highlighting their broader governance implications. Chapter Four explores how gender dynamics in leadership and regulatory frameworks influence financial irregularities within the MMDAs. Together, the chapters form a cohesive narrative, progressing from problem identification to impact analysis and finally to actionable mitigation strategies.

1.5 Overview of Research Methodology

The study employs a positivist research paradigm, asserting that reality is objective and can be quantified by empirical observation and quantitative analysis (Saunders et al., 2015; Bell et al., 2018). This paradigm is well-suited for examining measurable financial and governance phenomena within Ghana's MMDAs, as it enables the establishment of empirical relationships between variables such as financial irregularities, fiscal autonomy, and governance factors (Johnson & Clark, 2016; Wilson, 2014).

Building on this foundation, the study utilises a deductive reasoning methodology, deriving hypotheses from established theories and testing them using actual data (Creswell & Creswell, 2017; Bryman & Bell, 2015). The deductive approach starts with theoretical constructs and is operationalised into measurable variables (Saunders et al., 2018; Creswell & Creswell, 2017). By testing these variables through empirical data, the research validates or refutes hypotheses with precision. While inductive reasoning, which focuses on deriving theories from observed patterns (Saunders et al., 2018; Creswell & Creswell, 2017), is not the primary focus, it could play a supplementary role in identifying trends for future research. The deductive approach ensures the research remains grounded in theoretical validation, reinforcing its contribution to both academic discourse and policymaking. This methodology is evident in all three articles, as theoretical

frameworks direct the examination of the connections between financial irregularities and diverse institutional elements within Ghana's local government system (Myers, 2013; Sekaran & Bougie, 2016).

To ensure objectivity, the research employs a value-free axiology to maintain objectivity by reducing the impact of personal values on the research process (Collins, 2018; Morgan, 2014). This is essential for examining sensitive topics like financial irregularities and governance in public institutions, where stakeholders may possess divergent perspectives and interests (Saunders et al., 2019; Eriksson & Kovalainen, 2015). The value-free approach is upheld by stringent methodological procedures, transparent data-gathering methods, and methodical analytical techniques in all three studies (Kumar, 2014).

Consistent with the positivist paradigm, the research employs a quantitative methodology, including panel data analysis in all three studies (Hair et al., 2014; Zikmund et al., 2013). This facilitates a systematic analysis of financial irregularities and their correlations with diverse characteristics across numerous MMDAs throughout time (Punch, 2013). The research encompasses the years 2012 to 2021, concentrating on 216 MMDAs that were operating during this period.

Furthermore, the study employs an explanatory research design to establish statistical relationships among variables (Bernard, 2017; Gray, 2014). Each paper utilises distinct econometric techniques to address specific research objectives. The analysis focuses on the local government level, examining Ghana's MMDAs. This level of analysis is appropriate as local governments serve as crucial units of fiscal administration and public service delivery in Ghana's decentralised governance system (Yin, 2014; Silverman, 2015).

To ensure methodological rigour, the research employs many diagnostic checks across all articles to validate the findings (Collis & Hussey, 2013; Neuman, 2014). This encompasses descriptive statistical analysis, correlation analysis, Variance Inflation Factor assessments for multicollinearity, and evaluations of normality (Field, 2013). Supplementary robustness checks are incorporated to enhance the credibility of the results (Maxwell, 2012). This methodological approach is evident in the use of structured data collection techniques, regression analysis, and hypothesis testing, to ensure credible findings.

Ontologically, the research assumes that financial irregularities exist as objective phenomena, independent of individual perception, and can be reliably measured. Epistemologically, the research contends that knowledge about these irregularities is best acquired through empirical observation, statistical analysis, and application methods (Saunders et al., 2018; Creswell & Creswell, 2017).

Although phenomenology is traditionally associated with qualitative research, its relevance to this research is limited due to the focus on objective measurement. However, phenomenological insights, such as stakeholder perceptions of financial governance, could be incorporated as supplementary context to enrich the interpretation of quantitative findings. Nevertheless, the primary emphasis remains on objective, measurable constructs and empirical analysis

Overall, this methodology facilitates a systematic analysis of financial irregularities in Ghana's local government system. The methodology produces dependable insights for the creation and execution of policies in public financial management. The paradigm utilised in all three works enhances comprehension of financial anomalies and their ramifications within the setting of local government in Ghana (Easterby-Smith et al., 2012; Denzin & Lincoln, 2011).

1.6 The Structure of the Thesis

This thesis consists of three papers organised into five chapters, each serving a specific purpose in the research process. Chapter One introduces the thesis by presenting the background of the study, the problem statement, the objectives of the thesis, the significance of the study, and the structure of the thesis.

In Chapter Two, an investigation is conducted into the relationship between revenue, asset and liability levels and financial irregularities in Ghana's MMDAs. Secondary data from 216 MMDAs spanning from 2012 to 2021, was utilised. The study employed the MMQR to analyse the relationship between the variables across different quantiles. The findings indicated that incremental growth in revenue, assets and liabilities has statistically significant and positive relationship with financial irregularities in the MMDAs.

In Chapter Three, a threshold analysis is performed to determine the levels at which financial irregularities begin to significantly impede the fiscal autonomy of the MMDAs. The study employs the dynamic panel threshold regression analysis and Granger causality analysis to analyse a dataset spanning 216 MMDAs for a 10-year period (2012-2021). The results reveal that while contract and procurement/store irregularities significantly hinder the fiscal autonomy of the MMDAs above a threshold of 6% of total financial irregularities, their influence remains negligible below this threshold. In contrast, cash management irregularities significantly impede the fiscal autonomy of the MMDAs, irrespective of the threshold level. Moreover, this research establishes a causal relationship between financial irregularities and fiscal autonomy. It emphasises the need for the MMDAs to strengthen their internal control mechanisms, foster transparency, and accountability, embrace technological advancements, and diversify revenue streams to enhance fiscal autonomy and service provision.

Chapter Four explores the influence of MMDCEs' gender and regulatory frameworks (accrual-based IPSAS adoption and PFM reforms) on financial irregularities in the MMDAs. Secondary data from 216 MMDAs spanning from 2012 to 2021, was utilised for the analysis. The study employed the MMQR technique for the examination. The results indicated that female chief executives exhibit a statistically significant positive relationship at lower levels of financial irregularities. However, this association becomes negative at higher levels of financial irregularities, although not statistically significant. Contrary to expectations, the adoption of regulatory frameworks appears to have limited influence on mitigating financial irregularities in the MMDAs.

Finally, Chapter Five presents a summary of the entire thesis. It outlines the policy implications derived from the findings in Chapters Two to Four. Furthermore, it addresses the inherent limitations of this thesis and suggests potential avenues for future research.

CHAPTER TWO

EXPLORING THE FACTORS THAT DRIVE FINANCIAL IRREGULARITIES IN GHANA'S METROPOLITAN, MUNICIPAL AND DISTRICT ASSEMBLIES



Exploring the Factors that Drive Financial Irregularities in Ghana's Metropolitan, Municipal and District Assemblies

Abstract

This paper examines the drivers of financial irregularities within Ghana's Metropolitan, Municipal, and District Assemblies (MMDAs). The study relied on data sourced from the Auditor-General's reports spanning the period 2012 to 2021. A total of 216 MMDAs with relevant data from the list of 260 MMDAs at the time of the study were included in the study analysis. The method of moments quantile regression technique was employed to model the hypothesised asymmetrical and heterogeneous relationships. The findings revealed that financial irregularities occurred in all the Assemblies during the study period, showing significant variability and instances of outliers in the amounts involved. Additionally, the results indicated that increases in revenue, asset and liability levels have statistically significant and positive relations with financial irregularities in Ghana's MMDAs. These effects vary across different levels of financial irregularities. The study concentrated solely on financial irregularities within the MMDAs. Exploring similar studies within different public institutions could provide valuable perspectives. Additionally, while this study primarily addressed the financial drivers of irregularities in MMDAs, similar research focusing on non-financial factors contributing to such irregularities within these entities would yield valuable insights. This study provides empirical evidence on the dominant factors that drive financial irregularities at the local level in a decentralised system of governance.

Keywords: Revenue, Assets, Liabilities, Financial Irregularities, Local Government, Metropolitan, Municipal, and District Assemblies, Method of Moments Quantile Regression.

2.1 Introduction

The shift towards decentralisation is one of the most significant political trends in the past few decades (Kuhn & Pardos-Prado, 2021). Many emerging and advanced democracies have devolved fiscal, political, and administrative powers from national to subnational governments in recent decades. Garman et al. (2001), as cited in Martínez-Vázquez et al. (2017), found that over 80% of the 75 developing countries examined had undergone some form of decentralisation of authority by the inception of the millennium. Additionally, a study conducted by Hooghe et al. (2010) on the regional governance of 42 democracies, including 27 European Union member states, from 1950 to 2006, revealed a trend towards decentralisation in 70% of these nations.

Ghana's journey towards a decentralised system of governance as enshrined in the 1992 Constitution, empowers the Metropolitan, Municipal and District Assemblies (MMDAs) to manage local resources and deliver essential public goods and services to local populations (Bawole, 2017; Awortwi, 2010; Cofie-Agama, 2003). These MMDAs finance their operations through a combination of internally generated funds (IGF) and the District Assemblies Common Fund (DACF), a fund that receives a proportion of the central government's revenue as determined by Parliament for allocation to local government entities. Thus, the effective management of the finances of the MMDAs is not only crucial for local development but also indicative of the broader national governance trends (Blowfield & Frynas, 2005).

Moreover, Ghana's dedication to democratic principles and robust media has resulted in a political climate characterised by a continuous quest for transparency, accountability, and improved public service delivery (Adjei, et al., 2020). Consequently, the financial well-being and operational efficiency of the MMDAs are vital elements within the broader governance structure (Akomah & Ramani, 2023). This is because effective and transparent financial management within MMDAs aligns with national development goals, including poverty reduction, infrastructure development, and citizens' well-being (Leal Filho et al., 2019).

Nevertheless, MMDAs nationwide grapple with persistent challenges with financial irregularities, as outlined in the Auditor-General's annual reports to Parliament.

The concept of financial irregularities covers a wide range of issues, such as corruption, fraud, non-compliance with laws and regulations, operational inefficiencies, weaknesses in internal controls, and inaccuracies in financial records. However, unlike corruption and fraud, financial irregularities do not necessarily lead to personal benefits (Allen & Koshima, 2018). Thus, while all cases of corruption and fraud fall within the scope of financial irregularities, not every financial irregularity involves corruption or fraud. In Ghana, examples of financial irregularities include payments made outside the Ghana Integrated Financial Management Information System (GIFMIS), abandoned or delayed projects, unused completed projects, delays in depositing collected cash, and unintentional errors in recording transactions. These issues are all considered financial irregularities, even though they do not necessarily involve corruption or fraud. Financial irregularities within MMDAs undermine public trust in the local governance system. They impede local development initiatives, and threaten the attainment of national goals (Zetzsche et al., 2020; Herrera, 2019; Baltaci & Yilmaz, 2006).

Financial irregularities often arise from the significant class of transactions in the MMDAs, such as revenue, assets, and liabilities. These components are prone to mismanagement, which can negatively affect the delivery of public goods and services, hinder infrastructural development, and compromise the well-being of local communities. Such irregularities often result in financial losses to the state (Auditor-General, 2019).

The rapid increase in local populations, coupled with the growth in revenue, assets, and liabilities of MMDAs, heightens concerns about the potential escalation of financial irregularities within these entities. This underscores the importance of understanding how these financial factors influence such irregularities in MMDAs. Consequently, this study seeks to address three key questions. Firstly, to what extent do variations in revenue levels influence financial irregularities within Ghana's MMDAs? Secondly, to what extent do variations in asset levels influence financial irregularities within Ghana's MMDAs? Thirdly, to what extent do variations in liability levels influence financial irregularities within Ghana's MMDAs?

The literature on financial irregularities has primarily concentrated on corruption (Owusu-Nantwi & Owusu-Nantwi, 2023; Ibrahim, 2020; Nur-tegin & Jakee, 2020) due to its explicit economic, social, political, and legal consequences, as well as international efforts to combat corruption. This focus has however resulted in the neglect of the other types of financial irregularities.

Moreover, while prior research offers valuable perspectives on decentralisation and financial irregularities (Jaswadi et al., 2022; Yang & Cai, 2022; Soepriyanto et al., 2021; Adjei et al., 2020; Hakelius & Nilsson, 2020; Li & Li, 2020; Allen & Koshima, 2018; Chin & Tan, 2012; Blundell, 1986), it has not sufficiently examined the relationship between financial irregularities and the underlying factors critical for their effective remediation. Moreover, a significant portion of the literature is theoretical with limited empirical investigation into the relationship in the local government context (Maama & Marimuthu, 2021; Yao et al., 2017; Acquah, 2017; Akeem, 2015).

Furthermore, many of the models used in the literature are mean-based estimation techniques, which assume a static relationship between financial irregularities and the variables of interest (Xia et al., 2023; Ibrahim, 2020; Krieger & Meierrieks, 2020). However, similar to many economic variables, the relationship between financial irregularities and their driving factors is expected to be dynamic. The response of financial irregularities to changes in revenue, assets, and liability levels can vary significantly over time and under different conditions. This relationship, in essence, might show unusual patterns at the extremes that should be considered in policy decisions. Consequently, this study employs the method of moments quantile regression (MMQR) technique as the estimation model to deliver a more robust and precise analysis of the dynamic relationship. The MMQR technique enables the modelling of the expected asymmetric and non-linear relationship between revenue, asset, liability levels, and financial irregularities. It is particularly well-suited for datasets with non-parametric distributions, especially those containing outliers, and provides more accurate results in such cases. Additionally, the MMQR method allows for assessing multiple quantile values, offering deeper insights into the characteristics and distributional properties, and effectively addressing challenges related to uneven distributions.

Motivated by the gaps, the objective of this study is to empirically examine the effects of varied levels of revenue, assets, and liabilities on financial irregularities in Ghana's MMDAs. This study contributes to the literature by providing empirical evidence on the factors that drive financial irregularities within local government entities, thereby providing researchers with a basis for further exploration. Secondly, this research introduces methodological advancement to the study of financial irregularities. The MMQR technique modelled the expected asymmetric and non-linear relationships between revenue, asset and liability levels, and financial irregularities. This is vital in formulating policies that encompass all aspects of the relationships. Thirdly, the findings of the research would be directly relevant to policymakers, government officials, and other stakeholders involved in local governance and financial management. By identifying the drivers of financial irregularities within MMDAs, the study informs the design and implementation of policies aimed at improving financial accountability, transparency, and governance within them. In addition, the study contributes to the theoretical understanding of financial irregularities by exploring the application of agency theory to the domains of public financial management and financial irregularities within the public sector.

The remaining sections are structured as follows: the subsequent section provides reviews of both theoretical and empirical literature. This is followed by an assessment of the data and methods employed in the study. Subsequently, the empirical results are presented, and the final section addresses conclusions and policy implications.

2.2 Literature Review

This section provides a review of the conceptual, theoretical, and empirical literature concerning the agency theory and financial irregularities in the MMDAs. These insights are essential for informing the objectives of this study.

2.2.1 Theoretical Review

The study relies on the agency theory to explain the problem of financial irregularities in Ghana's MMDAs. The agency theory describes a working relationship where a principal assigns tasks to an agent for execution, and the agent is accountable to the principal for the outcomes. The key challenges in agency relationships involve issues with information asymmetry, disparities in preferences between the principal and agent, and the principal's restricted capacity to monitor the actions of the agent (Adams, 1994). Consequently, it becomes difficult for the principal to sufficiently monitor and control the agent's activities to ensure that the principal's interests are being served by the agent.

Streim (1994) identified at least three main types of principal-agent relationships in the public sector: between the electorate as the principal and the legislature as the agent; between the legislature as the principal and the government as the agent; and between the government as the principal and bureaucracy as the agent. The agency problem arises when the interests of the agents and principals are not aligned. In some cases, agents shirk responsibilities, enjoy privileges, and even engage in illicit acts (Kurtenbach & Roberts, 1994).

In the context of MMDAs, the application of agency theory reveals relationships similar to Stream (1994): between the electorate as the principal and the legislature as the agent; between the legislature as the principal and the executives as the agents; and between the executives as the principals and the employees as the agent. The principals in each relationship entrust resources and responsibilities to the agents to manage and account for their stewardship (Hay & Cordery, 2018; Kurtenbach & Roberts, 1994; Jensen & Meckling, 1976). Moreover, the MMDAs as the bureaucracy, also become the agents of the government which is the principal in this relationship. The agency problem arises when the interests of the agents are not aligned with those of the principals. The actions and inactions of the agents involving corruption, fraud, non-compliance with laws and regulations, operational inefficiencies, weaknesses in internal controls, and inaccuracies in financial records, become financial irregularities in the public accounts.

The theory further highlights that the lack of effective monitoring and accountability systems within organisations can provide opportunities for irregularities. When agents perceive a low risk of detection and punishment, they may be more inclined to engage in improper practices. However, Allen & Koshima (2018) argue that applying proportionate sanctions for violations is more effective in ensuring compliance with laws and regulations than relying on overly harsh penalties.

2.2.2 Empirical Review

Despite the important role played by local governments in the provision of essential public services to local communities, they face significant challenges (Habitat, U.N., 2015). Several studies have indicated that key challenges to local governments are related to capacity constraints which hinder effective financial management and increase the risk of financial irregularities. Fisman & Gatti (2002) and Prud'homme (1995) contend that local governments are fraught with challenges, such as poorly trained staff and inadequate logistics, which obstruct the realisation of the benefits associated with decentralisation. Moreover, local governments generally have weak financial management systems to guarantee efficient handling of finances. Owusu-Akomeah et al. (2022) highlighted various weaknesses in public-sector financial management in developing economies, including Ghana. These weaknesses include weak budget formulation and preparation, lack of ownership by MMDAs, weak expenditure monitoring and control, lack of robust accounting and monitoring systems, and inadequate information flow between key players. Moreover, capacity constraints have been identified as major impediments in executing strategies for local economic development (LED) in Ghana's MMDAs (Agbevade, 2018). These limitations in capacity impede effective financial management and increase the risk of financial irregularities in the MMDAs.

The Effects of Revenue on Financial Irregularities

Revenue is identified as the single most important financial item that enables MMDAs to provide essential public services and promote community development (OECD, 2013). Nonetheless, the mobilisation and management of revenue have been found to result in financial irregularities such as uncollected revenue,

unaccounted revenue, inefficient revenue collection, misappropriated revenue, unrecovered rent, failure to recover judgement debt and uncredited lodgements (Auditor-General, 2021; Auditor-General, 2019).

The inability of the MMDAs to mobilise revenue for operational and developmental purposes has resulted in significant disparities between projected and realised revenue, as well as between projected and actual expenditures (Scott, 2018). Scott (2018) examined the effects of revenue mobilisation strategies on service delivery within decentralised governments, specifically focusing on MMDAs in Ghana. The investigation revealed that MMDAs in Ghana encounter significant difficulties in establishing effective revenue generation mechanisms. To address this concern, Scott (2018) emphasised the importance of recruiting and retaining staff with the requisite skills for efficient revenue mobilisation.

Moreover, the MMDAs' failure to raise sufficient IGF compels them to seek funding from external sources, a situation beset by challenges. Reliance on external sources for funding could create conditions conducive to financial irregularities in diverse ways. As elucidated by Knack (2001), overreliance on external sources for funding could erode accountability, foster rent-seeking behaviour and corruption, trigger conflicts over the management of aid funds, divert skilled individuals from bureaucratic roles, and alleviate the urgency to reform inefficient policies and institutions. Mogues & Benin (2012) investigated the effects of external grants on IGF and concluded that the frequency and amounts of external funding could discourage MMDAs from generating their own revenue. Consequently, MMDAs overreliance on the DACF may impede the growth of IGF and potentially result in financial irregularities such as unrecovered debts, overutilisation of DACF on recurrent expenditures and misapplication of DACF (Auditor-General, 2021; Mohammed, 2015).

The Effects of Assets on Financial Irregularities

Assets play a crucial role in the functioning of local governments. However, they can contribute to financial irregularities through acquisitions, use, and disposal. The acquisition of fixed assets through procurement contracts is usually fraught with financial irregularities in the form of favouritism, bribery and corruption leading to the selection of suppliers based on personal relationships rather than merit.

Secondly, the use of assets in local government also potentially increases the risk of financial irregularities through improper and unauthorised use for personal benefits. Moreover, not optimising the use of assets and allowing them to remain idle leads to underutilisation of valuable resources, potentially resulting in revenue loss and missed opportunities. Thirdly, the divestment of assets may be affected by the rent-seeking behaviours of public officials, leading to a sale outcome lower than anticipated (Blundell, 1986). Other forms of asset-related financial irregularities include unauthorised investments, staff loans and advances granted without due process, uncollected staff loans and advances, and uncollected public debts (Auditor-General, 2019).

The Effects of Liabilities on Financial Irregularities

Local governments encounter different kinds of financial irregularities from their financial obligations. These include unapproved contracts, unapproved variations in contract sums, payments for unexecuted contracts, overpayments to suppliers, taxes not deducted, and taxes not remitted (Auditor-General, 2021). The manipulation and concealment of debt reported in financial statements represent instances of financial irregularities. Entities that intentionally conceal, understate, or overstate their financial obligations, depending on their intended purpose, also engage in such irregularities. Furthermore, financial obligations committed on behalf of public institutions in breach of financial administration rules result in financial irregularities. Xia et al. (2023) observed that entities with weak control and compliance systems have a higher probability of violations and undue delays in the detection and enforcement of rules and regulations. This allows culpable managers to enhance their concealment strategies by employing legitimate facades to mask violations (Xia et al., 2023).

The role of accounting in exposing financial irregularities within organisations through enhancing transparency, accountability, and fraud detection is being challenged by evidence that accounting can also be used to aid and abet financial crimes (Otusanya et al., 2017). A common occurrence in this regard is the understatement of pension obligations by entities in the corporate bond market (Yang & Cai, 2022). Accounting practices that involve off-balance sheet liabilities such as undisclosed guarantees or

contingent obligations may obscure financial transparency and result in financial irregularities. Harris & Bromiley (2007) found executive compensation and unsatisfactory organisational performance as significant factors that influence financial misrepresentations. This underscores the necessity to align incentives with transparent financial reporting practices. Moreover, the valuation of contingent liabilities, such as pensions, has been a subject of investigation, highlighting the broader considerations surrounding financial reporting and transparency (Cohen et al., 2011). In the context of financial reporting, the voluntary disclosure of off-balance sheet arrangements and aggregate contractual obligations has been emphasised as a means of promoting transparency (Zechman, 2010).

The Effects of Population Size on Financial Irregularities

The size of a population influences governance structures and the likelihood of financial irregularities. Larger populations may be associated with more complex governance systems and potentially higher risks of financial irregularities. This is because larger populations demand sophisticated governing systems, potentially creating conditions conducive to financial irregularities. Krieger & Meierrieks (2020) employed a panel time-series method to investigate the relationship between population size and government size across 130 countries from 1970 to 2014. The findings of the study indicated a positive long-term effect of population size on government size. This increase in government size in turn resulted in increases in government employees, agencies, spending, and the risk of financial irregularities. Dimant et al. (2015) assumed a direct correlation between population sizes and corruption levels in examining the effects of migration on corruption levels of destination countries. The reason given was that increases in population size increase the number of potential individuals involved in bribery, corruption, and challenges in effective monitoring (Dimant et al., 2015).

In contrast, smaller populations may exhibit different dynamics with governance and financial irregularities. Residents in smaller communities often have closer personal relationships with public officials which increases trust and cooperation between them. The close ties then create vulnerabilities to

nepotism and favouritism. Public officials may be more likely to give jobs and contracts to their favourites and not the most qualified. Additionally, residents may be less likely to speak up about the misconduct of public officials to avoid damaging their relationships.

To enhance the efficient management of revenue, assets, and liabilities and mitigate financial irregularities in local government entities, some studies have proposed measures such as the deployment of e-governance initiatives, stakeholder involvement in local governments' activities and project-based infrastructure development. Desouza et al. (2020) propose the adoption of artificial intelligence, such as predictive analytics systems, to detect fraud within the public sector. Additionally, Asamoah (2019) explored the challenges and opportunities for the adoption of e-government initiatives by MMDAs in Ghana. The research revealed that effective use of websites and social media platforms could enhance transparency and accountability in public financial management, thereby reducing the occurrence of financial irregularities. Furthermore, Krah & Mertens (2020) examined the relationship between democracy and financial transparency in local governments in Sub-Saharan Africa. The findings suggest a positive relationship between democracy and financial transparency, which indicates that strengthening democratic processes can contribute to reducing financial irregularities.

While most of the reviewed studies explored factors and challenges related to public financial management in MMDAs, they failed to consider the effects of varied levels of revenue, assets and liabilities on financial irregularities. Moreover, none of the studies considered the asymmetric and heterogeneous nature of the relationship. Consequently, the models used could not have accurately captured the asymmetric and non-linear nature of the relationship. This study addresses these gaps by examining the effects of varied levels of revenue, assets, and liabilities on financial irregularities in 216 MMDAs in Ghana, spanning from 2012 to 2021.

Conceptual Framework

This conceptual framework provides a structured model to analyse the underlying factors contributing to financial irregularities within Ghana's MMDAs. It integrates theoretical insights and key constructs to explore the effects of successive revenue, asset and liability increases on these irregularities. The framework is anchored on the agency theory which highlights the principal-agent relationship, emphasising how misaligned incentives and inadequate monitoring mechanisms can foster financial irregularities. The dependent variable is financial irregularities while the explanatory variables are revenue, assets and liabilities. The local populations are used as a control variable in the study. Following the literature review, this study hypothesises that:

- i. H1: Successive increases in revenue will result in increases in financial irregularities in MMDAs.
- ii. H2: Successive increases in assets will result in increases in financial irregularities in MMDAs.
- iii. H3: Successive increases in liabilities will result in increases in financial irregularities in MMDAS.

2.3 Methods and Data

This section covers the data and sources, the variable definition and measurement, model specification and development as well as the estimation strategy.

2.3.1 Data and Sources

The study uses secondary data on 216 MMDAs in Ghana to investigate the effects of revenue, asset, and liability levels on financial irregularities. Only MMDAs that were operating from 2012 to 2021 were selected for the study. The period for the study spans from 2012 to 2021. The data on revenue, assets, liabilities, and financial irregularities was sourced from the Auditor-General's reports on the Accounts of District Assemblies, and the Management and Utilisation of the District Assemblies Common Fund and Other Statutory Funds. These reports were personally obtained by the author from the Auditor-General's

office. They are also publicly available on the website of the Ghana Audit Service at <https://audit.gov.gh>. The data on the populations of MMDAs were directly obtained by the author from the Ghana Statistical Service. The population figures used in the study were derived from the 2010 Population and Housing Census and adjusted annually using the population growth rates provided by the Ghana Statistical Service.

2.3.2 Variables Definition

In this study, financial irregularities serve as the dependent variable, while revenue, assets, and liabilities are the independent variables. The populations of MMDAs are employed as control variables in accordance with the existing literature (McGuire et al., 2012; Fisman & Gatti, 2002; Fisman & Gatti, 2002b).

Table 2.1: Variable Measurement

Variable	Measurements	Source	Sign
Financial Irregularities	The total amount in Ghana cedi of financial irregularities relating to tax, cash management, payroll, stores/procurement and contracts.	Auditor-General's reports on IGF & DACF	Not Applicable
Revenue	Total revenue in Ghana cedi of the Assembly for the year.	Auditor-General's reports on IGF & DACF	+(-)
Assets	Total assets in Ghana cedis of the Assembly at the end of the year.	Auditor-General's reports on IGF & DACF	+(-)
Liabilities	Total liabilities in Ghana cedis of the Assembly at the end of the year.	Auditor-General's reports on IGF & DACF	+(-)
Population	The total number of people in the Assembly.	Ghana Statistical Service	+(-)

2.3.3 Model Specification and Development

The basic model developed for this study is captured in equation (1) with Financial Irregularities as the dependent variables and Revenue, Liabilities and Assets as the independent variables.

$$\text{Financial Irregularities}_{it} = f(\text{Revenues}_{it}, \text{Liabilities}_{it}, \text{Assets}_{it}, \text{Population}_{it},) \quad (1)$$

2.3.4 Estimation Strategy

This section discusses the diagnostic checks used in assessing the key features of the data, and the MMQR technique, which is the main model used in the study.

2.3.5 Diagnostic Checks

Prior to establishing the relationship between the variables examined in this paper, series of preliminary tests were conducted to assess the fundamental characteristics of the variables. These involved initially analysing the descriptive statistics (refer to Tables 2.2 and 2.3) and assessing the correlation of the data. In addition, the Variance Inflation Factor (VIF) was calculated to evaluate the presence of multicollinearity (refer to Table 2.4). Subsequently, the study employed a quantile plot to assess the data's normality to determine the most appropriate estimation technique for the analysis.

2.3.6 Method of Moments Quantile Regression

To investigate the relationship between revenue, asset and liability levels and financial irregularities, this study employs the MMQR technique, as presented by Machado & Silva (2019). The MMQR model addresses various limitations identified in traditional regression models (Ma, 2022; Sun & Razzaq, 2022; Wolde-Rufael & Mulat-Weldemeskel, 2022). First, the method provides more accurate results when the distribution of the dataset is non-parametric with outliers. Secondly, it has the capability to determine the distributional and distinctive characteristics of multiple quantile values, which addresses the issue of uneven distribution. Thirdly, MMQR allows for individual fixed effects across the conditional distribution, which allows the predictors to adapt to both location and scale functions. Additionally, MMQR not only accommodates location-based asymmetry, where parameters may depend on the position

of the predicted variable, but also provides reliable estimates in various conditions, even where the model is non-linear, and it is capable of handling both heterogeneity and endogeneity biases. In line with Machado & Silva (2019), the conditional quantile of the random variable in the panel data for the location and scale $Q_y(\tau|X)$ is specified in equation (2) as follows:

$$y_{it} = \alpha_i + X'_{it}\beta + (\partial_i + Z'_{it}\theta)v_{it} + \varepsilon_{it} \quad (2)$$

where y_{it} is the dependent variable, x'_{it} is an i.i.d endogenous variable, $(\alpha, \beta, \partial, \theta)$ are parameters to be assessed. The probability, $P\{\partial_i + X'_{it}\theta > 0\} = 1$. v_{it} is an i.i.d unobserved random variable distributed across individuals and is orthogonal to X'_{it} satisfying the moment conditions (Ma, 2022; Sun & Razzaq, 2022). $i = 1, \dots, n$ denotes the individual i fixed effects and Z' is a k -vector of known components of X (Adebola et al., 2022; Mdaghri & Oubdi, 2022; Ma, 2022; Sun & Razzaq, 2022; Wolde-Rufael & Mulat-Weldemeskel, 2022b; Xie & Jamaani, 2022; Xin & Xie, 2022; Adeleye et al., 2021; Anser et al., 2021; Firpo et al., 2022).

Again, x'_{it} is orthogonal to cross-sections (i) and time (t) in the expression as captured in Machado & Silva (2019). Thus, the reserves and external variables are stabilised. Hence, Equations (1) (2), and (3) might be rewritten as follows:

$$Q_{y(\delta|x_{it})} = (\alpha_i + \partial_i r(\delta)) + X'_{it}\beta + Z_{it}\theta r(\delta) \quad (3)$$

Where $Q_{y_{it}(\delta|x_{it})}$ is the quantile distribution of the dependent variable y_{it} . $\alpha_i(\delta) \equiv \alpha_i + \partial_i r(\delta)$ is the scalar coefficient (Ike et al., 2020) and δ th is the sample quantile (Sun & Razzaq, 2022; Mdaghri & Oubdi, 2022). Z denotes a k -vector of known components of X_{it} , which is normalized to satisfy the Machado & Silva (2019) moment conditions $E(U) = 0$ and $E(|U|) = 1$ (Xie & Jamaani, 2022).

2.4 Results and Discussions

The results from the econometrics and statistical tests performed are presented and analysed in this section. These include the outcome of the descriptive statistics, correlation matrix, and normality and variance inflation factor (VIF) tests. The MMQR results are presented along with the hierarchical regression results for robustness.

2.4.1 Descriptive Statistics

Table 2.5 shows descriptive statistics of the dataset. It shows that the total number of observations on each variable is 2,160. The mean irregularity is GH¢366,200 which indicates the average amount of irregularities per MMDA annually. The standard deviation (SD) is GH¢1,672,694 suggesting that there is some variability in the amounts of irregularities. The minimum and maximum amounts of irregularities are zero and GH¢67,400,000 respectively. The mean revenue is GH¢5,793,028 which indicates the average amount of revenue per MMDA per year. The SD is GH¢6,527,718 suggesting a relatively lower variability in revenue in the observations. The minimum and the maximum amounts of revenue were zero and GH¢94,300,000 respectively. The mean asset is GH¢ 1,400,071 which indicates the average amount of assets per MMDA at the end of each financial year. The SD is GH¢ 3,788,880 suggesting a relatively high variability in assets in the observations. The minimum and the maximum amounts of assets were zero and GH¢61,200,000 respectively. The mean liability is GH¢114,708 which indicates the average amount of liabilities per MMDA at the end of each financial year. The SD is GH¢487,480 suggesting a relatively low variability in liabilities in the observations. The minimum and the maximum amounts of assets were zero and GH¢7,837,081 respectively.

Skewness measures the symmetry of the distribution. The positive skewness values indicate that the distributions of irregularities, revenue, assets, liabilities, and population are skewed to the right which means they have longer right tails. Kurtosis measures the degree of peakiness or flatness of the distribution. Higher kurtosis values indicate that the distributions of irregularities, revenue, assets, liabilities, and population are more peaked and have heavier tails compared to a normal distribution.

Table 2.2: Descriptive Statistics

Statistics	Irregularities	Revenue	Assets	Liabilities	Population
Mean	366200	5793028	1400071	114708	148638
Sd	1672694	6527718	3788880	487480	90006
Skewness	31	6	9	9	2
Kurtosis	1213	65	110	102	6
N	2160	2160	2160	2160	2160
Min	0	0	0	0	29722
Max	67400000	94300000	61200000	7837081	588823

2.4.2 Pairwise Correlation

An initial pairwise correlation analysis performed indicated that revenue and expenditure are highly correlated. Subsequently, data on the expenditure was dropped from the model on the basis that revenue drives all the activities in the MMDAs. The results of the correlation analysis in Table 2.3 indicate that none of the correlation coefficients exceed the standard value of 0.8, which suggests the absence of multicollinearity.

Table 2.3: Pairwise Correlation Analysis

Variable	Irregularities	Revenue	Assets	Liabilities	Population
Irregularities	1				
Revenue	0.3145	1			
Assets	0.1102	0.4396	1		
Liabilities	0.1139	0.1909	0.2334	1	
Population	0.1549	0.5194	0.2361	0.1034	1

Additionally, a Variance Inflation Factor (VIF) analysis was conducted to verify the absence of multicollinearity in the dataset. The results in Table 2.4 indicate the non-existence of multicollinearity as all observed values are below 2. This finding is consistent with similar analyses in the literature

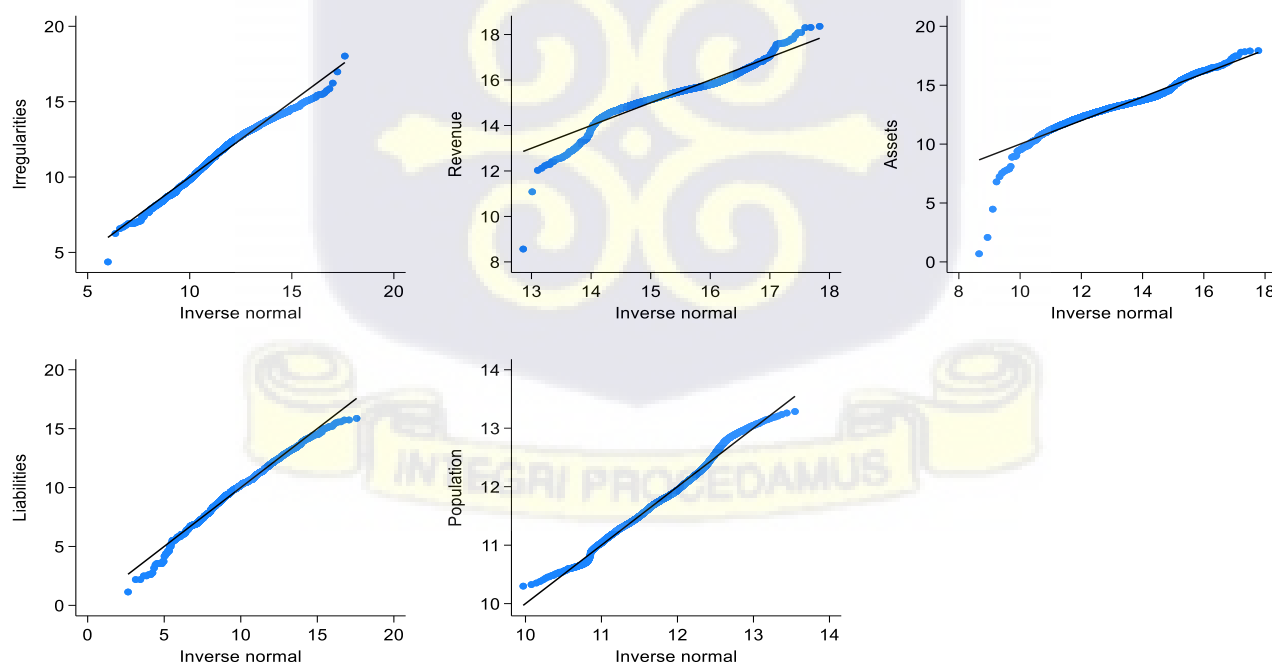
(Serikbayeva & Abdulla, 2022; Krah & Mertens, 2020; Ohene-Asare & Asmild 2012), supporting the conclusion that multicollinearity is not a concern in this data.

Table 2.4: Variance Inflation Factor Analysis

Variable	VIF	1/VIF
Revenue	1.62	0.619047
Population	1.37	0.730113
Assets	1.28	0.783505
Liabilities	1.07	0.935847
Mean VIF	1.33	

Figure 2.1 visualises the quantile distribution of the data in this study. It shows the spread of data across diverse quantiles, and it indicates that the variables have a non-parametric distribution, confirming the non-normality of the data. This highlights the significance of adopting asymmetric estimation procedures to obtain reliable empirical results, and it also partly accounts for the selection of the MMQR approach.

Figure 2.1: Graphical View of the Quantile Distribution of the Data on all the Variables



Baseline Results from Method of Moments Quantile Regression

Table 2.6 illustrates the effects of revenue, asset and liability levels on financial irregularities within MMDAs in Ghana from 2012 to 2021. The results indicate that financial irregularities are significantly positively affected by revenue levels across the second to ninth quantiles. Secondly, while asset levels show a significant positive effect on financial irregularities only in the eighth and ninth quantiles, liability levels exhibit significant positive effects on financial irregularities across all quantiles. Moreover, the population levels exhibit a significant positive relationship across the fourth to ninth quantiles.

Table 2.5: MMQR Results Nexus for MMDAs in Ghana for the Period 2012-2021

Variables	1 Location	2 scale	3 qtile_1	4 qtile_2	5 qtile_3	6 qtile_4	7 qtile_5	8 qtile_6	9 qtile_7	10 qtile_8	11 qtile_9
Revenue	0.257** (0.102)	0.00278 (0.0612)	0.252 (0.169)	0.254* (0.142)	0.255** (0.122)	0.256** (0.108)	0.257*** (0.0994)	0.258*** (0.0960)	0.259*** (0.0961)	0.260*** (0.100)	0.261** (0.110)
Assets	0.0437 (0.0524)	0.0404 (0.0313)	-0.0241 (0.0865)	-0.00143 (0.0727)	0.0176 (0.0626)	0.0345 (0.0554)	0.0499 (0.0509)	0.0622 (0.0491)	0.0746 (0.0492)	0.0874* (0.0512)	0.104* (0.0564)
Liabilities	0.0747*** (0.0277)	-0.00198 (0.0166)	0.0780* (0.0457)	0.0769** (0.0384)	0.0759** (0.0331)	0.0751** (0.0292)	0.0744*** (0.0269)	0.0738*** (0.0260)	0.0731*** (0.0260)	0.0725*** (0.0271)	0.0717** (0.0298)
Population	0.251* (0.138)	0.0266 (0.0828)	0.206 (0.229)	0.221 (0.192)	0.234 (0.165)	0.245* (0.146)	0.255* (0.134)	0.263** (0.130)	0.271** (0.130)	0.280** (0.135)	0.291* (0.149)
Constant	3.485** (1.580)	0.577 (0.945)	2.516 (2.611)	2.840 (2.193)	3.111* (1.888)	3.354** (1.669)	3.574** (1.534)	3.748** (1.482)	3.926*** (1.484)	4.110*** (1.546)	4.348** (1.703)
Observations	886	886	886	886	886	886	886	886	886	886	886

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Figure 2.2 illustrates a gradually increasing trend in the effects of revenue on financial irregularities, moving towards elevated levels of irregularities. Similarly, assets and population depict a significantly increasing effects on elevated levels of financial irregularities. On the contrary, liabilities show a decreasing effect on elevated levels of financial irregularities. The location parameters, which measure

the average effects of the variables on the dependent variable, show that, except for asset levels, all the independent variables can averagely increase financial irregularities in the MMDAs in Ghana. The scale parameters, which are also measures of dispersion, suggest that apart from liabilities, all the other independent variables have the potential to increase the dispersions in the financial irregularities committed in the MMDAs.

Figure 2.2: Graphical Results of the Nexus Between Revenue, Liabilities, Assets, Population and Financial Irregularities

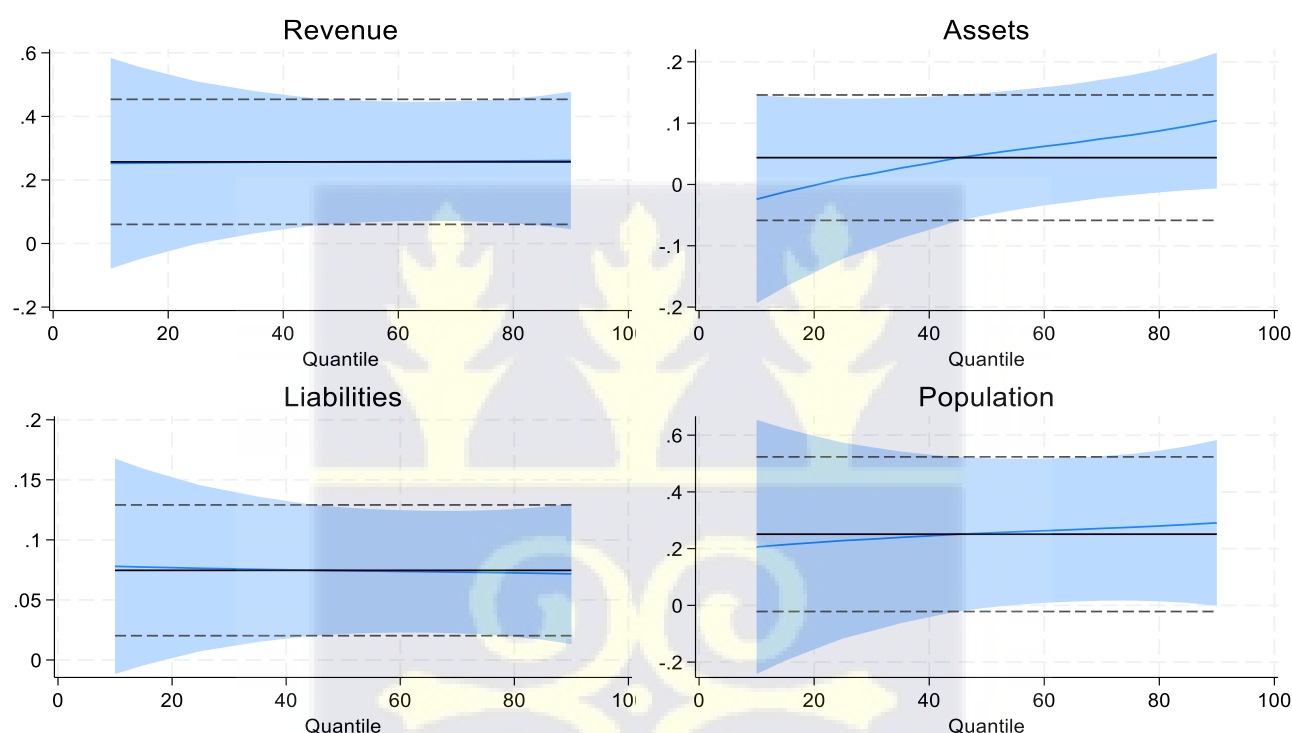


Table 2.7 below presents the results of the hierarchical regression analysis which is a mean-based measurement, to test the robustness of the results obtained in the MMQR. The results show that on average the coefficient and the signs of all the variables are similar to the averages of the MMQR regression results, a confirmation that, the results are robust.

Table 2.6: Hierarchical Regression Results for Robustness

Variables	Irregularities
Population	0.251* (0.139)
Revenue	0.257** (0.100)
Assets	0.0437 (0.0521)
Liabilities	0.0747*** (0.0277)
Constant	3.485** (1.548)
Observations	886
R-Squared	0.044

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The results in Table 2.6 indicate that as revenue levels increase, financial irregularities within MMDAs tend to worsen. These irregularities mainly involved uncollected revenue and unaccounted revenue such as unrecovered rent, uncollected property rates, failure to recover judgment debt, inefficient revenue collection, unaccounted value books, misappropriated revenue, misapplication of royalties, unaccounted auction sales, and uncredited lodgements (Auditor-General, 2021; Auditor-General, 2019). Possible explanations for this correlation include the potential lack of capacity within MMDAs to effectively handle larger sums of money as revenue increases. Secondly, the oversight and accountability mechanisms in MMDAs may not be effective in monitoring larger amounts of revenue which creates opportunities for financial irregularities. Thirdly, surpassing revenue targets might lead to the initiation of unplanned activities and expenditures, potentially creating situations conducive to financial irregularities. Finally, excessive emphasis on revenue generation may divert attention from the maintenance of robust financial management systems which creates an environment where financial irregularities are more prone to occur.

The findings validate Agyemang-Duah et al.'s (2018) assessment of Ghana's decentralisation programme, indicating that when local governments strive to generate more revenue, the risk of financial irregularities increases. In another study, Yusiawati & Marhaeni (2020) explored how investment, per capita gross regional domestic product, and local revenue directly affect regional financial autonomy in Indonesia. The research revealed that increases in local revenue result in more funds under the control of the regional government which in turn may create opportunities for financial irregularities to occur.

Regarding the effects of liability levels on financial irregularities in MMDAs, the results presented in Table 2.6 indicate that higher levels of liabilities have a significant positive association with financial irregularities within MMDAs. These irregularities predominantly involved tax and contract-related issues such as unapproved contracts, unapproved variations in contract sums, failure to deduct withholding taxes, non-remittance of taxes, use of fictitious VAT invoices, payment of VAT without invoices, unsupported payments, failure to recover overpayments, unwarranted payment of contingency, non-competitive procurement practices, payment for supplies not delivered and payments for services not rendered (Auditor-General, 2021; Auditor-General, 2019). The others were employee-related issues such as non-payment of staff social security contributions and neglecting to invest tier-two social security contributions for casual staff (Auditor-General, 2021).

The results echo the findings of Shariman et al.'s (2017) research in Malaysia, which identified common financial irregularities in the public sector. These irregularities included non-compliance with public procurement laws, conflicts of interest, a lack of transparency in contract awards, and inadequate supervision of government projects. In Ghana, public procurement, encompassing government spending on works, goods, and services, constitutes a substantial portion of government expenditure and frequently involves violations of public procurement laws (Asare & Prempeh, 2016; Ameyaw et al., 2012). The occurrence of such violations often gives rise to opportunities for fraud, corruption, misconduct, and abuse of power. The financial irregularities relating to employees, specifically the understatement of pension

liabilities, are consistent with the findings of Yang & Cai (2021), indicating that entities understate pension obligations to prevent accurate assessments of their financial positions. This behaviour poses a significant threat to the financial health of MMDAs, given that commitments to public pensions represent a substantial liability vulnerable to manipulation (Novy-Marx & Rauh, 2011).

Concerning the effects of asset levels on financial irregularities within the MMDAs, the results presented in Table 2.6 indicate that increases in asset levels have a significant positive influence on financial irregularities within MMDAs only in the eighth and ninth quantiles. These irregularities mainly involved misuse of public assets and employee-related issues, including delayed and abandoned projects, completed projects not put to use, unaccounted assets, failure of former officers to return Assembly's properties, unretired imprest, unrecovered staff advances, and unrecovered public debts regarding (Auditor-General, 2021; Auditor-General, 2019).

Altogether, the study supports the assertion that local governments are fraught with challenges including poorly trained staff and inadequate logistical support, which hinder the realisation of the advantages of decentralisation (Fisman & Gatti, 2002; Prud'homme, 1995). Secondly, the results validate a study conducted by Shariman et al. (2017) on the Auditor General's reports spanning from 2011 to 2013 in Malaysia. The study revealed common infractions in the reports including non-compliance with procedures (272 issues - 41%), procurement (214 issues - 33%), asset management (88 issues - 13%), and revenue management (71 issues - 11%).

Applying the agency theory to MMDAs, the government and electorate (represented by Parliament) are the principals who entrust resources and responsibilities to MMDAs as agents to manage and account for their performance. The agency problem arises when the interests of the MMDAs are not aligned with the interests of the government and electorate. The MMDAs' control over resources and information and the government and electorate's imperfect observability of the MMDAs' actions, allow the MMDAs to engage in activities that result in financial irregularities within them as posited by agency theory. The

theory recommends the establishment of effective monitoring and accountability mechanisms to address this problem.

2.5 Conclusions and Policy Implications

This section analyses the effects of revenue, asset, and liability levels on financial irregularities in Ghana's MMDAs. The data used in the study span from 2012 to 2021. A non-parametric panel quantile regression was employed to achieve the objectives of the study. Prior to this, a preliminary diagnostic check was undertaken on the data to evaluate the characteristics of the data to facilitate the appropriate model selection. Moreover, a quantile distribution plot was used to determine the non-normality of the data. The primary estimation model utilised in the study was the MMQR, a non-parametric panel quantile regression method introduced by Machado & Silva (2019). The study finds that increases in revenue, asset and liability levels tend to increase financial irregularities. This relationship is particularly pronounced with liabilities and revenue. This suggests that while increases in revenue, asset and liability levels can enhance the MMDAs' capacity for service delivery, they can also create opportunities for financial irregularities when effective financial management practices and accountability mechanisms are not in place.

These findings have implications for policymakers, local government authorities, and stakeholders involved in the functioning of MMDAs in Ghana. Tackling the issue of financial irregularities necessitates education and training that underscore both the preventive and enforcement dimensions of the issue. Firstly, it demands educational and cultural transformations that would ensure having the right people in public office to address the problem (Tabish & Jha, 2012). According to Tabish & Jha (2012, p.33), "the inculcation of values, attitudes and behaviour based on the principles of integrity and justice is arguably the most important element in the fight against corruption". It is therefore imperative for the government to explore the introduction of ethical education in schools as a means to instil ethical values in students before they transition to the workforce. Additionally, there should be background checks of potential

employees of MMDAs by the Police Service before employment as pertains to the financial institutions in Ghana.

Secondly, there is a need to raise awareness and sensitise citizens about the detrimental effects of financial irregularities on public service delivery and overall development. Stapenhurst & Langseth (1997) find the creation of public awareness, public participation, accountability of the courts, media and private sector participation, and international cooperation applied concurrently to be more effective in fighting malfeasance in the public sector.

Thirdly, it is essential to strengthen financial oversight mechanisms within MMDAs to promptly detect and address financial irregularities as they arise. This additionally demands the political will to allow laws such as the Public Procurement Act and Public Financial Management Act, as well as institutions like the Public Procurement Authority, Economic and Organised Crime Office, Ghana Audit Service, and the Office of the Special Prosecutor, established to ensure public sector financial accountability to operate impartially. Ethical codes of conduct for public officials must be strictly applied with proportionate sanctions for breaches as suggested by Allen & Koshima (2018) to serve as deterrents. Where necessary, amendments should be made to enhance enforcement with stricter and proportionate sanctions for breaches.

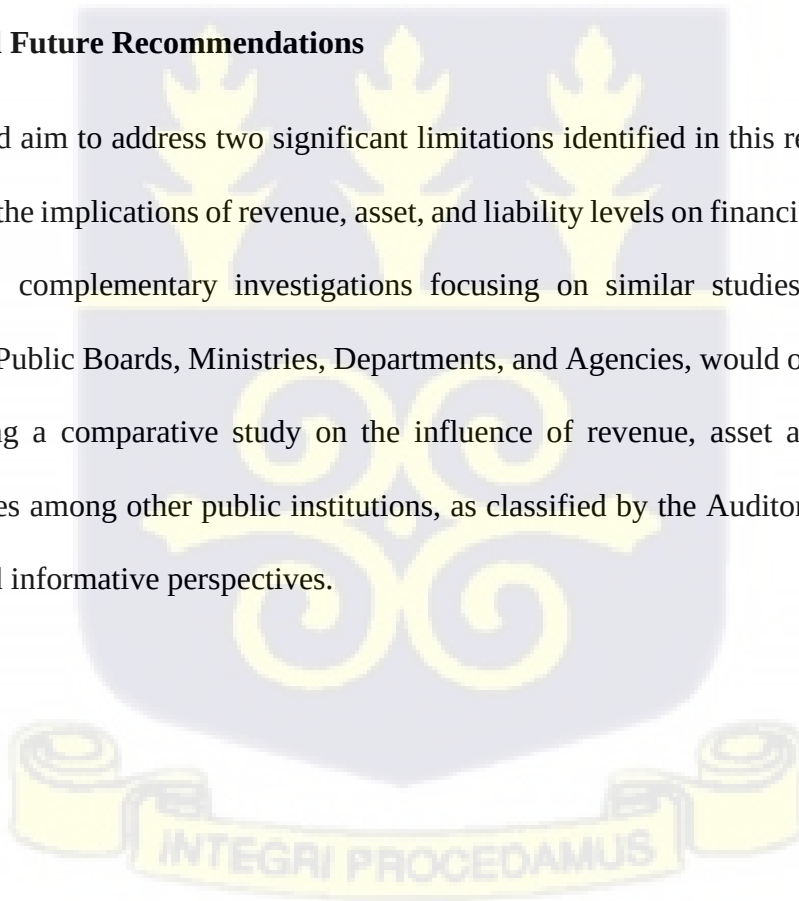
Fourthly, policymakers should consider implementing and enforcing robust anti-corruption measures and ethical standards within MMDAs. For instance, whistleblowing is an anti-corruption mechanism that has been used for many years to uncover malfeasances in the public sector (Rothschild & Miethe, 1999; Bovens, 1996). Rothschild and Miethe (1999) suggest that the use of whistleblowing by employees is more effective in uncovering and controlling misconduct and corruption in both public and private organisations. The government must put in place measures that would allow the Whistleblower Act and the Right to Information Act to become fully operational.

Finally, mechanisms should be put in place to promote accountability and transparency within MMDAs. The adoption of e-government, which allows public services to be rendered via information technology with little or no human intervention should be expanded to all MMDAs to control financial irregularities. Desouza et al. (2020) advocate for the use of artificial intelligence such as predictive analytics systems to detect fraud in the public sector.

In conclusion, there is a pressing need to establish and reinforce effective financial management practices and accountability mechanisms as revenue, asset and liability levels grow in the MMDAs. This is vital in ensuring that increases in revenue, asset and liability levels result in improved service delivery and not financial irregularities within Ghana's MMDAs.

2.6 Limitations and Future Recommendations

Future studies should aim to address two significant limitations identified in this research. Firstly, while this study examined the implications of revenue, asset, and liability levels on financial irregularities within MMDAs in Ghana, complementary investigations focusing on similar studies within other public institutions, such as Public Boards, Ministries, Departments, and Agencies, would offer valuable insights. Secondly, conducting a comparative study on the influence of revenue, asset and liability levels on financial irregularities among other public institutions, as classified by the Auditor-General, could yield highly insightful and informative perspectives.



CHAPTER THREE

THRESHOLD EFFECTS OF FINANCIAL IRREGULARITIES ON THE FISCAL AUTONOMY OF GHANA'S METROPOLITAN, MUNICIPAL AND DISTRICT ASSEMBLIES



Threshold Effects of Financial Irregularities on The Fiscal Autonomy of Ghana's Metropolitan, Municipal and District Assemblies

Abstract

This study explores the critical thresholds at which financial irregularities significantly impede the fiscal autonomy of Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana. The study relied on data sourced from the Auditor-General's reports from 2012 to 2021. Out of the 260 MMDAs available at the time of the study, 216 were deemed to have relevant data and were consequently included in the analysis. The dynamic panel threshold regression analysis and Granger causality analysis were employed in the investigation. The empirical analysis reveals a highly significant association between financial irregularities and the MMDAs' fiscal autonomy. The results demonstrate that contract and procurement/store irregularities significantly hinder the MMDAs' fiscal autonomy above 6% of total financial irregularities. Below this threshold, their influence is not statistically significant. In contrast, cash management irregularities adversely affect the MMDAs' fiscal autonomy above and below 6% of total financial irregularities. By implication, policymakers must prioritise strengthening control mechanisms to eradicate cash management irregularities in all areas to bolster the MMDAs' fiscal autonomy. Collectively, the findings indicate a clear and compelling conclusion that the financial irregularities thresholds have important implications for the MMDAs' fiscal autonomy. The study is limited by the focus on only MMDAs in Ghana. This may limit the generalisability of its findings in other contexts.

Keywords: Financial irregularities, local government fiscal autonomy, local government entities.

3.1 Introduction

Ghana's adoption of a decentralised system of governance as an alternative development strategy marked a significant shift in the country's governance structure. The initiative involved the devolution of power, resources, and responsibilities from the central to local government entities. It aims to address governance inefficiencies, promote local development, and enhance community involvement in policy-making. By vesting greater autonomy in local authorities, the reforms sought to promote grassroots development, improve public service delivery, and foster a sense of ownership and accountability among citizens.

Over the years, Ghana has progressively advanced its decentralisation programme through a range of strategic initiatives aimed at strengthening local governance structures and enhancing institutional capacities. These efforts encompass legislative reforms, revenue generation strategies, capacity-building programmes, and the development of comprehensive public financial management systems. Notably, Ghana's 1992 Constitution and the Local Government Act, 2016 (Act 936), empower local government entities to manage local resources, deliver essential public goods and services, foster community development, and implement government initiatives at the grassroots level (Bawole, 2017; Awortwi, 2010; Cofie-Agama, 2003).

The government adopted policy recommendations from the Fiscal Decentralisation Project to further strengthen the local government system. This project was set up to examine the public finance system, design transparent, efficient, and accountable mechanisms, and provide recommendations and strategies for a decentralised financial management system in Ghana (Cofie-Agama, 2003). A primary objective of the project was to design and implement a public financial management system that enhances the capacity of local government entities to autonomously generate and allocate resources, thereby improving their fiscal autonomy (Cofie-Agama, 2003).

Drawing on contemporary literature by Asare et al. (2020), Psycharis et al. (2016), and Arthur & Dawda (2015), local government fiscal autonomy is defined as the proportion of internally generated funds (IGF) to total revenue. It measures the degree to which local government entities independently manage their

finances, including revenue generation, budget control, expenditure management and strategic decision-making. While the precise threshold for local government fiscal autonomy varies based on the context and governance structures, it typically ranges from low (constituting less than 40% of total revenue from internal sources), through moderate (40-60%), to high (over 60%) (Blöchliger & King, 2007). A widely accepted benchmark is that a local government entity is deemed fiscally autonomous when it generates at least 50% of its total revenue from internal sources (Ivanyna & Shah, 2014). This proportion indicates a significant level of self-sufficiency and a reduced dependency on external funding.

Despite the progress made, local government entities in Ghana remain heavily reliant on central government funding. A review of the Auditor-General's reports from 2012 to 2021 indicates that, on average, only 20% of local government entities' total revenue is generated internally. This low revenue generation is primarily due to persistent challenges confronting these entities, particularly financial irregularities.

Financial irregularities encompass corruption, fraud, infractions of financial laws and regulations, inefficiencies and misstatement of financial information. Examples of financial irregularities include uncollected revenue, misappropriated funds, uncredited deposits, unsupported payments, unapproved contracts, unapproved variations in contract sums, payments for unexecuted contracts, overpayments to suppliers, taxes not deducted, taxes not remitted, unrecovered overpayments, and payments for no work done (Auditor-General, 2021; Auditor-General, 2019). Financial irregularities often result in substantial financial losses. They deplete the entities' IGF, and increase their reliance on the central government for support (Asare et al., 2020; Asamoah, 2017). Additionally, these irregularities can undermine public trust, decrease citizens' compliance with local tax and fee obligations, and ultimately reduce local government fiscal autonomy (Russell & Brock, 2016; Wielhouwer, 2015; Sentanu, 2015).

Notwithstanding the significant challenges posed by financial irregularities to local government fiscal autonomy, their complete eradication remains unattainable (Acemoglu & Verdier, 2000; Acemoglu &

Verdier, 1998). Moreover, given their enduring nature and the impracticality of achieving absolute eradication, it is imperative to conduct a cost-benefit analysis in adopting proactive measures to contain or reduce them at a reasonable cost (Acemoglu & Verdier, 2000; Acemoglu & Verdier, 1998). Furthermore, the different types of financial irregularities necessitate distinct strategies for their mitigation.

Prior studies have primarily concentrated on investigating the effects of corruption, a form of financial irregularity, on local government fiscal autonomy (Ewetan et al., 2021; Shon & Cho, 2020; Alfada, 2019). For instance, Ewetan et al. (2021) explored the connection between fiscal federalism and accountability in Nigeria, concluding that fiscal federalism does not effectively reduce long-term corruption due to inadequate bureaucratic quality and weak enforcement of law and order. Similarly, Shon & Cho (2020) and Alfada (2019) examined the relationship between fiscal decentralisation and corruption in U.S.A. and Indonesia respectively. Both studies concluded that decentralisation can increase corruption and undermine accountability. Other research has indicated that corruption can either "sand the wheels" by impeding economic activity or "grease the wheels" by facilitating it (Djouadi et al., 2024; Acemoglu & Verdier, 2000). However, these studies failed to establish the thresholds at which corruption impedes local government fiscal autonomy. Furthermore, there is also a notable gap in research examining non-linear asymmetric relationships within dynamic panels as highlighted by Seo & Shin (2016).

This study empirically analyses the threshold effects of financial irregularities, which encompass corruption and fraud, on the fiscal autonomy of local government entities. Furthermore, it utilises dynamic panel threshold regression analysis to elucidate the asymmetric and heterogeneous relationship between financial irregularities and local government fiscal autonomy.

This study seeks to answer four research questions. Firstly, what is the threshold effect of cash management irregularities on MMDAs' fiscal autonomy in Ghana? Secondly, what is the threshold effect of procurement/store irregularities on MMDAs' fiscal autonomy in Ghana? Thirdly, what is the threshold effect of contract irregularities on MMDAs' fiscal autonomy in Ghana? Finally, what is the threshold effect of the total financial irregularities on MMDAs' fiscal autonomy in Ghana?

This study addresses these research questions using a sample of 216 MMDAs in Ghana and employs a dynamic panel threshold regression analysis technique and Granger causality analysis. It utilises dynamic panel threshold regression and Granger causality analysis to examine the effects of contract, procurement/storage, and cash management irregularities on local government fiscal autonomy. These irregularities, which represent over 90% of the total financial discrepancies within these entities, are analysed separately due to their unique effects on local government fiscal autonomy. Identifying the thresholds at which these irregularities significantly impede local government fiscal autonomy is crucial for developing early warning systems and crafting targeted mitigation strategies and policy interventions for effective remediation.

The findings of this study indicate that contract irregularities and procurement/store irregularities impede local government fiscal autonomy once they exceed a threshold of 6% of total financial irregularities. Below this threshold, their effect remains statistically insignificant. In contrast, cash management irregularities exert an adverse effect on local government fiscal autonomy below and above the threshold of 6% of total financial irregularities. Moreover, robustness estimates underscore the validity of these findings, confirming that total financial irregularities detrimentally influence local government fiscal autonomy in Ghana.

This paper makes contributions to literature, policy, and practice in several ways. First, it provides empirical evidence to validate the assertion that different kinds of financial irregularities exert varying adverse effects on local government fiscal autonomy at different levels (Shon & Cho, 2020; Alfada, 2019). This enriches the literature on public finance and governance. Second, it advocates for the establishment of early warning systems designed to identify and signal the emergence of potential risks or threats before they escalate into crises. The goal is to provide timely and actionable information for decision-making. Third, it proposes the adoption of targeted mitigating strategies to tackle various kinds of financial irregularities. This approach optimises the efficiency and efficacy of mitigation efforts, encompassing a

blend of proactive measures, interventions, and controls aimed at reducing the likelihood or severity of financial irregularities. Policymakers are urged to allocate resources and efforts judiciously, prioritising areas where risks are most pronounced or vulnerabilities are most acute. Fourth, it demonstrates the effectiveness of the dynamic threshold panel data model in examining the asymmetric and heterogeneous relationship between financial irregularities and local government fiscal autonomy. Fifth, it offers policy recommendations, including strengthening oversight mechanisms and promoting transparency in local government entities. It emphasises the importance of capacity-building for local government officials and underscores the critical role of sound financial practices for sustainable development and good governance. Finally, it reinforces criticisms of fiscal federalism theory by demonstrating that challenges such as management override of controls, poorly trained personnel, and limited resources hinder local government entities from fully achieving the advantages of decentralisation (Fisman & Gatti, 2002; Prud'homme, 1995).

The subsequent sections of the study are organised as follows: the second section provides a literature review, the third outlines the research methodology, the fourth interprets the results, and the fifth discusses policy recommendations and limitations.

3.2 Literature Review

This section provides a review of the conceptual, theoretical, and empirical literature concerning decentralisation and financial irregularities. These insights are essential for informing the objectives of this study.

3.2.1 The Theory of Fiscal Federalism

The theory of fiscal federalism examines the optimal allocation of fiscal responsibilities and resources between central and subnational governments (Oates, 2005). It aims to achieve a balance between efficiency, equity, and accountability (Otoo & Danquah, 2021). In the Ghanaian context, fiscal federalism

principles guide the allocation of finances and responsibilities between the central government and MMDAs (Yeboah & Andrew, 2020; Appiah-Agyekum, 2013). The theory posits that MMDAs, being closer to the needs of their constituents, are well-positioned to deliver certain public services efficiently and effectively (Zegras et al., 2013; Boadway, 1994).

While fiscal federalism provides a framework for organising government finances across levels, it also has notable challenges and limitations. These issues primarily arise from the complexities of implementing the theory in diverse political, economic, and social contexts. Subnational governments often lack the administrative capacity and technical expertise necessary to manage resources effectively and implement policies efficiently (Fisman & Gatti, 2002; Prud'homme, 1995). Furthermore, insufficient revenue-generating capabilities frequently lead to a reliance on central government funding, which can undermine fiscal autonomy and foster a dependency culture (Fisman & Gatti, 2002; Prud'homme, 1995).

This over-reliance on central government funding may discourage subnational governments from developing their own revenue bases, weakening incentives to address local priorities or pursue innovative policy solutions (Oates, 2005). Moreover, dependence on central funding often erodes transparency and accountability at the grassroots level, thereby undermining the principles of fiscal federalism (Akeju & Ojogbede, 2022; Otoo & Danquah, 2021). This can create a vicious cycle where diminished public trust reduces citizens' participation, further weakening fiscal autonomy.

Additionally, subnational governments may prioritise local interests over national goals. This misalignment often manifests in the misuse of funds received from the central government for designated purposes (Auditor-General, 2019b).

While fiscal federalism offers many benefits, its drawbacks underscore the importance of careful design and implementation. Addressing these challenges requires clear assignment of functions, equitable resource distribution, robust institutional frameworks, and mechanisms for coordination and accountability.

Empirical Review

Local Government Fiscal Autonomy

In recent decades, local government fiscal autonomy has gained considerable attention from researchers, largely due to the global trend toward decentralisation (Kuhn & Pardos-Prado, 2021; Martínez-Vázquez et al., 2017; Hooghe et al., 2010). Researchers have examined various dimensions of this concept, offering insights across diverse contexts (Vidyattama, 2021; Shon & Cho, 2020; Turała, 2020; Alfada, 2019; Psycharis et al., 2016).

A key issue highlighted in the literature is the relationship between fiscal decentralisation, corruption, and accountability. Ewetan et al. (2021) explored the relationship between fiscal federalism and accountability in Nigeria, concluding that fiscal federalism does not effectively mitigate long-term corruption due to deficiencies in bureaucratic quality and weak enforcement of legal frameworks. Similarly, Shon & Cho (2020) investigated the relationship between fiscal decentralisation and corruption in U.S. state and local governments, finding that decentralisation may exacerbate corruption and undermine accountability. Additionally, Alfada (2019) examined the impact of fiscal decentralisation on corruption across 19 Indonesian provinces from 2004 to 2014. The study found a rise in corruption at the local level, which was attributed to factors such as limited human capital, low levels of transparency and accountability, and an increasing reliance on central government grants.

Other studies have focused on fiscal autonomy challenges from broader perspectives. Vidyattama (2021) examined the fiscal autonomy of subnational governments in Indonesia following the decentralisation reforms of 2001. The study found that while subnational governments assumed increased expenditure responsibilities, they lacked the fiscal autonomy necessary to fund their initiatives, leading to efforts to expand control over revenue through the introduction of new taxes and fees. In Poland, Turała (2020) critically assessed the financial autonomy of local and regional governments, noting the gradual erosion

of local governance structures due to legislative changes and the potential long-term impacts of the COVID-19 pandemic. Similarly, Psycharis et al. (2016) employed panel data regression to empirically assess the determinants and levels of local government fiscal autonomy in Greece between 1999 and 2009. The study identified key factors, including geographic conditions, demographic characteristics (such as education and unemployment rates), and political influences, as critical determinants of variations in fiscal autonomy across local governments.

Collectively, these studies emphasise the complexities of decentralisation, demonstrating how weak governance structures and institutional inefficiencies can amplify corruption and undermine accountability at the local level.

Ghana's decentralisation programme encompasses increasing local revenue mobilisation, reorganising resource allocation to address local requirements, and granting local government entities the authority to allocate both IGF and funds from the central government (Hackman et al., 2021a; Asare et al., 2020). The literature suggests that local government fiscal autonomy positively affects the efficiency of these entities (Owusu-Akomeah et al., 2022; Turała, 2020; Martínez-Vázquez et al., 2017; Psycharis et al., 2016). However, the vertical imbalance, characterised by a significant proportion of central government grants in the total revenue of local government entities, does not enhance the delivery of local goods and services by these entities in Ghana (Owusu-Akomeah et al., 2022). This underscores the importance for policymakers to prioritise supporting local government entities in enhancing their IGF to achieve greater fiscal independence.

3.2.2 Financial Irregularities Within MMDAs in Ghana

Financial irregularities are violations of the financial laws and regulations that govern the management and utilisation of public funds by MMDAs (Asare et al., 2020; Quashie, 2019). These include misappropriation of funds, unauthorised payments, failure to account for revenue, failure to recover

advances, and failure to comply with tax obligations (Quashie, 2019). In the Ghanaian context, financial irregularities are classified into seven types, namely, contract, procurement/store, cash management, tax, loans/advances, payroll, and rent irregularities, similar to Graycar's (2015) TAPS (types, activities, places and sectors) classification. This study focuses on contract, procurement/store, and cash management irregularities, which are the most significant irregularities observed in MMDAs in the Auditor-General's reports.

3.2.3 Contract Irregularities and Fiscal Autonomy

Contract irregularities occur when contracts are awarded without adhering to established laws and regulations, alongside inadequate project management. Examples of contract irregularities include unapproved contracts, unapproved variations in contract sums, awards of contracts without proper documents for pre-qualification and selection, overpayment of contract sums, overpricing of contracts, non-performance of contractual obligations, payment for services not rendered, abandoned projects, and completed projects not put to use (Ghana Audit Service, 2020). Contract irregularities accounted for 56.95% of the total financial irregularities of GH¢409.72 million (US\$91.88 million) reported on the Management and Utilisation of the District Assemblies Common Fund (DACF) within Ghana's MMDAs from 2015 to 2019 (Auditor-General, 2019). A study conducted by Asare et al. (2020) on DACF from 2015 to 2018 found an increasing trend in contract irregularities. The study also reveals widespread financial irregularities across MMDAs in Ghana, with contract irregularities being the most prevalent.

Research indicates that contract irregularities can have a significant impact on the financial health of the MMDAs. These irregularities may result in a significant reduction in available funds for MMDAs and impede their capacity to generate and retain their funds and funds from the central government (Asare et al., 2020; Quashie, 2019). Moreover, contract irregularities can curtail MMDAs' budgetary adaptability and effectiveness, impacting their capability to allocate and utilise funds in accordance with the needs and preferences of their constituents. Furthermore, contract irregularities can erode public trust in MMDAs.

This erosion of trust could result in individuals engaging in exploitative tax avoidance practices, ultimately decreasing Internally Generated Funds (IGF) and impacting fiscal autonomy (Russell & Brock, 2016).

According to Quashie (2019), contract irregularities in Ghana's MMDAs are the result of challenges in implementing Ghana's Public Procurement Act 2003 (Act 663). These challenges include inadequate human and financial resources, a lack of training and capacity building, political interference, and weak monitoring and enforcement mechanisms. A study conducted by Asare et al. (2020) on financial irregularities in Ghana's MMDAs revealed an increasing trend in contract irregularities, constituting approximately 60% of the overall financial irregularities in MMDAs. Asare et al. (2020) suggest that contract irregularities can significantly influence the fiscal autonomy of MMDAs by reducing the proportion of IGF to their total revenue. According to the literature, contract irregularities are anticipated to affect fiscal autonomy adversely.

3.2.4 Cash Management Irregularities and Fiscal Autonomy

Cash management irregularities consist of infractions related to the collection and management of funds by MMDAs. These include uncollected revenue, unaccounted revenue, unapproved disbursements, unauthorised use of internally generated funds, unsupported payments, unauthorised funds transfers, funds not credited to banks, payment of public funds into personal bank accounts, belated/non-lodgement of public funds, and misapplication of public funds (Auditor-General, 2019). Cash management irregularities accounted for 35.60% of the total financial irregularities reported on DACF from 2015 to 2019.

Deficiencies in cash management, encompassing activities such as embezzlement and misappropriations, constitute a significant threat to the financial stability of MMDAs, potentially impairing their ability to autonomously finance and oversee local projects (Alhassan & Acquah, 2020). Moreover, insufficient financial oversight and mismanagement of cash contribute to irregularities that could culminate in considerable revenue losses through the diversion of funds earmarked for public initiatives, consequently undermining the financial autonomy of MMDAs in Ghana (Puopiel & Chimsi, 2016).

Cash management irregularities in local government have the effect of undermining public trust in the government's ability to effectively manage public finances (Solé-Ollé & Sorribas-Navarro, 2014). The erosion of trust could decrease compliance with tax obligations and citizen support for revenue-generating initiatives. This in turn could undermine efforts towards the fiscal autonomy of local governments. In essence, the literature strongly suggests that cash management irregularities adversely affect the fiscal autonomy of MMDAs in Ghana.

3.2.5 Procurement and Store Irregularities and Fiscal Autonomy

Procurement/store irregularities involve failures to adhere to the public procurement law and regulations for the purchase of goods and services and failure to accurately document, account or manage items received into stores (Asare et al., 2020). Examples of procurement/store irregularities include procurement without approval, procurement without competitive bidding, procurement without agreements, unaccounted stores, and undocumented stocks (Adamu et al., 2021; Asare et al., 2020; Ghana Audit Service, 2020). Procurement/store irregularities constituted 7.07% of the total financial irregularities reported on DACF from 2015 to 2019 (Auditor-General, 2019).

Adamu et al. (2021) underscored the crucial role of financial management in local government autonomy, highlighting transparency and efficiency as fundamental components for achieving effective fiscal autonomy. They further contended that any irregularities in procurement processes could undermine the financial integrity of MMDAs. Similarly, Owusu et al. (2020) and Hackman et al. (2021b) provided insights into the procurement challenges confronting MMDAs in Ghana, with a particular emphasis on a concerning pattern of irregularities observed within local government procurement practices. Their findings suggest that these irregularities may contribute to financial mismanagement and instances of corruption. Consequently, such deviations have the potential to compromise the fiscal autonomy of MMDAs.

In addition, Boatemaa-Yeboah & Tamakloe (2019) highlighted the link between effective store management in local government and their overall financial health. They contended that effective store management is essential to prevent waste, minimize costs, and ensure optimal utilisation of resources. Irregularities involving store management, such as unaccounted stores and fuel could negatively impact the fiscal autonomy of MMDAs and diminish their capacity to deliver public goods effectively. Together, these studies provide a foundation for the hypothesis that procurement/store irregularities can have a detrimental effect on the fiscal autonomy of MMDAs in Ghana.

Collectively, the literature underscores the widespread occurrence of financial irregularities within Ghana's MMDAs, thereby underscoring the necessity to examine their effects on the fiscal autonomy of these entities.

3.2.6 Fiscal Autonomy of MMDAs in Ghana

The issue of fiscal autonomy within MMDAs in Ghana is of considerable interest to researchers and policymakers alike (Gilbert et al., 2013; Inanga & Osei-Wusu, 2004). The aims of Ghana's decentralisation programme encompass increasing local revenue mobilisation, reorganising resource allocation to address local requirements, and granting MMDAs the authority to allocate both locally generated funds and those disbursed from the central government (Hackman et al., 2021a; Asare et al., 2020). The literature suggests that fiscal autonomy, measured as the proportion of internally generated funds to total revenue MMDAs, positively affects the efficiency of these entities (Owusu-Akomeah et al., 2022; Turała, 2020; Psycharis et al., 2016). However, the vertical imbalance, characterised by a high share of central government grants in MMDAs' total revenue, does not improve the delivery of local goods and services by MMDAs in Ghana (Owusu-Akomeah et al., 2022; Turała, 2020; Psycharis et al., 2016). This underscores the need for policymakers to give priority to assisting MMDAs in boosting their internally generated revenue to achieve fiscal autonomy.

3.2.7 Conceptual Framework

The conceptual framework provides a concise overview of the research for this study. The conceptual framework illustrated in Figure 3.1 systematically represents the hypothesised relationships between financial irregularities and fiscal autonomy within Ghana's MMDAs. The framework is grounded in the fiscal federalism theory, which emphasises the efficient allocation of fiscal responsibilities and resources between central and subnational governments. It highlights that subnational governments, being closer to their constituents, are better suited to deliver specific public services effectively and efficiently (Zegras et al., 2013; Boadway, 1994). Drawing on fiscal federalism theory (Oates, 2005), the framework maps the channels through which different categories of financial irregularities potentially undermine local government fiscal autonomy.

At the core of the framework is fiscal autonomy as the dependent variable, operationalised as the ratio of IGF to total revenue, aligning with contemporary literature (Asare et al., 2020; Psycharis et al., 2016; Arthur & Dawda, 2015). The framework posits that financial irregularities, which encompass contract, procurement/store, and cash management irregularities, have negative associations with fiscal autonomy. The framework's structure reflects empirical evidence suggesting that these irregularities can significantly impede MMDAs' ability to achieve the benefits of fiscal decentralisation (Fisman & Gatti, 2002; Prud'homme, 1995). Recent research by Owusu-Akomeah et al. (2022) and Turała (2020) demonstrates that fiscal autonomy positively affects the efficiency of these entities, yet vertical imbalances and financial irregularities continue to pose significant challenges.

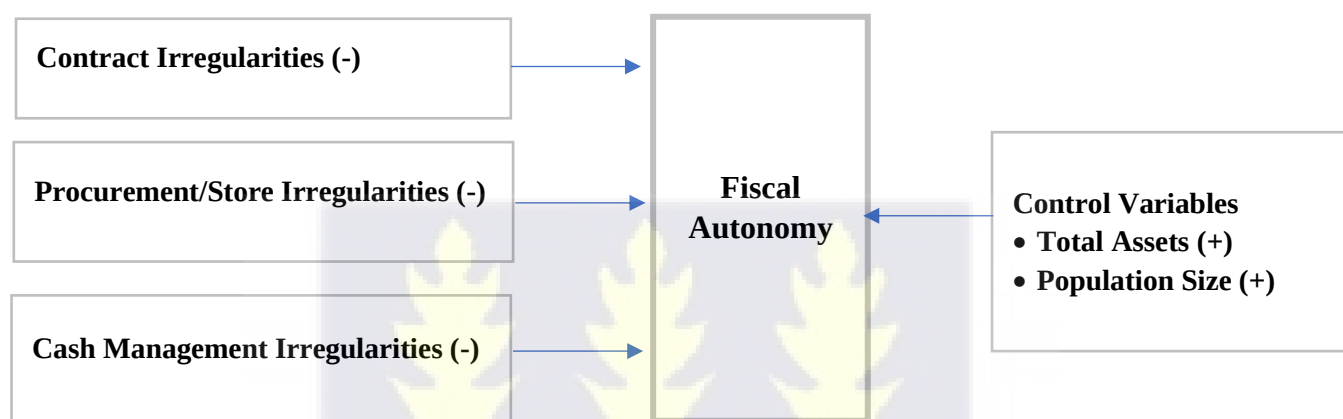
Martínez-Vázquez et al. (2017) provide evidence supporting the inclusion of control variables - total assets and population size - both hypothesised to have positive relationships with fiscal autonomy. These institutional characteristics are integral to understanding the complex dynamics of fiscal autonomy in decentralised systems. This conceptual framework advances fiscal federalism theory by explicitly modelling the mechanisms through which financial irregularities may undermine decentralisation

benefits. The framework's structure enables empirical investigation of these relationships while controlling for key institutional factors, offering insights into how various financial irregularities impede the realisation of the benefits of fiscal federalism in practice (Asare et al., 2020).

Following the literature review, the study summarises the key hypothesis in Figure 1 below.

Figure 3.1 Conceptual Framework

Following the literature review, the hypotheses of the study are summarised in Figure 1 below.



3.3 Methods and Data

This research investigates how financial irregularities affect the fiscal autonomy of MMDAs in Ghana. The study utilises panel data from 216 MMDAs, spanning a 10-year period from 2012 to 2021. Only MMDAs who were operational from 2012 to 2021 were selected for the study. The data on financial irregularities were obtained from the Auditor-General's reports on the Accounts of District Assemblies and the Management and Utilisation of the District Assemblies Common Fund and Other Statutory Funds. These reports were directly collected by the author from the Auditor-General's office but are also accessible on the Ghana Audit Service website (<https://audit.gov.gh>). Information on fiscal autonomy was extracted from the IGF and DACF figures included in the Auditor-General's reports. Data on the populations of MMDAs were sourced directly from the Ghana Statistical Service. The population figures for the study were based on the 2010 Population and Housing Census and adjusted annually using population growth rates provided by the Ghana Statistical Service.

3.3.1 Variables Measurement and Model Specification

The study uses six variables to estimate the effect of financial irregularities on fiscal autonomy. The dependent variable of interest is fiscal autonomy (FA), proxied by the IGF of MMDAs as a proportion of their total revenue for a period (Otoo & Danquah 2021; Adamtey & Amoako, 2021; Shirazu, 2013). The data on MMDAs' IGF and total revenues were obtained from the Auditor-General's report for the period under consideration. The independent variables in this study include Cash Management Irregularities (CMI), Procurement/Store Irregularities (PSI), and Contract Irregularities (CI).

Moreover, the study uses population size (POP), and Total Assets (TA) as control variables. The fiscal autonomy of MMDAs hinges on their capacity to raise IGF. This is influenced by the size of the population and other characteristics such as education, employment rates, the proportion of economically active individuals, and poverty levels within the MMDAs (Psycharis et al., 2016). Typically, larger populations foster heightened economic activity, thereby expanding the tax base available to MMDAs. This expanded tax base, fuelled by contributions from various sources including property rates, business operating licenses, and market tolls provide MMDAs with greater financial resources, potentially bolstering their fiscal autonomy. In addition, MMDA's total assets can be indicative of the overall financial health and capacity of an MMDA (Otoo & Danquah, 2021). Revenue sources, including interest earned on investments, income from equipment rental, and royalties, alongside proceeds from the sale of assets, are derived from both fixed and current assets of MMDAs (Psycharis et al., 2016). Thus, larger total assets may suggest a greater financial base and resources, potentially influencing the MMDA's ability to absorb or recover from the negative consequences of financial irregularities and maintain fiscal autonomy (Otoo & Danquah, 2021). By including these control variables, the study can mitigate the potential confounding effects and better isolate the specific influence of contract irregularities on fiscal autonomy. This will enhance the study's internal validity and strengthen the ability to draw meaningful conclusions about the relationship between contract irregularities and fiscal autonomy in the context of MMDAs in Ghana.

Table 3.1: Variable Measurement

Variable	Measurements	Source	Sign
Total Financial Irregularities (TFI)	The total amount in Ghana cedi of financial irregularities relating to tax, cash management, payroll, procurement/store and contracts.	Auditor-General's reports on IGF & DACF	Not Applicable
Cash Management Irregularities (CMI)	Aggregate amounts associated with various types of cash irregularities within MMDAs	Auditor-General's reports on IGF & DACF	+(-)
Procurement and Store Irregularities (PSI)	Aggregate amounts associated with various types of procurement/store irregularities within MMDAs	Auditor-General's reports on IGF & DACF	+(-)
Contract Irregularities (CI)	Aggregate amounts associated with various types of contract irregularities within MMDAs	Auditor-General's reports on IGF & DACF	+(-)
Total Assets (TA)	Total assets in Ghana cedis of the Assembly at the end of the year.	Auditor-General's reports on IGF & DACF	+(-)
Population (POP)	The total number of people in the Assembly.	Ghana Statistical Service	+(-)

Model Specification

$$FA_{it} = \alpha + \beta_1 CI_{it} + \beta_2 TA_{it} + \beta_3 POP_{it} + \mu_i + \epsilon_{it} \quad (1)$$

$$FA_{it} = \alpha + \beta_1 PSI_{it} + \beta_2 TA_{it} + \beta_3 POP_{it} + \mu_i + \epsilon_{it} \quad (2)$$

$$FA_{it} = \alpha + \beta_1 CMI_{it} + \beta_2 TA_{it} + \beta_3 POP_{it} + \mu_i + \epsilon_{it} \quad (3)$$

$$FA_{it} = \alpha + \beta_1 TFI_{it} + \beta_4 TA_{it} + \beta_5 POP_{it} + \mu_i + \epsilon_{it} \quad (4)$$

From equations 1 to 4, FA_{it} , CI_{it} , PSI_{it} , CMI_{it} and TFI_{it} respectively represent fiscal autonomy, contract irregularities, procurement/store irregularities, cash management irregularities, and total financial irregularities of MMDA i at time t . Also, TA_{it} and POP_{it} represent the total assets, and population size of MMDA i at time t . μ_i represents the unobserved MMDA-specific effect, while ϵ_{it} is the error term for MMDA i at time t . The Greek letters (α , β_1 , β_2 , β_3 , β_4) represent the parameters to be estimated.

Specifically, α is the intercept, and the β 's are the coefficients for the respective variables. These coefficients will indicate the effect of a one-unit change in the independent variable on the dependent variable (FA), holding all other variables constant.

3.3.2 Model Estimation Strategy

The study estimates the parameters of the regression equation using dynamic panel threshold regression.

A basic representation of a dynamic panel threshold regression model can be written as

$$y_{it} = \alpha_i + \gamma y_{i,t-1} + \sum_{j=1}^m \beta_j^i x_{it} I(q_{it} \leq \tau_j) + \epsilon_{it} \quad (5),$$

Where y_{it} is the dependent variable for MMDA i at time t , α_i is the unobserved MMDA-specific effect, $y_{i,t-1}$ is the lagged dependent variable, capturing the dynamic nature of the model, x_{it} is a vector of independent variables for MMDA i at time t , $I(q_{it} \leq \tau_j)$ is an indicator function that takes the value 1 if the threshold variable q_{it} is less than or equal to the threshold parameter τ_j , and 0 otherwise. ϵ_{it} is the error term for MMDA i at time t , while the Greek letters (α , γ , β_j) represent the parameters to be estimated.

In addition to the dynamic panel threshold model, the study also conducts four further analyses to assess the robustness of the baseline model, including (1) Two-stage system GMM (2) Two-stage least squares - 2SLS (3) Limited Information Maximum Likelihood instrumental variable analysis - LIML (4) Granger Causality Analysis. It is worth noting that the first three robustness tests are instrumental variable estimation techniques, and they use the same endogenous and instrumental variables as in the case of the baseline model. On the other hand, Granger Causality Analysis is a statistical hypothesis test for determining whether a one-time series is useful in forecasting another. Unlike the first three tests, which are instrumental variable estimation techniques, Granger Causality Analysis does not rely on instrumental variables. Instead, it examines the patterns of values in the time series to infer causal relationships. This provides a different perspective on the data and can offer additional insights into the dynamics of the variables in the model.

3.3.3 Preliminary Diagnostics Tests

Before conducting a dynamic panel threshold analysis, it is necessary to meet certain data requirements. This study undertakes a pre-analysis diagnostic to evaluate the stationarity, co-integration, slope homogeneity, and serial correlation of the model, each of which plays a vital role in ensuring the validity of the analysis.

Table 3.2: Stationarity Test

Philip Peron (PP) Unit Root Test

Stationarity at I (0)								Stationarity at I (1)						
	FA	CMI	CI	EXP	PSI	TA	POP	FA	CFI	CI	EXP	PSI	TA	POP
t-Stat.	0.000	0.038	0.159	0.360	0.002	0.000	0.001	0.000	0.007	0.027	0.030	0.001	0.000	0.004
Prob.	0.035	0.165	NA	0.420	0.200	0.000	0.022	0.002	0.012	NA	0.029	0.024	0.000	0.001
	**	n0	***	n0	n0	***	**	***	**	***	**	**	***	***
Augmented Dickey-Fuller (ADF) Unit Root Test														
t-Stat.	0.005	0.075	0.126	0.360	0.035	0.638	0.001	0.003	0.058	0.042	0.046	0.015	0.000	0.001
Prob.	0.060	0.159	NA	0.420	0.240	0.000	0.050	0.025	0.011	NA	0.024	0.028	0.000	0.023
	*	n0	***	n0	n0	***	*	**	**	***	**	**	***	**

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant
*MacKinnon (1996) one-sided p-values.

The data is examined for stationarity using the Philip Peron (PP) and Augmented Dickey-Fuller (ADF) Unit Root Test. From Table 3.2, both ADF and PP tests indicate that all variables were stationary at first differencing I (1), ensuring the reliability of the model. Similarly, the Kao Residual Co-integration Test in Table 3.3 reveals an ADF with a t-statistic of 3.520475 and a P-Value of 0.0002, allowing the study to reject the null hypothesis of no co-integration at a 5% significance level. This suggests that the variables are co-integrated, indicating a long-term equilibrium relationship between them. Moreover, slope homogeneity was assessed using Blomquist and Westerlund's (2013) generalised test. The test is

conducted against the null hypothesis that slope coefficients are homogeneous. From Table 3.3, p-values of 0.464 and 0.334 suggest that the null hypothesis is sustained, indicating that the relationships between the variables are consistent across the panel.

Table 3.3 General Diagnostics Tests

Test 1: Kao Residual Cointegration Test			t-Statistic	Prob.
ADF			3.5205	0.0002
H0: No cointegration				
Test 2: Slope heterogeneity (Blomquist, Westerlund. 2013)			Delta	P-Value
			0.732	0.464
adj.			0.966	0.334
H0: slope coefficients are homogenous				
Test 3: Arellano-Bond Serial Correlation Test for dynamic panel models				
Test order	m-Statistic	rho	SE (rho)	Prob.
AR (1)	-0.3208	-85.2055	265.5808	0.7483
AR (2)	-0.2754	-7.21249	26.1859	0.7830
H0: No Serial correlation				

Finally, the study assesses the model for serial correlation using Arellano-Bond's Serial Correlation Test for dynamic panel models. For the first-order autocorrelation test [AR (1)], the m-statistic is -0.3208, rho is -85.2055, the standard error of rho [SE (rho)] is 265.5808, and the probability (Prob.) is 0.7483. For the second-order autocorrelation test [AR (2)], the m-statistic is -0.2754, rho is -7.21249, the standard error of rho [SE (rho)] is 26.1859, and the probability (Prob.) is 0.7830. The probabilities for both tests are greater than the conventional significance level (0.05), which means we fail to reject the null hypothesis of no serial correlation at both the first and second order.

In addition to the general diagnostic tests, key diagnostic tests required for instrumental variable analysis were conducted, including (1) Test of Model Endogeneity and (2) Test for Weak Instrument Identification.

Table 3.4: Instrumental Variable Diagnostics

Test 4: Weak Instrument						F-Stats	
	Relative Bias	10%	15%	20%	25%	F(1,206430)	Prob > F
2SLS	size of nominal 5% Wald test	16.38	8.96	6.66	5.53	24.4329	0.00
LIML	size of nominal 5% Wald test	16.38	8.96	6.66	5.53	24.4329	0.00
GMM	size of nominal 5% Wald test	16.38	8.96	6.66	5.53	24.4329	0.00
Ho: instruments are weak							

Test 5: Test of Endogeneity			
	2 Stage Least Squares	GMM	LIML
Durbin (score) chi2(1)	8845.46 (p = 0.0000)	NA	NA
Wu-Hausman F(1,206429)	9241.22 (p = 0.0000)	NA	NA
GMM C statistic chi2(1) =	NA	3954.77 (p = 0.00)	NA
Ho: instruments are exogenous			

From Table 3.4, the test for endogeneity checks if an explanatory variable in a model is correlated with the error term, implying that the variable is endogenous. The null hypothesis (H0) is that the variable is not endogenous. For the GMM estimator, the GMM C statistic chi-square (1) of 3954.77 with a corresponding p-value of 0.00 rejects the null hypothesis of no endogeneity, hence justifying the need for GMM instrumental variable analysis. Regarding the 2-stage least squares estimator, the Durbin score chi-square statistic is 8845.46 with a p-value of 0.0000. This is also confirmed by the Wu-Hausman test, which had an F-statistic of 9241.22 with a p-value of 0.0000. Therefore, we reject the null hypothesis of no endogeneity and conduct 2SLS instrumental variable analysis. Notably, the LIML estimator does not require a test for endogeneity. The reason is that it does not require the specification of the full covariance matrix of the error terms. Instead, it uses a restricted version of the covariance matrix that satisfies the over-identifying restrictions.

Additionally, the test of weak instrument checks whether the instrument has a low correlation with the endogenous explanatory variable. Table 3.4 shows the results of a weak instrument test. The null hypothesis was that the instrument used would be weak. The F-statistic is used to test this hypothesis. The

test results reveal that the F-statistic is 24.4329, and the p-value (Prob > F) is 0.00. Since the p-value is less than 0.05, we reject the null hypothesis. This means that the instruments used in the model are not weak. Additionally, the table provides the critical values of the F-statistic for different sizes of the nominal 5% Wald test under 2SLS, LIML, and GMM estimation methods. These values (16.38, 8.96, 6.66, 5.53) represent the thresholds for the relative bias (10%, 15%, 20%, 25%) of the estimator. If the F-statistic is below these thresholds, the estimator is biased by at least the corresponding percentage. However, in this case, the F-statistic (24.4329) is above all these thresholds, indicating that the estimators are not significantly biased. Therefore, the instruments used in your model are valid.

3.4 Results and Discussions

From Table 3.5, the first variable, CMI, with its 2144 observations, exhibited a significant dispersion around the mean of 178342.05, as evidenced by a standard deviation of 1593058.6. This suggests a high degree of variability in the CMI values, which ranged from 0 to 67382627. The second variable, CI, had slightly fewer observations (2132), but a similar pattern of wide dispersion was observed, with a standard deviation of 449415.2 around the mean of 159818.34. The CI values spanned from 0 to 6815682.7. The other variables in Table 3.5 are interpreted in a similar manner.

Table 3.5: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CMI	2144	178342.05	1593058.6	0	67382627
CI	2132	159818.34	449415.2	0	6815682.7
PSI	2159	27460.244	122935.67	0	3689219.4
TFI	2160	366199.68	1672694.5	0	67382627
FA	2054	.154	.183	0	2.244
EXP	2159	3942379.1	5908693.8	0	96760139
TA	2159	1401256.4	3789507.7	0	61241294
POP	2160	148637.94	90005.744	29722	588823

Additionally, the pairwise correlation of the eight variables is presented in Table 3.6. For instance, the correlation between FA and TFI was found to be 0.033, suggesting a very weak positive linear

relationship. However, a strong positive linear relationship was observed between TFI and CMI, with a correlation coefficient of 0.770. The variables CMI and PSI showed a moderate positive linear relationship with a correlation coefficient of 0.332. The other pairwise correlations have similar interpretations.

Table 3.6 Pairwise Correlations

Variables	lnFA	lnFI	lnCMI	lnPSI	lnCI	lnEXP	lnTA	lnPOP
lnFA	1.000							
lnFI	0.033	1.000						
lnCMI	0.000	0.770	1.000					
lnPSI	-0.029	0.401	0.332	1.000				
lnCI	0.069	0.538	0.266	0.074	1.000			
lnEXP	-0.182	0.050	0.074	0.097	-0.034	1.000		
lnTA	0.069	0.093	0.042	-0.076	0.076	0.223	1.000	
lnPOP	-0.007	0.077	0.046	-0.012	0.075	-0.017	0.131	1.000

3.4.1 Empirical Results Presentation

From Table 3.7, Model I examines the threshold effect of CI on fiscal autonomy. The results indicate that the threshold value of TFI is 6.08976, meaning that when TFI is below this value, fiscal autonomy is higher than when TFI is above this value. The coefficient of CI is -0.000933, which is not statistically significant, implying that contract irregularities do not have a significant effect on fiscal autonomy when TFI is below the threshold. However, the coefficient of CI is -0.00936, which is statistically significant and negative, indicating that CI have a negative and significant effect on fiscal autonomy when TFI is above the threshold. This suggests that contract irregularities reduce the ability of MMDAs to generate their own revenue and increase their dependence on central government funding. The coefficients of the control variables, TFA-1, assets, and population are also significant and have the expected signs.

Table 3.7: Dynamic Panel Threshold Regression

Variables	(Model I: CI) Fiscal Autonomy	(Model II: PSI) Fiscal Autonomy	(Model III: CMI) Fiscal Autonomy
<i>Threshold (TFI)</i>	6.1%*** (0.032)	5.9%*** (0.046)	6.1%*** (0.023)
<i>TFA-1</i>	-0.483*** (0.187)	-0.657*** (0.180)	-0.654*** (0.210)
<i>Below threshold</i>	-0.000933 (0.00124)	-0.00357 (0.00264)	-0.00341*** (0.00117)
<i>Above threshold</i>	-0.00936*** (0.00250)	-0.0116*** (0.00301)	-0.00977*** (0.00246)
<i>Assets</i>	0.00236* (0.00142)	0.00397** (0.00169)	0.00500*** (0.00156)
<i>Population</i>	0.277*** (0.0524)	0.166** (0.0671)	0.290*** (0.0577)
<i>Constant</i>	-1.396*** (0.266)	-0.818** (0.338)	-1.438*** (0.290)
<i>Observations</i>	1,674	1,681	1,673
<i>Number of id</i>	216	216	216

1. Note 1: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

2. Note 2: Model 1 is the case where we examine the threshold effect of Contract Irregularities (CI) on fiscal autonomy, Model II examines the threshold effect of procurement/store irregularities (PSI) on fiscal autonomy, while Model III examines the threshold effect of cash management irregularities (CMI) on fiscal autonomy.

3. For each model, total financial irregularities is the threshold variable (TFI)

Model II examines the threshold effect of PSI on fiscal autonomy. The results show that the threshold value of TFI is 5.858628, which is slightly lower than the threshold value in Model I. The coefficient of PSI is -0.00357, which is not statistically significant, implying that procurement/store irregularities do not have a significant effect on fiscal autonomy when TFI is below the threshold. However, the coefficient of PSI is -0.0116, which is statistically significant and negative, indicating that procurement/store irregularities have a negative and significant effect on fiscal autonomy when TFI is above the threshold. This suggests that PSI reduce the efficiency and effectiveness of MMDAs' fiscal autonomy. The coefficients of the control variables are also significant and have the expected signs.

Model III examines the threshold effect of CMI on fiscal autonomy. The results reveal that the threshold value of TFI is 6.089761, which is the same as the threshold value in Model I. The coefficient of CMI is -0.00341, which is statistically significant and negative, implying that CMI have a negative and significant effect on fiscal autonomy when TFI is below the threshold. This suggests that CMI affect the liquidity and

solvency of MMDAs and limit their fiscal flexibility. However, the coefficient of CMI is -0.00977, which is also statistically significant and negative, indicating that CMI have a negative and significant effect on fiscal autonomy when TFI is above the threshold. This suggests that CMI exacerbate the fiscal problems of MMDAs and increase their fiscal vulnerability. The coefficients of the control variables are also significant and have the expected signs. The results of the baseline model are also confirmed by several robustness estimates carried out, as outlined in Table 3.8.

Table 3.8: Instrumental Variable Regression

Variables	(Model 1: GMM) Fiscal Autonomy	(Model 2: 2SLS) Fiscal Autonomy	(Model 3: LIML) Fiscal Autonomy
<i>lnTFI</i>	-0.242*** (0.0484)	-0.242*** (0.0491)	-0.242*** (0.0491)
<i>lnPOP</i>	0.192*** (0.0389)	0.192*** (0.0393)	0.192*** (0.0393)
<i>lnTA</i>	0.0234*** (0.00443)	0.0234*** (0.00453)	0.0234*** (0.00453)
<i>Constant</i>	-0.165*** (0.0418)	-0.165*** (0.0417)	-0.165*** (0.0417)
Observations	206,434	206,434	206,434
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Thus, Table 3.8 compares the estimates of three different estimators: system GMM (Model 1), two-stage least squares (2SLS) (Model 2), and limited information maximum likelihood (LIML) (Model 3). In each model, TA and POP are treated as control variables. The table also reports the robust standard errors in parentheses and the significance levels of the coefficients. The main finding from the table is that the coefficient of TFI is negative and significant at the 1% level in all three models, indicating that financial irregularities reduce the fiscal autonomy of MMDAs in Ghana. This result is consistent with the baseline model, which also found a negative and significant effect of TFI on fiscal autonomy. The magnitude of the coefficient of -0.242 is the same across the three models. This suggests that the effect of TFI on fiscal autonomy is robust to different estimation methods and does not depend on the choice of instruments or the assumptions about the error structure.

The table also shows that the coefficients of the control variables, TA and POP, are positive and significant at the 1% level in all three models, implying that TA and POP have a positive effect on the fiscal autonomy of MMDAs in Ghana. This result is also in line with the baseline model, which found positive and significant effects of TA and POP on fiscal autonomy. The table also supports the findings of the baseline model, which used a different estimation method and a different set of instruments. The table therefore confirms the hypothesis that financial irregularities undermine the fiscal autonomy of MMDAs in Ghana and suggests that reducing financial irregularities is a key policy goal for enhancing the fiscal autonomy of MMDAs. Moreover, the Granger causality test results in Table 3.9 confirm the predictiveness of the variables used in the model.

Table 3.9: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
Financial Irregularities Do Not Granger Cause Fiscal Autonomy	1512	5.03309	0.0066
Fiscal Autonomy Does Not Granger Cause Financial Irregularities		3.90323	0.0204
Total Assets Do Not Granger Cause Fiscal Autonomy	1412	17.5638	0.0000
Fiscal Autonomy Does Not Granger Cause Total Assets		1.26013	0.2839
Cash Management Irregularities Do Not Granger Cause Fiscal Autonomy	1489	3.39199	0.0339
Fiscal Autonomy Does Not Granger Cause Cash Irregularities		2.78671	0.0619
Contract Irregularities Do Not Granger Cause Fiscal Autonomy	1491	13.5908	0.0000
Fiscal Autonomy Does Not Granger Cause Contracts Irregularities		5.98736	0.0026
Procurement/Store Irregularities Do Not Granger Cause Fiscal Autonomy	1512	1.13845	0.3206
Fiscal Autonomy Does Not Granger Cause Store Irregularities		0.40002	0.6704

Table 3.9 suggests a mutual relationship between total financial irregularities and fiscal autonomy, as indicated by Granger causality in both directions. Policies that aim to decrease financial irregularities could potentially improve fiscal autonomy and vice versa. This interconnection should be considered by

policymakers when formulating interventions in these sectors. Moreover, Granger causality from total assets to fiscal autonomy implies that alterations in total assets can forecast changes in fiscal autonomy. This indicates that policies that aim to augment total assets could potentially boost fiscal autonomy. However, the nonexistence of Granger causality from fiscal autonomy to total assets signifies that those modifications in fiscal autonomy do not forecast changes in total assets. Additionally, Granger causality from cash management irregularities to fiscal autonomy suggests that policies that aim to decrease cash management irregularities could potentially improve fiscal autonomy. However, the evidence of Granger causality from fiscal autonomy to cash management irregularities is weaker, indicating that alterations in fiscal autonomy may not significantly forecast changes in cash management irregularities. Furthermore, the Granger causality in both directions suggests a mutual relationship between contract irregularities and fiscal autonomy. Policies that aim to decrease contract irregularities could potentially improve fiscal autonomy; the reverse is also true. Policymakers should take this interconnection into account when formulating interventions for these sectors. Lastly, the nonexistence of Granger causality between procurement/store irregularities and fiscal autonomy suggests that alterations in procurement/store irregularities do not forecast changes in fiscal autonomy and vice versa. This indicates that policies that aim to decrease procurement/store irregularities may not directly affect fiscal autonomy and fiscal policies may not directly affect procurement/store irregularities.

In conclusion, the Granger causality test results offer valuable insights for policymakers, highlighting sectors in which policy interventions could potentially improve fiscal autonomy and decrease various types of irregularities. Nonetheless, it is important to bear in mind that although Granger causality may suggest predictive connections, it does not signify a causal relationship in the conventional sense. Therefore, these results should serve as a guide, not as an absolute blueprint, for policy interventions. More research is required to fully comprehend the causal mechanisms underlying these relationships.

3.4.2 Contract irregularities and Fiscal autonomy

Contract irregularities reported on the IGF and DACF by the Auditor-General from 2012 to 2021 accounted for 44.0% of the total financial irregularities of GH¢830.61 million (US\$205.98 million). These irregularities take various forms, such as unapproved contracts, unapproved variations in contract sums, selection of less-qualified contractors, and poorly executed contracts. These issues collectively diminish the fiscal autonomy of the MMDAs. Irregularities in the award of contracts, such as bypassing established laws and regulations, often result in inefficient resource allocation and misuse of public funds, thereby reducing fiscal autonomy. Moreover, the erosion of IGF due to contract irregularities further undermines fiscal autonomy, as highlighted by Adamtey & Amoako (2021) and Otoo & Danquah (2021).

3.4.3 Cash Management Irregularities

Cash management irregularities reported by the Auditor-General on the IGF and DACF for the study period constituted 48.9% of the total financial irregularities in MMDAs. Cash management irregularities including uncollected revenue, unaccounted funds, and misappropriation of funds significantly affect IGF and the fiscal autonomy of MMDAs. This erosion of IGF not only undermines public trust but also hampers the MMDAs' ability to attract external funding (Jones, 2020; Smith, 2019). Moreover, the decline in IGF may impede the MMDAs' capacity to allocate resources towards revenue-generating projects or services, further curtailing their fiscal autonomy (Brown & Lee, 2022).

3.4.4 Procurement/Store Irregularities

Procurement/store irregularities reported by the Auditor-General on the IGF and DACF from 2012 to 2021 accounted for 6.1% of the total financial irregularities in MMDAs. These irregularities involved uncompetitive procurement, unbudgeted expenditures, payment for goods not supplied, unaccounted stores and fuel within MMDAs. Procurement/store irregularities usually result in inflated costs, corruption, mismanagement of funds, reduction in the efficiency of resource utilisation, and erosion of

public trust (Quashie, 2022; Asare et al., 2018). These irregularities could diminish IGF and weaken fiscal autonomy as citizens may be less willing to comply with tax obligations (Transparency International Ghana, 2023; Russell & Brock, 2016).

Mensah & Agyekum (2020) underscored the need for more robust inventory management systems and effective internal audit functions. However, MMDAs often lack the necessary skills and resources to implement such measures (Transparency International Ghana, 2023). These challenges are exacerbated by inefficient external monitoring systems and weak enforcement mechanisms, which allow irregularities to go undetected, foster a culture of impunity, and discourage misconduct reporting (Agyenim-Boateng & Ampofo, 2014). To address these issues, it is necessary to promote integrity and accountability in leadership through regular training, adherence to ethical standards, and the promotion of committed leaders. Developing strong inventory systems and efficient audit functions in MMDAs necessitates capacity-building efforts, possibly through training programmes and collaborative resource partnerships.

Furthermore, citizen participation in the procurement process is essential for ensuring transparency and accountability. Nevertheless, there is insufficient awareness and involvement of citizens in numerous MMDAs in Ghana (Asare et al., 2018). This is attributed to inadequate information dissemination, inaccessible communication channels, and limited opportunities for feedback and reporting. These issues can be addressed by implementing a comprehensive public engagement strategy, which would include regular public briefings on procurement activities, and the use of accessible and diverse communication channels such as local radio stations, social media, and community meetings to disseminate information. Moreover, MMDAs could also develop user-friendly platforms for citizens to provide feedback and report irregularities. Furthermore, training programmes could be established to enhance citizens' understanding of the procurement process and their role in ensuring accountability. Additionally, fostering partnerships with civil society organisations can facilitate citizen engagement and advocacy, thereby enhancing citizen involvement and enabling MMDAs to foster a culture of transparency and accountability in their procurement processes.

3.5 Conclusions and Policy Implications

This section analyses the threshold effects of financial irregularities on the fiscal autonomy of MMDAs in Ghana. The data used in the study span from 2012 to 2021. The study examined the threshold effects of contract, procurement/store, and cash management irregularities, on the fiscal autonomy of MMDAs in Ghana. The study employed a dynamic panel threshold regression analysis and Granger causality analysis on a sample of 216 MMDAs over a period of 10 years (2012-2021). The findings reveal that contract and procurement/store irregularities harm fiscal autonomy when each exceeds a threshold of 6% of total financial irregularities. However, they do not have a significant effect below these threshold values. On the other hand, cash management irregularities reduce fiscal autonomy both below and above a reported threshold value of 5%. The results also confirm the causal relationship between financial irregularities and fiscal autonomy.

These findings have implications for policymakers, local government authorities, and stakeholders interested in the operations of MMDAs in Ghana. Addressing the challenges of financial irregularities requires many different approaches put together simultaneously to mitigate them. First, there is the need to create awareness of the enormity of the problem at hand and how they hamper the delivery of public goods and services. Ethical education should be introduced in all schools to inculcate ethical values in students before they join the workforce.

Second, there should be cultural transformation and enforcement of anti-corruption laws and regulations (Allen & Koshima, 2018; Tabish & Jha, 2012; Staphurst & Langseth, 1997). This entails implementing robust internal control systems, ensuring transparent accounting and financial reporting, enforcing stringent regulatory oversight control, and cultivating a culture of accountability and integrity within MMDAs (Allen & Koshima, 2018; Tabish & Jha, 2012; Staphurst & Langseth (1997). This could involve increasing the frequency of audits and implementing proportionate penalties for non-compliance with policies and procedures (Allen & Koshima, 2018). Anti-corruption laws and institutions should be

adequately resourced and empowered to operate effectively, backed by the political will necessary for robust enforcement.

Third, expanding the implementation of e-government across all MMDAs, which enables the delivery of public services through information technology with minimal human intervention, is essential for controlling financial irregularities. For instance, the government has now created a payment system called MyAssembly, through which payments for property rates could be made to MMDAs with mobile money. This could be expanded to include all payments to MMDAs. Moreover, MMDAs could use digital platforms to publish details of all contracts to allow for community participation and oversight. The implementation of artificial intelligence (AI), and data analytics for financial transactions can ensure transparency and traceability, making it difficult for financial irregularities to go undetected (Han et al., 2023; Zhang et al., 2020). Furthermore, Artificial intelligence can analyse financial patterns and detect anomalies that might indicate fraud, misappropriation, and other forms of irregularities. MMDAs can leverage data analytics to identify trends in revenue collection, expenditure patterns, and contractor performance, enabling them to optimise resource allocation and improve efficiency. This automation can significantly reduce the risk of human error and manipulation to further improve the integrity of financial processes. These technologies synergistically create control systems that enhance transparency and accountability in financial transactions.

Fourth, leveraging public-private partnerships (PPPs) is vital in rectifying financial discrepancies within MMDAs by outsourcing tasks inadequately handled internally to private entities equipped with the necessary expertise and experience. For example, MMDAs could collaborate with banks to establish cash collection units within their premises for banking purposes, significantly mitigating issues related to unaccounted cash. Similarly, engaging debt collection agencies to recover outstanding payments on behalf of MMDAs can address the challenge of uncollected revenue.

Fifth, performance-based contracting should be implemented in MMDAs. MMDAs should be made to maintain a database of contractors, including details of their past projects, performance ratings, and any

instances of contract irregularities. These measures, if effectively implemented, could significantly curtail contract irregularities, and enhance fiscal autonomy.

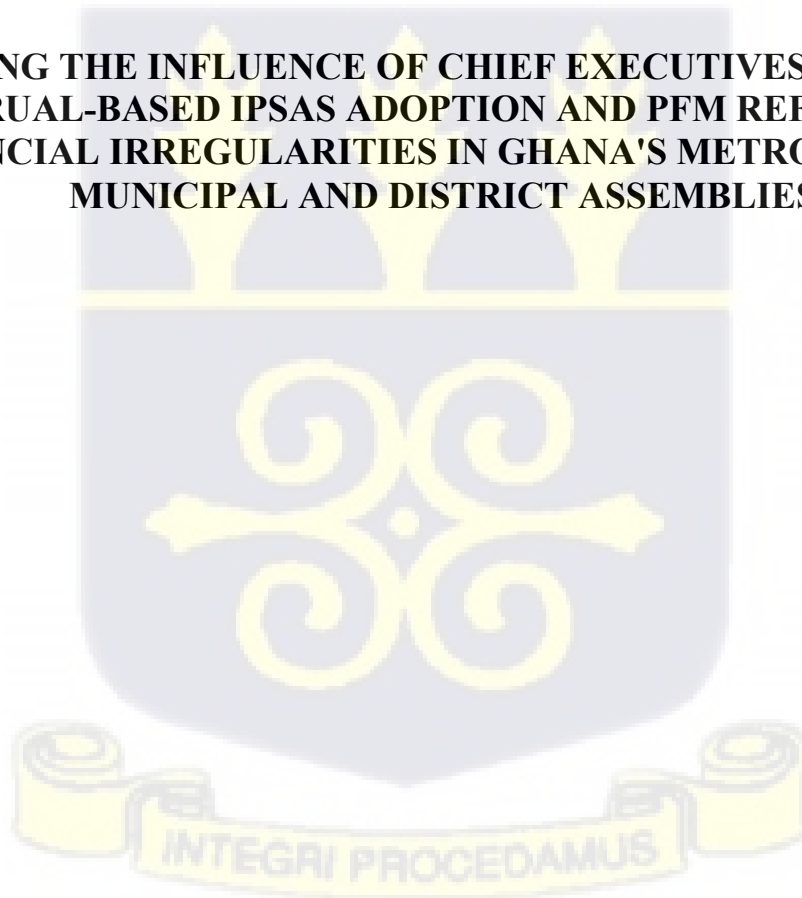
Finally, there should be active promotion of whistleblowing, an established anti-corruption mechanism that has been employed for many years to expose wrongdoing in the public sector (Rothschild & Miethe, 1999; Bovens, 1996). Establishing a secure and anonymous hotline or digital platform could facilitate the reporting of instances of financial irregularities. Currently, the Ghana Audit Service has developed an internet portal called CITIZENSEYE through which malfeasances could be reported in anonymity for investigation. Citizens need to be informed and encouraged to use such mechanisms in reporting infractions in the MMDAs. According to Rothschild and Miethe (1999), the use of whistleblowing by employees is more effective in uncovering and controlling misconduct and corruption in both public and private organizations. The government needs to implement measures to ensure the full functionality of the Whistleblower Act and the Right to Information Act.

3.5.1 Study Limitations

This study concentrated on examining the threshold effects of various types of financial irregularities (contract, cash management, and procurement/storage irregularities) on the fiscal autonomy of MMDAs. However, it did not address specific financial irregularities such as misappropriated revenue, uncredited lodgements, and unsupported payments. Future research investigating these dimensions could contribute to a more comprehensive understanding of the subject matter. Additionally, the study underscored the unique context of MMDAs in Ghana, which limits the applicability of its findings to other contexts.

CHAPTER FOUR

**EXPLORING THE INFLUENCE OF CHIEF EXECUTIVES' GENDER,
ACCRUAL-BASED IPSAS ADOPTION AND PFM REFORMS ON
FINANCIAL IRREGULARITIES IN GHANA'S METROPOLITAN,
MUNICIPAL AND DISTRICT ASSEMBLIES**



Exploring the Influence of Chief Executives' Gender, Accrual-Based IPSAS and PFM Reforms on Financial Irregularities in Ghana's Metropolitan, Municipal and District Assemblies

Abstract

This paper examines the influence of Chief Executives' gender and regulatory frameworks on financial irregularities in local government entities in Ghana. The study utilised data from the Auditor-General's reports spanning 2012 to 2021. Out of the 260 local government entities existing at the time of the study, 216 were deemed to have relevant data and were consequently included in the analysis. The method of moments quantile regression was employed in the investigation. The findings reveal a statistically significant positive relationship between female Chief Executives and lower levels of financial irregularities. However, this relationship becomes negative, though not statistically significant, at higher levels of financial irregularities. The adoption of accrual-based International Public Sector Accounting Standards (IPSAS) and Public Financial Management (PFM) reforms reveals statistically significant positive relationships with financial irregularities. This trend suggests that these regulatory frameworks may be limited in mitigating financial irregularities within local government entities. These findings highlight the need for policymakers to address gender-specific leadership challenges and improve financial management in local governments. Additionally, policymakers should thoroughly evaluate the adoption processes for accrual-based IPSAS and PFM reforms, considering potential shortcomings. The study exclusively focused on local government entities in Ghana, potentially limiting the generalisability of the results. The study provides empirical evidence on the influence of Chief Executives' gender and regulatory frameworks on financial irregularities in local government entities.

Keywords: Gender, International Public Sector Accounting Standards, Public Financial Management, Financial Irregularities, Method of Moments Quantile Regression, and Local Government Entities.

4.1 Introduction

The persistent upward trend of financial irregularities in local government entities presents a significant global challenge (Paranata, 2022; Masters & Graycar, 2016). This issue is notably pronounced in developing countries, characterised by weak public institutions, management overriding controls in public entities, limited independence of monitoring and oversight bodies, and a general absence of political will to enforce laws and regulations established to guide the conduct of public officials (Allen & Koshima, 2018; Russell & Brock, 2015).

Financial irregularities encompass both actions and inactions, whether intentional or unintentional, that contravene public financial administration laws and regulations. These irregularities include corruption, fraud, misapplication of public funds, underutilisation of public assets, unauthorised use of public assets, and misrepresentation of financial records. It is important to note that the scope of financial irregularities extends beyond corruption and fraud, as they do not always result in personal benefits (Allen & Koshima, 2018). Financial irregularities hinder the operations of local government entities, diminish public trust in the local governance system, impede local development initiatives, and often result in economic losses. These challenges ultimately hinder the achievement of national development goals (Zetzsche et al., 2020; Herrera, 2019; Auditor-General, 2019).

In Ghana, the Metropolitan, Municipal, and District Assemblies (MMDAs) contend with persistent challenges related to financial irregularities, as highlighted in the Auditor-General's reports. These irregularities emanate from a combination of financial and governance factors. While previous research has primarily focused on financial aspects (Jaswadi et al., 2022; Yang & Cai, 2022; Soepriyanto et al., 2021; Adjei et al., 2020; Hakelius & Nilsson, 2020; Li & Li, 2020; Allen & Koshima, 2018; Tan & Robinson, 2014; Blundell, 1986), this paper delves into the less-examined realm of governance factors, specifically, between the gender of the Metropolitan, Municipal, and District Chief Executives (MMDCEs) and financial irregularities, as well as between regulatory frameworks and financial irregularities in local government entities.

Several studies have investigated the relationships between gender and various aspects of leadership, such as style (Babiak & Bajcar, 2019; Miranda, 2019; Rosener, 2011; Gibson, 1995), risk-taking (Friedl et al., 2020; Byrnes et al., 1999), and ethical behaviour (Bilwani & Anjum, 2022; Kennedy et al., 2017; Glover et al., 2002), but have failed to establish a direct relationship between chief executives' gender and financial irregularities in local government contexts. However, according to Resnick (2022), the influence of chief executives' gender on financial irregularities is a complex issue that requires thorough analysis. The influence of MMDCes' gender on financial irregularities is multifaceted, involving political factors, governance structures, and financial management practices. Nonetheless, there is a dearth of research dedicated to examining the relationship between the gender of MMDCes and occurrences of financial irregularities within Ghana's MMDAs. This study endeavours to address this gap by investigating the influence of MMDCes' gender on financial irregularities within Ghana's MMDAs.

Moreover, although regulations aim to strengthen transparency, accountability, and financial reporting in local government entities, their effectiveness can be hampered by implementation challenges, resulting in financial irregularities in the entities. These challenges include the inherent complexity of regulations, limitations in local government capacity and expertise, inadequate training initiatives, delays in implementation, potential resistance to change within the entities, and weaknesses in internal controls and oversight mechanisms. Specifically, research exploring IPSAS adoption and its impact on mitigating financial irregularities in the public sector. Studies conducted in various countries shed light on the potential connection between IPSAS adoption and the prevention or reduction of financial irregularities. Tawiah (2021) explored the influence of IPSAS adoption on corruption within developing nations. The study indicated that the deterrent effect of IPSAS on corruption is more evident in countries that have fully embraced accrual-based IPSAS. Nonetheless, the accrual-based IPSAS allows for the potential misuse of discretionary measurement (Tawiah, 2021). In another study, Hamed-Sidhom & Loukil (2021) focused on beneficiaries of Official Development Assistance (ODA) in developing countries and observed a

correlation between IPSAS adoption and a reduction in perceived corruption levels. Thus, IPSAS adoption has the potential to mitigate public sector financial irregularities.

Again, while PFM reforms are widely recognised for their contribution to strengthening public financial governance, recent academic discourse highlights potential unintended consequences. Concerns have emerged regarding the possibility of PFM reforms inadvertently increasing the susceptibility to corruption (Ratmono & Darsono, 2022) mainly due to implementation challenges. With Ghana having undergone a series of PFM reforms since the late 1990s, the latest reform was done in 2016. The new Public Financial Management Act, 2016 (Act 921) was passed in August 2016 for implementation. However, there is a dearth of studies that leverage empirical data specifically from Ghana's MMDAs to explore the potential for heterogeneous and asymmetric effects of PFM reforms on financial irregularities.

This research explores the interplay between gender dynamics and financial irregularities and the relationship between regulatory frameworks and financial irregularities within Ghana's MMDAs. This study aims to address a gap in the literature concerning the insufficient examination of governance factors contributing to financial irregularities within the context of local governments. The study specifically addresses the following questions: First, what is the relationship between the gender of MMDCEs and financial irregularities within Ghana's MMDAs? Second, what is the relationship between the adoption of accrual-based International Public Sector Accounting Standards (IPSAS) in Ghana and financial irregularities within Ghana's MMDAs? Third, what is the relationship between Ghana's Public Financial Management (PFM) reforms and financial irregularities within Ghana's MMDAs?

This study contributes to the broader understanding of financial irregularities in the context of local governments. First, the investigation of the relationship between MMDCEs' gender and financial irregularities within Ghana's MMDAs offers empirical evidence to inform the analysis. This lays the groundwork for further inquiry into the nuanced relationship between the chief executives' gender and financial management in the local government. Moreover, it can assist policymakers in planning initiatives

that address gender-specific leadership challenges and foster effective financial management in local governments. Additionally, it could assist in the development of policies and reforms that address gender-related challenges and ultimately result in the implementation of proactive gender-responsive measures in vulnerable areas.

The investigation into the interplay between regulatory frameworks and financial irregularities within Ghana's MMDAs employs empirical data to assess the efficacy of regulatory frameworks such as IPSAS and PFM. These data offer valuable insights into the effectiveness of strengthening financial management systems and mitigating financial irregularities within the public sector. Furthermore, it contributes to the ongoing academic discourse on the role of regulations in fostering transparency and accountability within public entities, thereby laying the foundation for further scholarly exploration in this domain. Additionally, the research employs a comparative pre- and post-implementation analysis to assess the effectiveness of regulatory frameworks in mitigating financial irregularities within local government settings. This approach could assist policymakers in pinpointing critical areas, necessitating targeted capacity-building initiatives and supplementary support programmes to ensure the optimal efficacy of regulations.

The remaining sections of the paper are organised as follows. The next section reviews both the theoretical and empirical literature, followed by an evaluation of the data and methods used in the study. The ensuing sections present the empirical results, conclusions, and policy implications of this study.

4.2 Literature Review

This section examines theoretical and empirical reviews, drawing on the relevant literature on financial irregularities within local government settings. These reviews are pertinent in addressing the objectives of the present study.

4.2.1 Theoretical Review

The study relies on gender roles and stereotype threat theories to explain the influence of gender on financial irregularities within Ghana's MMDAs. Gender role theory emphasises how the social constructs of gender influence individual experiences and opportunities (Kray et al., 2017). This theory delves into social and cultural expectations associated with femininity and masculinity. It argues that people learn and adopt societal norms about what it means to be a man or a woman. These norms shape how people behave and see themselves. Thus, society establishes norms that determine the expected behaviours, attributes, and roles associated with each gender. These expectations permeate various aspects of life including, family dynamics, educational pursuits, professional endeavours, and interpersonal relationships. The delineation of roles prescribed by societal norms significantly impacts individuals' conduct and decision-making processes within economic contexts.

Stereotype threat theory suggests that individuals may experience anxiety when they are aware of negative stereotypes about their social group (Steele & Aronson, 1995). This anxiety stems from the fear of confirming stereotypes and being judged based on group affiliation rather than merit. The theory proposes that awareness of these stereotypes can hinder performance by creating psychological pressure and self-doubt, leading individuals to conform to the stereotype. For instance, in societies in which gender stereotypes associate men with financial competence and women with financial incompetence, individuals may conform to these perceptions, which could influence their financial conduct. Consequently, women might exhibit a decreased tendency to pursue financial guidance or take undue risks, which could potentially result in financial irregularities. (Lusardi and Mitchell 2011; Lusardi and Mitchell 2007).

In Ghana, where male dominance is prevalent, women are frequently seen as less capable in financial and leadership positions. The increased vulnerability of women to financial irregularities in local government entities can be attributed to a combination of social, economic, and structural factors. It is essential to highlight that this susceptibility stems from the influence of gender biases and stereotypes that are common in the workplace.

Regarding the influence of regulations on financial irregularities within Ghana's MMDAs, this study relies on institutional theory for explanation. The theory examines how organisational structures and actions are influenced by cultural, political, and social forces within their operating environment (Fogarty, 1996). It posits that organisations respond to pressures from their institutional environments by adopting structures and procedures that are socially accepted as the norm within the organisation. In this context, the term 'institution' refers to a prevailing way of thought or action embedded in the habits or customs of a group, influencing their patterns of thought and programmed behaviour (Rahaman et al., 2004). The theory views organisations as operating within a social framework defined by values, assumptions, and norms (Carpenter & Feroz, 2001).

Isomorphism is a fundamental concept within institutional theory. Institutional theory recognises two key forms of isomorphism: competitive and institutional (Moll et al., 2006). Competitive isomorphism emphasises how market pressures drive organisations to adopt cost-effective structures and practices to maintain a competitive edge.

Institutional isomorphism signifies the pressures that lead organisations to standardise. It is further categorised into normative, coercive, and mimetic forms (DiMaggio & Powell, 1983). Normative isomorphism reflects a tendency to conform to societal expectations and established practices. Coercive isomorphism arises from external forces exerted by governments, societal expectations, or powerful stakeholders (Deegan, 2009). This pressure can lead to the adoption of specific practices, often at the expense of less powerful stakeholders, ultimately resulting in similar approaches across organisations. Mimetic isomorphism, prevalent during periods of uncertainty, describes the tendency of organisations to imitate the practices and structures of successful peers (Carpenter & Feroz, 2001). These mimicking behaviours can lead to the adoption of standardised practices irrespective of their efficiency for each organisation. .

Ghana's adoption of accrual-based IPSAS and PFM reforms appears to be driven by normative, coercive, and mimetic pressures from the international community and development partners. However, non-compliance with these standards and reforms ends up as financial irregularities within the MMDAs.

4.2.2 Empirical Review

The Relationship Between MMDCs' Gender and Financial Irregularities

The influence of chief executives' gender on financial irregularities is a complex issue that requires a thorough analysis (Resnick, 2022). This complexity arises from diverse perspectives on gender, including social, economic, and psychological contexts. Moreover, significant individual differences exist within each gender group. This makes broad generalisations inadequate for capturing the complexities of human behaviour. Hence, attributing financial irregularities solely to the chief executives' gender may oversimplify a complex issue, and any conclusions drawn should be made with caution.

Generally, effective leadership is determined by an individual's knowledge, skills, and abilities rather than gender (Powell, 2018; Gurian, 2008; Kouzes & Posner, 2006). Nevertheless, there may be some potential relationships between chief executives' gender and financial irregularities that deserve consideration. Firstly, some studies suggest potential gender-based differences in leadership styles, with female leaders exhibiting inclinations towards open communication, collaboration, and consensus-driven approaches (Babiak & Bajcar, 2019; Rosener, 2011). According to Rosener (2011), women tend to adopt a transformational leadership style that involves efforts to promote participation, delegate authority, inspire, and enhance the self-worth of others. In contrast, men exhibit negative leadership behaviours to a greater degree than women (Babiak & Bajcar, 2019).

The chief executive's leadership style influences organisational policies, procedures, and practices which potentially affect the occurrence of financial irregularities in the organisation. Moreover, the chief executive's gender may influence the overall organisational culture. A culture that promotes transparency, accountability, and ethical behaviour is less likely to tolerate financial irregularities. Nonetheless, in male-

dominated settings, such as government institutions, men are often perceived as more competent leaders than women (Paustian-Underdahl et al., 2014).

Secondly, the ethical behaviour of the chief executive potentially affects the occurrence of financial irregularities in the organisation. Research suggests that on average, men and women exhibit distinct approaches to ethical decisions (Bilwani & Anjum, 2022; Kennedy et al., 2017; Glover et al., 2002). Drawing on social-cognitive theories of ethical behaviour, Kennedy et al. (2017) observed that women exhibit a greater propensity to internalise moral values relative to men. Consequently, women develop stronger moral identities, which serve to mitigate unethical behaviours (Kennedy et al., 2017). This supports the findings of Glover et al. (2002) regarding gender disparities in ethical decision-making. The study discovered that while female participants emphasised integrity and honesty as the highest workplace values, their male counterparts prioritised fairness. Moreover, Bilwani & Anjum (2022) affirmed that women tend to exhibit greater concern for care and often demonstrate empathy and willingness to make sacrifices than men. Although these generalisations may not be universally applicable, a chief executive's ethical behaviour could influence the incidence of financial irregularities in the organisation.

Thirdly, the chief executive's attitude toward risk can influence decision-making in financial matters and the likelihood of engaging in irregularities. Research has identified gender differences in risk-taking attitudes (Byrnes et al., 2020; Byrnes et al., 1999). Byrnes et al. (1999) conducted a meta-analysis of 150 studies focusing on the risk-taking inclinations of male and female participants. The study indicated that men have a higher inclination towards risk-taking than women. Additionally, a study by Friedl et al. (2020) addressing gender differentials in social risk-taking within Western contexts underscores a prevailing pattern in which women commonly display greater risk aversion than men in decisions involving individual risk-taking.

Luh and Kusi (2023) conducted a study on non-financial firms listed on the Ghana Stock Exchange and found that females serving in top executive positions, including chief executive officers, positively impacted firm performance in terms of return on assets, net profit margin, and gross profit margin. This

finding suggests that appointing female chief executives in the local government could positively influence financial performance and, hence, potentially reduce financial irregularities.

Though the appointment of MMDCes is generally gender-neutral, it often carries implicit gender-related implications that influence financial management in MMDAs (Sabbi & Stroh, 2020; Debrah, 2016). Mohammed (2018) posits that the appointment of MMDCes is influenced by politics and partisanship, which can create challenges and potential conflicts. This suggests that MMDCes' gender may not be the sole determinant of financial irregularities but rather the broader political context in which they are appointed.

From the above review, it is evident that the influence of MMDCes' gender on financial irregularities is multifaceted, involving political factors, governance structures, and financial management practices. Nonetheless, there is a dearth of research dedicated to examining the relationship between the gender of MMDCes and the occurrence of financial irregularities in Ghana's MMDAs. This study addresses this gap by investigating the influence of gender on financial irregularities within Ghana's MMDAs.

The Relationship Between Accrual-Based IPSAS Adoption and Financial Irregularities

The global adoption of IPSAS has been attributed to several factors. Mnif Sellami & Gafsi (2019) employed the institutional theory and the theory of economic regulation to investigate the environmental factors influencing the decisions of 110 countries to adopt IPSAS. The results revealed a positive influence of external public funding, suggestive of coercive isomorphic pressure, as well as the level of external openness, indicative of mimetic isomorphic pressure, on countries' decisions regarding IPSAS adoption.

The accrual-based IPSAS aims to improve financial reporting quality by establishing a common framework for public-sector entities. To this end, IPSAS requires accrual-based accounting, which enhances the completeness and transparency of financial information (Saleh et al. 2021; Kartiko, 2018). Additionally, accrual-based IPSAS incorporates principles such as fair value measurement, impairment of assets, and provisions, which further contribute to the accuracy and reliability of financial reports

(Tessema & Abou-El-Sood, 2022; Duenya et al., 2017; Kartiko, 2018). This aligns with the quest for improved financial governance, a global movement that seeks to ensure the reliability and transparency of public financial reporting (Benzaken et al., 2022; Cuadrado-Ballesteros & Bisogno, 2022; Teorell & Rothstein, 2009; Armstrong, 2005).

However, the adoption of IPSAS has not been a challenge. Many African countries have limited resources and expertise, and the transition to accrual-based IPSAS can be costly and time-consuming. However, the benefits of IPSAS adoption are generally expected to outweigh the costs, and most African countries are now committed to adopting IPSAS.

Research has explored the adoption of IPSAS and its impact on mitigating financial irregularities in the public sector. Studies conducted in various countries have shed light on the potential connection between the adoption of IPSAS and the prevention or reduction of financial irregularities. Tawiah (2021) explored the influence of IPSAS adoption on corruption in developing countries. This study indicated that the deterrent effect of IPSAS on corruption is more evident in countries that have fully embraced accrual-based IPSAS. Nonetheless, accrual-based IPSAS allows for the potential misuse of discretionary measurements (Tawiah, 2021). Hamed-Sidhom & Loukil (2021) focused on beneficiaries of Official Development Assistance (ODA) in developing countries and observed a correlation between IPSAS adoption and a reduction in perceived corruption levels. Thus, IPSAS adoption has the potential to mitigate public-sector financial irregularities.

Ghana acknowledges the importance of a transparent and accountable financial management system in promoting economic growth and development. Demonstrating a commitment to achieving fiscal transparency and accountability, the government of Ghana, in 2009, initiated the process of adopting accrual-based IPSAS for public sector financial reporting and finally announced its adoption in 2014 (Hamed-Sidhom et al., 2022). The transition to accrual-based IPSAS marked a significant step forward in enhancing the country's financial management (Tawiah & Soobaroyen, 2022).

Collectively, most of the reviewed studies suggest that IPSAS adoption has a positive impact on financial reporting quality, transparency, and accountability in Africa. These findings support the argument that the adoption of accrual-based IPSAS can contribute to reducing financial irregularities in developing countries. Nevertheless, there is a research gap regarding the direct correlation between the adoption of accrual-based IPSAS and the reduction of financial irregularities within local government institutions. This gap is particularly pronounced in Ghana, where no studies have employed empirical data from MMDAs to investigate the potentially heterogeneous and asymmetric nature of this relationship (Halidu et al., 2023). Consequently, the true efficacy of accrual-based IPSAS in mitigating this enduring challenge within Ghana's MMDAs remains an under-researched, yet vital area of inquiry. This study endeavours to bridge this gap in the extant literature.

The Relationship Between PFM Reforms and Financial Irregularities

Governments implement PFM reforms to create a more efficient and responsive government. These reforms often involve decentralising governance structures, empowering citizens, improving service delivery mechanisms, and establishing frameworks for public accountability (Sarker, 2006). The PFM plays a crucial role in ensuring accountability in the public sector and bolstering a nation's financial administration, with the overarching objectives of enhancing fiscal discipline and macroeconomic stability (Agyeman 2015). Moreover, Lodhia and Burritt (2004) contend that pre-existing deficiencies in management and instances of corruption may act as obstacles to realizing PFM goals, even after adoption. To realise the envisaged outcomes, PFM reforms must be carefully tailored to align with the institutional capacity of the implementing country (Lawson, 2012). Additionally, the successful implementation of PFM reforms hinges on strong political will and effective leadership (Lawson 2012). Agyeman (2015) posits that the attainment of PFM objectives is contingent upon the establishment of robust accounting and auditing systems (Ratmono & Darsono, 2022).

While PFM reforms are widely recognised for their contribution to strengthening public financial governance, recent academic discourse highlights potential unintended consequences. Concerns have

emerged regarding the possibility of PFM reforms inadvertently increasing susceptibility to corruption (Ratmono and Darsono 2022). These vulnerabilities stem from several key implementation shortcomings including the complexity of reforms, capacity and skill gaps of personnel, resource constraints, inadequate training and awareness, ineffective internal controls, delayed implementation processes, resistance to change, and inadequate oversight and monitoring mechanisms. Consequently, robust oversight and monitoring mechanisms and improvement in financial reporting quality are essential for successful implementation of reforms (Ratmono & Darsono, 2022).

Ghana has undergone a series of PFM reforms since the late 1990s, with the current Public Financial Management Act, 2016 (Act 921) passed in August 2016 for implementation. However, there is a dearth of studies that leverage empirical data specifically from Ghana's MMDAs to explore the potential for heterogeneous and asymmetric effects of PFM reforms on financial irregularities. This study aims to bridge this gap by investigating the relationship between financial irregularities and PFM within Ghana's MMDAs, utilising empirical evidence.

Conceptual Framework

This conceptual framework examines how the gender of chief executives, the accrual-based IPSAS, and PFM reforms influence financial irregularities within Ghana's MMDAs. It integrates theoretical underpinnings and key constructs to identify direct relationships among these factors, contributing to a deeper understanding of financial governance within the MMDAs. The framework draws on the gender role theory and stereotype threats to explore how gender-based differences in leadership styles, ethical decision-making, and risk-taking may influence financial management within the MMDAs. It also draws on the institutional theory to examine how the adoption of accrual-based IPSAS and PFM reforms reflects broader institutional changes aimed at improving accountability and reducing irregularities. The constructs are financial irregularities as the dependent variable and Chief Executives' Gender, accrual-based IPSAS and PFM reforms as the explanatory variables. The local populations and the assets of the MMDAs are used as the control variables. Following the literature review, this study hypothesises that:

- i. H1: The MMDCEs' gender influences financial irregularities within the MMDAs.
- ii. H2: The accrual-based IPSAS adoption influences financial irregularities within the MMDAs.
- iii. H3: The PFM reforms influence financial irregularities within the MMDAs.

4.3 Methods and Data

This section discusses the nature and sources of data used in the study, the definition and description of the variables involved, and the model specifications.

4.3.1 Data and Sources

This study uses data on 216 MMDAs in Ghana to investigate the effects of gender, accrual-based IPSAS adoption, and PFM on financial irregularities within Ghana's MMDAs. The study period spans from 2012 to 2021. The selection criteria for the MMDAs involved operational timeframes spanning from 2012 to 2021. The data on financial irregularities were obtained from the Auditor-General's reports on the Accounts of District Assemblies and the Management and Utilisation of the District Assemblies Common Fund and Other Statutory Funds. These reports were directly collected by the author from the Auditor-General's office but are also accessible on the Ghana Audit Service website (<https://audit.gov.gh>). Data on the populations of MMDAs were sourced directly from the Ghana Statistical Service. The population figures for the study were based on the 2010 Population and Housing Census and adjusted annually using population growth rates provided by the Ghana Statistical Service. The data on MMDCEs' gender were obtained from the website of Ghana Districts (<https://www.ghanadistricts.com>), a repository of all Local Assemblies in Ghana.

4.3.2 Variables Definition

In this study, financial irregularities represent the dependent variable, while The MMDCEs' gender, accrual-based IPSAS adoption and PFM are the independent variables. The populations of MMDAs have been employed as control variables in line with the literature (McGuire et al., 2012; Fisman & Gatti, 2002).

Table 4.1: Variable Measurement

Variable	Measurements	Source	Sign
Financial Irregularities	The total Ghana Cedi (GH¢) amount of irregularities related to tax, cash, payroll, stores and procurement and contracts	Auditor-General's reports	Not Applicable
MMDCEs' Gender	Male/Female = 0/1	Ghana Districts	+(-)
Accrual-Based IPSAS	1 represents IPSAS adoption, otherwise 0.	Self-Constructed	+(-)
PFM	1 represents PFM, otherwise 0.	Self-Constructed	+(-)
Population	The total number of people in the assembly	Ghana Statistical Service	+(-)

4.3.3 Model Specification and Development

The basic model developed for this study is shown in equation (1), with Financial Irregularities as the dependent variable.

$$\text{Financial Irregularities} = f(\text{MMDCEs' Gender}, \text{IPSAS}, \text{PFM}, \text{Population}) \quad (1)$$

4.3.4 Estimation Strategy

This section discusses the diagnostic checks used in assessing the key features of the data and the Method of Moments Quantile Regression (MMQR) technique, which is the main model used in the study.

4.3.5 Preliminary Diagnostics Tests

Prior to establishing the relationships between variables, this study conducted a series of preliminary tests to assess their underlying characteristics. This initial analysis included an examination of descriptive statistics (refer to Table 4.2) to establish measures of central tendency and dispersion. Additionally, correlations were calculated to identify potential bivariate associations. Furthermore, the Variance

Inflation Factor (VIF) was computed (see Table 4.3) to diagnose the presence of multicollinearity, a potential threat to the validity of the subsequent analyses. Subsequently, the study employed a quantile plot to assess the normality of the data and determine the most appropriate estimation technique for the analysis.

4.3.6 Method of Moments Quantile Regression

To examine the influence of gender, accrual-based IPSAS adoption, and PFM reforms on financial irregularities within Ghana's MMDAs, this study employs the MMQR technique, as presented by Machado and Silva (2019). The MMQR model addresses various limitations identified in traditional regression models (Ma, 2022; Sun & Razzaq, 2022; Wolde-Rufael & Mulat-Weldemeskel, 2022). First, the method provides more accurate results when the distribution of the dataset is non-parametric, with outliers. Secondly, it can determine the distributional and distinctive characteristics of multiple quantile values, addressing the uneven distribution issue. Thirdly, MMQR allows for individual fixed effects across the conditional distribution, allowing the predictors to adapt to the location and scale functions. Additionally, MMQR not only accommodates location-based asymmetry, where parameters may depend on the position of the predicted variable, but also provides reliable estimates in various conditions, even when the model is non-linear, and it is capable of handling both heterogeneity and endogeneity biases. In line with Machado & Silva (2019), the conditional quantile of the random variable in the panel data for the location and scale $Qy(\tau|X)$ is specified in equation (2) as follows:

$$y_{it} = \alpha_i + X'_{it}\beta + (\partial_i + Z'_{it}\theta)v_{it} + \varepsilon_{it} \quad (2)$$

where y_{it} is the dependent variable, x'_{it} is an i.i.d endogenous variable, $(\alpha, \beta, \partial, \theta)$ are parameters to be assessed. The probability, $P\{\partial_i + X'_{it}\theta > 0\} = 1$. v_{it} is an i.i.d unobserved random variable distributed across individuals and is orthogonal to X'_{it} satisfying the moment conditions (Ma, 2022; Sun & Razzaq, 2022). $i = 1, \dots, n$ denotes the individual i fixed effects and Z' is a k -vector of known components of X (Adebola et

al., 2022; Mdaghri & Oubdi, 2022; Ma, 2022; Sun & Razzaq, 2022; Wolde-Rufael & Mulat-Weldemeskel, 2022b; Xie & Jamaani, 2022; Xin & Xie, 2022; Adeleye et al., 2021; Anser et al., 2021; Firpo et al., 2022).

Again, x'_{it} is orthogonal to cross-sections (i) and time (t) in the expression as captured in Machado & Silva (2019). Thus, the reserves and external variables were stabilized. Hence, Eqs. (1) (2), (3) can be rewritten as follows:

$$Q_{y(\delta|x_{it})} = (\alpha_i + \partial_i r(\delta)) + X'_{it}\beta + Z_{it}\theta r(\delta) \quad (3)$$

Where $Q_{y_{it}(\delta|x_{it})}$ is the quantile distribution of the dependent variable y_{it} . $\alpha_i(\delta) \equiv \alpha_i + \partial_i r(\delta)$ is the scalar coefficient (Ike et al., 2020) and δ th is the sample quantile (Sun & Razzaq, 2022; Mdaghri & Oubdi, 2022). Z denotes a k-vector of known components of X_{it} , which is normalized to satisfy the Machado & Silva (2019) moment conditions $E(U) = 0$ and $E(|U|) = 1$ (Xie & Jamaani, 2022).

4.4 Results and Discussions

The results from the econometrics and statistical tests performed are presented and analysed in this section. This section includes a discussion of the outcomes of the descriptive statistics, correlation matrix, and the normality and variance inflation factor (VIF) tests. The MMQR results are presented along with the Bootstrap Quantile Regression results for robustness.

4.4.1 Descriptive Statistics

Table 4.3 presents the descriptive statistics for the dataset. It indicates that there are 2,160 observations for each variable. The average irregularity per MMDA annually is GH¢366,200. The standard deviation is GH¢1,672,694, highlighting considerable variability in irregularity amounts across MMDAs, ranging from a minimum of GH¢0.00 to a maximum of GH¢67,400,000.

Skewness measures distribution symmetry with positive skewness values for irregularities and populations, suggesting right-skewed distributions with longer right tails. Kurtosis gauges tail heaviness,

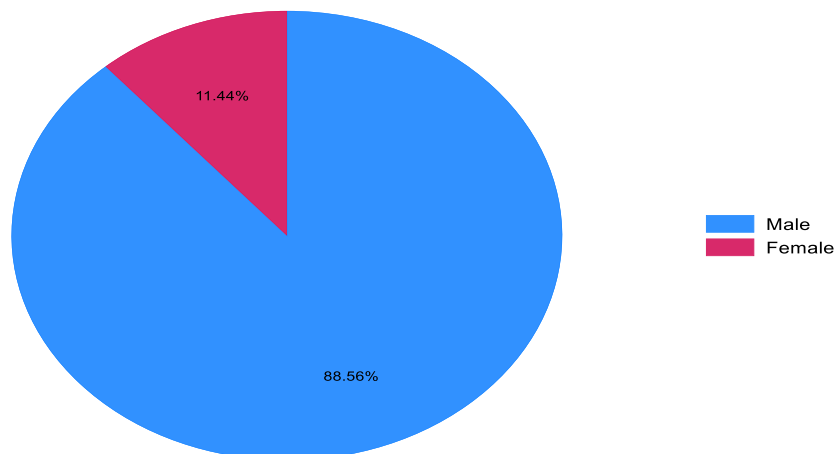
with values exceeding three indicating heavier and more extreme tails. Irregularities and populations exhibit high kurtosis, indicating peak distributions with heavier tails than normal distributions.

The mean value for chief executives' gender is 0.11, implying that 11% of the data points represent the female gender (assigned a binary value of 1). This suggests a relatively small proportion of females in the dataset. Accrual-based IPSAS and PFM reforms have mean values of 0.7 and 0.5, respectively, indicating that 70% and 50% of the data points correspond to these Accrual-based IPSAS and PFM reforms (assigned a binary value of 1). The population mean was 148,638 with a standard deviation of 90,006, suggesting a relatively symmetric population distribution.

Table 4.2: Descriptive Statistics

Statistics	Irregularities	CEOs Gender	IPSAS	PFM	Population
N	2160	2160	2160	2160	2160
Min	0	0	0	0	29722
Max	67400000	1	1	1	588823
Mean	366200	0.1144	0.7	0.5	148638
SD	1672694	0.3183	0.4584	0.5001	90006
Skewness	31.41951	2.4236	-0.8729	0	1.7709
Kurtosis	1213.044	6.8741	1.7619	1	6.4584

Figure 4.1 also visualises the composition of the gender variables. The figure shows that the male gender is dominant (89%), and the female gender is 11%.

Figure 4.1: Composition of Gender of MMDCEs

4.4.2 Pairwise Correlation

The results of the correlation analysis in Table 4.3 indicate that none of the correlation coefficients exceed the standard value of 0.7, which suggests the absence of multicollinearity.

Table 4.3: Pairwise Correlation

Variables	Irregularities	CEOs Gender	IPSAS	PFM	Population
irregularities	1				
CEO gender	0.001	1			
IPSAS	0.091	0.121	1		
PFM	0.045	0.121	0.655	1	
Population	0.155	0.006	0.085	0.094	1

Additionally, Variance Inflation Factor (VIF) analysis confirms this conclusion, as all recorded values fall below 2. This finding is consistent with similar analyses in the literature (Serikbayeva & Abdulla, 2022; Krah & Mertens, 2020; Ohene-Asare & Asmild, 2012), supporting the conclusion that multicollinearity is not a concern in these data. Table 4.3 presents the results of the investigation of multicollinearity, revealing no substantial correlations among the explanatory variables of the study. Additionally, no variance inflation factor (VIF) exceeded 1.70 for any variable. Generally, a VIF below five is considered acceptable.

Table 4.4: Variance inflation factor

Variable	VIF	1/VIF
PFM	1.76	0.568
IPSAS	1.757	0.569
CEOs Gender	1.018	0.982
Population	1.01	0.99
Mean VIF	1.386	

In Table 4.5, the results of the normality, slope homogeneity, and cross-sectional dependence tests are presented. The data were not normally distributed, necessitating the use of the Method of Moments Quantile Regression (MMQR).

4.4.3 Baseline Results from Method of Moments Quantile Regression

Table 4.4 presents the MMQR results on the influence of gender, accrual-based IPSAS adoption, and PFM reforms on financial irregularities within Ghana's MMDAs from 2012 to 2021. The results indicate that the coefficient of female gender is statistically significant at the 5% significance level in quantiles 1 to 3 and at the 10% significance level in quantile 4. This indicates that the female gender has a statistically significant positive relationship with financial irregularities at low-to-moderate levels of financial irregularities. This suggests that on average, MMDAs with female MMDCEs have higher financial irregularities at lower quantiles, whereas at higher quantiles, the differences are not statistically significant.

This result aligns with previous research indicating that gender can influence the occurrence of financial irregularities within organisations. It supports the findings of Byrnes et al. (1999), suggesting that women are generally less inclined to take risks compared to their male counterparts, despite their association with financial irregularities as posited by Saeed & Riaz (2022). According to Saeed & Riaz (2022), the presence

of female directors on boards may amplify the impact of financial misconduct among female directors. Furthermore, Bonny et al. (2015) noted a rise in female involvement in financial fraud, including embezzlement.

The vulnerability of the female gender to financial irregularities within local government entities can be attributed to a confluence of social, economic, and structural factors. It is important to underscore that women's susceptibility to financial irregularities originates from the impact of gender biases and stereotypes prevalent in the workplace. In Ghana, where male dominance prevails, women are often perceived as less competent in financial and leadership roles. Consequently, they contend with discriminatory practices and limited opportunities, potentially resulting in instances of financial irregularities in reaction to these challenges. Furthermore, the marginalisation of women in leadership positions within local government entities may hinder their professional development and impede their advancement to higher leadership roles. Such marginalisation could potentially heighten the risk of financial irregularities when women assume leadership positions.

Concerning the relationship between the accrual-based IPSAS adoption and financial irregularities within the MMDAs, Table 4.4, indicates a statistically significant positive relationship across all quantiles at the 1% significance level. Furthermore, the results reveal an increasing trend in the relationship between IPSAS adoption and financial irregularities, particularly towards higher levels of financial irregularities. This suggests that the magnitude of financial irregularities is greater in the post-IPSAS adoption period than in the pre-IPSAS adoption period.

Several factors may have accounted for this relationship. Firstly, the complexity of accrual-based IPSAS may increase the likelihood of misinterpretation or misapplication, particularly in MMDAs that lack the necessary expertise and capacity to fully understand and implement standards. The combination of the complexity of standards and the existing skill gap may lead to errors or intentional manipulation of financial records, potentially giving rise to financial irregularities.

Secondly, inadequate training and capacity building for MMDAs' staff in relation to accrual-based IPSAS may lead to unintentional errors or provide openings for intentional manipulation, thus contributing to financial irregularities.

Thirdly, the transition to an accrual-based IPSAS may encounter obstacles due to implementation delays. During this period, there might be inconsistencies in reporting practices, potentially leading to financial irregularities because of the lack of a standardised approach. Despite Ghana's adoption of accrual-based IPSAS in 2014, the country originally envisioned a five-year implementation period (Ugwumadu 2014). This timeframe was subsequently extended by the Controller and Accountant-General's Department to conclude by the end of 2023, which is yet to be fulfilled. Consequently, the country has resorted to utilising modified cash/modified accrual IPSAS in financial reporting. Meanwhile, Atuilik's (2016) review of the consolidated financial statements of MMDAs spanning from 2006 to 2012 revealed that they did not fully adhere to IPSAS.

Fourthly, resistance to change from both employees and stakeholders can significantly impede the smooth implementation of accrual-based IPSAS within MMDAs. This resistance may give rise to inadequate adherence to standards and diminish the overall commitment to maintaining a rigorous financial reporting system.

Finally, a combination of insufficient internal controls and ineffective oversight and monitoring systems may heighten the vulnerability to financial irregularities within MMDAs. Weak internal controls create a conducive environment for the occurrence of financial irregularities, while deficient oversight and monitoring mechanisms elevate the potential for fraudulent activities, misreporting, and the likelihood of undetected financial irregularities.

These findings align with those of Mnif Sellami & Gafsi (2019) and Alozie (2020), which emphasise challenges related to IPSAS adoption, including capacity building, accounting education, and transitioning from cash to accrual accounting. Therefore, this study underscores the importance of a holistic approach

to the adoption of accrual-based IPSAS by incorporating effective training, monitoring, enforcement, and stakeholder engagement to achieve its goals.

Regarding the relationship between PFM reforms and financial irregularities within Ghana's MMDAs, Table 4.4 indicates a statistically significant positive influence on financial irregularities at a 10% significance level in quantile 4, at a 5% significance level in quantiles 5 and 6, and at the 1% significance level in quantiles 7 to 9. Additionally, the results indicate a rising trend in the influence of PFM reform on financial irregularities, particularly towards higher levels of financial irregularities. This suggests that PFM reforms appear to mitigate lower levels of financial irregularities; however, higher levels of irregularities remain unaffected, potentially due to instances of management override.

Similar factors accounting for the relationship between accrual-based IPSAS adoption and financial irregularities may also account for the relationship between PFM reforms and financial irregularities. These include the complexity of reforms, inadequate resource allocation, delays in implementing reforms, resistance to change, and inadequate oversight and monitoring. In addition, other factors such as poor communication and corruption may contribute to the ineffectiveness of PFM reforms in mitigating financial irregularities within Ghana's MMDAs. Poor communication about the objectives and requirements of PFM reforms can lead to misunderstandings among the MMDA staff. This lack of clarity may result in unintentional financial errors or irregularities due to misinterpretation of new policies and procedures. Moreover, changes in systems and procedures may create opportunities for manipulation if proper checks and balances are not implemented. This allows individuals within MMDAs to exploit the transition period during PFM reforms to engage in corrupt practices or fraudulent activities.

These results validate those of previous studies on PFM reforms. For example, Lodhia and Burritt (2004) found that PFM reforms might not succeed when poor management and corruption existed before their implementation. Agyeman (2015) suggests that reaching PFM goals depends on establishing robust accounting and auditing systems. Indeed, implementing PFM reforms could potentially raise the

likelihood of corruption. This situation calls for measures such as enhancing financial reporting standards and conducting independent audits (Ratmono and Darsono, 2022).

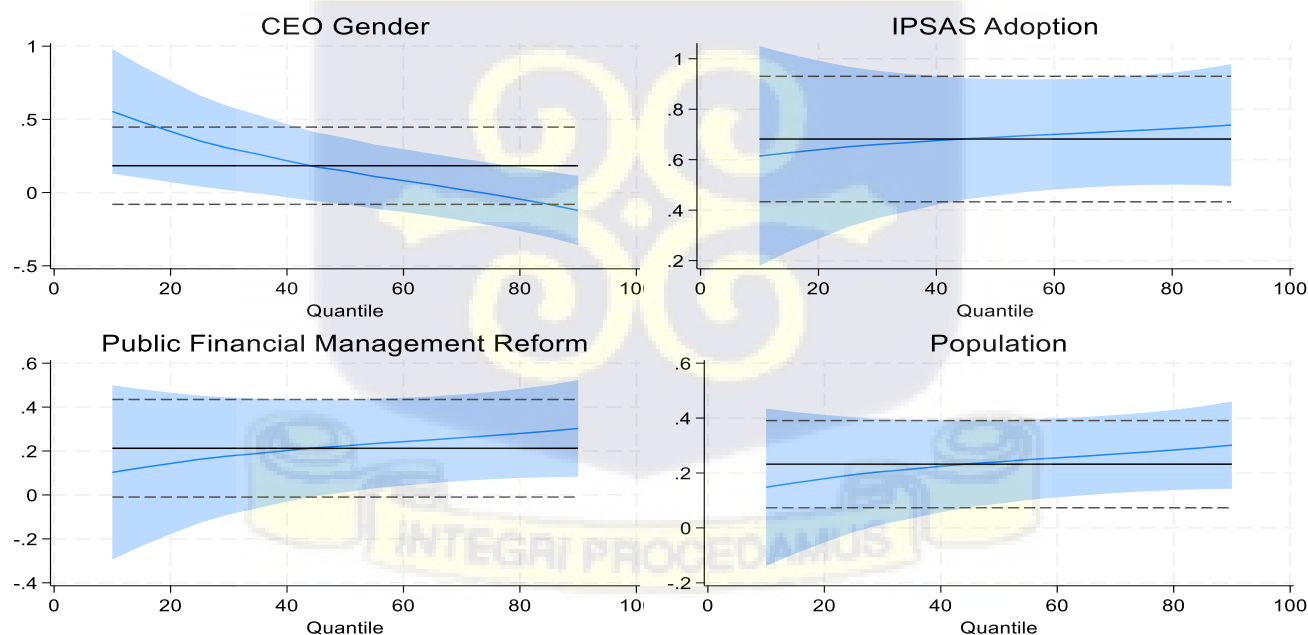
Ghana's adoption of accrual-based IPSAS and PFM reforms by its MMDAs can be seen as a response to pressure from the international community and development partners. These pressures can be categorised as normative, coercive, and mimetic. However, replicating these practices may not be the most efficient strategy for enhancing transparency and accountability to address financial irregularities. According to Rothschild and Miethe (1999), the use of whistleblowing by employees is a more effective method for uncovering and managing misconduct and corruption across both public and private organisations. Additionally, international standards often lack adaptability and may not cater to the specific needs of local entities, resulting in inefficient and slow decision-making processes. Moreover, local entities may focus more on appearing compliant with external standards than on actual performance, neglecting activities that genuinely contribute to their objectives. Furthermore, imitating successful institutions can stifle innovation and hinder the development of new ideas, thus making local entities less adaptable to changing circumstances. Additionally, international standards and reforms may not account for the distinct cultures, values, and workforce of local entities, resulting in a disconnection between adopted practices and local operational realities. Lastly, local entities may adopt solutions from others without thoroughly analysing their challenges and crafting customised approaches, leading to ineffective outcomes.

The location parameters, assessing the average impact of the variables on the dependent variable, suggest that all independent variables have the potential to raise the average level of financial irregularities. Regarding the scale parameters, which also gauge dispersion, the findings reveal that, although the gender of the chief executive decreases dispersion in irregularities, all variables have the potential to elevate dispersion in irregularities.

Table 4.5: MMQR Results of the Effect of MMDCEs' Gender, Accrual-Based IPSAS Adoption, and PFM Reform on Financial Irregularities Within Ghana's MMDAs for 2012-2021

Variables	1 Location	2 scale	3 qtile_1	4 qtile_2	5 qtile_3	6 qtile_4	7 qtile_5	8 qtile_6	9 qtile_7	10 qtile_8	11 qtile_9
1.ceogender	0.183 (0.121)	-0.211*** (0.0758)	0.554** (0.217)	0.418** (0.177)	0.303** (0.146)	0.218* (0.127)	0.147 (0.116)	0.0821 (0.109)	0.0200 (0.108)	-0.0448 (0.111)	-0.122 (0.121)
1.ipsas	0.682*** (0.124)	0.0382 (0.0775)	0.615*** (0.222)	0.639*** (0.180)	0.660*** (0.149)	0.676*** (0.130)	0.688*** (0.118)	0.700*** (0.112)	0.711*** (0.110)	0.723*** (0.113)	0.737*** (0.123)
1.pfm	0.213* (0.113)	0.0623 (0.0707)	0.103 (0.203)	0.143 (0.164)	0.177 (0.136)	0.203* (0.118)	0.223** (0.108)	0.243** (0.102)	0.261*** (0.100)	0.280*** (0.103)	0.303*** (0.112)
lpopulation	0.232*** (0.0814)	0.0477 (0.0510)	0.148 (0.146)	0.179 (0.119)	0.205** (0.0980)	0.224*** (0.0855)	0.240*** (0.0778)	0.255*** (0.0735)	0.269*** (0.0724)	0.284*** (0.0745)	0.301*** (0.0811)
Constant	8.430*** (0.954)	0.821 (0.598)	6.985*** (1.714)	7.518*** (1.390)	7.966*** (1.149)	8.298*** (1.003)	8.572*** (0.912)	8.825*** (0.862)	9.067*** (0.849)	9.319*** (0.874)	9.620*** (0.951)
Observations	1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Figure 4.2: The Graphics of the Nexus between MMDCEs' Gender, Accrual-Based IPSAS Adoption and PFM Reforms and Financial Irregularities

4.4.4 Robustness Test with Bootstrap Quantile Regression

Table 4.6: Bootstrap Quantile Regression

Variables	1 qtile_1	2 qtile_2	3 qtile_3	4 qtile_4	5 qtile_5	6 qtile_6	7 qtile_7	8 qtile_8	9 qtile_9
CEO Gender	0.515 (0.333)	0.440* (0.258)	0.434* (0.234)	0.363** (0.166)	0.187 (0.160)	0.0172 (0.140)	-0.0981 (0.140)	0.0185 (0.156)	-0.170 (0.119)
IPSAS	0.629*** (0.216)	0.418 (0.350)	0.636** (0.298)	0.699*** (0.225)	0.640*** (0.205)	0.715*** (0.149)	0.633*** (0.182)	0.683*** (0.118)	0.754*** (0.106)
PFM	-0.0215 (0.261)	0.196 (0.317)	0.183 (0.270)	0.354 (0.219)	0.427** (0.166)	0.301* (0.154)	0.304** (0.131)	0.261** (0.117)	0.274* (0.163)
Population	0.121 (0.142)	0.127 (0.212)	0.226* (0.118)	0.219 (0.158)	0.181 (0.140)	0.212* (0.111)	0.209* (0.112)	0.242** (0.0948)	0.258*** (0.0790)
Constant	7.352*** (1.700)	8.268*** (2.537)	7.715*** (1.386)	8.253*** (1.852)	9.222*** (1.650)	9.296*** (1.295)	9.830*** (1.328)	9.831*** (1.133)	10.14*** (0.915)
Observations	<u>1,636</u>	1,636	1,636	1,636	1,636	1,636	1,636	1,636	1,636

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 4.5 presents the results of the robustness test using the bootstrap quantile regression model. The results are largely similar and confirm the results obtained using MMQR.

4.5 Conclusions and Policy Implications

This section discusses the policy implications of the relationship between MMDCEs' gender and financial irregularities as well as the relationship between regulatory frameworks and financial irregularities in Ghana's MMDAs. The data used in this study were collected from 2012 to 2021. Regarding regulatory frameworks, this study focused specifically on accrual-based IPSAS adoption and PFM reforms in Ghana. MMQR, a non-parametric panel quantile regression approach developed by Machado and Silva (2019), was employed as the main estimation model. This model was employed based on a preliminary diagnostic check of the data and assessment of its characteristics. The primary factor influencing the choice of model was its suitability for addressing the non-normal distribution of data.

The overall results of the relationship between MMDCEs' gender and financial irregularities in Ghana's MMDAs reveal a statistically significant positive relationship between female MMDCEs at lower levels of financial irregularities. However, this association becomes negative at higher levels of financial irregularities, although not statistically significant. In the case of regulatory frameworks, the overall results indicate that accrual-based IPSAS adoption and PFM reforms have statistically significant positive relationships with financial irregularities, especially at higher levels of financial irregularities.

Various policy measures can be explored to address gender disparities and to promote gender equality in local governments. These policies should strive to establish an inclusive and supportive environment for female leaders. Policy implications include the design and execution of gender-sensitive training programmes aimed at enhancing the knowledge and skills of female MMDCEs. These programmes should encompass training in areas such as financial management, leadership, and governance. Additionally, mentorship programmes could be established for newly appointed female MMDCEs to receive practical guidance from their experienced counterparts, aiding them in navigating the challenges of their roles.

Gender mainstreaming within local government institutions is another crucial step that extends across all MMDAs and administrative levels. This approach seeks to integrate gender perspectives into policy design, implementation, monitoring, and evaluation, thereby promoting equal opportunities and outcomes for individuals of all genders and addressing existing imbalances.

Efforts to increase the representation of women in leadership roles should not be limited to MMDCEs but should also encompass all positions within MMDAs. This may involve the implementation of quota systems or setting targets for female participation. Moreover, public policies should recognise and address the challenges faced by female MMDCEs with family responsibilities. Supportive mechanisms that enable female MMDCEs to achieve balanced integration of their professional and personal lives should be developed and implemented.

Lastly, policies aimed at eliminating gender-based discrimination and harassment in the workplace are essential. Mechanisms for reporting and resolving such incidents should be established to ensure a safe and inclusive work environment for employees.

The findings on the relationship between regulatory frameworks and financial irregularities offer several important policy considerations. Firstly, policymakers should conduct a comprehensive review of accrual-IPSAS adoption and PFM reform processes to identify potential weaknesses and challenges, including evaluating training, resources, and implementation strategies. Secondly, strengthening internal controls and external monitoring mechanisms is crucial for assessing MMDAs' compliance with regulations and for promptly addressing deviations. Thirdly, addressing skill gaps and promoting a better understanding of regulations among financial personnel are essential through targeted training programmes. Fourthly, policymakers should consider incentivising compliance and improving communication with stakeholders to ensure smoother implementation and reduce resistance. Implementing effective change management strategies, including comprehensive communication plans and stakeholder involvement, is also important. Lastly, strengthening accountability mechanisms and establishing a system for the continuous evaluation of regulations and their impact on financial irregularities is key. By addressing these points, policymakers can mitigate the observed increase in financial irregularities and promote a more effective and transparent financial reporting system within the MMDAs.

4.6 Limitations and Future Recommendations

Despite the significant contributions of this study, its findings are limited in some respects. First, it focused only on MMDAs in Ghana. This could impact the interpretation and generalisation of the results, particularly the implications for the entire country. Thus, including other public institutions such as public boards, corporations, and other statutory institutions, as well as Ministries, Departments, and Agencies, all of which are similarly impacted by financial irregularities, would enhance the overall applicability of the research findings. Future studies should address the two key limitations of this study.

CHAPTER FIVE

CONCLUSIONS



5.1 Introduction

The final chapter of this thesis offers a recap and examination of the key findings across various studies. Consistent with the overarching objectives of the thesis, it presents the concluding remarks of each article derived from the findings, along with providing thoughtful advice and recommendations concerning the implications for public policy. Additionally, this chapter underscores the unique and specific contributions of each paper. It then acknowledges the limitations of the thesis and puts forth further suggestions for future research in the field.

5.2 Overview

This thesis comprises three independent papers that focus on the relationship between financial irregularities and the factors that drive them within Ghana's MMDAs. The first paper begins with an empirical investigation into the nexus between financial irregularities and the levels of revenue, assets, and liabilities within the MMDAs. Utilising data spanning from 2012 to 2021, the study employs the method of moments quantile regression (MMQR), developed by Machado & Silva (2019) as the primary estimation model, representing a non-parametric approach to panel quantile regression. Prior to this analysis, a preliminary diagnostic evaluation of the data was conducted to ascertain its characteristics for appropriate model selection. Additionally, quantile distribution plots were constructed to confirm the non-normality of the data, a key consideration in opting for non-parametric panel econometric quantile regression. The study underscores that increases in revenue, asset, and liability levels tend to increase financial irregularities. This trend is particularly pronounced in MMDAs with lower levels of financial irregularities. This suggests that while increases in revenue, asset and liability levels potentially enhance the capacity for service delivery, they can also create opportunities for financial irregularities in the absence of robust financial governance practices and accountability mechanisms.

Chapter Three is also an empirical study that delves into the threshold level at which financial irregularities begin to significantly impede the fiscal autonomy of the MMDAs. It focused on contract, procurement/store, and cash management irregularities which constitute 99% of the total irregularities in

the MMDAs. The study employed the dynamic panel threshold regression analysis and Granger causality analysis on a dataset of 216 MMDAs over a period of 10 years (2012-2021) to unravel the relationships at play. The results reveal that while contract and procurement/store irregularities significantly hinder fiscal autonomy above a threshold of 6% of total financial irregularities, their influence remains negligible below this threshold. In contrast, cash management irregularities consistently negatively influence fiscal autonomy, irrespective of threshold level. Moreover, this research establishes a causal relationship between financial irregularities and fiscal autonomy. It emphasises the need for MMDAs to strengthen their internal control mechanisms, foster transparency and accountability, embrace technological advancements and diversify revenue streams to enhance fiscal autonomy and service provision.

In Chapter Four, an empirical study of the relationship between MMDCEs' gender and financial irregularities, and the relationship between regulatory frameworks (accrual-based IPSAS and PFM reforms) and financial irregularities are undertaken. The data used in the study span from 2012 to 2021. The MMQR which is a non-parametric panel quantile regression approach, was employed as the main estimation model. This model was employed based on a preliminary diagnostic check on the data and an assessment of its characteristics. The primary factor influencing the choice of model was its suitability for addressing the non-normal distribution of the data.

The results reveal a statistically significant positive relationship between female chief executives at lower levels of financial irregularities. However, this association becomes negative at higher levels of financial irregularities, although not statistically significant. These findings emphasise the importance of policymakers devising initiatives to address gender-specific leadership challenges and to promote effective financial management in local governments. Additionally, there is a need for policies and reforms directed at addressing gender-related challenges. This entails the adoption of proactive measures that are sensitive to gender considerations, ensuring the promotion of gender equity within MMDAs.

The findings on the regulatory frameworks reveal a statistically significant positive relationship between the adoption of accrual-based IPSAS and financial irregularities within the MMDAs across all quantiles.

Similarly, PFM reforms exhibit a statistically significant positive relationship with financial irregularities, but from the 4th to the 9th quantile. Moreover, there is an increasing trend in the relationship between these regulatory frameworks and financial irregularities, particularly at higher levels of financial irregularities. This implies that the implementation of accrual-based IPSAS and PFM reforms may not sufficiently address financial irregularities within the MMDAs. Consequently, policymakers should conduct thorough assessments of the adoption of accrual-based IPSAS and PFM reform processes to identify potential shortcomings and obstacles. This should encompass a comprehensive evaluation of various factors including training, resource allocation, and implementation strategies.

5.3 Summary and Public Policy Implications

The findings presented in this thesis hold several significant policy implications. Firstly, the results from the study of the relationship between revenue, asset, and liability levels and financial irregularities underscores the importance of establishing and fortifying robust financial governance practices and accountability mechanisms as these financial components increase within the MMDAs. This approach is imperative to ensure that the growth in resources leads to enhanced service delivery and does not inadvertently foster financial irregularities. Therefore, policymakers should conduct a comprehensive assessment of the adequacy of existing laws and regulations governing financial management in MMDAs. Where deficiencies are identified, amendments should be considered to bolster enforcement, with appropriate sanctions applied for violations (Allen & Koshima, 2018). Additionally, the adoption of background checks by the appropriate security services prior to employment, mirroring procedures in financial institutions, should be implemented by MMDAs.

Secondly, the study of the threshold effect of financial irregularities on the fiscal autonomy of the MMDAs highlights the essence for policymakers and administrators to develop early warning systems and targeted intervention strategies to address irregularities promptly. Robust internal controls, including stringent oversight and a culture of accountability, are essential. This involves increasing audit frequency and

imposing penalties for non-compliance. Furthermore, adequate resourcing and empowerment of anti-corruption laws and institutions are crucial, alongside expanding e-government implementation. Digital platforms can enhance transparency, such as by publishing contract details for community oversight. Promoting whistleblowing is vital. Secure reporting channels should be established to encourage employees to expose misconduct. Ensuring the functionality of legislation like the Whistleblower Act and the Right to Information Act is imperative for safeguarding institutional integrity and fiscal responsibility in MMDAs.

Thirdly, the study on the relationship between chief executives' gender and financial irregularities stresses the need for policies supporting female MMDCEs. Such policies should prioritise gender-sensitive training programmes to enhance female leaders' skills. Gender mainstreaming across all MMDAs is crucial for equal opportunities. Efforts to boost female representation in leadership should extend beyond MMDCE roles. Addressing challenges faced by female MMDCEs in balancing work and family is essential. Lastly, robust policies against gender-based discrimination and harassment in the workplace are imperative for fostering an inclusive environment.

Finally, the research on the relationship between regulatory frameworks (accrual-based IPSAS and PFM reforms) entails several key policy implications. Firstly, policymakers should assess the accrual-based IPSAS adoption process comprehensively to identify potential weaknesses and challenges. Secondly, strengthening monitoring mechanisms and oversight bodies is crucial to ensure compliance with IPSAS and address deviations promptly. Thirdly, addressing skill gaps among financial personnel and aligning incentives with IPSAS compliance should be prioritized. Fourthly, enhancing communication with stakeholders and assessing financial resources for IPSAS implementation are essential. Additionally, simplifying IPSAS and implementing effective change management strategies are necessary to facilitate a smoother transition. Strengthening accountability mechanisms and establishing continuous evaluation processes are also critical. Addressing these policy implications is vital to mitigate financial irregularities associated with IPSAS adoption and enhance transparency in financial reporting within Ghana's MMDAs. These policy implications are equally applicable to the PFM reforms.

5.4 Limitations of the Thesis

Despite the significant contributions this thesis has made to understanding financial irregularities and the various factors influencing them, there are several limitations to the research. Firstly, the scope of the Auditor-General's audits encompasses a wide range of public entities with diverse objectives, including profit-driven ones. Consequently, the factors driving financial irregularities in these institutions may differ from those in the MMDAs. Thus, caution is needed when generalising the findings of the thesis to these public entities. Secondly, the study focuses solely on the regular audit reports issued by the Auditor-General, thereby excluding ad-hoc reports which may also uncover significant financial irregularities relevant to scholars and policymakers.

5.5 Avenues for Future Research

In terms of future research directions, scholars and researchers are encouraged to further develop this study by concentrating on specific breaches that led to the reported financial irregularities, especially those related to cash management, contracts, and procurement/store irregularities. This targeted approach will facilitate the implementation of more precise mitigation strategies. Additionally, it will aid in distinguishing between financial irregularities that result in actual financial losses to the state and those that are merely indicative of control weaknesses.

Furthermore, this research solely examines the financial irregularities within the MMDAs. However, the Auditor-General's annual reports encompass a broader spectrum of public institutions, including the General Government, Public Boards, Corporations, and other Statutory Institutions, as well as Ministries, Departments, and other Agencies. It also covers Pre-University Educational Institutions, Technical Universities and Polytechnics, Consolidated Statements of Foreign Exchange Receipts and Payments of the Bank of Ghana, and the Management of Petroleum Funds. Exploring the financial irregularities reported in these institutions could yield insightful findings.

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