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COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF BUSINESS

DEPARTMENT OF ACCOUNTING AND FINANCE

EFFECT OF BANK DIVERSIFICATION ON THE FINANCIAL PERFORMANCE OF LISTED BANKS IN GHANA

By

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KNUST

DECLARATION

I hereby declare that this submission is my own work towards the degree in Master of Science (Accounting and Finance Option) and that to the best of my knowledge, it contains no materials previously published by another person or group nor material which has been accepted for the award of any other degree of the university, except where due acknowledgement has been made in the test.

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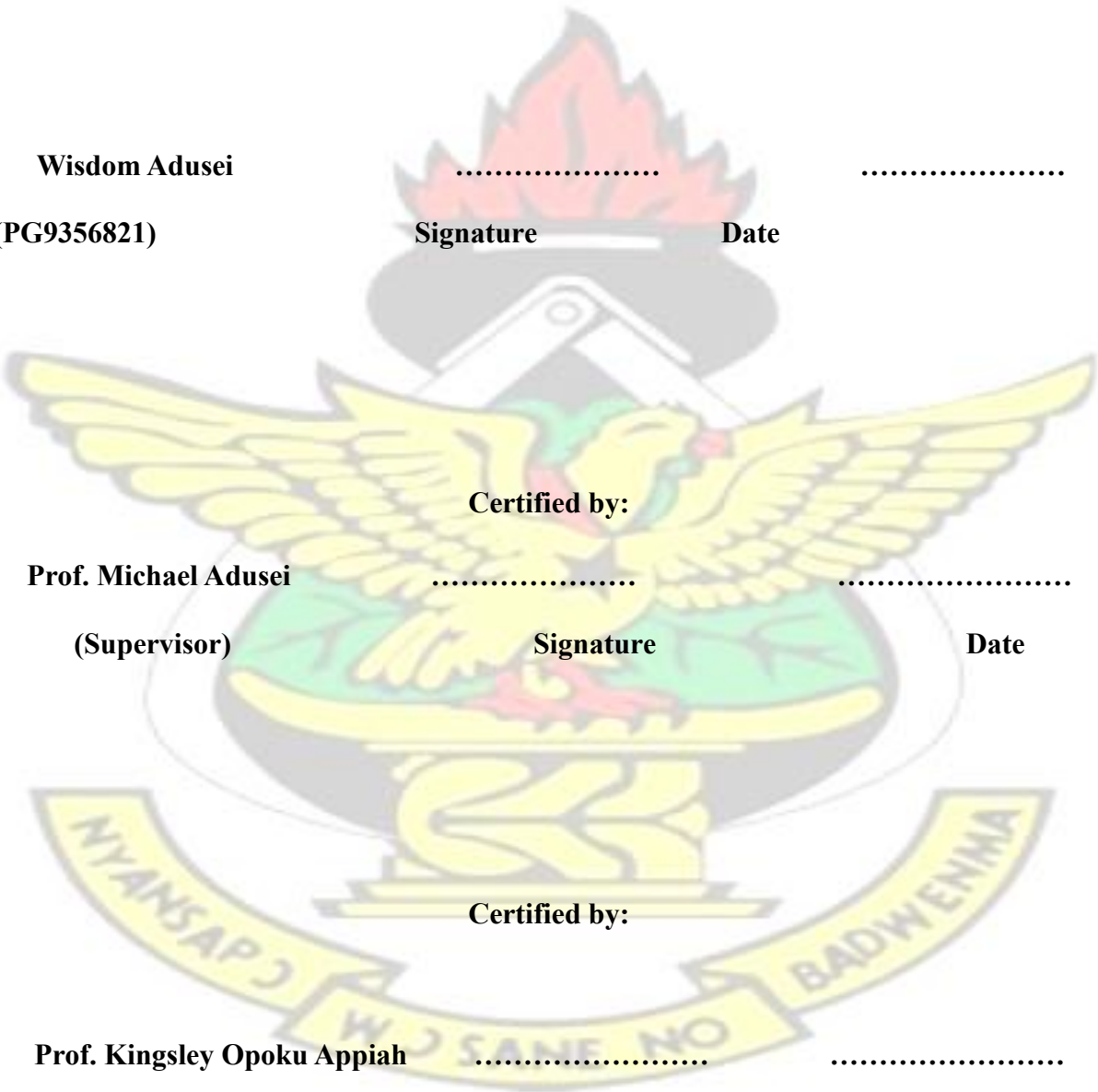
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(Head of Department) **Signature** **Date**

DEDICATION

I dedicate this Thesis to my parents, Mr. Paul Adusei-Tweneboah and Madam Beatrice Bio for being the pillars and source of encouragement to me by their constant supports, showing unconditional love and whose good examples have taught me to work hard for things that I aspire to achieve. To my sisters, I am truly thankful for having you in my life. Finally, I dedicate this work to all my family members directly or indirectly for their prayers in completing this piece of work successfully. Thank you!

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ABSTRACT

There have been growing interests in bank diversification following the over two decades' financial liberalization in Africa as well as the growing competition and increasing focus on risk management. There has been have a shift from net interest income to non-interest income not dependent on traditional financial intermediation. The decline in interest margins has changed the traditional role of banks and has forced them to search for new sources of revenue. However, there is still a number of insights that ought to be obtained on the effect of diversification on financial performance in banks. The study examines the relationship between bank diversification and financial performance of listed banks in Ghana. Specifically, income diversification, asset diversification and geographical diversification are examined. The study analyzes 8 listed banks in Ghana using their annual income statement between 2009 and 2021. For robustness, econometric techniques of OLS; namely pooled OLS, the fixed-effects model and random-effects are used. The study finds that there is a positive and insignificant relationship between income diversification (IND) and return on asset (ROA). Also, the study illustrates that a positive and significant relationship between asset diversification (ADV) and return on asset (ROA) at 5% significant level. Lastly, the study finds a positive and significant relationship between geographical diversification (GDV) and bank return on asset (ROA) at 1% significance level. Based on the findings, the study, therefore, concludes that except for

income diversification, asset and geographic diversifications have positive and significant effect on the financial performance of listed banks in Ghana. The study hence recommends that, the banking sector supervisors and regulators in Ghana not only be aware of the role a particular bank plays in each line of business, but must understand the risk management strategy of the whole banking organization in order to evaluate the risk exposures of a particular bank giving the current levels of income diversification and its concomitant revenue volatility since income diversification shows a positive idea but it does not necessarily increase in financial performance. Government and economic policy makers are also urged to keep a stable macroeconomic environment including aiming high GDP but for low inflation, interest rates as a rise in these external variables have negative effect on the banks in Ghana.
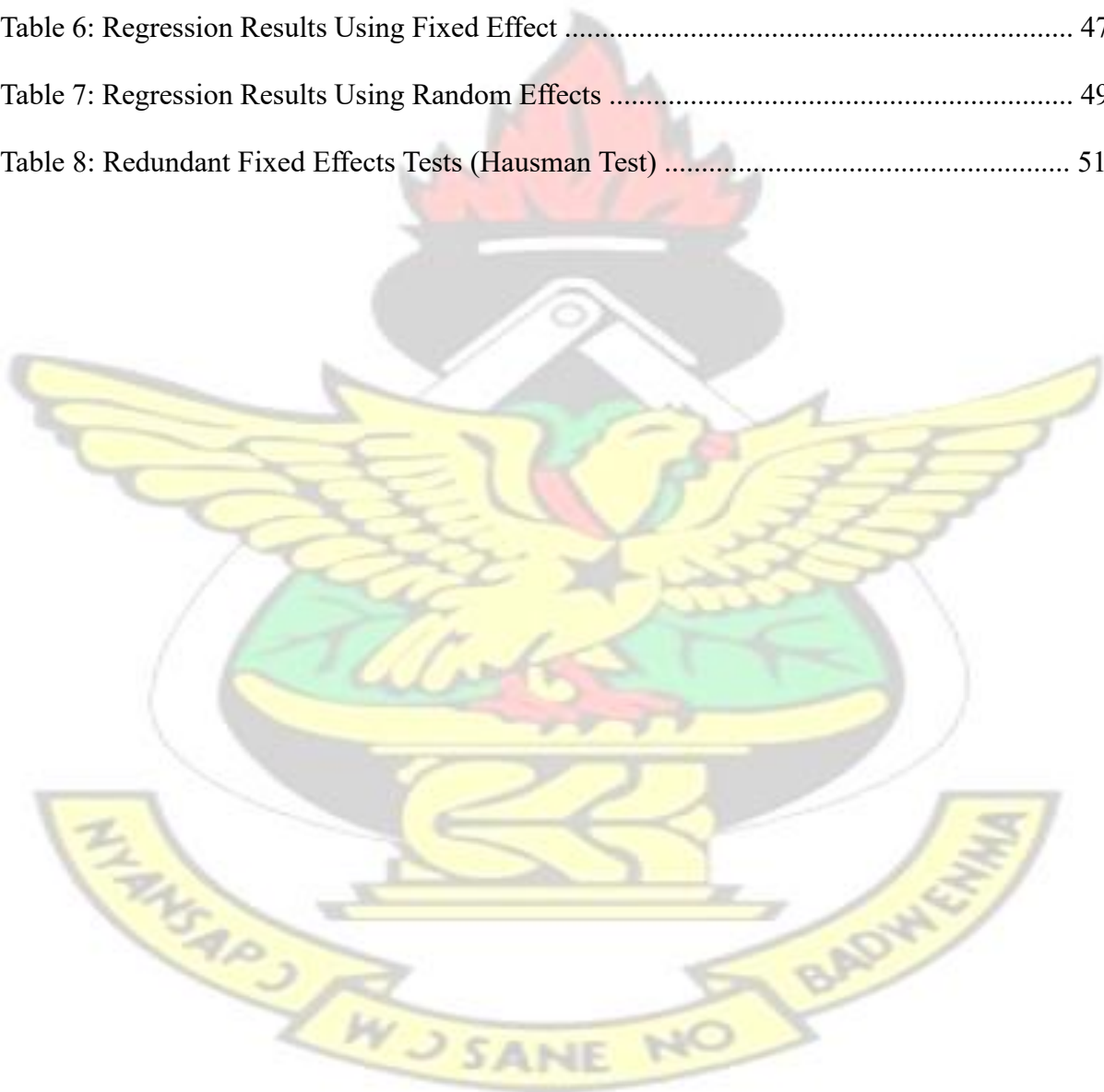
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CHAPTER ONE

GENERAL INTRODUCTION

1.0 Background to the Study

Banks in Africa have rethought their business models in response to the financial reforms that began in the region in the 1990s (Andries 2011; Delis & Papanikolaou 2014; Girardone et al 2017). Non-interest income refers to money made through activities other than lending or investing and can include anything from transaction fees to gains on the sale of assets (Abuzayed et al., 2018). As with the revenue statement, bank diversification has ramifications for the balance sheet as well (Beck et al., 2013). Therefore, in the search for banks to either use a focused or diversified strategy, components from both financial statements must be taken into account (Girardone et al., 2017).

Despite the considerable interest in corporate diversification among financial analysts, bankers, policymakers, and academics, there is still a scarcity of research on the subject in Africa, and Ghana in particular (Alhassan, 2015). The empirical and theoretical literature on corporate finance is replete with ambiguous and contradicting assertions regarding the profitability, effectiveness, and risk implications of diversification (Abuzayed et al., 2018). For instance, while the conglomeration hypothesis contends that diversified organizations are better at overseeing their operations as a whole, the strategic-focus hypothesis contends that diversified organizations have volatility of higher earnings, costs of agency, monitoring costs and monitoring challenges (Elyasiani & Wang, 2012; Laeven & Levine, 2017; Stiroh, 2014). The dispersion of fixed and overhead costs across a larger range of products will lead to the aggregation hypothesis's predicted easier attainment of economies of scope. These divergent viewpoints establish the framework for a potential non-linear link between diversity and bank performance measures. In addition, the banking sector's key strength is risk management.

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Banks' strategies may have effects on their production, efficiency, and profitability (Alhassan 2015; Duho et al 2019). Banks rely more and more on non-interest income to fund their customer service efforts and remain competitive in business environment, which is shaped by shifting demographics, geopolitical influences, globalization, and digital technology. As a result, it's more lucrative to generate income from unconventional sources.

Fee income from investments and also interest on advances and loans are two of a bank's most common types of income. Commissions from banks and insurance companies are examples of non-traditional revenue streams. Insurance and brokerage commissions are examples of feefor-service income, while profits earned by banks from their investments in other companies' assets are examples of stakeholder income (DeYoung & Torna, 2013). Bank regulation policymakers face new challenges as the banking system evolves.

Banks have expanded their geographic reach, changed the kinds of investments they make, and diversified their services over the previous three decades. Financial regulators have minimal leeway for error, despite the fact that diversification is valued in the theory of finance for lowering risk (Haugen, 2011). Before the global economic downturn, banks were more diversified, but they maintained low capital and liquidity reserves (Buch & Dages, 2018). Diversification and improper evaluation of the risks involved contributed to the global financial crisis' escalation. Despite initiatives for rigorous regulations on banks in the wake of the crisis (Ichiue & Lambert, 2016), there has been a global tendency over the past three decades to relax these controls. In the empirical literature, no definite conclusion has been made regarding how diversification affects bank performance. Innovative research by Stiroh (2014) shows a conflict between functional heterogeneity and stability of the corporate sector. A newer body of research, however, challenges these conclusions (Chiorazzo et al., 2018; Hsieh et al., 2013).

Loan diversification portfolios and expansion into new markets have both been researched, although the findings are inconsistent (Acharya, Hasan, and Saunders 2016; Rossi et al. 2019). These conclusions are frequently the result of solitary study into a single form of diversification. Due to the fact that banks frequently combine many diversification strategies, it is crucial to assess how they interact.

Mercieca et al. (2017) identify three distinct forms of diversification in the banking field: I diversification involving economic services and products; (ii) geographic diversification; and (iii) the combination of the two. Incorporating enterprises that serve both consumers and businesses is part of the diversification of financial products and services. In addition to credit cards and home equity loans, these companies also provide insurance, stocks, and investment goods (Naceur & Goaied, 2008). In order to reduce the portfolio's vulnerability to shocks that only affect a single part of the world, Subramanian (2019) defines geographic diversity as "an investment strategy whereby a portfolio is formed of enterprises across several geographic regions."

Considering Ghana's status as a developing nation, the banking sector has developed considerably during the past few decades. There were only nine banks in 1988, but that number more than doubled by 2011. While only two of the country's 16 banks were under foreign ownership in 1988, that number had grown to seven by the year 2000. By 2008, a same number of foreign-controlled and domestically-controlled banks (out of a total of 26) had been established. Among the 27 banks in operation in 2011, foreign banks made up 52%, while domestic banks made up 48% (Saka et al., 2012). By 2018, there were a total of 34 banks with universal banking licenses, 17 of which were foreign institutions (PwC 2017). The efficiency

indices for the banking industry show an overall rise in effectiveness between April 2017 and April 2018. Major profitability indicators for the banking industry, such as net return on equity (ROE) and gross return on assets (ROA), showed a decline in profitability between April 2017 and April 2018.

Return on assets decreased from 4.0 percent in April 2017 to 3.6 percent as in April of 2018. Businesses' return on equity declined as well, falling from 19.3 percent in April 2017 to 17.3 percent in April 2018. The industry's cost to income ratio dropped from 86.0 to 84.5 percent over the research period, while the cost to total assets ratio dropped from 5.40 to 4.40 percent. In the same time period, the proportion of operational costs to total assets decreased from 2.9 percent to 2.7 percent, indicating an improvement in operational efficiency. However, the proportion of operating costs to the sector's gross income increased from 46.7 to 51.3 percent between April 2017 and April 2018. (Bank of Ghana, 2018).

1.1 Problem Statement

The influence of banks in a country's economic growth cannot be overstated. In order for an economy to grow, it needs a financial system that is stable, innovative, and dynamic (Vossen 2019). Lepetit and Strobel (2014) argue that a financially stable economy benefits from a banking system that is both robust and lucrative. Profits from banks, when reinvested in the company, can be a significant source of equity (Berger & DeYoung 2013, Gulamhussen et al. 2014, Liang & Rhoades 2018). Financial stability may benefit from strong earnings, as this should lead to secure banks (Flamini et al., 2019). According to Gupta (2018), one should not put all of their financial eggs in one basket. This is why diversification is such a crucial tenet of sound financial management. Prior studies on the topic of diversification and business value have yielded conflicting results, particularly when looking at studies conducted in various

nations and industries. According to Perez (2015), academic discussion is sparked by the fact that research into asset diversification's impact on financial performance is still largely theoretical, with varying findings. The study's authors draw the conclusion that the inherent risks associated with commercial banks' trading assets tend to be higher for those institutions with a higher share. Lins and Servaes (2016) make a similar case, arguing that businesses with a wider range of assets are less likely to be profitable overall. While Muñoz and Sanchez (2015) examine diversification from a geographical perspective, they claim that a company's profitability decreases when it expands into new markets. According to Elefachew and Hrushikesava's (2016) research, which evaluates the industry diversification's impact on the financial performance of chosen banks in Ethiopia, diversification has a negative and statistically significant impact on both return on asset and equity. Contrarily, Ishak and Napier (2016) state that more diversification typically results in higher firm value rather than lower firm value. In their 2019 paper, Booth and Fama acknowledge that the increased profits from diversification are larger for low-cap stocks than for other assets.

This is because of the high degree of volatility in small-cap stock returns and the ease with which their risk can be diversified away due to their low correlations with other assets. According to Mutega (2016), Kenyan commercial banks' bottom lines benefit noticeably and favorably from increased asset diversification. Kipleting and Bokongo (2016) reach the same good conclusion about the investment diversification's impact on commercial banks' financial performance. The aforementioned research demonstrates that diversification has its drawbacks. However, diversification has been occurring whether or not banks have diversified, since it is necessary for the goal of obtaining profits and strengthening the competitiveness of the banks in the context of international economic integration. With respect to how best we know, no research has examined how diversification influences the financial performance of banks in Ghana. By offering such a detailed analysis in Ghana, this research seeks to address a gap in

the existing literature. The banking business in Ghana was selected for this analysis because of recent trends with important implications for market concentration, competition, efficiency, and risk. In 2017, the Bank of Ghana began enforcing a number of regulatory oversight measures with the intention of bolstering the sector (Onumah & Duho 2019). By the beginning of 2019, just 23 of the original 32 banks were still in business. Moreover, competition in the business has expanded significantly with the implementation of the Bank of Ghana Act, 2002 (Act 612) and the Universal Banking License (Onumah & Duho 2019). Plus, as the market became more competitive, a variety of cutting-edge financial services were introduced, most notably the ATM, which could have contributed to greater service variety. In addition, Alhassan (2015) notes that when banks develop, it is not uncommon for them to see the launch of a plethora of subsidiary enterprises. Some banks may use the assets of their subsidiaries, which could have an effect on diversity in their statements of financial position. In light of this, the goal of this research is to analyze how bank diversification affects the profitability of Ghana's publicly traded financial institutions.

1.2 General Objective

This study attempts to examine the relationship between bank diversification and financial performance of listed banks in Ghana.

1.3 Specific Objectives

Specifically, the study seeks to:

1. Examine the effect of income diversification on ROA of listed banks in Ghana.

2. Determine the effect of asset diversification on ROA of listed banks in Ghana.

3. Establish the effect of geographical diversification on ROA of listed banks in Ghana.

1.4 Research Questions

The following question would need to be answered based on the above research objectives:

1. What is the effect of income diversification on ROA of listed banks in Ghana?

4. Is there any effect of asset diversification on ROA of listed banks in Ghana?

5. How does geographical diversification have effect on ROA of listed banks in Ghana?

1.5 Significance of the Study

Prompt corrective measures are typically invoked by central banks when the stability of a banking system is challenged, for example, by an increase in non-performing assets or decreasing profitability. The purpose of this research is to examine how income, asset, and geographical diversification influence or relates to the financial success of Ghanaian banks. The findings of this study have crucial implications for banking experts and practitioners, government, policymakers and regulators, and, finally, academics, given the importance of a stable financial system for economic growth. First, the study's outcome have significant connotation for the management of banks, as these institutions will get a better understanding of the value diversification may bring to their operations.

As a result of interest rate restriction and rising competition, universal banks have been trying to offset a decline in interest income. Managers, professionals, and bank practitioners will benefit from this research by learning how the three types of diversification impact the financial performance of universal banks. Second, the research is important to those who stand to gain from increased dividends on bank stocks. This is because implementing the measures for diversification advocated in this study will lead to higher bank profits. Finally, the government gains something from the research as well, since the report recommends regulatory changes to encourage diversification among universal banks. The research is used by Bank of Ghana to inform policy decisions. In addition, the study helps to educate decisions made by both banks

and regulators in Ghana about the required level of income diversity that universal banks are to maintain in order to remain competitive. In the fourth place, the study has academic relevance because it contributes to the existing body of knowledge. It is difficult to produce any significant conclusions about the nature of the connection between business value and diversification because of the often contradictory findings that have been reported. This is especially true in the banking industry. Therefore, this work provides a foundation for future research by pointing out knowledge gaps and suggesting directions for future investigation.

1.6 Scope of the Study

This study aims to examine how bank diversification in Ghana has affected their bottom lines. There are 32 universal banks in Ghana, but we're only going to look at the eight that are traded on the Ghana Stock Exchange here. The study covers revenue diversification, asset diversification, and geographical or location diversification, even though there are likely many other types of bank diversification. Additional factors included in the analysis are the size of the bank, the percentage of bad loans, the capital-to-risk assets ratio, and the GDP. Return on asset (ROA) is used as a surrogate for financial performance.

1.7 Brief Methodology

Research methodology, sample size, sampling technique, data type, source of data, collection procedure of data, data analysis technique, estimation strategy, and model definition are all discussed here. The primary focus of the research is on institutions trading on the Ghana Stock Exchange. The study's observational window spans 2009–2021, providing a total of 23 years of data. This study will employ a strictly quantitative and explanatory research methodology to investigate the hypothesis that a correlation exists between the degree to which a bank's portfolio is diversified and the financial success of its listed subsidiaries in Ghana. With regards to the size of the sample, eight (8) listed banks are randomly chosen from the Ghana Stock

Exchange. The annual income and balance sheets of individual banks are mined for information. Therefore, the specifics of the data are irrelevant. In order to acquire more information, the study uses a panel data set as its estimating procedure. Ordinary least squares (OLS) regression models are optimal for model estimation with panel data. You can use the pooled OLS, fixed effect, or random effect models that come with this model. When deciding whether to report data from a fixed effect or a random effect, the Hausman test is employed to guarantee the reliability and validity of the findings of the research. The data is analyzed using Eviews, an economic viewpoint. If the variables in a diagnostic test are not steady, the estimate procedure may yield meaningless, erroneous findings. The study employs a stationarity test, a multicollinearity or correlation matrix test, and a test of panel unit roots (or stationarity) to ensure its validity and reliability.

Returns on assets (ROA) measured in accounting, is defined as operating income divided by total assets, has its usage in assessing financial performance (Ongore & Kusa, 2017; Turkmen & Yigit, 2016). Ncube (2019) and Pan and Tsai (2020) both note that financial ratios have been the standard technique of accounting used to evaluate bank performance in diversification research. Based on Stiroh and Rumble (2016), Doumpos et al. (2013), and Elsas et al. (2006), the Herfindhal-Hirschman index (HHI) is used to measure income, asset, and geographical diversity.

The HHI measures the degree to which income and assets are diversified, and it does so by subtracting the square root of one from the sum of the squares of the shares of each component to the total income or assets. The study uses a metric for geographical diversity equal to the natural logarithm of the bank's branch count. When dealing with numbers that are subjective in nature, the natural logarithm is used.

1.8 Organization of the Study

There are primarily five (5) sections to the study. Background information, the problem, broad and narrow study goals, research questions, the study's significance, its scope, its constraints, and its overall structure are all covered in Chapter 1. Conceptual review, theoretical review, empirical review, and conceptual framework are all presented in second chapter's literature reviews. The methods and instruments used to ascertain the research findings are described in depth in Chapter 3. Analysis of data and discussion of outcomes are presented in Chapter four. In fifth chapter, I will sum up my observations, draw my conclusions, and offer my suggestions.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The chapter covers the conceptual review, theoretical review, empirical review and conceptual framework. This conceptual review captures definitions of themes such diversification and firm financial performance. It also presents brief general overview of the banking industry in Ghana and other items that relate to the concept of firm diversification. The review of theory presents the various theories that reinforces the study field. The empirical review offers studies by other scholars in the same field of study. Lastly, the conceptual framework illustrates the relationships between the independent and dependent variables.

2.1 Conceptual Review

This section covers the definition of diversification and overview of firm financial performance. Areas such as Ghanaian banking industry and other items that relate to the concept of firm diversification.

2.1.1 Ghanaian Banking Industry

Since the founding of the first Government Savings Bank in 1896 (Onumah & Duho 2019), which was an offshoot of the now Standard Chartered Bank (then British Bank of West Africa), the banking industry in Ghana has a long and storied history. The government established a commercial bank to regulate commercial banking before independence in 1957 and a central bank to handle fiscal policy and other necessary regulatory matters. Bank of Gold Coast was the name under which the institution functioned from 1953 and 1957, before it was split into two independent entities. A system was developed to categorize banks based on the services they offered. We had a variety of specialized financial institutions, such as those catering to investors, farmers, merchants, and the elderly (Mensah & Obeng, 2015). Like individual bank departments were designed to work independently. In response to economic volatility in the 1970s, economic alliances like the IMF (International Monetary Fund) and the World Bank took action to restore financial stability and economic growth (Isshaq & Bokpin, 2012).

With the help of three distinct plans—the Financial Sector Strategy Plan, the Financial Sector Adjustment Programmes, and the Economic Recovery Programme—the country's economy and financial industry were reinvigorated, free-trade made and reformed (Korsah et al., 2011). When it comes to facilitating economic expansion and progress, the banking sector has proven time and time again to be indispensable. During these eras, banks did not need to keep as much money on hand. Banks are hampered in their ability to conduct high-value transactions as a result of low capital requirements. Some financial institutions failed in 2000 as a result of widespread financial instability.

Sheng and Tannor (2016) link this to real estate losses, citing Bank of Housing and Construction as an example. Following the incident, measures were taken by regulators and supervisors to address the issues. In 2003, for example, the Universal Banking license went into effect, and in 2004, the Banking Act (Act 673) was passed. Banking now has more options thanks to this license (Onumah & 2019). Foreign banks began making inroads into the Ghanaian market in 2003, ushering in an era of intense rivalry. The majority of these new financial institutions were branches of existing Nigerian financial institutions. As a result of this boost in competition, banks have started to diversify the types of services they provide. This is more evidence that they have been diversifying their income streams to include both conventional and novel sources. However, throughout this time, banks' minimum capital requirements were not substantially raised. In 1989, a valuation of $740,700 was established, and in 2003, that figure was revised upward to GH7m. In 2008, it was raised to GH60m. In 2013, the regulator suggested a GH120m minimum for all new entrants, while advising existing banks to increase their reported capital. Another period of extreme banking instability occurred in 2017–2018, with seven institutions failing and being merged into or bought by other institutions. Poor corporate governance, risk management, a large percentage of nonperforming loans, and ineffective management are all factors that have been related to the instability of these banks (Onumah & Duho, 2019). Experts have also pointed to the influence of oversight and laws as a contributing element.

Bank of Ghana, the nation's financial regulator, has been working to implement the Basel Accords' recommendations for more sound financial sector regulation. The necessity to control capital risk, market risk, and operational risk is a major theme throughout the Accord. Banks can engage in a certain volume of financial transactions based on their regulatory capital, which acts as a buffer against financial shocks. The Central Bank raised the minimum requirement of

capital from GH120m to GH400m to encourage expansion, improve risk management, and stabilize the banking system.

The result was a drop from 34 permitted banks in January 2019 to just 23 in February of that year. Mobile money banking, digital banking, and automated teller machines are just a few examples of how the sector has incorporated technology into its operations. Although there has been much talk about how AI, blockchain, cloud computing, and big data analytics can revolutionize the banking industry on a global scale, these technologies have yet to be put into practice in a meaningful way. Therefore, the industry's perennial hitch of excessive bad debts has not been addressed. Asymmetry information, adverse selection and moral hazard are all features of poorly performing loans. Experts predict that these innovations will help financial institutions work more effectively (Onumah & Duho, 2019). Since they have not been reached, banks seek new ways to generate revenue than the traditional interest income they have always relied on. Furthermore, these new technologies are in and of themselves potential new revenue streams for Ghanaian banks. Therefore, it is crucial to analyze the impact of banks' knowledgebases or intellectual capital-bases on the diversification strategy in order to shed light on this topic for the industry's numerous stakeholders.

2.1.2 Diversification

The term "diversification" has no universal definition among academics. Reed and Luffman assert that when a researcher has a wide range of interests, the term "diversification" has a different connotation (2016). Since it has been characterized in so many various ways by so many different authors, it is imperative to construct a thorough definition that is both theoretically solid and managerially valid (Olo 2019). Researchers have characterized diversity in a number of different ways, with some emphasizing the sheer volume of goods, services,

and markets a company offers (Capar & Kotabe, 2013), while others place more emphasis on the strategy and tactics that enable expansion while reducing risk (Hoskisson & Hitt, 2017).

Whether or not the many divisions of a company are interconnected, diversification generally refers to an increase in the number of divisions the company operates. According to Olo (2019), the term "diversification" describes a dramatic shift away from a company's traditional line of business into an unrelated one for the sake of growth or expansion. According to Mulwa's (2013) research, a company is considered diversified when it has multiple sources of finance and uses them to generate income. According to the literature (Baele et al., 2016), financial institutions diversify when they offer a wide range of services to their customers, including commercial banking, securities trading, insurance, and other economic services. Bank diversification, according to Ebrahim and Hasan (2018), is bank's operations expanding into provision of new economic services and goods that are distinct from its typical intermediary business. Another illustration of bank's operations diversification is the augmentation of a bank's allowed job roles into non-traditional banking roles. With this background, we can define bank diversification as the division of the many distinct components of a commercial bank that comprises of the operations, assets and liabilities. Therefore, the accumulation of various asset kinds, revenue streams, and liability types used in banking operations can be described as bank diversification.

2.1.3 Dimensions of Bank Diversification

There are three main categories into which a bank's diversification can be broken down. The first subcategory considers how diversification affects financial results (Meslier et al., 2014; Trivedi, 2015). The second subset examines how bank diversification affects their market value (Baele et al., 2016; Mnasri and Abaoub, 2019; Sawada, 2013). The final set examines how

diversification affects banks' steadiness (Berger et al., 2017; Amidu & Wolfe, 2020). According to the available research, there are at least three different diversification tactics that banks might employ. The first option is functional diversification, often known as activity diversification or broadening. The next step is for banks to open branches in new areas. Geographic diversification refers to this type of growth that facilitates access to new areas. Third, by expanding their customer base, banks increase their loan portfolio diversity. By spreading their risk, banks are better able to originate advances with flexible terms and generous amounts.

2.1.3.1 Functional Diversification

Recent empirical research has focused exclusively on the topic of banking sector diversification. There are two main causes for this emphasis on broadening functions. As a first step, banks' focus has changed from their usual interest payments to a more creative forms of non-interest income. Owing to their part in the global economic downturn, authorities and scholars have taken an interest in these innovative services and products offered by banks. Second, international research on bank diversification is made easier by the availability of similar data on income diversification. There is a lack of consensus among studies that examine how functional diversification affects bank stability. Functional diversification among American bank holding corporations is associated with lower levels of stability and riskadjusted return, according to early research (Stiroh, 2014).

These results have since been corroborated by research conducted on American community banks (Stiroh & Rumble, 2016). Research from different parts of the world (Williams, 2016; Abuzayed et al., 2018) corroborated this. Diversification is good, according to data from several markets, including Europe (Chiorazzo et al. 2018), Asia (Hsieh et al. 2013), and the Asia-Pacific (Lee et al 2014) Non-interest income is highly variable, which may account for the seeming contradiction between the positive and negative effects of functional

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diversification. Services, commissions, and trading profits all contribute to a company's noninterest income (Stiroh, 2014).

When disparate sources of income are added together, the individual contributions of each are masked. The stability of a bank that chooses to diversify into trading activities will differ from that of a bank that chooses to pursue commissions due to the projected volatility of trading income. It is only in the situation where the current origins of income are not fully connected to interest income does functional diversification minimize risk (Chiorazzo et al, 2018). For example, service revenue may offer little diversification benefits because it is heavily connected with interest income. Income that is not interest is broken down into its component parts to account for diversity. But it's still unclear how each part contributes as a whole. For instance, some authors argue that commissions and fees have no effect at all, while others claim that they have a beneficial effect (Ammar & Boughrara 2019; Sawada 2013; Hidayat et al. 2012; Lepetit et al. 2018; Edirisuriya et al. 2019). Trading revenue has also been disclosed to have positive (Ammar & Boughrara 2019; Mostak 2017), negative (Bian et al. 2015; Hidayat et al. 2012), and inconsequential (Hidayat et al., 2012)

2.1.3.2 Geographic Diversification

Banks increase their geographic diversification by opening additional branches and focusing on new types of customers. The advantages of networking, greater utilization of managerial talents, rules, and processes, and the advantages of geographical risk diversification may all play a role in inspiring these expansions. The issues that arise from having a geographically dispersed workforce are unique. Motivation for geographical diversification might be dampened by factors such as remoteness from the mother organization and a lack of core competencies in the geographical area (Berger & DeYoung, 1997).

The conditional advantage proposed by the theoretical literature is supported by empirical research. While it is true that spreading operations throughout multiple regions might lessen the likelihood of a company going bankrupt (Liang & Rhoades 2018), the benefits of doing so diminish as the interspace from the parent company to its subsidiaries grows (Deng & Elyas 2018). The prospect of worldwide variety is also fraught with doubt. Depending on who you ask, international diversification can have either a positive (Garca-Herrero et al. 2013) or negative (Gulamhussen et al., 2014)

2.1.3.3 Loan Portfolio Diversification

Lending to multiple different sectors helps banks spread their risk. While it's true that banks typically provide identical financial products across sectors, diversification might help reduce dangers unique to each markets. It is also possible to diversify a loan portfolio by making loans of varying amounts (Rossi et al., 2019). For two reasons, research into the effects of diversified loan portfolios is scarce. First, there is a dearth of information on banks' individual loan portfolios that can be analyzed in isolation. Second, there is a lack of consistency in the numbers that are reported by various nations. Cross-national research is hindered by the absence of standard datasets. Empirical research finds that loan portfolio diversification has a mixed effect, much like that found with earlier diversification schemes. Loan portfolio diversity results in lower profitability and higher expenditures, according to a research of Chinese banks conducted by Berger et al. (2014). Portfolio diversity, however, has been shown to decrease risk and improve profit efficiency in a thorough analysis of Austrian banks (Rossi et al., 2019). Diversifying a bank's loan portfolio may pay off, but only if the bank is competent in doing so. It has been found that diversified banks benefit from having lower risk (Acharya, Hasan, & Saunders, 2016) or better surveillance (Berger et al., 2014).

2.1.4 Determinants of Noninterest Income

As a result of financial free trade and the speedy growth of information and communications technology permeating the financial markets, the banking industry has undergone a considerable structural upheaval over the past two decades. Several banks have converted to a new business model focusing on nontraditional banking services in order to offset the low interest margins and poor profitability brought about by fierce competition. Several empirical studies using either single or bloc countries have been undertaken to ascertain the effect or influence of non-interest income on banks' bottom line. For instance, Craigwell and Maxwell (2016) investigate the drivers and implications of non-interest income for Barbados's commercial banks' bottom lines.

Commercial banks resident in Barbados' were analyzed by the authors after selection from 1985 to 2011. Their research shows that in Barbados, non-interest income for banks is primarily affected by customer preferences and the availability of automated teller machine technology. There is a close correlation between non-interest revenue and the profitability and volatility of banks' profits. Hakimi et al. (2012) analyze the causes of non-interest income in Tunisia using data from 10 retail banks in the nation. The years 1998-2009 make up the sample. In a panel data regression analysis of national income inequality (NII), the use of ATMs and credit cards as surrogates for ICT development shows an affirmative linkage between the two variables. The data also demonstrates that the trajectory of non-interest revenue in Tunisia is determined in large part by the size of the bank, the quality of the bank's credit, and the bank's strategy. Hahm (2008) analyzes information from 662 big commercial banks in 29 OECD nations between 1992 and 2016 to analyze the NII and its consequences.

The data shows that commercial banks having larger asset sizes, lower net interest margins, higher non-performing loans, and higher efficiency ratios have a greater share of non-interest income in their overall revenue. In addition to looking at elements unique to individual banks,

the author also considered the impact of macroeconomic factors on NII. The findings show that in economies with moderate growth, low inflation, and healthy stock markets, banks rely on non-interest revenue streams to a higher extent. De Young et al. (2014) discovers that the larger the bank, the more money it makes in non-interest income. These writers contend that large financial organizations can effectively corner the market on consumer loan origination by taking advantage of economies of scale.

2.1.5 Noninterest Income and Bank Performance

Recent research has looked at how liquidity risk, risk of credit, bank size, and capital of banks all play into the profitability of banks in relation to industry-specific features like and concentration and competitive indexes. Tan (2016) examines the risk impact and competition on profitability of banks. He did this by looking at information from the Chinese banking sector from 2003 to 2011. Empirically, a Generalized Method of Moments (GMM)-based systems estimator was employed. There is zero correlation between market competition, risk, and profitability for financial institutions. When examining the numbers more closely, however, we see that variables such as taxes, overhead, worker productivity, and inflation affect Chinese banks' bottom lines. Another recent study by Tan et al. (2017) investigates what made a hundred different commercial banks in China successful between 2003 and 2013. The writers primarily focused on how factors like efficiency, risk, and competition affect bank earnings. The research shows that when competition is low and bank risks are low, Chinese commercial banks make greater money. Risk of credit, liquidity risk, capital risk, and bankruptcy risk are all areas that Tan and Anchor (2017) investigate in relation to the baking sector and the impact of competition. To investigate the impact of rivalry on risk, he used a sample drawn from China's banking sector between 2003 and 2013 and the Generalized Method of Moments (GMM) system estimator. Increased competitiveness is associated with higher levels of credit risk,

liquidity risk, and capital risk but lower levels of bankruptcy risk, according to the available empirical evidence.

Research on banking diversification effect has discussed the impact of non-interest revenues on banking profitability, with varying outcomes. Numerous empirical studies show that diversity improves both individual and organizational performance and overall bank profits. Meslier et al. (2014) use information from thirty-nine (39) banks, which were universal and commercial in nature in the Philippines, that were active between 1999 and 2005 to analyze the value of bank diversity. Noninterest revenue has been found to boost bank profitability and risk-adjusted profits.

In order to ascertain non-interest revenue's effect on bank profitability and risk, Lee et al. (2014) evaluated data from 967 Asian banks in 22 countries between 1995 and 2009. An Asian bank's risks are reduced by non-interest activities but their activities do not increase profitability, according to a dynamic panel Generalized Method of Moments (GMM) analysis. Using data from a sample of 16 listed commercial banks residing in China from 2007 to 2013, Sun et al. (2017) examine the effect of noninterest revenue on bank performance. Noninterest income appears to have a nonlinear relationship with bank performance, as indicated by empirical data from a panel threshold model. The findings also indicate that the noninterest income ratio is inversely related to the performance of commercial banks. If banks could raise their noninterest income share above a certain threshold, they would become more profitable, according to the authors. Ismail et al. (2015) use data on a subset of Pakistani banks operating between 2006 and 2013 to analyze how income diversification affects financial outcomes. The findings revealed that increasing economic diversity in Pakistan increased bank levels. In a similar vein, Trivedi (2015) analyzes information from 81 Indian financial institutions between 2005 and 2012.

Key conclusions imply that expanding fee-based portion of total sum of income, as well as diversification are profitable. The non-interest income's higher ratio is related with the banking sector's higher profitability persisting under different market regimes, as shown by Saunders et al. (2013) who analyzed 368,006 quarterly observations on 10,341 U.S banks between 2002 and 2013. For his analysis, Craigwell & Maxwell (2016) looked at quarterly data of seven commercial banks residing in Barbados between 1985 and 2001. According to their findings, as banks' non-interest income expanded, so did both their profitability and their profits volatility.

2.2 Theoretical Review

Theoretical underpinnings of this investigation begin with the question, "Why do companies diversify?" There are various reasons why one could choose to diversify their holdings (Amit & Livnat, 1988). There are many reasons why businesses might choose to diversify, as Montgomery (1994) explains. She discusses diversity from three different vantage points: market power, resources, and agencies. While the first two perspectives are congruent with maximizing profits, the third is managerial in nature and not concerned with either profits or efficiencies. The larger a firm is, the more resources it is assumed to control and, thus, the better it should perform in its industry, according to the market power concept. This conventional knowledge accords with the resource-based approach, which holds that a company's competitive advantages are founded on its bundled resources and capabilities, which have been built up over time. Companies that have diversified their operations are not more efficient than those that have not because they benefit from Conglomerate Power. According to Gribbin et al (1976), a company lacks conglomerate power if it does not have a dominant position in many markets. Companies that expand their operations to other industries typically do so to reduce competition.

The anti-competitive practices that are frequently related with diversification motivations are highlighted by. The multinational corporations can use many methods and tactics to either increase or maintain their position of dominance. According to Montgomery (1994), the strength of the market shows that diversification contributes to the success of a company. It's not so much the power itself that improves productivity at the organization. In conclusion, the market power view holds that the primary motive for corporate diversification is to improve market power and, by extension, profits. Berle and Means (1994) analyze the distinction between the firm's principal and agent. When there are few or no major shareholders, management is more likely to make decisions that harm the company's value as a means to protect its own financial biases.

From the standpoint of the agency, diversity can serve a number of purposes. The principal will not benefit from that in most cases. This is due to the fact that unlike the owner, the manager has no financial stake in the business. This is in line with Sambharya's (2000) theory that a company's decision to diversify may be an indication of the objectives and goals of the senior management. The four most compelling arguments for corporate leaders to diversify the business are laid out: Free cash flow (Jensen, 1986), Empire building (Montgomery, 1994), Managerial entrenchment (Schleifer & Vishny 1989), and Risk minimization (Amit & Livnat 1988). Value maximization and profit enhancement are argued to be unmotivated from an agency perspective on diversification. The so-called "agency cost" suggests that the overall effect of agency theory is to reduce the value of the firm rather than improve it. The resource view on diversification was created by (Penrose, 2014) who included the expansion of the enterprise in the original resource-based concept. Diverse resources, rather than general market or sector trends, are the primary drivers of expansion for every given business. A company has an incentive to grow (Penrose, 2014) and is motivated to diversify when it has extra resources that are not being put to good use. The company needs to specialize in order to expand, and the

revenues or resources gained from this expansion can then be underutilized to fuel further expansion through diversification. The vicious cycle, which states that specialization leads to diversification, describes this dynamic (Penrose, 2014). However, diversification will never occur if the underutilized resources cannot be sold at a profit. In response to companies selling off divisions in the 1990s, the "return to the core" strategy emerged in the early 2000s (Montgomery, 1994). Nevertheless, diversification remains an ongoing process in most businesses, making it worthwhile to investigate the connection between diversity and productivity. With their model of diversification, Rajan, Servaes, and Zingales (2000) made a significant contribution. If the availability and cost of resources are comparable, then money will be reallocated to the more productive departments. However, if variety between departments grows, resources will be diverted from the most efficient group and given to the least efficient, lowering total productivity. According to the resource view, a diversified portfolio should be more profitable. This is true up to a point, though, as studies have shown that increasing transaction costs eat into profits by driving up the price of corporate governance. Connecting theories to findings, both the resource perspective and the market power view aim to maximize profits. In contrast to the market power view, which focuses on the firm's internal elements, the resource view describes diversification in terms of its external environment. The two perspectives are more supplementary than competitive. Diversification into other industries may have a greater impact on operations than what is currently accounted for by the resource view, which is focused on the company's own internal resources. Therefore, it can be useful to incorporate certain ideas from both perspectives. The agency approach differs from the other two in that it does not seek to maximize profits but rather to promote the perks and interests of managers, which may result in a decline in shareholder value.

To explain diversification, the agency approach places more emphasis on the incongruity and complexity of strategy design and implementation. It has been proposed that the agency view

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and the two profit maximizing viewpoints should not be combined in research; nonetheless, the agency view does provide a perspective that can be explored with positive outcomes. The jump to tangible proof in the area of diversity and performance is not too far from the connection between the viewpoints. While the resource view and the market power view would anticipate a positive association between diversity and ROA, the agency theory predicts the opposite.

2.3 Empirical Review

To illustrate the diversification impact on the bottom line, this portion gives examples from a variety of industries and nations. Kahloul and Hallara (2018) conduct a study to determine the connection between diversity and productivity. A total of 69 big French enterprises were selected for this analysis, covering the years 1995-2015. In this approach, both univariate and multivariate statistical methods are prioritized. All 69 non-financial businesses meeting specific criteria for size, time period, and industry activity were included in the sample. Regression analysis is used to analyze such panel data, which combines cross-sectional and time-series information. The results invalidate the hypothesis that increased diversity leads to better performance. The results also show that diversity does not reduce total risk in any appreciable way. However, ownership structure can moderate the link between performance and diversification, as well as diversification's protective effect against risk. Understanding the interplay between diversification, risk, and performance may be more or less important depending on the ownership structure. Turkmen and Yigit (2016) examine bank diversification's impact on Turkish banks' performance. Forty banks of commercial nature are the focus of the research. Herfindahl Index (HI) is used to evaluate geographic diversity and ROA and ROE are used to assess statement of operations. The Herfindahl Index quantifies geographical diversity by adding each bank's market share in each market and then squaring that number.

The study concludes that banks can decrease their overall risk exposure by bringing diversification to their credit portfolios, since profits made in one industry or region can offset losses in others. Maina (2019) examines product diversity's impact on the bottom line of microfinance establishments. The primary goals of this research are to characterize the various forms of diversification present in the Kenyan microfinance industry and to establish their correlation with business success. Secondary data from the books of Microfinance institutions and the Central Bank of Kenya form the basis of this descriptive survey. The major research findings from 2008–2012 show that the diversity indicator, return on assets and return on equity are all increasing. Since horizontal, vertical, and corporate diversification all have distinct effects on financial results, it is unclear from the study which type of diversification was attempted. On the other hand, Bapat and Sagar (2015) look at how different types of income and asset quality affect a bank's bottom line. They look at information from 46 different types of banks in India between 2006 and 2013. When comparing public and private banks, they find striking differences in the ways in which diversity is handled. It's laying the groundwork for the aforementioned negative correlation between NPAs and ROA. The favorable correlation between diversification and ROA is also instructive. Using a data set of 105 Italian banks for the sample period 1993–1998, Acharya et al. (2016) analyze the impact of diversification on a bank's return and risk.

Results should be interpreted with caution due to data limitations, but they do reveal some implications for banks' ideal size and scope. Their research supports the hypothesis that a bank will have diseconomies of scale if it enters a highly competitive market. Kamwaro (2017) analyzes the connection between investment firms' profitability and their portfolio decisions on the Nairobi Securities Exchange. Descriptive research methods were used for this investigation. The research includes a comprehensive inventory of all investment firms trading

on the Nairobi Securities Exchange. The Nairobi Securities Exchange is home to five different investment firms.

Secondary data from company books of account and the NSE or Capital Market Authority are used to examine financial performance over a three-year period (2012-2014). Using an equation of multiple linear regression, estimated with Ordinary Least Squares (OLS), portfolio composition's impact on statement of operations of investment entities listed on the Nairobi Securities Exchange is calculated. According to the findings, the portfolio composition has an effect on the financial performance of investment firms traded on the Nairobi Securities Exchange. Sanya and Wolfe (2019) examine the connection between ownership structure, revenue diversification, and insolvency risk. Using a panel dataset of one hundred and fiftythree listed European banks from 2000-2017 and the 3-stage least squares estimate approach, they conclude that income diversification reduces the likelihood of insolvency in banks with a big shareholder. This is because the capacity to effectively influence strategic investment decisions is a common means by which the majority shareholder satisfies the need to safeguard its wealth. The results are still reliable after taking into consideration the rigorous controls mandated by banking sector regulation. This novel method is based on the association between ownership concentration and diversification, and it measures the income diversification impact on bank insolvency risk.

Sanya and Wolfe (2017) analyze how income diversity influences the success and vulnerability of financial institutions. Using a novel approach to data analysis, generalized method of moments (GMM) estimators, we examine the dataset of a panel consisting of two hundred and twenty-six listed banks from eleven developing countries and find that diversification existing in both interest and non-interest income producing sectors reduces insolvency risk and increase profitability. Institutions with average risk exposures are also found to profit the most from

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these trends. Berger et al. (2014) examine the effect of specialization versus variety on profitability using data on Chinese banks from 1996-2006.

They segment the market along the dimensions of loans, deposits, assets, and geographic presence. They conclude that all four features of diversification contribute to decreased profits and increased costs. These results persist uniformly across several diversification measures and performance. They discover that both majority and minority foreign ownership of banks, as well as affiliation with a conglomerate, are related with lower diseconomies of diversification, suggesting that these factors may play key moderating roles. Kipleting and Bokongo (2016) investigate the impact of varied investments on the bottom lines of commercial banks in Kenya. This inquiry took an experimental tack. The sample for this study consists of forty different commercial banks. Data sheets and interview schedules are used to collect secondary data. Multiple regression, as well as other types of descriptive and inferential statistics, are used to investigate the collected information. According to the results of the survey, most banks in Kenya made use of insurance investment to improve their bottom lines. Chiorazzo et al. (2018) use annual data from Italian banks to analyze the correlation between non-interest revenues and profitability. The findings suggest that partaking in non-interest activities can boost income but put you at greater risk due to their uncertain nature. This demonstrates once again that the advantages of diversification are not limitless as banks grow. Smaller banks can benefit from growing their non-interest income if they currently have a low non-interest income percentage. In his 2017 research, Maudos examines income structures' impact on European banks' risk and profitability.

This is done by estimating the revenue structure from 2002 to 2012 using data collected from a sample of European banks. This study analyzes how investment banks and financial intermediation banks' income structures affect their risk and profitability. The findings show that profits fall as income from fees (or non-interest income) accounts for a greater part of total

income, even if this effect is only noticeable once earnings reach a particular level. Looking at the impact on interest banks in isolation from the impact on other types of banking reveals a negative and sizable impact on interest banks, but no impact on banks offering a wider variety of services. A higher proportion of non-interest income to total income was associated with a higher risk, according to the study's authors, albeit this correlation lessened as the recession wore on. The findings appear to suggest that market dominance is associated with increased financial stability. In addition, Meslier et al. (2014) examine how a bank's ability to generate income from a variety of sources may affect its productivity in a developing economy. Banks' profits and risk-adjusted earnings will increase, in particular, if they move their focus away from interest-bearing activities and toward non-interest ones, such as trading in government securities. This result relied on the use of a novel dataset that included detailed information on sources of income other than interest. It also demonstrates that foreign financial institutions gain more than their domestic counterparts from this shift. Nguyen et al. (2020) investigate how market strength and income diversification relate to a bank's stability, as well as whether or not these two elements interact. From 1998 to 2008, the authors analyze the financial systems of Bangladesh, India, Pakistan, and Sri Lanka. Using GMM estimators, they determine that large South Asian banks prioritize traditional interest collection strategies. A bank's strength increases, nevertheless, as it broadens its revenue base beyond interest payments.

They conclude that banks have a negative market power to non-interest revenue ratio. The safety of the financial system is enhanced when market leaders diversify their revenue streams. Banks' non-interest income increases alongside overall financial and economic growth, and larger credit loss institutions give this diversification a higher priority. The effects of diversification on the risk-taking behaviors of diversified and non-diversified banks are studied by Goetz (2018). The research shows that as banks expand into new geographic markets, they

alter their lending policies and the market interest rates, which has ramifications for banks that haven't diversified.

The smaller the risk a bank confronts, the more sites its competitors have. These findings imply that a bank's level of diversification influences its rivals' risk-taking behavior, even if the rivals are not diversifying themselves. By treating bank subsidiaries as different assets inside the banking group's overall portfolio, Fang and Lelyveld (2018) were able to calculate the benefits of international diversification using a generalizable correlation matrix approach. They utilize it to examine 49 of the major banking conglomerates from 1992–2009 that also operate sizable overseas operations. It focuses on the main risk facing banks and shows how diversifying across regions can help reduce credit risk. Baele et al. (2016) investigate the hypothesis that banks with a wider range of services have better long-term overall performance/risk profile than their more narrowly focused competitors. They use a panel data analysis to look back at the return/risk trade-off implied by different functional diversification strategies between the years of 1989 and 2004. Bank franchise values are seen to climb when the share of non-interest income in overall bank profits rises. Banks' idiosyncratic risk will increase non-linearly and be skewed toward the negative if their income originates from a wide variety of financial activities, but the effect on the banks' systematic risk will be linear.

Mutega (2016) uses a descriptive research strategy on a sample of 43 Kenyan commercial banks to analyze how asset diversification affects financial results. The annual financial statements of the companies are analyzed for further information regarding financial performance and asset variety. This research only covers the years 2011 through 2015, a rather short period of time. A quantitative technique is used to provide a descriptive analysis of the data. Financial assets, loans, cash and equivalents, and other investments are all independent variables.

All independent variables were found to have a positive and statistically significant effect on the financial outcomes of Kenya's commercial banks. Elefachew and Hrushikesava (2019) examine the effect of industrial diversification on the bottom lines of certain prominent Ethiopian financial institutions. Data for six years (2008/09–2013/14), including ten private and two government commercial banks. Ethiopian banks' loan portfolios cover a wide range of economic activities. It is found that diversification across industries has a negative and statistically significant influence on ROA and ROE when the regression is computed using the fixed effects model. To research how varying sources of income affects the worth of banks, A panel data collection covering nine countries from 2000-2018 is compiled by Elsas et al. (2016). They adopt a comprehensive technique for analyzing bank performance, unlike previous research that has focused on industrial businesses, and they uncover substantial evidence against a conglomerate discount. They reasoned that shareholders would place a higher value on a financially diverse bank. This indirect performance benefit holds true whether or not diversity was achieved through organic expansion. They also demonstrate how past conclusions in the literature on the impact of diversification on bank value likely differ due to the way diversification is evaluated and the ignoring of the indirect value effect via bank profitability.

Diversity, according to Landskroner et al. (2015), can provide a financial institution a leg up in gaining the trust of its customers and, in turn, increase profitability and efficiencies. Ebrahim and Hasan (2018) break out the monetary worth of interest and noninterest banking earnings for commercial banks, but they do so independently. In particular, it examines the reaction of the market to a change in the composition of banks' earnings caused by the introduction of noninterest financial services. A sample of commercial banks was used during the years 1993 and 2002. They found a stronger positive correlation between annual anomalous returns and

changes in the bank's noninterest income than between such returns and changes in the bank's interest income.

Elyasiani and Wang (2012) look into the hypothesis that a more diverse workforce boosts company output. For a sample of bank holding businesses between 2007 and 2017, Data Envelopment Analysis is used to calculate the Malmquist index of productivity and the total factor productivity change. The first observation made by the researchers was that banks that did not engage in any form of diversification tended to have higher levels of technical efficiency. Total factor productivity change is independent to diversification, although technical efficiency declines as diversity increases over time.

2.4 Conceptual Framework

The below Figure 1 illustrates the relationship among variables conceptually. That is, it establishes the various paths through which the independent variables such as diversification of income, diversification of asset and diversification of geography affect the dependent variable, return on asset. The Figure 1 also, shows how the control variables used in the study include NPL, bank capitalization, banks and GDP relate to ROA.

Figure 1: Relationship Among Variables
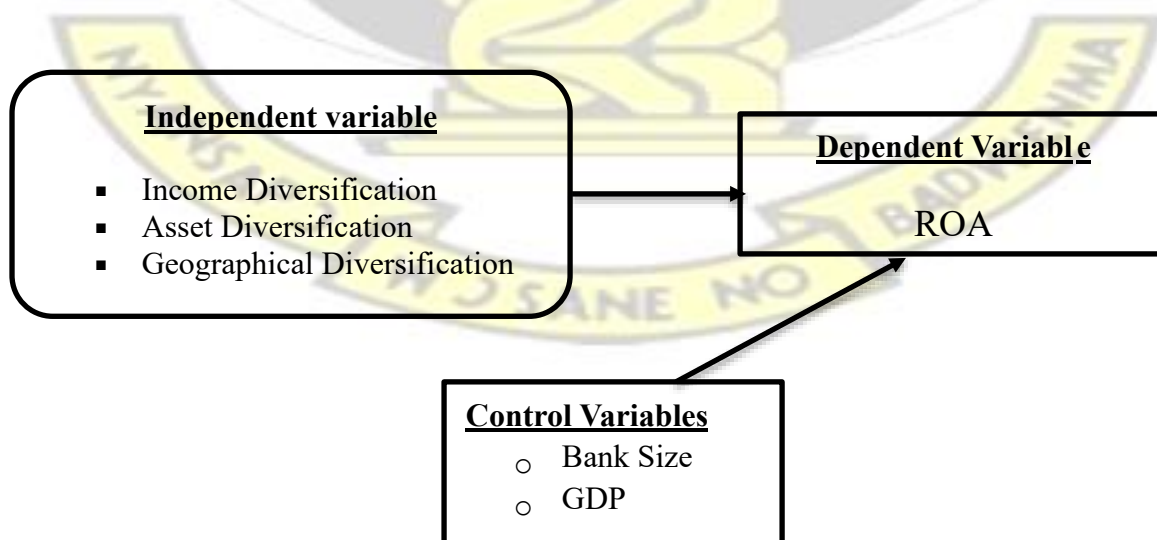
CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents various study tools and methodologies used to execute the study's findings. Specifically, the chapter encompasses design of the research, sample size and sampling technique, data type, procedure for sourcing and collecting, data analysis method, strategy of model estimation, variables and model specification measurements.

3.1 Research Design

This study first and foremost attempts to explore the relationship between bank diversification and financial performance of listed banks in Ghana. Explicitly, in order to examine the effect of income diversification on ROA of listed banks in Ghana, determine the effect of asset diversification on ROA of listed banks in Ghana and establish the effect of geographical diversification on ROA of listed banks in Ghana, the researcher employs research design that is explanatory in nature making use of a panel data set. A cross-section of time period data set is used by the panel. Using panel data method allows for more data points to be obtained. Panel data sets can be mainly grouped into balanced and unbalanced panel data sets.

The same unit shows up on each time period when using a balancing panel. Some units do not frequently present in each time period with an unbalance panel owing to attrition (Wooldridge 2016). Applying an ordinary least squares OLS regression model, this study employs unbalanced panel data. The three (3) primary models included in this OLS model are the pooled

OLS, the fixed effect model and the random effect model. The Hausman test is used to evaluate how effective random effect or fixed effect models as a robustness safeguard and an appropriate model for the final presentation of data would be.

3.2 Data Type, Source and Sampling Techniques

First and foremost, this study is made up of all financial companies listed on the Ghana Stock Exchange (GSE). What it means is that the non-financial companies are excluded from the study to remove any inconsistencies associated with regulation, regarding liquidity, asset and capital holding. Currently, there are 8 banks listed on the Ghana Stock Exchange. The researcher conveniently samples all the 8 banks. This sampling technique allows methods' range that would enable a researcher decrease the data amount required to be collected by considering the data only from a sub-group (Saunders 2013). The study uses secondary data and sourced from the rural banks' annual financial statement. The macroeconomic variables are sourced from worldwide development indicator covering the period of 2009–2021, which has a 23-year period of observations.

3.3 Data Analysis Techniques

This econometric view which is popularly known as Eviews is what the study employed in analyzing the data. Prior to data being analyzed, the data is taken through a chain of robustness checks such as stationarity, heteroscedasticity and multicollinearity. The study employs ordinary least squares regression model. To established the appropriateness of the results, pooled OLS regression model, fixed effect regression model and random effect regression model under OLS are run. Hausman Test is employed in the selection of either fixed effects model or random effect model.

3.4 Measurement of Variables

This section presents an overview of how each of the variable is measured. That is, it presents the various proxies and how each of these proxies is operationalized. Specifically, the dependent variable is return on asset (ROA) whilst the independent variables comprised and proxied as diversifications income, assets and geographical location. The control variables used in study are bank size and GDP.

Table 1: Description of Variables and Expected Signs

Variable Category	Variable Definition	Expected Sign
Dependent Variable ROA	*Net income that is pre-tax profit/Total asset*	
Independent Variable		
Income Diversification	$1-(Interest\ income\ Total\ income)^2-(Non-interest\ income\ Total\ income)^2$	$(\pm)$
Asset Diversification	$1-(Loans\ Total\ assets)^2-(Non-loans\ assets\ Total\ assets)^2$	$(\pm)$
Geographical Diversification	*Natural logarithm of the number of branches*	$(\pm)$
Control		
▪ *Bank Size*	*Total liquid assets/Total assets*	$(\pm)$
▪ *GDP*	*GDP growth (annual %)*	$(\pm)$

Source *(Researcher 2023)*

3.4.1 Dependent Variables

In order to evaluate an institution's financial health at a certain time and its management effectiveness over a given time period, accounting and market data are used by all performance metrics (Jianu et al., 2017). De Andres and Vallelado (2018) and agree that profitability is a useful summary indicator of performance. The study employs one of two standard metrics for gauging a company's (or bank's) success: return on assets (ROA), which is defined as the return

on the average total assets. Conversely, ROE is the ratio of profits to stockholders' equity. Tobin's Q (the market value of common stock plus the book value of preferred shares divided by the book value of total assets) is not the same as the measure of bank performance used by Laeven and Levine (2017). Since there is a dearth of information regarding the market value of banks, this research employs ROA as a proxy for performance measurement in order to calculate added value. Cost-to-income ratio, which is an inverse proxy for bank's cost efficiency, and loan loss reserves divided by gross loans, an inverse proxy for asset quality or bank stability, are two examples of non-ROA or non-ROE measures that should not be used to evaluate a bank's performance (Beck et al. 2019). As banks increase their earnings, they also increase the dangers associated with their operations. Thus, diversification is necessary for banks not just to increase profits but also to reduce exposure to risk (Chiorazzo et al. 2018; Stiroh et al. 2019a).

3.4.2 Independent Variables

The study employs three (3) independent variables which are: diversifications of income, assets and geographical location, to measure bank diversification. Referring to the studies of Alkhouri and Arouri (2019):

Income diversification $=1-(Interest\ income\ Total\ income)^2-(Non-interest\ income\ Total\ income)^2$. The value of income diversification is between 0 and 1. If the bank's value of income diversification tends to 0, it is assumed that it works more concentratedly; if it tends to 1, it is assumed that it operates more diversified. The study also uses asset diversification as a way to gauge bank diversification. According to the research by Alkhouri and Arouri (2019), asset diversification is measured as follows:

Asset diversification $=1-(Loans\ Total\ assets)^2-(Non-loans\ assets\ Total\ assets)^2$. Diversification of assets has a value between 0 and 1. If the bank's value of asset diversification

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is closed at 0, it is assumed that it has concentrated operations; if it is closed at 1, it is assumed that it has diversified operations. In the past, geographic diversification has been calculated by breaking down a bank's asset portfolio by administrative province (Berger et al 2017). In other research, the administrative province's bank deposits have been used to measure geographic variety (Liang & Rhoades 2018; Morgan & Samolyk 2016). Instead, this study creates a different variable by using the number of such bank's branches to calculate the level of geographic diversity (Sharma & Anand 2019).

3.4.3 Control Variables

The natural log of total assets is used as a surrogate for the size of a company. It has been argued that a company's capital structure is determined by its size (Abor, 2005). Companies with a larger size and scope may typically take on more debt since their earnings are more stable and less volatile (Castanias, 2018; Wald, 2019). However, smaller businesses may have lower debt ratios because it is more expensive for them to resolve information asymmetries with lenders (Castanias, 2018). Research into the correlation between company size and capital structure yields conflicting results. Most research finds that as business size increases, leverage does as well (Marsh 2017).

Fischer, Heinkel, and Zechner (2019), on the other hand, discover an inverse correlation between firm size and the debt ratio. The total assets of the selected banks have been logarithmically scaled to represent the size of the firms. The logarithm's ability to standardize quantities allows us to obtain the true total asset of the firms, leveling the playing field for more effective analysis. The GDP serves as the other control variable.

3.5 Model Adequacy and Diagnostics Test

Diagnostics test are performed to check whether dataset achieved all the necessary assumptions of the regression analysis. The tests this study to be performed are; the Levin, Lin and Chu Unit Root Test, correlation matrix test and correlated random effects-Hausman Test. This Hausman test is exercised in the selection of either fixed effects model or random effect model.

3.6 Panel Data Analysis

This study makes use of the many benefits of the panel data paradigm. Panel data analyses considers the same firms (n) being observed across a certain number of years (t) which gives a clearer and trustworthy picture as compared to cross-section analyses that are based on a single year of observation. Since the greater the sample size, the less bias is detected in the estimations, increasing the amount of observations based on (n x t) as shown above helps to improve the estimators' efficiency.

Time series research can benefit from using panel data since it reduces the issue of multicollinearity. More degrees of freedom and efficiency are provided by panel data, and there is less collinearity across variables. Time series and cross section investigations, as pointed out by Moulton (1987), are susceptible to getting biased results since they do not account for individual heterogeneity. In this regard, the panel data analytical framework separates heterogeneity into two categories: that which is related to changes over time (period effects) and that which is related to differences between firms (group effects).

The basic formula of the panel data model is :

$$Y_{it} \; \square \; \square\square \; \square \; \square X_{it} \square \; _{it}$$ …………………………………………………………………. (1)

Where $\square$ is constant, i stands for the firm and t is the time dimension. X_{it} represents the explanatory variable and $\square_{it}$ is the error term. $\varepsilon_{it} = u_{it} + v_{it}$, where $\square_i$ shows the firm's specific effect and v_{it} is a random term. Depending on how the error term behaves, there are various ways to estimate the fundamental model of panel data. Additionally, it relies on whether serial correlation and heteroscedasticity exist in the questioned estimated model. The study primarily uses pooled ordinary least squares (OLS), fixed effects, and random effects, as already mentioned.

3.6.1 Pooled OLS Model

Regression models are run using a pooled set of observations while ignoring cross-sectional data and time series from the natural world where X is not connected with the error portion. Pooled regression's primary flaw is that it does not distinguish between the many entities. The assumption that applies to cross-section analysis is of the following form, and this model is the most restricted one that stipulates constant coefficients.

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$ ……..………………………………………...………………… (2)

Where; Y = dependent variable, X = explanatory variable, i = cross- section unit, t = time period and $\square$ = Error term it is assume that the X's are non-stochastic and that the error term is followed by the classical assumptions.

3.6.2 Fixed Effect Model

Fixed effect model allows the individual-specific effects β_{1t} to correlate with the explanatory variables X. The fixed effect model is as shown below:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (3)}$$

Where;

$Y =$ dependent variable, $X =$ explanatory variable, $i =$ cross- section unit, $t =$ time period.

Fixed Effect Model usually expropriate may vary across individual firms, however each individual intercept or expropriate unvaries over time. Hence, it is not time variant. Fixed Effect Model assume that the regressions' slope coefficients do not fluctuate across individuals or over a time period.

3.6.3 Random Effects Model

The rationale behind random effect model is that the random effect assumes that the entity's error term is not correlated with the explanatory variables which is not how the fixed effect model behaves. The fixed effect model is of the form:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (3)}$$

Where;

$Y =$ dependent variable, $X =$ explanatory variable, $i =$ cross- section unit, $t =$ time period. We assume β_{1i} is a random variable with a mean value of β_{1i}, which has no subscript i. Hence, each error parts are uncorrelated with each other and are uncorrelated across with cross-section and time series unit. ε_i which is not directly observable, is known as an unobservable or latent variable. In the event it is assumed that, ε_i and the X's are correlated, fixed effect model may be appropriate whereas if they are not correlated, REM may be appropriate.

3.7 Model Specification

$$ROA = \beta_0 + \beta_1\, INDV_{ti} + \beta_2\, ADV_{ti} + \beta_3\, GDV_{ti} + \beta_4\, BSIZ_{ti} + \beta_5\, GDP_{ti} + \varepsilon_{it}$$

Where:

ROA= *return on asset*
INDv=income diversification
ADv=asset diversification
GDv=geographical diversification
BSIZ=bank size
GDP=gross domestic product

ε = error term, i & t represent cross-section unit and at time t respectively, and β represents coefficient of the variables.

CHAPTER FOUR

PRESENTATION OF DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Introduction

This study investigates the connection between the financial performance of Ghana's listed banks and their diversity. The research specifically looks at how income diversification affects listed banks in Ghana's return on assets (ROA), how asset diversification affects return on assets (ROA) of listed banks in Ghana, and how geographic diversification affects return on assets (ROA) of listed banks in Ghana. The panel unit root, multicollinearity tests, descriptive statistics, empirical results, Hausman tests, and discussion of findings are the chapter's six (6) key components.

4.1 Panel Unit Root Results

Reliability and validity ensure the data set is free from inaccuracy. In panel data set, running the unit root test by Levin, Lin and Chu shows testing the stationarity of data. Table 2 below shows the Levin, Lin and Chu Panel Unit Root Test (at level) and Levin, Lin and Chu Panel

Unit Root Test (at first difference). At level, it is evidenced that some of the variables are at stationary whilst others are not stationary. To correct for non-stationarity in these variables, the first difference of the variables [d(var)] was used in the regression models. After taken the first difference of each variable, there are evidence of stationarity of the variables after first difference. The result shows at first difference and Individual Intercept, first difference and Individual intercept and Trend, and first difference at None, stationary variables exist. This means that, all variables' probability values are at a significant level of $\leq 5\%$.

Table 2: Levin, Lin and Chu Panel Unit Root Test (At Level & At First Difference)

Variable	Levin, Lin & Chu Panel Unit Root Test (At Level)			Levin, Lin & Chu Panel Unit Root Test (At First Difference)		
	Level @ Indv. Intecp.	Level@Indv. Intecp & Trend	Level @ None	1st Diff@ Indv. Intecp.	1st Diff@Indv. Intecp & Trend	1st Diff@ None
ROA	0.0000	0.0000	0.0117	0.0000	0.0000	0.0000
INDV	0.0001	0.0000	0.6883	0.0000	0.0000	0.0000
ADV	0.7038	0.0000	0.2635	0.0172	0.0000	0.0012
GDV	0.5074	0.0036	0.4309	0.0042	0.0001	0.0013
BSIZ	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
GDP	0.0000	0.0000	0.0522	0.0000	0.0000	0.0000

(EViews 10) All variables must be stationary at 5% significant level   (EViews 10) All variables must be stationary at 5% significant level
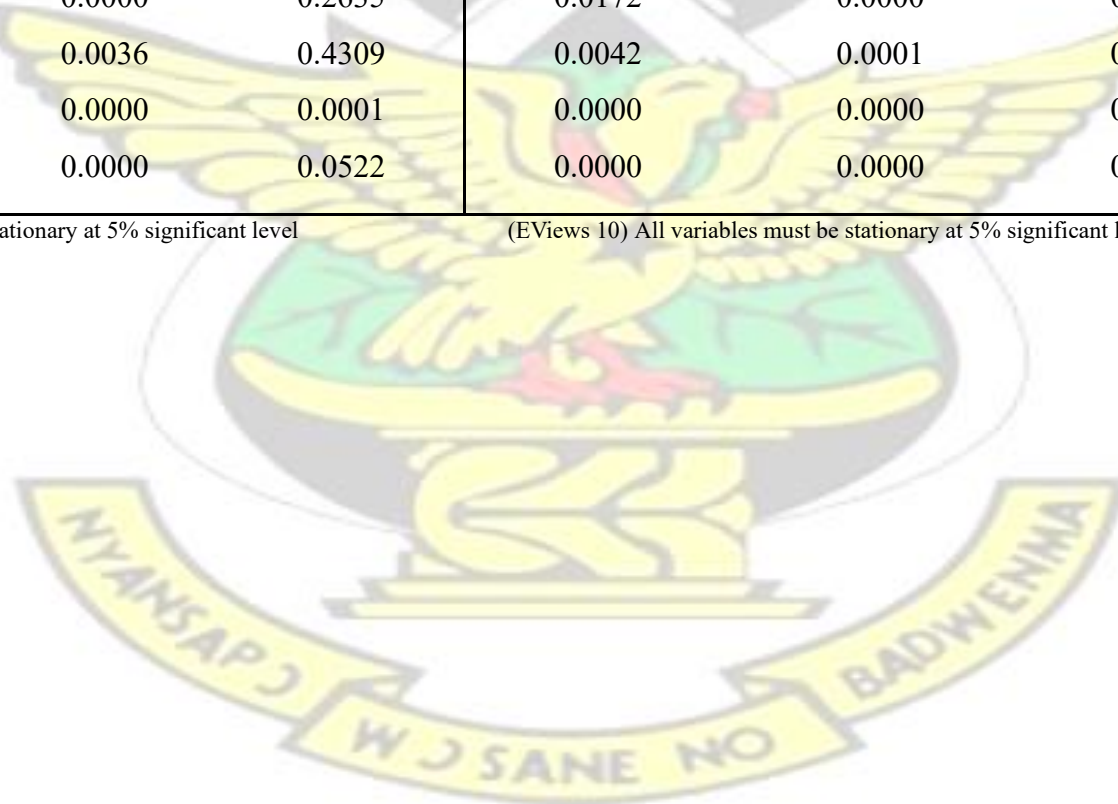
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4.2 Descriptive Statistics

Table 3 below shows the descriptive statistics summary for return on asset, income diversification, asset diversification, geographic diversification, bank size and gross domestic product.

Table 3: Descriptive Statistics of Variables

Variables	Obs.	Mean	Std. Deviation	Minimum	Maximum
ROA	184	0.8594	2.159	0.001	9.4841
INDV	184	11.406	5.137	4.466	19.998
ADV	186	12.086	4.712	4.542	17.473
GDV	184	2.4351	0.455	1.325	3.0915
BSIZ	189	14.848	2.463	11.66	17.536
GDP	188	5.4643	2.074	3.611	8.5881

(EViews 10) Descriptive statistics of ROA, income diversification, asset diversification, geographical diversification, bank size and GDP.

Table 3 presents the research's the descriptive statistics of the variables. Between the sampling period of 2009 – 2021, 188 observations were made. The range of Return on asset (ROA) was from 0.001% to 9.48% with 0.86% mean value and a 2.2% standard deviation (s.d). The range of Income diversification (INDV) was also from 4.66% to 19.99% with an 11.40% average mean and a 5.13% s.d. The range regarding asset diversification (ADV), was from 4.54% to 17.47% with a 12.09% mean value and a 4.71% s.d. Regarding geographical diversification (GDV), the result range was from 1.32% to 3.09% with 2.43% mean and a 0.46% standard deviation. For bank size (BSIZ), the result range shows from 11.66% to 17.53% with a 14.84% mean and a 2.46% standard deviation. Lastly, the results indicates that gross domestic product (GDP) has a 5.46% mean with a 2.07% s.d which ranges from of 3.61% to 8.58%.

4.3 Multicollinearity Tests

Table 4: Pearson Correlation Matrix generally shows that zero correlation exists within the variables among selected variables.

Table 4: Variables Correlation Matrix

Variables	INDV	ADV	GDV	BSIZ	GDP
INDV	1				
ADV	0.013	1			
GDV	0.004	0.027	1		
BSIZ	0.042	0.116	0.213	1	
GDP	0.027	0.013	0.014	0.013	1

Multicollinearity index of ROA, income diversification, asset diversification, geographical diversification, bank size and gross domestic product.

The study's correlation matrix variables is shown in Table 4. The direction and degree of link between the study's variables are revealed by the correlation matrix. The level of multicollinearity among the independent variables should be determined, according to the researcher, as any significant correlation between any two variables could result in predictions that are skewed. This is why it is necessary to estimate the correlation matrix. Table 4 shows that there is no multicollinearity between the independent variables because the magnitude of the correlation coefficients is typically very small.

4.4 Empirical Results

As already indicated in the previous section, this particular section has four (4) main results: Pooled OLS regression, fixed effect regression, random effect regression and Hausman tests.

4.4.1 Pooled OLS Regression

Table 5: Regression Results Using Pooled OLS

Variables	Coefficients	Std. Error	t-Statistics	Probs.
C	-0.0094	0.0286	-0.3305	0.7425
INDV	0.0647	0.0429	-1.5081	0.0387
ADV	0.1835	0.0737	2.4881	0.0167
GDV	0.2937	0.2654	-1.1065	0.2745
LNBSIZ	10.757	3.4558	3.1129	0.0033
LNGDP	11.510	3.9022	2.9496	0.0051
R-squared = 0.62				
Adjust. R^2 = 0.55				
f-statistic = 4.31				
Prob(f-stat) = 0.0027				

The correlations between the dependent variable, return on assets (ROA), and the independent variables, income diversification (IND), asset diversification (ADV), and geographical diversification are shown in Table 5 above (GDV). This pooled OLS regression model analyzes other control variables such as bank size (BSIZ) and gross domestic product (GDP). According to the R-square statistics, diversification of income, diversification of assets, and geographic localization each account for around 62 percent of the systematic variation in return on asset. The return on assets for banks in Ghana is significantly and cumulatively impacted by all of the explanatory factors, as indicated by the reported f-statistics of 4.31 and the probability value of 0.0027. The results show that at the 5% level of significance, income diversification (IND) and return on asset (ROA) frequently have a favorable and substantial correlation. This suggests that income diversification has a major impact on the financial performance of

Ghana's listed banks. Technically speaking, this suggests that income from non-traditional sectors is crucial in ensuring the return on assets of listed banks in Ghana and that the development in income diversification over the research period actually contributes to financial performance. Additionally, there is a substantial and positive correlation between return on assets (ROA) and asset diversification (ADV) at the 1% significant level. That is, the financial performance of Ghana's listed banks is significantly impacted by asset diversification. This implies, theoretically, that a rise in asset diversification over the research period actually contributes to financial performance and that a bank's revenue from varied assets is crucial to assuring return on assets for listed banks in Ghana. The geographical diversity of Ghana's listed banks is the following factor. Surprisingly, the study discovers that geographical diversification (GDV) and bank return on asset have a positive and negligible association (ROA).

This suggests that the geographic diversification of Ghanaian banks neither increases nor decreases their financial performance. However, if the effect is strong, increasing geographical diversification raises return on assets because the effect shows a positive correlation. The study included bank size and gross domestic product as control variables in addition to the variables of interest (independent variables). According to the study, bank return on asset (ROA) and gross domestic product (GDP) both exhibit positive and significant relationships with each other at the 1% significant level. This indicates that a bank's size affects its financial performance, and that a larger bank will have a better return on assets. The return on assets for Ghanaian banks also rises when the GDP of the nation does. As a result, the country's strong GDP has a favorable, significant impact on the financial performance of banks at any given time.

4.4.2 Fixed Effect Model

Table 6: Regression Results Using Fixed Effect

Variables	Coefficients	Std. Error	t-Statistics	Probs.
C	-0.0108	0.0312	-0.3463	0.7311
INDV	0.0707	0.0500	-1.4136	0.1663
ADV	0.1564	0.0911	1.7158	0.0550
GDV	0.2433	0.3147	-0.7730	0.4447
BSIZ	10.512	3.9261	2.6774	0.0112
GDP	11.260	4.4275	2.5433	0.0456
$R^2 = 0.66$				
Adjust. $R^2 = 0.58$				
f-statistic = 2.449				
Prob(f-statistic) = 0. 0007				

The above table displays the correlations between ROA (the dependent variable), income diversification (IND), asset diversification (ADV), and geographic diversification (GDV) (the independent variables). This fixed effect regression model also examines such additional controls as bank size (BSIZ) and GDP. According to the R-squared statistic, diversity of income, diversification of assets, and diversification of geographical area account for roughly 66% of the systematic variation in return on asset. All the included explanatory variables significantly and jointly affect return on asset of banks in Ghana, as shown by the reported f-statistics of 2.45 and the probability value of 0.0007.

In contrast to the results of the pooled OLS model, which show a positive and statistically significant association between income diversification (IND) and return on asset (ROA) at the 5% level, the results of the present study show no such relationship. The fixed effect model

demonstrates a positive but statistically insignificant correlation between IND and ROA. This indicates that the impact of revenue diversification on the bottom lines of Ghana's publicly traded banking institutions is negligible. Based on these findings, it can be concluded that listed banks in Ghana do not need to rely on revenue from non-traditional activities in order to ensure return on asset, regardless of whether income diversification increases or decreases over the period under study. Nonetheless, at the 5% level of significance, a positive correlation exists between ADV and ROA. That is to say, asset diversification has a considerable impact on the bottom lines of Ghana's publicly traded banks. Theoretically, this suggests that a bank's return on asset of listed banks in Ghana is highly dependent on the revenue generated by its diversified assets and that a gain in asset diversification throughout the time under review actually subsidizes towards financial performance. Once again, using the pooled OLS, the study discovers a positive and statistically insignificant link between GDV and bank ROA.

The same conclusion holds true for the fixed effect model. In other words, the fixed effect model reveals a positive and statistically insignificant connection between GDV and ROA for financial institutions. That is to say, financial results are unaffected by whether or not banks in Ghana enhance their geographical diversification. Increases in geographical diversification are associated with higher rates of return on assets only if the effect is statistically significant. The study also took into account bank size and gross domestic product as control variables in addition to the variables of interest (independent variables).

At the 1% and 5% levels of significance, respectively, the analysis finds a positive and significant association between bank size (BSIZ) and bank return on asset (ROA). This indicates that the larger a bank is, the greater its financial performance, as measured by return on assets. In a similar vein, a rise in GDP in Ghana would boost banks' ROA there. This means that a high national GDP has a consistently beneficial healthy impact on the banking sector.

4.4.3 Random Effect Model

Table 7: Regression Results Using Random Effects

Variables	Coefficients	Std. Error	t-Statistics	Probs.
C	-0.0094	0.0312	-0.3034	0.7629
INDV	0.0647	0.0467	-1.3846	0.1731
ADV	0.1835	0.0803	2.2844	0.0272
GDV	0.2937	0.2891	-1.0159	0.0152
BSIZ	10.757	3.7640	2.8580	0.0065
GDP	11.510	4.2502	2.7081	0.0096
$R^2 = 0.72$				
Adjust. $R^2 = 0.64$				
f-statistic = 4.3185				
Prob(f-statistic) = 0.0018				

The following table shows the correlations between the three types of diversification (income, asset, and geography) and the dependent variable (return on assets, ROA). This fixed effect regression model also incorporates the use of additional control variables like bank size (BSIZ) and GDP for a more complete analysis. Yet again, R-square statistics shows that spreading your bets over multiple revenue streams, asset classes, and geographies accounts for almost 72% of the systematic variation in return on asset. Results showing an f-statistic of 4.32 and a probability value of 0.0018 confirm that all of the included explanatory variables significantly and jointly affect banks' ROA in Ghana.

A positive and statistically significant association between income diversification and return on asset is described by the pooled OLS model, while a positive and insignificant relationship

is displayed by the fixed effect model. In a surprising twist, the random effect model agrees with the fixed effect regression model. According to the random effect, the correlation between IND and ROA is positive and statistically negligible. It follows that the impact of income diversification on the financial results of listed banks in Ghana is negligible. Technically speaking, this indicates that revenue from non-traditional activities is not relevant in ensuring return on asset of listed banks in Ghana, regardless of whether income diversification increases or decreases over the period under study. There is a positive and statistically significant correlation between asset diversification and ROA, as predicted by all three models.

That is, at the 5% level of significance, there is a positive and significant correlation between ADV and ROA, as shown by the random effect. That is, listed banks in Ghana benefit significantly from asset diversification, as measured by their financial performance. Theoretically, this suggests that revenue from diverse assets of a bank is particularly essential in ensuring return on asset of listed banks in Ghana and that a rise in asset diversification over the period under investigation really subsidizes towards financial success. While the pooled OLS and fixed effect models demonstrate a positive and statistically insignificant connection between geographic diversity and bank ROA, the random effect model shows a different picture. That is, at the 1% level of significance, the random effect model reveals a positive and significant association between GDV and bank ROA. That is to say, Ghanaian banks' bottom lines would benefit enormously if they spread their investments throughout a wider geographic area.

Furthermore, the research shows that BSIZ and Gross Domestic Product (GDP) have positive and significant relationships with bank ROA at the 1% and 1% significant level, respectively, as shown by the pooled OLS and fixed effect regression model. As a result, larger banks tend to have better financial results overall and a higher return on assets. Banks in Ghana might expect

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a higher return on their assets if the country's GDP rises. Therefore, a high GDP in the country has a consistently favorable, material impact on the financial health of banks.

4.4.4 Hausman Test

Table 8: Redundant Fixed Effects Tests (Hausman Test)

Effects Tests	Statistics	d.f.	Probs.
Cross-section f	1.967046	(4,28)	0.5271
Cross-section's Chi-square	9.905846	4	0.0690

Null Hypothsis: Appropriate for Random Effect (P-value ≥0.05)
Alternative Hypothesis: Appropriate for Fixed Effect (P-value ≥0.05)
Notes: (***), (**) and (*) Denote significance at the 1%, 5% and 10% levels respectively

OSL model has 3 primary model. The Hausman Test is used to determine which results should serve as the foundation for conclusions and suggestions. Under the Hausman Test, the null hypothesis describes the random effect's usage as suitable, whereas the alternate hypothesis describes the fixed effect's usage as appropriate. When the Hausman test's p-value is greater than 0.05, we accept the null hypothesis (random effect) by rejecting the alternative hypothesis. But when the Hausman test's p-value equal to 0.05 or less, we accept alternative hypothesis (fixed effect) and reject the null hypothesis. The random effect is appropriate, according to the p-values in Table 8. In light of the findings from the random effect regression model, the study draws a conclusion and offers its final suggestions.

4.5 Discussion of Findings

Listed banks in Ghana are analyzed to determine how their levels of diversity affect their financial results. Specifically, this study aims to ascertain the impact of income diversification

on ROA for listed banks in Ghana, the impact of asset diversification on ROA, and finally, the impact of geographical diversification on ROA. The BSIZ and GDP of the banks are also included as additional control variables. On the basis of the findings of the Hausman tests, it can be concluded that the alternative hypothesis that the differences between the coefficients of the fixed effect estimator and the random effect estimation are not systematic cannot be supported by the data. The random-effects estimator would therefore seem to be the best choice. Therefore, the most consistent and efficient estimate can be seen in Table 7, which presents the results of a random-effect cross-sectional specific estimation. R-square statistics, which measure the reliability and validity of a model (random effect), demonstrate that diversity of income, diversification of assets, and diversification of geographical area account for around 72% of the systematic variance in return on asset. The f-statistics of 4.32 and the probability value of 0.0018 confirm that all the considered explanatory variables significantly and jointly affect banks' ROA in Ghana.

4.5.1 Relationship Between Income Diversification and Bank Financial Performance

Examining the research of certain academics, commercial banks' ROA suffers greatly from income diversification, whereas ROE is unaffected. According to Stiroh (2016), there are situations in which a bank's ability to generate income from a variety of sources decreases its risk-adjusted earnings and raises the bank's overall risk. Because the advantages of non-interest revenue could not fully balance out the uptick in risk generated by heterogeneity to fee-based income, Kiweu (2012) concludes that income diversification is not advantageous to the performance of Kenyan banks.

The study concludes that income diversification (IND) is positively associated with ROA, but that this association is statistically insignificant. That listed banks in Ghana don't need to rely on non-traditional revenue sources to maintain their return on assets supports the technical

conclusion that neither an increase nor a decrease in income diversification over the period under study contributes to financial performance. This finding is consistent with the view of Kiweu (2012) and, to a lesser extent, Stiroh (2014), who argue that the risks and costs (Baele et al., 2019) of income diversification outweigh the advantages to performance. Mercieca et al. (2017), for example, found that the level of revenue heterogeneousness practiced by European banks had little bearing on their overall profitability. Additionally, Montgomery (1994) uses 128 Fortune 500 companies to support his thesis that diversification has no appreciable effect on business performance. These findings corroborate the government's viewpoint that managers with surplus funds on hand will seek heterogeneity that does not improve performance for purely selfish motives (Jensen 1986).

4.5.2 Relationship Between Asset Diversification and Bank Financial Performance

Asset diversification's impact on the profitability of commercial banks in Kenya is the subject of Mutega's 2016 study. The results show that commercial banks in Kenya's financial performances are positively and significantly impacted by all independent variables. This is consistent with the study's findings. The research demonstrates a favorable and statistically significant correlation between ADV and ROA at the 5% level. That is to say, asset diversification has a significant weight on the bottom lines of Ghana's publicly traded banks.

Theoretically, this suggests that a bank's return on asset of listed banks in Ghana is highly dependent on the revenue generated by its diversified assets and that a gain in asset diversification throughout the time under review actually subsidizes towards financial performance. In contrast, Abuzayed et al. (2018) conclude that diversifying one's assets does not improve financial results.

4.5.3 Relationship Geographical Diversification and Bank Financial Performance

Obinne et al. (2012) have confirmed that regional diversification has a favorable effect on financial performance. The research also supports additional methods through which a varied bank might enhance its performance, such as management economies of scale, more effective resource management and increased productivity. Resource efficiency may be able to produce high returns, as anticipated by the RBV theory (Montgomery, 1994). This is as a result of the premium for diversity. This study shows that, at the 1% level, GDV and bank ROA are positively and statistically significantly correlated. To put it another way, spreading their investments across a larger geographic area would have a significant positive weight on the bottom lines of Ghanaian banks. This outcome is in line with the findings of Doumpos et al. (2013), who found banks with greater worldwide reach were better able to counteract the potentially disastrous implications of solvency risk.

Geographical diversification is predicted by the Market Power theory due to crosssubsidization, mutual tolerance of ferocious competition, and complementary buying and selling across the units of a multi-business firm (Montgomery, 1994.) looks into how banks, both diversified and non-diversified, take risks and how diversification affects that. The study integrates theories of bank organization, market structure, and risk-taking to show that increased geographic diversity of banks modifies a bank's lending behavior and market interest rates, with spillover consequences for non-diversified competitors due to interactions in the banking market.

4.5.4 Control Variables

Despite the effectiveness of small banks in terms of relationship banking, Mercieca et al. (2018), Dermiguc-Kunt and Huizinga (2000) all claim major banks of commercial nature performed

better. Additionally, the study demonstrates that bank return on asset (ROA) is positively correlated with bank size (BSIZ) at the 1% significance level. This suggests that Ghana's biggest banks are better able to manage their finances. According to research by Onumah and Duho (2019) and (Alhassan & Asare, 2016), the size of a bank can have a significant impact on its ability to weather economic storms. The final factor is GDP, which measures the economic output of a country. A country's economic health can be gauged in part by looking at its level of aggregate consumer spending on goods and services; if the economy is healthy, this suggests that people's incomes are growing, which in turn boosts the rate of return on banks' loans and improves their overall performance. This research demonstrates that there is a positive and statistically significant link between GDP and bank ROA pegged at 1% level. As a result, a rise in GDP has a multiplicative effect on banks' ROA in Ghana. This means that a high national GDP has a consistently beneficial impact on the health of the banking sector.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter covers a summary of findings, conclusion, and recommendations. This chapter contains three sections. The first section presents the summary of findings. The second section presents the conclusion of the study. The third section presents recommendations of the study.

5.1 Summary of Findings

The study finds that there is a positive and insignificant correlation between income diversification and ROA. With respect to the relationship between asset diversification and financial performance of banks, the study reveals a positive and significant relationship. The study also reveals a positive and significant relationship between geographical diversification and bank's return on asset. Adding to this, the study establishes a positive and significant relationship between bank size and return on asset and lastly, finds that there is a positive and significant association with gross domestic product and bank return on asset.

5.2 Conclusion

The study examines the relationship between bank diversification and financial performance of listed banks in Ghana. This study utilizes both quantitative and explanatory approaches to establish the correlation linking the dependent variables to the independent variables. The population of this study is made up of 8 banks listed on the Ghana Stock Exchange (GSE). Secondary data used are sourced from the respective banks' annual financial statements. For estimation strategy, panel data set and ordinary least squares (OLS) are employed by applying the pooled OLS, fixed effect and random effect regression model made it possible to obtain more data points. The results support the conclusion that, listed banks in Ghana do not need to rely on revenue from non-traditional activities in order to ensure high return on asset. Again, the results support the conclusion that, asset diversification has a considerable effect on the publicly traded banks in Ghana. Lastly, the study concludes that geographically diverse banks in Ghana have a significant return on assets. Based on the findings, the study, therefore, concludes that except for income diversification, asset and geographic diversifications have positive and significant effect on the financial performance of listed banks in Ghana.

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5.3 Recommendations

Firstly, the study finds a positive and insignificant correlation between income heterogeneity and banks' financial performance. Based on this finding, the study recommends that for the evaluation of the risk exposures of a certain bank, owing to income diversification current levels and its accompanying revenue volatility, banking sector supervisors and regulators in Ghana need to have a thorough understanding not just for only bank diversifications but for the entire risk management strategies, diversity within the banking organization by considering the complexity of banking operation. By this, listed banks in Ghana would not be enthusiastic in pursuing diversification strategies but would identity the most suitable strategy that best sooth their operation and business philosophy in order to improve long-term financial sustainability. Secondly, the study finds that there is a positive and significant effect between asset diversification and financial success for listed banks in Ghana. For policy implication, the study recommends the Bank of Ghana should continue to tighten its controls, as the variety and complexity of banking operations in recent times necessitates it, by closely monitoring and assessing the rising levels of risks assumed by banks and requiring the necessary capitals to safeguard the interests of all stakeholders involved in respect to capital adequacy ratio and banks liquidity requirements. Thirdly, the study demonstrates that there is a positive and significant effect between geographical diversification and financial performance of listed banks in Ghana. This is evidence to the fact that bank size shows a positive and significant effect on return on asset. Technically, what this means is that larger listed banks on the Ghana Stock Exchange are more financially successful than their smaller counterparts and suggests that the smaller banks cease making new investments in geographical diversification activities. Based on this, the study recommends that smaller listed banks in Ghana should diversify their portfolio if only they are already making good profits from their existing business expansion.

Adding to this, only highly lucrative large banks should put money towards geographical diversification. Lastly, the positive and significant relationship between gross domestic product and diversification must serve as a signal to the government and other economic policy-makers to maintain a stable macroeconomic environment.

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APPENDIX

Correlation Matrix

IND ADV GDV BSIZ GDP

INDV

	INDV	ADV	GDV	BSIZ	GDP
ADV	0.1978580689243595	1			
GDV	0.61093771588813312	0.01554017469839085	1		
BSIZ	0.3830161019362351	0.49746509941494588	0.513532467708136913	1	
GDP	0.0967743513639927	0.02680400834756225	0.01241630922363265	0.16373533864271983	1

ROA C INDV ADV GDV LNBSIZ LNGDP

POOLED OLS

Dependent Variable: ROA
Method: Panel Least Squares
Date: 30/04/23   Time: 14:57
Sample: 2009 2021
Periods included: 23
Cross-sections included: 8
Total panel (balanced) observations: 186

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009471	0.028652	-0.330563	0.7425
INDV	0.064785	0.042957	-1.508156	0.0387
ADV	0.183578	0.073780	2.488164	0.0167
GDV	0.293778	0.265493	-1.106538	0.2745
LNBSIZ	10.75780	3.455860	3.112915	0.0033
LNGDP	11.51025	3.902262	2.949636	0.0051

R-squared 0.629192   Mean dependent var -0.015706 Adjusted R-squared 0.552964   S.D. dependent var 0.231317

S.E. of regression	0.199930	Akaike info criterion	-0.269532
Sum squared resid	1.758769	Schwarz criterion	-0.040089
Log likelihood	12.73829	Hannan-Quinn criter.	-0.182159
F-statistic	4.318509	Durbin-Watson stat	2.011831
Prob(F-statistic)	0.00777		

ROA C INDV ADV GDV LNBSIZ LNGDP

FIXED EFFECT

Dependent Variable: ROA
Method: Panel Least Squares
Date: 30/04/23   Time: 15:02
Sample: 2009 2021
Periods included: 23
Cross-sections included: 8
Total panel (balanced) observations: 186

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010834	0.031277	-0.346381	0.7311
INDV	0.070782	0.050071	-1.413630	0.1663
ADV	0.156466	0.091190	1.715824	0.0550
GDV	0.243312	0.314753	-0.773024	0.4447
LNBSIZ	10.51202	3.926118	2.677460	0.0112
LNGDP	11.26094	4.427597	2.543353	0.0456

Effects Spe   cification

Cross-section fixed (dummy varia bles)

R-squared	0.666986	Mean dependent var	
		-0.015706	

71

Adjusted R-squared	0.583780	S.D. dependent var	0.231317
S.E. of regression	0.217760	Akaike info criterion	0.032478
Sum squared resid	1.659678	Schwarz criterion	0.606085
Log likelihood	14.18805	Hannan-Quinn criter.	0.250911
F-statistic	2.449360	Durbin-Watson stat	2.099345
Prob(F-statistic)	0.000712		

ROA C INDV ADV GDV LNBSIZ LNGDP

RANDOM EFFECT

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 30/04/23   Time: 15:07
Sample: 2009 2021
Periods included: 23
Cross-sections included: 8
Total panel (balanced) observations: 186
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009471	0.031207	-0.303497	0.7629
INDV	0.064785	0.046788	-1.384670	0.1731
ADV	0.183578	0.080360	2.284436	0.0272
GDV	0.293778	0.289170	-1.015936	0.0152
LNBSIZ	10.75780	3.764055	2.858034	0.0065
LNGDP	11.51025	4.250267	2.708124	0.0096

Effects Spe cification

		S.D.	Rho
Cross-section rando m		0.000000	0.0000
Idiosyncratic random		0.217760	1.0000

Weighted Statistics

R-squared	0.729192	Mean depen dent var	-0.015706
Adjusted R-squared	0.642964	S.D. dependent var	0.231317
S.E. of regression	0.199930	Sum squared resid	1.758769
F-statistic	4.318509	Durbin-Watson stat	2.011831
Prob(F-statistic)	0.001807		

Unweighted Statistics

R-squared	0.329192	Mean dependent var	-0.015706
Sum squared resid	1.758769	Durbin-Watson stat	2.011831

HAUSMAN TEST FOR REXC

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.967046	(4,28)	0.5271
section Chi-square	9.905846	4	0.0690

Cross-