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INCOME DIVERSIFICATION AND PROFITABILITY OF BANKS: EVIDENCE FROM GHANA'S BANKING SECTOR

JOSEPH OWUSU AMOAH

THESIS SUBMITTED TO THE DEPARTMENT OF ACCOUNTING, SCHOOL OF BUSINESS AND LAW, UNIVERSITY FOR DEVELOPMENT STUDIES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF COMMERCE DEGREE IN ACCOUNTING

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BY

JOSEPH OWUSU AMOAH

(UDS/MCM/0142/17)

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SEPTEMBER, 2019

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DECLARATION

Student

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …… Date: ……

Name: Joseph Owusu Amoah

Supervisor

I hereby declare that the preparation and presentation of the thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

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Supervisor's Signature:  Date: 27th September, 2019

Name: Dr. Muazu Ibrahim

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ABSTRACT

Non-interest income accounts for a significant percentage of operating income of commercial banking industry. However, current studies on income diversification and profitability of banks have centered on the implications of diversification without investigating the threshold effects and transmission channels through which income diversification affects banks profitability. The study addresses these gaps in the literature relying on panel data from 10 banks in Ghana spanning 2006–2016. We employ both the fixed and random effect estimation approach. The study finds that, while increased diversification proxied by non–interest income is associated with higher profitability of banks in Ghana, the effect is not robust. Further results suggest that, the effect of income diversification on profitability is monotonic and do not show evidence of threshold effects. On the channels of manifestation, the study observes that, income diversification increases profitability and non-performing loans heighten the positive relationship between non-interest income and profitability. In the light of the banks diversifying their source of income, we recommend that banks increase their income diversification drive in order to maximize performance.

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DEDICATION

This thesis is dedicated to my parents, Sampson Owusu and Comfort Adusei, my sisters, Rebecca Owusu, Eunice Nkasan and all my nephews.

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LIST OF ACRONYMS

CAR	Capital Adequacy Ratio
CEO	Chief Executive Officers
CV	Coefficient of Variation
EU	European Union
FDI	Financial Development
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GMM	Generalized Methods of Moments
INF	Inflation
IPOs	Initial Public Offerings
LSDV	Least-Squares Dummy Variables
Max	Maximum
Min	Minimum
NII	Non-Interest Income
NPL	Non–Performing Loan

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OLS	Ordering Least Square
PC	Private Credit
PRO	Profitability
PwC	PriceWaterHouseCoopers
ROA	Return on Assets
ROE	Return on Equity
SSA	Sub-Saharan Africa
St. Dev	Standard Deviation
TOC	Total Overheads Cost
USA	United States of America
VAR	Vector Autoregressive
WDI	World Development Indicators

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

During the financial liberalization era which can be traced back in the year 1970s, there was an increasing role of financial markets to engage in different operations rather than only traditional lending activity (Gurbuz et al., 2013). Examples of such operations are investment banking, trading, insurance and intermediation in financial markets. Although the traditional revenue source of banks is interest income, they have more intensively engaged in non-interest income generating activities especially in developed countries in the aftermath of the financial liberalization. In this respect, share of non-interest income in net operating income has increased all around the world, especially in the last three decades (Gurbuz et al., 2013).

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Indeed, the broad spectrum of studies espoused two conflicting theories concerning the optimal degree of diversification. While traditional banking and portfolio theory opine that, banks should be as diversified as possible to reduce their risks of suffering a costly bank failure, corporate finance theory suggests that a bank should focus on specific sectors or lines of business in order to enjoy the comparative advantage of developing expertise in the areas they focus and their key operation so as to obtain the greatest possible benefit from management's expertise and to reduce agency problems.

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Consistent with Mercieca et al. (2007), diversification in banking area has three class specifically (i) economic services and products diversification (ii) geographic diversification and (iii) aggregate of geographic and commercial enterprise line diversification. The financial products and services diversification includes a range of consumer and commercially oriented companies offering a wide variety of financial products and services such as various lending products and examples are home equity loans and credit cards, insurance, securities and investment products.

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Again the geographic diversification refers to an investment strategy whereby a portfolio is comprised of companies across different geographic regions. The strategy is expected to reduce risk exposure to events affecting one region. Kim and Mathur (2008) examine the impacts of geographic and industrial diversification for a large sample of U.S. firms over the period 1984–1997 in a framework that simultaneously controls for both types of diversification. They use foreign income and related taxes from income tax disclosure to proxy for geographic diversification. The results show that geographic diversification is associated with a significant increase in firm value, and is consistent with the benefits of internalization theory for geographic diversification. For most part, income diversification in banking sector revolves around charging of fees for banking services, net trading profits and other non-interest income within the net operating income of a bank. Also, different studies examining the impact of income diversification on risk-adjusted banks overall performance shows that diversification may also increase the volatility of banks operating earnings. A study by DeYoung and Roland (2001) define three primary motives why non-interest income can also increase the volatility of banks operating income: a) mortgage-primarily based activities

require switching charges as compared to charge-based totally activities, b) lending activities require decrease operating leverage than price-based activities, and c) lending activities require lower monetary leverage than price-based activities. there may be associated literature on earnings diversification; consequently, it's miles very prudent to evaluate the effect of profits diversification and credit risk on the profitability for financial institution managers' regulators and inventors, due to the fact know-how whether or not income diversification and credit risk can create value for banks and that is very essential for the diverse stockholders within the banking sector.

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A developing nation like Ghana banking sector has seen significant growth over the years. In the year 1988, the total number of banks was nine, and by 2011, it rose to 27. There were only two foreign controlled banks in the year 1988 which increased to seven out of a total of 16 banks in the year 2000. By 2008, out of the 26 registered banks the number of the foreign controlled and the domestic controlled banks evened up. As of 2011, the number of foreign banks surpassed the number of local banks with 52% to 48% out of the 27 total number of banks recorded (Saka et al., 2012). The total number of universal licensed banks rose up to 34 by the year 2018 with the foreign banks recording 17, and 17 of which are local banks (PwC, 2017). The banking industry's efficiency indicators points towards a general improvement in efficiency in April 2018 as compared with April 2017. The industry's primary profitability indicators, specifically, after tax return on equity (ROE) and before tax return on assets (ROA) pointed in the direction of declining profitability within the banking industry for the duration ending April 2018 as compared with the same period last year. The ROA

declined from 4.0% in April 2017 to 3.6% in April 2018. Additionally, the industry ROE fell to 17.3% in April 2018 from 19.3% in April 2017.

The industry's cost to income ratio declined from 86.0% to 84.5%, while the cost to total assets ratio declined from 5.4 to 4.4% during the period under review. The operational cost to total assets ratio also declined from 2.9% to 2.7% within the same comparative period, pointing to some improvement in the industry's operational efficiency. The sector's operational cost to gross income ratio, however, increased from 46.7% in April 2017 to 51.3% in April 2018 (Bank of Ghana, 2018)

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1.2 Statement of the Problem

The relationship between diversification and profitability of banks has received significant research attention in recent times. Indeed, banks all over the world get their income from interest and non-interest income. With an increasing credit risk and dwindling interest income, many financial institutions in developing countries including Ghana banks are looking at an alternative way of enhancing funds from non-interest sources as an avenue for diversification. Elsas et al., (2010) identify that commercial banks normally increase diversification by moving into fee-based services whilst banks with already strong fee-based revenues expanded into trading activities.

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Ghanaian banking sector comprises of 34 licensed banks, 17 classified as domestically-controlled, while the remaining 17are foreign-controlled. According to Aduda and Gotinga (2011), the last two decades have seen a number of banks folding up in Ghana due to their inability to effectively and efficiently manage credit risk. Evidence from the recent 2018 banking sector report by Bank of Ghana shows that, the banking industry's net income stood at GH¢782.20 million as compare to GH¢ 1.59 billion in the year 2017 which shows significant reduction in the growth rate of net interest income. In addition to the significant drop in the net interest income, an increase in the growth rate of provisions on non-performing loans led to the slowdown in growth of banks' net income. DeYoung and Rice (2004) are of the view that, the increasing presence of non-interest income at commercial banks has been widely documented and discussed but only a few academic studies have investigated the impact of non-interest income on the financial performance of banks. More precisely, few existing studies (see Rime and Stiroh, 2003; Tortosa-Ausina, 2003; Clark and Siems, 2002) have examined the influence of non-interest income on banks' profitability. Notwithstanding the tremendous input of these studies to literature, they have closely been focused in Asian, America, and European at large. Once more, the outcomes of these studies have produced mixed outcomes because of contextual variations. In different instances, studies in comparable contexts have produced divergent perspectives (for example Stiroh et al.., 2000). Doumpos et al. (2016), concluded in their study that, diversification in the banking sector is useful for banks operating in developing nations as compared to banks in evolved nations.

Notwithstanding this, empirical evidence on non-interest income–profitability nexus in Ghana is lacking. More tellingly, while anecdotal evidence may suggest the contribution of non-interest income to banks' profitability, the precise empirical effect of non-interest income on profitability is dearth with conclusion often drawn from public discourse with very little theoretical and empirical backing. Furthermore, whether the impact of non-interest income on profitability of banks exhibit threshold effects is unexplored in the literature. In other words, whether non-interest income increases or decreases profitability above or below which the effect changes sign is yet to be studied. Indeed, the direct effect of non-interest income on profitability may not be instructive since it potentially affects profitability through some crucial channels. However, we do not also know the transmission channels through which non-interest income affects profitability. These issues warrant intense investigations which have been largely ignored in existing literature. To the extent the banking sector of Ghana is evolving, knowledge of these nuances is important in guiding the workings of the sector.

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1.3 Objectives of the Study

The general objective of the study is to examine the effect of income diversification on banks' profitability using Ghana as a case. Specifically, the study seeks to:

1. examine the effect of income diversification on profitability;
2. determine possible threshold effect of income diversification on profitability; and
3. investigate the channels through which income diversification impacts on profitability.

1.4 Research Questions

From the objectives above, the study aims to answer the research questions below;

1. what is the effect of income diversification on profitability?
2. what is the possible threshold effect of income diversification on profitability?
3. how does income diversification impacts on profitability?

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1.5 Significance of Study

This study significantly contributes to the literature in so many ways. To the best of my knowledge, it is the first study examining how income diversification affects profitability in Ghana's banking sector. Through this, the study brings clarity on how income diversification empirically impacts on profitability. Furthermore, whether income diversification–profitability nexus exhibits non-linearities will be unearthed and possible optimal level of non-interest income identified. Beyond this, the thesis uncovers the transmission channel through which income diversification impacts on profitability which hitherto remains unknown. In this essence, the study is instructive and useful to policy makers given its identification of the precise empirical effect, threshold effect and transmission channel of non-interest income to profitability of banks. Methodologically, the findings of the study is reliable for policy formulation since the study departs from the use of ordinary least squares to invoking an approach that utilizes the heterogeneity of the various banks and in so doing, produces consistent and efficient results.

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1.6 Scope of the Study

The scope of this study covered 10 banks comprising local and foreign owned banks. The foreign banks are seven whilst the local banks are three. The foreign banks consist of Barclays Bank of Ghana Limited, Banque Sahélo–Saharienne pour I'Investissement et le Commerce (BSIC Ghana Limited), Zenith Bank (Ghana) Limited, Ecobank Ghana Limited, Societe General Ghana Limited Guaranty Trust Bank (Ghana) Limited and Standard Chartered Bank (Ghana) Limited. The local banks included CAL Bank Limited, Home Finance Company (HFC) Bank Ghana Limited and Ghana Commercial Bank (GCB) Limited.

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1.7 Structure of the Thesis

The structure of this research work is organized into five chapters. Chapter one provides an overall introduction and background to the study in addition to specifying among others, the research objectives, research questions, problem statement and significance of the study. Chapter two provides thorough review of both the theoretical and empirical literature on income diversification and banks' profitability. It also presents some stylized facts on Ghana's financial sector and domestic banking sector in particular. Chapter three presents the methodology where the data and empirical strategy are outlined. In chapter four, we present the findings and discussions of the empirical findings on income diversification, credit risk and profit volatility while chapter five concludes the study with key implications and recommendations for policy.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter addresses some stylized facts on the banking sector of Ghana with special attention on income diversification and credit risk on profitability of the banking sector. This section will also look at critical review of both existing theoretical and empirical literature relating to income diversification, credit risk and profitability. On the side of empirical literature, it critical review of the nexus between income diversification and credit risk on profitability, bank–specific variables and their relationship with banks' profitability, the linkage between macroeconomic variables and profitability; as well as income diversification and its impact on profitability in the banking sector profitability.

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2.2 Stylized facts on income diversification, credit diversification of the Ghana's Banking Sector

Universal banks are expected to provide various services, from traditional loan marketing toward a broader range of financial services, in order to generate more income, such as from fees, trading and non-interest income, due to global financial liberalization and changes in deregulation. Looking at these services, their competitiveness can improve by achieving economies of scale. Presently, banks provide a broader range of services and can operate in more places than ever before, while still surviving in the market.

In banking and finance literature, product diversification in general reduces the risk of loan failure. This strategy leads to greater diversification of income sources, which might help banks to reduce risks and stabilize profits, provided the different income components are imperfectly correlated. However, banking institutions may reach disintermediation by expanding non-interest product activities. Some non-interest income activities are associated with much higher risks than other income sources and therefore, they could contribute to a destabilization of both individual banks and the whole banking system.

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The performance of banks is often associated with the quality of loans in their books. But, the default rate associated with these loans has become prevalent in the banking industry in Ghana in recent times. The continuous occurrence of NPLs in the banking industry may impede banks' ability to settle their liabilities in the long run if this situation persists. Again, it adversely affects the level of private investment that the bank can make and consequently reduces banks' ability to grant further credit facility to customers. According to Amuakwa-Mensah et al. (2017), the wide-ranging effects of NPLs on an economy, hence controlling them is vital for stable and sustainable growth.

Ghana banking sector has been in large part transformed during the last two decades because of the privatization of country-owned monetary establishments and the liberalization of restrictive monetary sector regulations. In order to continue to exist within the aggressive

market surroundings and to maintain profitability, commercial banks in emerging economic system like Ghana began diversifying their income from interest to non-interest income sources. Therefore, the percentage of non-interest income (NII) has appreciably increased for the banks.

Banks on average earned approximately 10.4 % of their operating income from NII sources as the year 2017 (bank of Ghana, 2017). Doumpos et al. (2016), using a global sample, concluded that revenue diversification is greater useful for banks operating in developing nations in comparison to banks in developed nations. This fact warrants an extreme investigation into the subject for Ghanaian banking sector which has been in large part neglected in existing literature.

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The Ghana banking industry is sound and solvent and continuous to enjoy some stability even though key risk such as NPLs and a worrying situation of concentration risks regarding the exposure to the energy sector by the industry. The medium–term outlook for the banking industry remains positive. The policies such as the tightening of credit risk management practices and the increase in minimum paid up capital by the banks inter alia are expected to have positive impact on the overall performance of the banking industry (Bank of Ghana, 2017).

In line with bank of Ghana report (2017), Banks' stock of Non-performing Loans (NPLs) as at end-October 2017 stood at GH¢ 8.30 billion, from GH¢ 6.52 billion in October 2016. The stock of NPLs to date, even though high, indicators a sluggish annual increase to 27.2% from 58.1% in October 2016. Regardless of this trend, the industry's NPL ratio accelerated to 21.6% in October 2017 from 19.0% a year earlier, because of a slowdown within the increase of gross loans. Whilst adjusted for the completely provisioned loan loss category, the NPL ratio declined to 10.5% in October 2017, barely higher than the adjusted NPL ratio of 10.2% recorded in October 2016.

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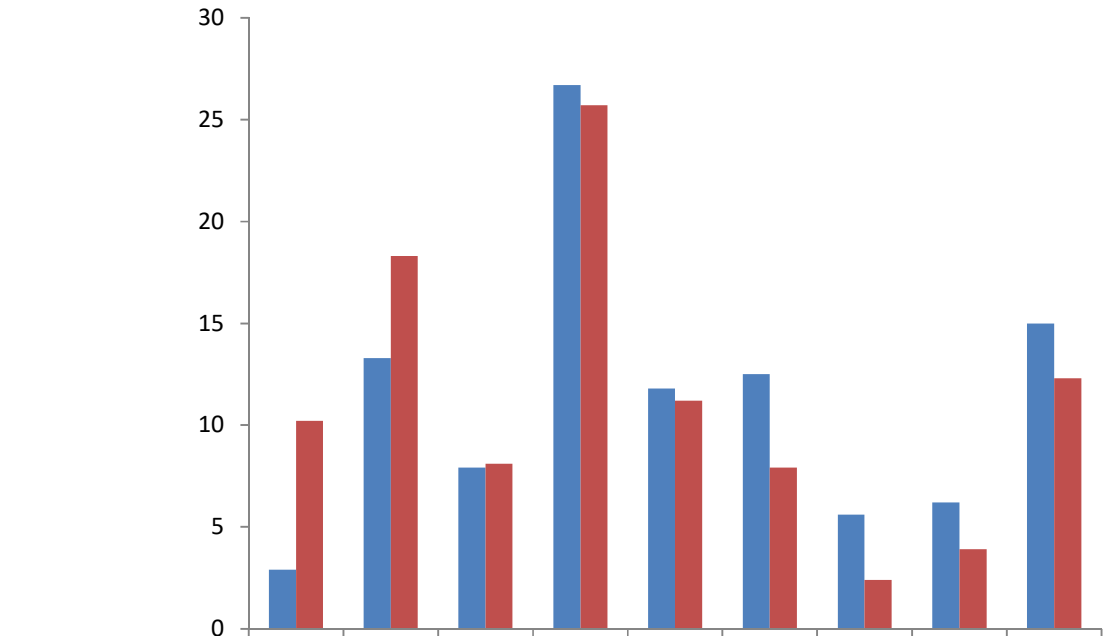
Figure 2.1: Sector distribution by credit and NPL as at June, 2018



	miscellaneous	Services	transportation	commerce and finance	construction	manufacturing	mining and quarrying	agric and fishery	electricity, water and gas
share of total NPL	2.9	13.3	7.9	26.7	11.8	12.5	5.6	6.2	15
share of total credit	10.2	18.3	8.1	25.7	11.2	7.9	2.4	3.9	12.3

Source: Bank of Ghana (2018)

Following the reforms in TOR and VRA money owed within the final quarter of the year 2016 shows that the public sector's share of overall non-performing loans fell from 11.3% in October 2016 to 5.3% in October 2017. The non-public sector, being the biggest recipient of great credit balances accounted for the greater proportion of banks' non-performing loans with its share increasing to 94.7% from 88.7% over the review period. Indigenous non-public organizations accounted for 78.2% of overall non-performing loans in October 2017 as compared with a share of 75.6% within the corresponding period last year. Households accounted for 5.3% of total non-performing loans in October 2017 compared with a share of 5.1% in October 2016.

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The three sectors that accounted for the largest proportions of non-performing loans were Commerce and Finance, Services, and Electricity, Gas and Water sectors. Together these accounted for 61.3% of total non-performing loans in October 2017. The Commerce and Finance sector, the largest recipient of total credit, was also the sector that contributed the most to the industry's non-performing loans, accounting for a share of 35.1% in October 2017. The Manufacturing sector was however the sector with the highest proportion (33.1 percent) of its loans being classified as non-performing as at end-October 2017 from 29.3% in October 2016. The agriculture, forestry and fisheries sector had the second highest sectorial non-performing loan ratio of 32.9%, though it declined from 38.1% a year ago.

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The banking sector as at the month end-April 2018 remained sound and stable as evidenced by trends in some key financial soundness indicators. The banking industry continued to be solvent with the main solvency indicator, the capital adequacy ratio remaining well above the statutory requirement of 10%. Liquidity was adequate although slight declines were witnessed in the core liquidity measures and the industry was generally profitable. Asset quality however remained a source of concern as banks' stock of non-performing loans (NPLs) and the NPL ratio increased between April 2017 and April 2018, with the Commerce and Finance sector accounting for almost a third of total NPLs in the industry (Bank of Ghana, 2018).

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There was an observed shift in the structure of the balance sheet, and the income statement of the banks' in 2018 with investments, and other income generating sources gaining importance as preferred income earning sources for the banks, relative to income generated from loans and advances. Growth in outstanding credit balances also slowed with increases in new advances being offset by increases in recoveries (which included proceeds from the ESLA bond allocated to the banks). The increases in new advances in 2018 were however, consistent with results of the credit conditions survey which indicated that there was a general net easing in credit stance on loans to both households and enterprises. Although inflation expectations remained unchanged during the April 2018 survey round relative to the February 2018 round, banks indicated that they expected lending rates to decline, one year ahead, following the implementation of the new Ghana Reference Rate in April 2018.

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Notwithstanding some lingering vulnerabilities, the outlook for the sector remains positive with the on-going regulatory reforms by the Bank of Ghana expected to address these challenges and improve stability within the banking sector. These reforms are also expected to equip the banks to properly play their role in supporting the growth and development of the economy.

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The banking sector's total assets of GH¢97.78 billion as at end-April 2018, recorded a growth of 15.7% compared with a growth of 31.1%t in April 2017. There was a general slowdown in growth in all the major components of the sector's balance sheet in April 2018, compared with the same period in 2017. The slower annual growth in total assets was on the back of a contraction in net advances by 0.5% in April 2018 as well as a slowdown in the year-on year growth of investments (the biggest component of banks' total assets) from 57.3%in April 2017 to 41.5% in April 2018. The banking sector also recorded a sharp decline in the growth of foreign assets from 48.5% in April 2017 to 3.0 percent in April 2018, driven mainly by a decline in banks' placements abroad; a possible effect of the relative stability of the domestic currency against other major currencies in recent times.

An increase in loan recoveries (partly due to proceeds from the ESLA bond), offset new advances granted by the banks leading to a moderated growth of 2.2% in outstanding gross

domestic advances to GH¢36.75 billion in April 2018. This compared with a growth of 16.7% same time in 2017. Bank loans and advances, net of provisions and interest in suspense (net loans and advances), on the other hand, contracted from GH¢30.99 billion (14.5% year on year growth) in April 2017 to GH¢30.84 billion (-0.5% year on year growth) in April 2018. Changes in banks' overall investment in bills and securities indicated a shift in preference towards longer dated securities in April 2018.

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While banks' investments in securities (long term investment instruments) grew by 126.3% to GH¢15.74 billion in April 2018 (109.6% year on year growth in April 2017), short term investments (bills) of GH¢19.36 billion grew by 8.5% year-on-year in April 2018, compared with a growth of 43.3% in April 2017.

The banking industry remained highly leveraged with 62.5 % of total assets funded by deposits. Total deposits increased from GH¢52.83 billion to GH¢61.08billion during the period under review, a quarter of which were deposits denominated in foreign currency. This increase however represented a moderated growth of 15.6% in April 2018 compared with a growth of 28.4% in April 2017. Banks also borrowed funds amounting to GH¢16.41 billion, representing 12.7% annual growth in April 2018 compared with 47.0 percent growth in April 2017.

Banks' paid-up capital increased by 25.9% to GH¢5.22 billion as at end-April 2018, following the injection of capital by some banks to meet the December 2018 recapitalization deadline. Fresh capital injection by the three newly licensed banks (Ghana Home Loans bank, the Beige bank and Construction bank) also injected additional capital into the industry. Growth in the sector's shareholders' funds (comprising paid-up capital and reserves) slowed from 21.2% in April 2017 to 18.8% in April 2018. Declining profitability within the banking sector partly accounted for the slower growth in shareholders' funds during the period under review.

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2.2.1 Stylized Facts on banks' non-interest income in Ghana's banking industry

There has been increased concern about the continued deterioration in the asset quality of Ghanaian public sector banks in recent times. As result, banks have channel their focus from depending solely on interest income to mobilize revenue from fee generating activities (Damankah et al., 2014). According to bank of Ghana (2018) banks generated greater earnings from their investments as compared with earnings generated from loans advanced. With a share in overall earnings of 42.6%, earnings from investments were the biggest earning source for the banks in April 2018, growing from 40.5% in April 2017. The proportion of earnings from loans, which in preceding years was the biggest element of total earnings, however, declined from 43.6% in April 2017 to 38.0% in April 2018. Other earnings generating sources accelerated in significance for the banks as the proportion of fees and commissions in overall earnings increased from 10% in April 2017 to 12.6% in April 2018, and the share of banks' other' income sources also, recorded a 100 basis points increase from 5.9% to 6.9% over the same period.

According to bank of Ghana report 2017, the banking industry posted a stronger income statement performance in December 2017 compared with the performance in December 2016. This reflected in an improvement in the year-on-year growth of the industry's net operating income from 4.3% in December 2016 to 11.1% in December 2017 on account of slowdown in the industry's operating expenses, particularly staff costs. The industry's net interest income however recorded a slower year-on-year growth from 17.3% to 12.6% during the period under review. The improved net operating income performance translated into an improved income before tax performance with a 13.3% growth in December 2017 from 3.4% a year earlier. Similarly, the industry's net profit after tax posted a 10.0% growth in December 2017 after contracting by 1% a year ago.

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DeYoung and Roland (2001) is of the view that, there are three reasons why non-interest income (NII) may increase the volatility of bank earnings. First, loans that are held in a bank's portfolio – especially loans to businesses – are relationship based. Second, a bank that shifts its product mix from traditional assets base interest–generating activities to nontraditional fee-based activities tends to increase its degree of operating leverage. Lastly , most non-interest income activities require banks to hold little or no fixed assets unlike interest-based activities like lending, non-interest income activities like trust services, mutual fund sale and cash management require little or no regulatory capital. From them, this allows the banks to finance

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huge amount of their income-generating activities with debt, which increases fixed interest expenses.

Table 2.1: Trends of Non-Interest Income (%) for the period (2006-2016)

Banks	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
CAL BANK	3.57	1.80	2.81	2.58	2.53	4.48	7.37	11.44	21.38	23.79	18.24	99.99
HFC BANK	0.65	0.89	3.38	4.21	3.56	4.99	7.63	13.97	21.91	18.83	20.00	100.02
GHANA COMMERCIAL BANK	0.03	4.86	4.68	6.06	4.86	7.15	8.50	10.13	21.68	13.44	18.62	100.01
STANDARD CHARTERED	2.59	2.72	3.89	6.01	6.22	6.38	10.72	13.30	17.89	14.99	15.29	100
BARCLAYS BANK	3.21	3.46	4.67	4.26	4.06	6.85	8.49	10.67	14.54	16.51	23.27	99.99
SAHEL SAHARA	-	-	0.22	0.99	4.02	8.43	12.33	12.04	14.16	23.58	24.22	99.99
ECOBANK	0.64	0.82	5.68	5.40	15.62	8.27	12.05	12.43	15.27	12.53	11.29	100
GUARANTY TRUST	0.07	0.33	2.02	2.68	4.24	7.32	11.70	15.41	18.83	18.81	18.59	100
SOCIETE GENERAL	0.04	5.56	7.38	8.17	7.48	10.10	17.58	15.68	23.36	26.32	34.64	156.31
ZENITH BANK	0.27	1.37	3.07	7.75	6.24	9.86	10.59	14.85	19.98	5.56	20.46	100
Total	11.07	21.81	37.8	48.11	58.83	73.83	106.96	129.92	189	174.36	204.62	

Source: Bank of Ghana (2016).

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Table 2.1 presents background statistics on NIIs of some selected local and foreign banks. GCB bank recorded the lowest NIIs of 0.03% in 2006 but Barclays bank recorded the highest NIIs of 3.2% within the same period. Around the same period, NIIs for Cal Bank, Standard Charted Bank were above 2.5% whiles the remaining 8 banks recorded below 1% of NIIs. It is also evident that between 2014 and 2016, the behavior of NIIs is not non–monotonic and does not follow a definitive pattern. For instance, NIIs for Zenith Bank increased from 14.85% in 2013, 19.98% in 2015 before decreasing to 5.56% in 2015 and assumed an increasing trend thereafter in 2016. Similar trend is observed for HFC bank.

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These notwithstanding, Societe Generale have the highest NIIs 34.64%, followed by Uni Bank with NIIs of 25.31% over the period 2006–2016 whiles Eco-bank and standard chartered bank has the lowest with NIIs of 15.62% and 17.89 respectively. Among the local banks, unibank has the highest NIIs relative to CAL Bank, HFC and GCB Bank. Indeed, both local and foreign banks are always increasing their NIIs as seen in the results.

2.3 Theoretical Literature

A growing and sustainable economy is essential goal of every nation in the world. A sustainable economy enhances a nation's standard of living by creating wealth and jobs, encouraging the development of new knowledge and technology, and helping to ensure a stable political climate.

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Theoretically, income diversification can be viewed in the resource-based view theory and risk reduction hypothesis. The diversification decision may relate to efficiency and risk management of a bank, where joint production of a wide range of financial services should increase a bank's efficiency, as the results of increasing bank's economies of scale. (Klein and Saidenberg, 2010; Chiorazzo et al., 2008). Having more resource with good production efficiency should lead bank to better performance. Meanwhile, in risk reduction hypothesis perspective, diversification leads to less risk with manageable income. The diversification may diminish if there is integration among financial markets. For instance, if lending market, mortgage market, capital market, and money market are integrated, there is no extra risk-adjusted return for banks in doing diversification.

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Diversification involves variegating the tentacles of production to increase the means of revenue generation in a corporate setting. It involves delving into the production of products other than the typical one that a body is known for so as to limit the susceptibility of the body to the risks attached to generation of income through a single means. Diversification does not put an end to the former means of income generation. Instead, it finds alternative source of income generation to lighten the load borne by the already existing means of income generation.

One fundamental question in the mind of an investor may include how much risk is contained in my investment. Conservative, moderate, and aggressive investors tolerate differing

amounts of risk; thus their investment portfolios should differ. An understanding of the degree of diversification in an investment portfolio is desired because it measures how risky the investment is. For example, holding a group of highly positively correlated stocks is riskier than holding a group of uncorrelated stocks.

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Another factor contributing to the risk involves holding a stock that is behaving unusually. The idea of contestable markets has spanned forms of empirical assessments for competition which have been carried out to financial sector. The model of Bresnahan (1989) makes use of the condition of widespread market equilibrium. The fundamental idea is that profit maximization companies in equilibrium will pick out prices and quantities such that marginal costs equal their apparent marginal revenue, which coincides with the demand price under ideal competition or with the industry's marginal revenue under perfect collusion. This permits for the estimation of a parameter that offers a measure of the degree of imperfect competition, varying among perfect competitions to full market power. One empirical benefit is that only sector-wide records are needed to estimate this parameter, despite the fact that bank-specific data can be used as well.

The overall performance of the banking sector is a subject that has obtained quite a few interests in recent years. In general, empirical studies have particularly observed two alternative approaches, particularly the dealership and/or the firm theoretic technique. On the one hand, the dealership method first proposed via Saunders and Schumacher (2000) and

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further extended by McShane and Sharpe (1985), Allen (1988), and Angbazo and Samder (1996) views banks as dynamic dealers, setting interest rates on loans and deposits to balance the asymmetric arrival of loan demands and deposit components. Then again, the firm theoretical approach in the beginning developed by Klein (1971) and Monti (1972) views banking firms in a static setting in which demand and supply of deposits and loans concurrently clear each market. Moreover, the dealership approach undertakes that irrespective of the ownership, banks practices are similar and their business strategies are exposed to a set of profitability determinants, nevertheless the belief appears to be inappropriate, especially for developing countries that have constantly embraced reforms and liberalization of the financial sector. To triumph over the shortcomings, a number of studies on the empirical specification of the dealership approach capture the impact of bank ownership by introducing dummy variables into their estimation models (Micco, Panizza, and Yanez 2007).

2.3.1 The Concept of Diversification

The concept of diversification does not have specific meaning among researchers. Luffman and Reed Luffman (1986), opined the word diversification have distinctive connotations when a researcher interests are numerous. Many authors have defined it in so many ways and so what is essential is a comprehensive definition which is both theoretically sound and managerially legitimate (Olo, 2009). Some researchers have described diversification in terms of the number of products, services and markets (Capar and Kotabe, 2003) while others define it in terms of the approach and techniques that enable organizations to gain growth and reduce

overall risk (Hoskisson and Hitt, 1990). By and large, diversification talk about the growth of a firm number of business lines it runs whether or not such lines are associated or not (Penrose, 1959). Olo (2009) is of the view that, the word diversification represents an exceptional departure from the firm existing core of operations to a new business line either with the aim expansion or growth. Mulwa (2013) in his study considered a loan given firm to be diversified when it used several sources of financing to generate income. In world of banking, diversification is said to be taken place through the combination of activities such as commercial banking, securities trading, insurance and other economic services (Baele et al., 2006). Additionally, Ebrahim and Hasan (2008) described diversification of banks activities as the expansion of the bank operations into new economic products and services apart from the customary intermediation activities. Once again, diversification of bank operations can be said to be the extension of a banks approved activities into non-traditional banking activities. From this background, bank diversification means the breaking down the various factors that constitute the operations, assets and liabilities of a commercial bank. Therefore, diversification of bank can be properly-defined as the collection of different activities which include assets, income sources and liabilities in banking operations.

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2.3.2 Stewardship Theory

It is generally view that, higher quality control of resources by managers is the core element accounting to the good performance banks in the world. This have affirmed by several studies in the United States banking system (DeYoung and Rice 2004; Bhuyan and Williams 2006; Stiroh and Rumble 2006; Hirtle and Stiroh 2007). A different author from the western and

advanced countries has also contributed (Molyneux and Forbes 1995; To and Tripe 2002; Kosmidou et al, 2007; Pasiouras and Kosmidou 2007; Athanasoglou et al,2008; Kosmidou and Zopounidis 2008; Albertazzi and Gambacorta 2009).

Another concept that gives a reason as to why there is viable relationship among bank size and bank stability is the stewardship theory. This theory suggests that managers are integrally of an organizational set up because they entrusted to implement the plans of the top hierarchy and for this reason are not vulnerable to misappropriate the resources of the company (Davis et al., 1997; Donaldson and Davis, 1991). The theory argues that, managers are non-financial motivators, and for that matter company managers are seen as drawing motivation from the need to achieve, to gain intrinsic pleasure through a success execution of intrinsically tough work and also to exercise responsibility and authority and by so doing, they are rewarded by the reputation from peers and top executives. It moves on to explain that, company managers perceive to be with the firm for long period of time and for they matter the structures of the firm is shaped in form to help guideline the organization. This enables the manager ego and the organization, therefore combining individual self-esteem with company status.

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The theory further opined that, it is very vital for a company manager to discover a course of action individually unrewarding, nevertheless, they are possibly to pursue it from a sense of obligation. When a manager discovers that their fortunes are inextricably tied to their contemporary employers via an expectation of future employment or pension rights, they will

view their interest as aligned with that of the company and its proprietors although they do not own shares within the firm. In essence, the stewardship principle submits that there may be no internal motivational problems amongst corporate managers because corporate managers are aspire to achieve desirable corporate performance. A performance variation, in the view of the principal, comes from the structural state of affairs in which corporate managers find themselves. If the structural situation is convenient, one should anticipate good corporate performance from company managers. One question always arises as to whether or not the organizational structure encourages managers to formulate and implement plans for high corporate performance. Structures guide goals to the extent that they offer clear, consistent expectations and authorize and empower senior management (Donaldson and Davis, 1991). In nutshell, stewardship theory shows that growing size is indicative of structural convenience that may enhance stability. From this background one may not be wrong to say that, the stewardship theory predicts a relationship between bank stability and bank size.

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2.3.3 Agency Theory

Agency principle argues that within the present day enterprise, in which share ownership is extensively held, managerial actions depart from those required to maximise shareholder returns (Berle and means 1932; Pratt and Zeckhauser 1985). In agency theory terms, the owners as the principals and the managers as the agents and there is an agency loss which is the extent to which returns to the residual claimants, the owners, fall below what they would be if the principals, the proprietors, exercised direct control of the organization (Jensen and Meckling 1976). Agency theory specifies mechanisms which reduce agency loss (Eisenhardt

1989). These consist of incentive schemes for managers which reward them financially for maximising shareholder interests. Such schemes normally consist of plans wherein senior executives acquire shares, possibly at a reduced price, thus aligning financial interests of executives with those of shareholders (Jensen and Meckling 1976). Other comparable schemes tie executive compensation and levels of benefits to shareholders returns and have part of executive compensation deferred to the future to reward long-run value maximisation of the corporation and deter short-run executive action which harms company value. Consequently, the implication of agency theory is that where chief executive officers (CEO) duality is retained, shareholder interests could be protected by way of aligning the interests of the CEO and the shareholders via an appropriate incentive scheme for the CEO, That is, with the aid of a system of long-term compensation additional to basic salary, CEOs holds the dual role of chair, the presence of long-term compensation will align their interests with shareholders and prevent the loss in shareholder benefit which otherwise will result from the dual role. Any superiority in shareholder returns observed amongst dual CEO chairs over independent chairs might be explained away through agency theory as being due to the spurious effects of financial incentives. By contrast, stewardship theory might hold that any observed superiority in shareholder returns from CEO duality was not a spurious effect of greater financial incentives among CEO-chairs than among independent chairs.

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2.3.4 Portfolio Theory

Portfolio principle talks about the connection between diversification, expected returns and risk in a liquid portfolio. In large-spectrum, different portfolios display unique degrees of risk

and expected return. Portfolio principle assumes that amongst all feasible portfolios at some certain risk level investors will usually select the one with the very best expected return, which is known as risk-return efficient. The efficient portfolios for different risk levels represent an efficient frontier, which displays a superb slope in a risk-return diagram. The positive slope means that while moving on the efficient frontier there may be a trade-off between risk and expected returns.

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2.3.5 Loanable Funds Theory of Interest Rates

The loanable funds theory was propended by Robertson and Ohlin in the year1930. According to this approach, the interest rate is determined by the demand for and supply of loanable funds. The term loanable fund includes all forms of credit, such as loans, bonds, or savings deposits (Bertocco, 2013). The loanable funds theory extends the classical theory, which determined the interest rate solely by savings and investment, in that it adds bank credit. The total amount of credit available in an economy can exceed private savings because the bank system is in a position to create credit out of thin air. Hence, the equilibrium (or market) interest rate is not only influenced by the propensities to save and invest but also by the creation or destruction of fiat money and credit. According to Ohlin (2013), one cannot say "that the rate of interest equalizes planned savings and planned investment, for it obviously does not do that. How, then, is the height of the interest rate determined? The answer is that the rate of interest is simply the price of credit, and that it is therefore governed by the supply of and demand for credit.

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The banking system through its ability to give credit can influence, and to some extent does affect, the interest level. Woodford (2003) in this work have essential exception on this theory and points out that Wicksell's concept constitutes the theoretical basis of the approach adopted in recent years via the central banks of western countries which pursues the goal of price stability through a monetary policy based on interest rate. Wicksell defines this rule by introducing the difference between the rate of interest on money and the natural rate of interest. Friedman (1968), for instance, makes use of the difference between natural rate of interest and market rate of interest to give an explanation as to what monetary policy can and cannot do. In general terms banks use the wicksellian distinction to confirm that economic policy can only have an effect on the short term interest rates while in the long run the interest rates are determined through real factors.

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2.3.6 Market Power Theory

This is a concept build from Porter (1980) who believes that of putting the organisation in its right environment using a set of techniques which separates a firm's position from the other competitors. Barney (2002) is of the view that, the strategy to triumph over competition is diversification. Diversifications of a firm's operations help to build market power by granting access to get right of entry to new market and conglomerate powers as well. By way of getting into different markets via diversification, firms are capable of benefit from competitive power within the market not because of their specific position in that market but because of their positions in different markets. Gribbin (1976) contends that, in an event of getting conglomerate power, a firm must have to have individual power in its specific market. The

control of market share then boosts the firm to go into new markets through predatory strategies supported via its position, resources and power in its current market. In line with Montgomery (1994) there are three approaches by which companies are able to expand their market strength when using diversification which are subsidization through using income from one marketplace to aid predatory pricing in the other market, mutual forbearance of demanding opposition amongst competitors and the last is give-and-take buying for among units of a multi-enterprise organisation which shut out small competition. Again, Palich et al., (2000) who content that corporations with marketplace power can easily control market prices by making provision for discounts, subsidies and working closer to loyal customers which server as promoting tool compete well. By this way, firms are in a good position to triumph over competition and at the end, allow them to earn profit above average. In summary, the market power theory prescribes diversification as a tool to boost the performance of firms in a particular industry at a period of time.

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2.4 Empirical Literature

This section of the study reviews the empirical literature on the effect of income diversification on profitatility. Specifically, it reviews existing studies on the effect of credit risk on profitability; the linkages between bank–specific variables and profitability; macroeconomic variables and profitability as well as channels through which income diversification impacts on profitability. The determinants of bank profitability are well examined in the literature and show that bank profitability is driven by both bank-specific and external factors (Athanasoglou et al., 2008; Goddard et al., 2004; Pasiouras and Kosmidou, 2007; Staikouras and Wood, 2003). Lately, regulators of banks and their operation require

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banks to set aside sufficient risk-capital as a cushion to soak up unexpected losses and other adverse shocks that threaten bank solvency (Tasche, 2004). For this reason, bank supervisors across African countries require banks to set aside some level of regulatory capital for the risk they take, and this requires them to reserve a minimum regulatory capital levels to enhance the solvency and stability of their banking operations.

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Literature suggests that the objective regulation capital requirement of bank is to keep capital levels to minimize the risk of banks in situations like banks failure (Aggarwal and Jacques, 2001). Again (Ng and Roychowdhury, 2014) is the view that, the impact of regulatory on capital requirements of banks failure is clearly understood. In connection with this, other scholars belive that the impact of regulatory capital requirements on bank profitability is not completely understood especially, for banks in Africa (see Barth et al, 2008; Berger and Bouwman, 2013).

2.4.1 Income diversification and profitability

In terms of income diversification Elsas et al. (2010) use panel data from nine countries over the period 1996–2008 to test how revenue diversification affects bank value. Relying on a comprehensive framework for bank performance measurement, they find robust evidence against a conglomerate discount, unlike studies concerned with industrial firms. They opined that, diversification increases bank profitability market valuations. This indirect performance effect does not depend on whether diversification was achieved through organic growth. They

further demonstrated that previous results in the literature on the impact of diversification on bank value presumably differ due to the way diversification is measured, and the negligence of the indirect value effect via bank profitability. Similar work was done by Landskroner et al., (2005) considered diversification as a means to improve profitability and operational efficiency and allows the bank to develop customer reliability.

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Chiorazzo et al. (2008) used annual data from Italian banks, conduct a study the link between non-interest revenues and profitability. Findings of their paper suggest that non-interest activities are often associated with profitability gains but also with higher risk because of their unstable nature. Again, it was revealed that there are limits to diversification gains as banks get larger. Small banks can make gains from increasing non-interest income, but only when they have very little non-interest income share to start with.

Maudos (2017), did a study to investigate whether the impact of the income structure on the risk and profitability of european banks. To achieve this objective, the writer estimates the income structure over the period 2002–2012 using data for a panel of european banks. The study examines if there are variations between investment-oriented banks and banks focusing on financial intermediation in terms of the effect of income structure on risk and profitability. The findings show that an increase in the share of non-interest income has a negative effect on profitability, even though the effect was only significant at some point. Nevertheless, analyzing the impact on each type of banking business separately, the effect on interest banks is negative and significant, but not significant in the case of banks whose business is more

diversified. An increase in the share of non-interest income was found to increase risk, although the effect diminished with the crisis. Their finding suggests that market power has beneficial effects on financial stability.

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On the other side, Bapat and Sagar, (2015) examining relationship of income diversification, asset quality with bank profitability. They use a data for 46 public sector and private sector banks in India over the period from the year 2006 to the year 2013. They identify significant difference for diversification measures when comparing public sector banks with private sector banks. It was established that negative relationship between non-performing assets and return on assets. It was also revealed diversification exhibits a positive relationship with return on assets.

Acharya et al. (2006) in their paper examined the effects of a bank's decision to diversify on its return and risk and used data set of 105 Italian banks over the sample period 1993–99. While data limitations mean that our results need to be interpreted with caution, they do suggest some implications for the optimal size and scope of banks. Their findings continue to suggest that, empirically there are diseconomies of scale for a bank that expands into industries in which it faces a high degree of competition.

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Sanya and Wolfe (2011) conduct a study on the link between ownership structure, revenue diversification and insolvency risk is investigated. Using a panel dataset of 153 listed European banks over the period 2000-2007, and the three stage least squares estimation technique, they identify that revenue diversification reduces insolvency risk in banks that have a large shareholder. This is because, the need for the majority shareholder to protect its wealth is often accomplished through its ability to influence strategic investment decisions positively. The results are also robust to controls for the regulatory environment that banks operate in. The link identified between ownership concentration and revenue diversification is a novel way of analyzing the impact of the latter on insolvency risk in banks.

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Also, Sanya and Wolfe, (2011) investigated the effect of revenue diversification on bank performance and risk. Using a panel dataset of 226 listed banks across 11 emerging economies and a new methodological approach, System Generalized Method of Moments estimators, the results in this paper provide empirical evidence of the impact of the observed shift towards non-interest income generating activities on insolvency risk and bank performance. The core finding was that diversification across and within both interest and non-interest income generating activities decrease insolvency risk and enhance profitability. The results also show that these benefits are largest for banks with moderate risk exposures. By extension, these results have significant strategic implications for bank managers, regulators and supervisors.

Moving forward, Pennathur et al. (2012) examine the impact of ownership on income diversification and risk for Indian banks over the period 2001–2009.The study investigates

both the determinants of non-interest income and the impact of diversification on various profitability and insolvency risk measures for public sector, private domestic and foreign banks. They identified that ownership does matter in the pursuit of non-interest income. Relative to private domestic banks, public sector banks earn significantly less fee-income, while foreign banks report higher fee income. Public sector banks with higher levels of governmental ownership are significantly less likely to pursue non-interest income sources. Fee-based income significantly reduces risk, measured by profitability variables, for public sector banks.

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In another development, Berger et al. (2010), investigates the effects of focus versus diversification on bank performance using data on Chinese banks during the 1996–2006 period. Their diversification dimensions were loans, deposits, assets, and geography. They concluded that, all four dimensions of diversification are associated with reduced profits and higher costs. These results are robust regardless of alternative measures of diversification and performance. Furthermore, they observed that banks with foreign ownership (both majority and minority ownership) and banks with conglomerate affiliation are associated with fewer diseconomies of diversification, suggesting that foreign ownership and conglomerate affiliation may play important mitigating roles.

Similarly, Meslier et al. (2014) examines the effect of bank revenue diversification on the performance of banks in developing economy. Using a unique dataset with detailed

information on non-interest earnings, it was that, a shift in the direction of non-interest activities will increase bank profits and risk-adjusted earnings particularly whilst banks are more involved in trading in government securities. It additionally indicated that foreign banks gain extra from such a shift than their domestic counterparts.

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Again, Nguyen et al. (2012) investigate the association between bank market power and revenue diversification and whether revenue diversification interacts with market power impacting on individual bank stability. They explore four South Asian banking markets (Bangladesh, India, Pakistan and Sri Lanka) from the period 1998–2008. They opined using Generalized Methods of Moments (GMM) estimators indicate that South Asian banks with greater market power focus more on traditional interest income generating activities. Such banks, however, become more stable when they diversify across both interest and non-interest income activities. The conclusions of their findings were that, bank market power is not positively associated with non-interest income. Also, banks with market power become more stable when they diversify their revenue. Again, banks with higher credit losses focus more on revenue diversification and financial and economic development impact bank non-interest income positively.

Goetz, (2012) also conducted a study on how bank's diversification affects its own risk taking behavior and the risk taking of competing and non-diversified banks. The study suggest that greater geographic diversification of banks changes a bank's lending behavior and market

interest rates, and has effects for non-diversified competitors due to connections in the banking market. It was also indicated that bank's risk level is lesser when its competitors have a more diversified branch network. These findings indicate that a bank's diversification also impacts the risk taking of competitors, even if these banks are not diversifying their activities.

Fang and Lelyveld, (2014) use a universally applicable correlation matrix approach to calculate international diversification effects, in which bank subsidiaries were treated as individual assets of the banking group portfolio. They applied the framework to 49 of the world's largest banking groups with significant foreign business units over the 1992–2009 periods. Focusing on the most main risk in banking sector, credit risk; it was revealed that allowing for geographical diversification can reduce banks' credit risk.

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Baele et al., (2007) of their paper investigates whether or not functionally diversified banks have a comparative gain in terms of long-term overall performance/risk profile in comparison to their specialised competitors. They once more examine the return/risk trade-off implied in different functional diversification techniques using a panel data analysis over the period 1989–2004. They discover that higher share of non-interest earnings in total profits impacts banks' franchise values positively. Diversification of revenue streams from distinct financial activities will increase the systematic risk of banks but the impact at the idiosyncratic risk factor is non-linear and predominantly downward-sloping.

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Ebrahim and Hasan (2008) examine differences in the value relevance of commercial bank earnings components from interest and noninterest banking activities. Specifically, it studies market reaction to changes in bank earnings from noninterest sources resulting from expansion into new financial services other than the traditional intermediation activities. A sample of commercial banks between 1993 and 2002 was used. Findings of their study show that annual abnormal returns have more significant positive relation with changes in the noninterest component of bank earnings compared with changes in the interest component of earnings.

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Elyasiani and Wang, (2012) this study examines whether diversification is associated with improvement production efficiency. Data Envelopment Analysis was applied to calculate the Malmquist index of productivity, and the total factor productivity change for a sample of banks holding company over the period 1997–2007. Technical efficiency is negatively associated with activity diversification and the effect is primarily driven by banks that did not experience diversification was first finding of the study. On the other hand, the degree of change in diversification over time is not associated with total factor productivity change but it is negatively associated with technical efficiency change. The paper concluded that, diversification on average is associated with lower production efficiency of banks.

2.4.2 Credit risk and profitability

Chantapong, (2005) did a study on performance of banks in Thailand from 1995 to 2000. It has observed that banks decrease their credit risk during certain period at the time ofcrises

period and as results have advanced their profitability after crises in Thailand. The outcomes of the paper suggest that the foreign banks have exhibited higher profitability levels in comparison to the average domestic banks. It again identify that, the gap among foreign and domestic banks' profitability has closed during the post-crisis period, suggesting that the financial restructuring program has bring forth some positive outcomes.

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In another comprehensive study, Claessens et al, (2001) tested the determinants of bank interest margins and profitability in 80 countries in the course of 1988- 1995. The paper revealed that, banks asset to GDP have lower market concentration ratio which leads to decrease margins and earnings. The scholars concluded that foreign banks have relatively good indication of margins and profits as compared to domestic banks in developing countries.

Alhassan et al, (2016) conducted am empirical study to assess the effect of non-interest income on efficiency and economies of banks in Ghana by using data envelopment analysis method to estimate efficiency rankings with and without non-interest income of 26 Ghanaian banks from the 2003 to 2011 for the first-stage analysis. At the second stage, a truncated bootstrapped regression was use to estimate to the effect of contextual variables on bootstrapped efficiency scores. The outcome of the study revealed that, the exclusion of non-interest profits as predictive variable leads to the under-estimation of efficiency of banks. The findings from the second method using regression analysis suggested a curve-linear relationship between bank size and efficiency confirming that bank efficiency increases bank size and this increases occurs due to economies of scale. However, the increases get to an

optimal point and then inefficiency sets in. The study also identify that loan loss provisions, market concentration, leverages are the alternative significant determinants of efficiency.

In addition, Assefa (2014) investigates the determinants of bank credit in Ethiopia using annual data spanning 1978–2011. Results from the study show that in the long run, among others domestic deposits, real lending rate, GDP, inflation and previous year's lending positively influence banks credit. Further results show that in the short run domestic deposits do not matter in credit behaviour of banks suggesting that banks do not immediately lend to the private sector from their deposits. However, money supply exerts negative effect on lending both in the short and long run.

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Moreover, Dietrich and Wanzenried (2011) did a study on determinants of commercial banking profitability in low–middle– and high–income countries. The writers applied the generalized method of moments (GMM) on a large cross–country dataset of commercial banks across 118 countries for a period covering 1998 to 2012. The paper analyzed how bank characteristics, macroeconomic variables and industry specific factors affect bank profitability. The outcome of the study revealed that there is significant difference in profitability as peroxided by return on assets, return on equity and net interest margin in the determinants of profitability between banks from low income, middle income, and high income nations accordingly. In general, underdeveloped markets in low income countries tend to be less competitive as indicated by their relatively high profitability

(return on assets, return on equity) then again the higher development of a nation (measured by the country's income) tend to have tougher competition and higher efficiency in the capital allocation (measured by loan loss provisioning to total assets ratio) and also, lower profitability. This suggests that financial institutions doing business in high income countries need to be more efficient so they can deal with the lower profit margins and higher pressure demanded by the requirement for efficiency. Additional evidence from Dietrich and Wanzenried (2011) indicates that, in low income countries, capital ratios are much higher than in the high income countries. In low and middle income countries the level of bank capital does not affect bank profitability however the capital ratio in countries that are high–income has a positive and significant impact on the bank's profitability. Hence, banks that have higher equity to assets ratio are somewhat more profitable.

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Roman and Tomuleasa, (2012) conducted an empirical study to evaluate the impact of specific internal and external factors on bank profitability. The study covered a sample size of 86 commercial banks within the European Union member States for a time period spanning 2003 to 2011 using a balanced panel data. The results revealed that, bank profitability (represented by ROE) of majority of the countries considered is influenced significantly by the bank–specific factors which are NPL, CAR, cost–to–income ratio and the size of a bank. Also, profitability is influenced significantly by macroeconomic factors such as GDP growth rate, concentration of banks and inflation. Moreover, higher NPL ratio to total loans and the deterioration of the quality of credit portfolio has negative impact on the profitability of commercial banks.

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Li and Zou (2014) examine the relationship between credit risk and profitability of commercial banks in Europe of which data was collected from 47 commercial banks, for the period of 2007 to 2012. The study was done with a series of statistical test were performed and it was noted that credit risk management does not have positive impact on profitability of banks. This is consistent with Hosna et al (2009). Interestingly, there were differences regarding the level of effect of credit risk on profitability proxies. For instance, while NPL has a significant effect on ROE and ROA, the impact of CAR on both profitability measures are insignificant suggesting that the link between credit risk and profitability is indicator–specific.

Saona (2016) studied the intra–and extra–bank determinants of Latin American Bank's profitability using data from seven commercial banks in Latin American countries covering the year 1995 to 2012. The author used GMM approach to estimate the models in order to address the issues from endogenous independent variables and heterogeneity in relation to the individual banks. The study showed evidence of several relations involving bank profitability. Importantly, the study found an inverted U–shaped relationship between credit risk and profitability suggesting that higher credit risk increases profitability up to a point beyond which further increases in credit risk lowers profitability.

A study by Otieno et al.., (2016) on credit risk management practices on loan portfolio of Barclays Bank Kenya relying on both primary and secondary data. The findings suggest that credit risk management policies do influence loan portfolio performances; the impact is either negative or positive depending on whether the loan is priced highly or reasonably. Otieno et al.., (2016) point out that, when lenders charge reasonable interest rate on their customers, loan portfolio performances tend to improve therefore increasing lender returns. Moreover, when interest rates reduce it gains traction with new customers with consequent increases in incomes to the bank. Price of loan was deemed to positively impact on the size of NPL which have emotional impact the bank's credit portfolio. This finding is consistent with Idowu and Samami (2011) whose study show that when interest rates are high, access to loans by the private sector becomes difficult. Those few entrepreneurs that are able to access the credit facilities tend to struggle to keep on schedule with the loan repayments because of the high cost of the credit. This situation leads to the creation of loan–losses high–interest cycle.

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Kusi et al., (2017) in a study that examined credit information sharing through private credit bureaus and public registries and their effect on bank credit risk in low and high-income countries in Africa covering the period from 2006 to 2012 with 548 banks in Africa. The study used Prais– Winsten panel data technique to conclude that credit information sharing reduces credit risk of deposit money banks in low and middle income nations irrespective of whether it is through private credit bureaus or public credit registries. Further findings reveal that credit information sharing via public credit registries is only negatively and significantly related to credit risk when all nations sharing credit information through public credit

registries are treated as a unit but the effect is not significant in countries with low or high income countries. In contrast, credit information shared via private credit bureaus registered a negative and significant impact on credit risk in both low and high income nation states and in all countries that engage in credit sharing through private credit bureaus. The study suggested that credit information that is shared via private credit bureaus is more robust in relation to dealing with credit risk in banks irrespective of the income bracket of the bank.

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Boahene et al., (2012) studied the relationship between credit risk and the performance of Ghanaian banks. They found out that credit risk has impact on the financial performance of Ghanaian banks. Further, Acheampong, (2013) studied the effects of foreign bank entry on financial performance of domestic–owned banks in Ghana. The study zeroed–in on the impact of foreign banks entry on the financial performance of Merchant Bank Ghana Limited and GCB from a period spanning 1975 to 2008. The most consistent result from the pooled regression technique was that foreign bank entry increased the ROA of domestic banks between the periods of 1992 to 2008, a period in which the entry of foreign banks into the country was at its peak. The result supports a study done by Beck, Demirgüc–Kunt and Levine (2006) as well as Boldrin and Levine (2009) whose studies show that foreign bank entry into domestic banking sector improves the domestic banks' profitability margins. Moreover, liquidity had a comparatively larger multiplier effect on the local banks' ROA than any other independent variables covered between 1975 and 1991. This study supports the view that the presence of foreign banks in a country such as Ghana is not inimical to the financial performance of the locally–owned financial institutions within

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the country was that foreign bank entry increased the ROA of domestic banks between the periods of 1992 to 2008, a period in which the entry of foreign banks into the country was at its peak.

2.4.3 The Bank-Specific Variables and Profitability

Guru et al.., (2002) investigated the determinants of bank profitability in Malaysia. They used a sample of 17 commercial banks from the year 1986 to 1995. They group the determinants of profitability in two main categories; specifically, internal determinants which include capital adequacy, costs management and liquidity. The other category is external determinants namely; economic conditions, firm size, and ownership. The findings from these scholars suggest that, efficient cost management is significant which explains high bank profitability. Again macroeconomic indicators such as high interest ratio are said to associate with low bank profitability, while inflation appears to have positive impact on bank performance.

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Using the panel data for sixty-two main Chinese commercial banks during 1997-2012, Chen et al., (2018) did a study on the effect of income diversification on bank risk. Their empirical results show that there is no significant relationship between income diversification and bank risk. The reduction of overall risk is attributed to the significant reduction in the risk of interest income business. While the proportion of noninterest income increases, its volatility also increases, and thus its contribution to overall risk increases.

Stroh (2004) assessed diversification benefits in the U.S. banking industry from the steady shift toward activities that generate fee income, trading revenue, and other types of noninterest income. In the aggregate, declining volatility of net operating revenue reflects reduced volatility of net interest income, not diversification benefits from noninterest income, which is quite volatile and increasingly correlated with net interest income. At the bank level, greater reliance on noninterest income, particularly trading revenue, is associated with lower risk-adjusted profits and higher risk. This suggests few obvious diversification benefits from the ongoing shift toward noninterest income. Meanwhile Staikouras (2003) investigate the diversification effects of noninterest income at banks in 15 different European countries. They also conclude that noninterest income is more volatile than interest income over time; they find negative correlations between these two income streams, which leads them to conclude (in contrast to the U.S. studies) that noninterest income tends to stabilize bank earnings.

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Wanamali et al., (2016) examines the impact of bank income source diversification between interest income and non-interest income and its impact to bank's risk-return trade-off by using secondary data for ten years' period from 2004 to 2013 for a sample of 11 commercial banks. The study used multiple regression models for analyzing the data. Their results reveal that non-interest income bearing activities are riskier than interest income bearing activities but offer potential diversification benefits to shareholders. They also discovered that the marginal increase in non-interest income improves the shareholders' potential return and risk whereas an increase in interest income, decrease the potential return and risk for shareholders. Additional comparative analysis of non-interest income bearing activities and risk-adjusted returns shows that foreign exchange income and other income have a major influence on the

shareholders' risk and return. Nevertheless, fee-based income has no impact on the risk-adjusted return.

Louzis et al. (2012) discover that lending rates have a positive relationship with NPLs. Using log-linear regression model on data collected from United States' commercial banks between 1984 until 1987, the researcher's shows that NPLs is strongly affected by high lending interest rate. During economic downturn, unsettle loans problem may extremely arise due to problem of loan collections. Thus, this problem will reduce the ability of banks to grant more credits while cost of borrowings will increase too because of the bank's high lending rate. In a different set up, Badar and Yasmin (2013) assert that there is significant positive relationship and long-term effect on Islamic banks in Pakistan.

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Stiroh and Rumble, (2006) examines whether or not the discovered shift toward activities that generate expenses, trading revenue, and other non-interest income has advanced the performance of financial holding businesses from 1997 to 2002. Their finding was that, diversification advantages exist among financial holding businesses, however those profits are offset by way of the improved exposure to non-hobby sports, which are plenty greater unstable however no longer necessarily extra worthwhile than interest-generating activities. Within financial holding businesses, however, marginal increases in revenue diversification aren't related to higher overall performance, at the same time as marginal increases in non-interest income are nonetheless related to lower risk-adjusted profits. Another key finding was

that, diversification gains are more than offset via the costs of increased exposure to volatile activities represents the dark side of the search for diversification benefits and has implications for supervisors, managers, investors and borrowers.

In a study by Coffinet and Lin (2010) evaluate the sensitivity of banks' profitability to plausible severe adverse macroeconomic shocks in France, using supervisory data spanning 1993 to 2009. The authors results based on their regression model show that bank specific variables such as bank size, capital ratio and non–interest income to assets ratio significantly affect French banks' profitability. Specifically, the results evidenced a statistically significant relationship between macro environment and the profitability of the banking sector. Also, profitability is negatively related on credit risk and bank size. Moreover, profitability is positively dependent on the GDP growth of France, the stock market return and the interest rate maturity spread, the share of the non–interest income and the capital of the banks.

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Ersado (2006) examined income diversification in Zimbabwe, taking into consideration the urban-rural divides, the changes and welfare implications of income diversification in Zimbabwe following macroeconomic policy changes and droughts of the early 1990s. They used data from the national income, consumption and expenditure surveys in 1990-91 and 1995-96, which related a period of economic volatility and natural disasters and shows that the percentage of households earning profits from private and informal sources grew considerably, even though government and formal sources declined in the aftermath of the

drought and policy changes. The study reveals that, rural households generally tend to have a more diversified portfolio of income as compared with their urban counterparts, and the degree of diversification decreases with the level of urbanization. However, there are important differences in the level of diversification within the rural and urban areas depending on wealth: regardless of the fact that the relatively better-off households have a more diversified income base in rural areas, it is the poor who pursue multiple income sources in urban areas. On the other hand, there were significant declines in returns to human and physical capital assets during the same period. Their findings propose that households with a more diversified income base are better able to withstand the unfavorable impacts of the policy and weather shocks.

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Molyneux and Thornton (1992) explored the determinants of bank profitability using sample data of 18 countries during the period from 1986 to 1989. They observed a significant relationship between return on equity and interest rates and bank concentration. More lately, Pasiouras and Kosmidou (2007) investigated performance of foreign and domestic 15 european banks in during 1995 to 2001.They discovered that the profitability of both domestic and foreign banks is not only affected by bank's specific characteristics, but financial market structure and macroeconomic conditions as well. The results continue to suggest that, variables under the study have significant relationship with bank profitability, despite the fact that the impacts are not always uniform for domestic and foreign banks.

Once more, Fu and Heffernan (2010) assessed the overall performance banks operating within the Chinese banking sector during the period 1999 to 2006. The findings of these scholars suggest that, net interest margins performs well than the conventional measures of bank profitability, particularly return on assets and return on equity. Again, macroeconomic variables and financial ratios are significant although the type of bank is important but not always the bank size.

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Furthermore, Demirgüc–Kunt et al., (1998) researched into how foreign entries affect the domestic banking market. The authors presented evidence on the scale of foreign participation in national banking markets in (80) countries relating the share of foreign banks to the levels of the interest margins, profitability and overhead expenses (all relative to assets) of domestic banks. Using regression analysis the data covered a period between 1988 and 1993. The results suggested that increased share of foreign banks reduces domestic bank's profitability as well as the overhead expenses (overhead cost). The reduction in the local bank's cost implies the overall welfare implication of foreign bank entry into domestic space is positive. Foreign bank entry also reduces local bank net interest margin but the impact is not significant. This evidence suggest that local banks become less profitable, because they tend to lose market share to foreign banks entrants. However, there is a gain for the local banking customers because their movement to foreign banks implies a preference that has been revealed.

Naseem et al., (2012) studied into the impact of bank–specific characteristics and macroeconomic indicators on banks' profitability in the Pakistan's banks for the period of 2006 to 2010. They used bank characteristics (both internal and external factors) as determinants of bank profitability. Equity capital, total assets, loans, deposits and macroeconomic factors such as economic growth, inflation and stock market capitalization are considered to be safe and such an advantage can translate into higher profitability. Specifically, Capital, deposit and loans have a negative relationship with profitability.

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Eldomiaty et al., (2015) conducted a study to examine the relative importance of bank specific and macroeconomic factors to bank profitability in the MENA and EU regions. The study used a panel data that covered a period of 2006 to 2012 for 945 commercial banks. A discriminant analysis was used for estimating Z–scores that discriminate between below median and above median ROE for the sampled banks. The results revealed that operating expenses are positively associated with bank profitability in the MENA region whilst financial leverage is negatively related with bank profitability. In the EU region the results says both bank equity and the ratio of liabilities to assets (debt) are negatively related to profitability.

2.4.4 Macroeconomic variables and profitability

Athanasoglou et al., (2008) examine the effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability; they used a GMM technique to a panel of Greek banks that covers the period 1985–2001. The estimation results show that profitability persists to a moderate extent, indicating that departures from perfectly competitive market

structures may not be that large. All bank-specific determinants, with the exception of size, affect bank profitability significantly in the anticipated way. However, no evidence is found in support of the SCP hypothesis. Finally, the business cycle has a positive, albeit asymmetric effect on bank profitability, being significant only in the upper phase of the cycle.

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Demirguc–Kunt and Huizinga, (1999) used bank records for 80 countries between 1988–1995, and the article suggests that, differences in interest margins and bank profitability replicate a variety of determinants which include bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, legal and institutional indicators. A larger ratio of bank assets to GDP and a decrease market concentration ratio lead to decrease margins and profits, controlling for differences in bank interest, leverage, and the macroeconomic surroundings. According to them, foreign banks have better margins and profits than domestic banks in developing countries, whilst the opposite holds in industrial countries. Additionally, there is evidence that the corporate tax burden is fully surpassed onto bank customers, whilst higher reserve requirements are not, specifically in developing countries.

Klein (2013) did a study in Europe and found that NPLs for the period of 1998-2011 is very much related to macroeconomic variables. The study argues that the level of non-performing loans is influenced by the macroeconomic variables and several banks' factors. Previous findings in the literature analyzing the relationship of macro-financial conditions towards

NPL indicate a positive impact to NPL. Macroeconomic conditions played a key role in forecasting of banking crises and one of them is by using the NPLs.

Ben Naceur and Goaied (2008) examined the impact of bank characteristics, financial structure, and macroeconomic conditions on Tunisian banks' net-interest margin and profitability during the period from 1980 to 2000. They propose that, banks with high amount of capital and overhead expenses generally tend to showcase higher net interest margin and profitability levels. They however discover that, market development have positive impact on profitability bank. The authors concluded their empirical findings by proposing that, private banks are quite more profitable than their state-owned banks and also share a view that macroeconomic conditions have no significant effect on banks' profitability.

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Stiroh (2002) studied diversification in banking relying on aggregate and individual bank dataset from the late 1970s to 2001 and with the help of a simple VAR framework. The aim was to examine how noninterest income affects the mean and variation of bank profitability and revenues as well as empirically determine whether concentration in nontraditional activities is correlated with risk 44 factors. The results showed that risk adjusted returns (profitability) are robust and negatively linked to the share of income derived from noninterest sources. Trading income particularly is linked with a declining profitability per unit of risk, whereas increase in fiduciary income is linked with a gain. Non–interest income share as are also positively associated with insolvency risk. The results together imply a shift to

noninterest income is actually worsening the risk/return trade–off for a bank because as volatility increases the average returns or profitability is stationary.

Again Subramanian (2010) conducted a study on how characteristics of banks and the overall financial environment affect performance of banks in China and India. With the help of bank level data covering a period of 1998 to 2009, compiled from income statements and balance sheets of 54 Indian banks and 127 Chinese banks using Wald test and Sargan test. The results indicated that GDP growth has positive impact on profitability. In times of strong economic growth, loan demand tends to be higher. Also, bank's cash flows, non–interest income and profit tend to increase during the time of strong economic growth because of high demand for financial services. Consequently, fewer loans tend to be in default during strong economic growth.

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Furthermore, Barth et al., (2002) conducted a study that used a large, data from the World Bank and USA office of the Comptroller of the Currency from 1996 to 1999 of national banking supervisors to measure and examine the determinants of foreign banking of 110 countries using OLS to estimate the regressions. The results revealed that foreign banking correlated positively with the range of financial activities that banks were allowed to conduct. Hence, foreign banking tends to have greater presence in countries that have accepted trade openness or countries that are generally more opened to interact economically with the world. Also, the extent of foreign banking is positively related with direct measures of profitability

in banking. Nations with smaller and more profitable local banks also tend to welcome many foreign owned banks as foreign owned banks tend to make domestic market more competitive (Claessens et al. 2001). Other advantages to foreign bank entry include importation of skilled banking management and advancement in information system. Estimated results also indicated that an increase in the presence or entry of foreign bank leads to a reduction in profitability and margins for the locally owned banks.

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2.4.5 Market risk variables and profitability

Cotarelli et al., (2003) examines the effect of institutional variables on bank credit to private sector over a panel of 27 industrialized and non-transitional developing economies spanning 1973–1996. The authors found an inverse relationship between public debt and bank credit to private sector – an evidence of possible crowding-out effect. Further results also show that bank credit rises in response to increases in GDP per capita. However, the effect of inflation is non-linear. In other words, the effect of inflation on bank credit is negative (positive) if the inflation rate is above (below) a certain threshold. Beyond the macroeconomic drivers of credit, higher transparency in accounting standards translates into higher bank credit to GDP ratio.

Amidu (2014) examines the micro and macroeconomic determinants of bank lending relying on data of 264 banks across 24 countries in SSA. At the micro level, bank size, growth and efficiency positively influences bank credit. Where banks are heavily concentrated, credit supply is low. However, the level of bank stability, risk adjusted profit and high non-

performing loans do not affect bank lending in SSA. At the macro level, Amidu (2014) found a negative nexus between policy–induced interest rate and bank lending suggesting bank credit supply increases when the monetary policy stance is relaxed. This evidence is however inconsistent with Assefa (2014) who found a positive nexus between bank credit and lending rate. Further results from study reveal that the level of economic activity sufficiently affects banks' lending behavior especially in a well reformed financial sector coupled with high bank density.

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Sharma and Gounder (2012) examined the drivers of bank credit to private sector across six economies using the generalized methods of moments over the period 1982–2009. Results from their estimation show that while lending rate and inflation negatively affect banks' credit growth, deposit and asset size are credit–enhancing. Further results also reveal an increase in credit growth in response to increases in economic growth proxied by GDP. This finding is particularly consistent with Olokoyo (2011).

Shijaku and Kullaci (2013) investigate the determinants of bank credit in Albania spanning 2001–2011, by employing the vector error correction model, Results from their study show that in the long run credit supply is positively influenced by exchange rate, financial intermediation and banks deposits. Nevertheless, lending to the private sector is constrained by higher public debt (consistent with Cotarelli et al., (2003) and rising lending rate.

In addition, Akinlo, and Oni (2015) examine the determinants of credit growth in Nigeria using the Engle and Granger error correction model. Findings from the study show that in the long run, bank assets, money supply, cyclical risk premium and inflation positively and significantly influence credit growth while reserve ratio and lending rate negatively affects growth of credit to the private sector. Apart from these, further results reveal that in the short run real GDP per capita adversely affects credit growth. This finding is particularly inconsistent with Sharma and Gounder (2012) who found a positive relationship between credit growth and GDP per capita. Akinlo and Oni (2015) argue that because oil constitutes a major component of GDP, its value added is negligible with low linkages with other sub–sectors and is therefore unable to translate into higher credit growth hence the difference in GDP–lending nexus.

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Rabab'ah's (2015) study in Jordan shows that non-performing loans negatively and significantly affects credit supply with size of bank and economic growth positively impacting on lending. Consistent with Imran and Nishat (2013), Rabab'ah's (2015) study found of the effect of inflation and interest rate on bank credit.

2.5 Conclusion

This section reviewed literature on the stylized facts on income diversification and profitability of the Ghana's banking sector placing emphasis on banks specific variables and macroeconomic variables. It continued with theoretical review and empirical review of credit risk and profitability, bank-specific variables and profitability, macroeconomic variables and

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profitability. Conclusively, the empirical result reveals mixed findings mainly due to differences in data set, estimation approach, time period and country settings. This thesis therefore examines the relationship between income diversification and banks' profitability in addition to investigating the transmission channels through which income diversification affects profitability of banks. The study discusses the methodology in the next chapter.

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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the scope of the study, data sources and data description of the thesis, measures of: income diversification, credit risk, non-interest income, bank–specific variables, macroeconomic variables and conclude with the empirical strategy used in examining the effect of income diversification on profitability of Ghana banking sector.

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3.2 Scope of the Study

The scope of this study covered 10 banks which are grouped into local and foreign owned banks. The foreign banks are seven whilst the local banks are three. The foreign banks consist of Barclays Bank of Ghana Limited, Banque Sahélo–Saharienne pour I'Investissement et le Commerce (BSIC Ghana Limited), Zenith Bank (Ghana) Limited, Ecobank Ghana Limited, Societe General Ghana Limited, Guaranty Trust Bank (Ghana) Limited and Standard Chartered Bank (Ghana) Limited. The local banks included CAL Bank Limited, Home Finance Company (HFC) Bank Ghana Limited and Ghana Commercial Bank (GCB) Limited.

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3.3 Data Sources

A panel data was extracted from two main different sources namely; annual consolidated financial statement data from the commercial banks was downloaded from the individual banks' websites. The choice of these banks is based on data availability. Data for macroeconomic variables was taken from World Development Indicators (WDI) database of the World Bank. For both the bank-specific and macroeconomic variables, the data span over the period 2006–2016

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3.4 Data Description

The study discusses each of the variables with their appropriate proxies relying on WDI definitions. The study employ bank-specific variable which is proxies by non-interest income and profitability. Non-interest income and profitability our two proxies, which represent our independent and dependent variables respectively, are separately discussed below.

3.4.1 Non-Interest Income

Non–interest income is the returns that come from activities other than banks' primary businesses or investments. These activities may include but not limited to banks' commissions, charges on withdrawals, fees on interbank withdrawals and counter cheque clearing among others. The other non-interest income sources include charges for any kind of services provided by a bank to customers, such as providing safe deposit lockers, issuing demand drafts, cheque book charges, clearing cheque, underwriting initial public offerings

(IPOs), capital gains from dealing in government securities and equity markets, trading income, gains from foreign exchange markets, revaluation of fixed assets such as office buildings, selling miscellaneous assets, monthly or annual account maintenance charges, income from selling insurance, and so on.

3.4.2 Profitability

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Profitability is the ability of a firm to use its resources to generate revenues in excess it expenses and it is the building block for analyzing financial statement and a firm performance. Profitability looks at the relation between the revenues and expenses to see how well a firm is performing and the future potential growth a firm might have. The researcher use two separate measures of profitability and they are individually discussed below.

3.4.2.1 Return on Assets

ROA is defined as the ratio of net profits to total assets expressed as a percentage. It reflects the ability of the management of a bank to generate profits from the assets of the bank. It demonstrates the profits generated per GHc of assets and indicates how effectively the bank's assets are managed to generate revenues (Dietrich and Wanzenried, 2011). It is the most common measure of bank profitability in the literature (Pasiouras, and Kosmidou, 2007). Again, study by Guru et al., 1999, defines ROA as the ratio of net income to total assets and taken to indicate how efficient and profitable a bank is managed relative to the total assets. In this study, we calculate ROA as the ratio of net income (or profit after tax) to total assets

expressed as a percentage. In fact, this indicator has also been expansively used in the literature to measure profitability (see Ekanayake, 2018; Tee, 2017; Petria et al., 2015; Albulescu, 2014; Afriyie and Akotey, 2013; Ntow and Laryea, 2012; Kosmidou et al., 2012; Alper and Anbar, 2011).

3.4.2.2 Return on Equity

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Return on Equity (ROE) is used to measure the amount of net income after taxes earned for each Ghana Cedi of the equity capital paid by shareholders. On the other hand, ROE values the total profitability of fixed income per Ghana Cedi of equity. ROE which is calculated as the ratio of net income (or profit after tax) to total equity capital has been used in quite a lot of studies (Kishan and Opiela, 2000; Lepetit et al.2008a, 2008b; Afriyie and Akotey, 2013; Boahene et al., 2012; Eldomiaty et al., 2015; Petria et al., 2015; Albulescu, 2014; Alper and Anbar, 2011; Ntow and Laryea, 2012) to proxy profitability.

3.4.3 Non-Performing Loans

Non–performing loan (NPL) is regarded as a significant indicator where their low values indicate low risk (Brewer et al., 2006). The presence of NPL is a probability that a loss will ensue which requires provision to be made. Here, the loan loss provisioning is subtracted from the profitability of the bank. Thus, the higher the NPL, the higher the loan loss provisioning and this may result in lower profitability (Li and Zou, 2014). In this study, we use NPL to total assets (NPLTA) to proxy credit risk. This indicator is computed as the ratio of total amount of NPL in banks' loan portfolio to total assets. Boudriga et al., (2009) posits that the

aggregate rate of NPLs is commonly taken as the measure of financial soundness which shows the quality of banks' loans. We expect non-performing loans to be negatively related to profitability. A number of studies have used NPL as measures of credit risk (see Hosna et al., 2009; Roman and Tomuleasa, 2012; Li and Zou, 2014; Shingjergji and Idrizi ,2014; Adjeitsey, 2016; Afriyie and Akotey, 2013; Albulescu, 2015; Kolapo et al, 2012; Otieno, 2016; Tetteh, 2012).

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3.4.4 Total Overheads Cost

Total overhead cost comprises all cost on the income statement except for direct labour, direct materials and direct expenses. Nevertheless, in managerial accounting, the term cost is applied in many ways. Okunbor (2013) defines the term "cost" as an economic resource that has a value. Cost should be used to generate the profit. Cost can be said to be the total expenses of the company that have to be paid to make the production or provide the services. Many authors of accounting books group cost into two main divisions and titles them as direct and indirect costs. Direct costs primarily comprise direct materials and labor, representing those easily and accurately identified with a particular cost object. Therefore, indirect costs cannot be determined specifically and exclusively with a given cost object (Napitupulu, 2015).

3.4.5 Inflation

Inflation is defined as the change in annual percentages relative to consumer price index (2010=100). According to Ibrahim and Alagidede (2017), inflation is used to proxy

macroeconomic stability or instability at a period. Again, inflation is used as a proxy for percentage change in aggregate price levels. Staikouras et al., (2003) indicated that inflation does not have a one-way effect on bank profitability; it could have direct or indirect influence on profitability of banks. The effects of inflation on bank returns could be is either predicted or unpredicted. If predicted, the interest rates are adjusted appropriately, which results increasing revenues faster than costs, showing a positive effects on profitability. Nevertheless, the banks may be relaxed in adjusting their interest rates if inflation is unpredicted, resulting bank operational costs increasing faster than revenues and subsequently having a negative effect on profitability of banks.

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3.4.6 Financial Development

Following standard literature (Ibrahim and Alagidede, 2017; 2018a, b; Ibrahim, 2018; Sare et al., 2018), we proxy financial development using private sector credit as a proportion of GDP. The private sector credit private credit includes all credit to various sectors on a gross basis except credit to the central government. Broadly, higher financial development is generally taken as the improvement in quantity, quality and efficiency of financial intermediary services. Levine (2005) argues that financial developments by far improves the production of ex ante information about possible investments, monitors investments and implementation of corporate governance, trading, diversification and risk management, mobilizes and pools savings as well as facilitate the exchange of goods and services. This study includes a measure of financial development to examine its effect on profitability of banks.

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3.5 Empirical Strategy

While the earlier section discusses the data description, this section of the study outlines the empirical strategy used in achieving the objectives of the study. Based on the aims of the study, this thesis constructs a model where profitability of banks is a function of income diversification proxied by non-interest income, non-performing loans, total overhead cost, inflation and financial development as shown in equation (3.1) below:

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$$PRO_{it} = f(NII_{it}, NPL_{it}, TOC_{it}, INF_{it}, PC_{it}) \quad (3.1)$$

where PRO_{it} is a vector of profitability for bank *i* at time *t*; NII_{it} is non-interest income for bank *i* at time *t*; NPL_{it} denotes non-performing loans for bank *i* at time *t*; TOC_{it} represents total overhead cost for bank *i* at time *t*; INF_{it} is inflation for bank *i* at time *t* while PC_{it} is private credit for bank *i* at time *t*.

Based on the compact model in equation (3.1), we explicitly derive equation (3.2) below:

$$PRO_{it} = \alpha_1 + \alpha_2 NII_{it} + \alpha_3 NPL_{it} + \alpha_4 TOC_{it} + \alpha_5 INF_{it} + \alpha_6 PC_{it} + \varepsilon_{it} \quad (3.2)$$

where α_1 is the constant; α_2 through to α_6 are the parameters/coefficients to be estimated with α_2 measuring the impact of income diversification on profitability of banks; ε_{it} is the error term while the other variables remain as previously defined.

The first research objective is achieved by observing the sign and significance of α_2. From equation (3.2), if $\alpha_2 > 0$ and significant, it implies that higher income diversification is associated with higher profitability and if $\alpha_2 < 0$ and significant, our results will suggest that higher income diversification lowers profitability.

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To achieve the second research objective which aims at investigating for threshold effects, we include a quadratic square term of NII_{it} into the profitability equation in (3.2) above. On this score, the study fits the following equation:

$$PRO_{it} = \gamma_1 + \gamma_2 NII_{it} + \gamma_3 NII_{it}^2 + \gamma_4 NPL_{it} + \gamma_5 TOC_{it} + \gamma_6 INF_{it} + \gamma_7 PC_{it} + \mu_{it} \quad (3.3)$$

where NII_{it}^2 is the square term of non-interest income with the other variables remaining as previously defined.

To examine possible threshold effect, the study relies on the sign of γ_2 and γ_3. For instance, if the sign of both γ_2 and γ_3 are homogenous, there is no evidence of threshold effects. However, if $\gamma_2 > 0$ and $\gamma_3 < 0$, we find evidence of a threshold effect and inverted U–shaped relationship in particular. In this case, income diversification increases profitability up to a certain point above which further increases in non-interest income lowers profitability. Furthermore, if $\gamma_2 < 0$ and $\gamma_3 > 0$, we find evidence of a threshold effect and U–shaped

relationship in particular. In this case, income diversification decreases profitability up to a certain point above which further increases in non-interest income increases profitability. Beyond the determination of possible threshold, the study estimates the exact value of the threshold point by taking a partial derivative of profitability in equation (3.3) with respect to non-interest income (NII_{it}) and setting the result to zero as shown below:

$$\frac{\delta PRO_{it}}{\delta NII_{it}} = \gamma_2 + 2\gamma_3 NII_{it} = 0 \qquad (3.4)$$

By solving for NII_{it}, the study arrives as $NII_{it} = {}^{-\gamma_2}/_{2\gamma_3}$ as the optimal non-interest income above or below which the effect changes sign.

Turning to the third research objective where the study investigates for the transmission channel through which non-interest income impacts on profitability. Here, our channel of transmission is through credit risk proxied by NPLs. Based on this, we include an interactive term of non-interest income and non-performing loans in the profitability equation thus specifying the following equation:

$$PRO_{it} = \beta_1 + \beta_2 NII_{it} + \beta_3 NII_{it}^2 + \beta_4 NPL_{it} + \rho(NII_{it} \times NPL_{it}) + \beta_5 TOC_{it} + \beta_6 INF_{it} + \beta_7 PC_{it} + \mu_{it} \qquad (3.5)$$

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While the other variables remain as previously defined, ρ measures how income diversification affects profitability via non-interest income.

In terms of the estimation approach, we depart from the use of pooled ordinary least squares (OLS) to the use of the fixed and random effects estimation technique.

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3.5.1 The fixed effects method

With regards fixed effects, it helps to analyse the impacts of variables that vary over time. This method explores the relationship between predictor and the outcome variable. When using fixed effect we assume that something within the individual variable may impact on the predictor variables therefore there is a need to control for it. In this estimation method the constant is treated as group-specific. This means that the model allows for different constants for each group, it is also known as the least-squares dummy variables (LSDV) estimator because in order to allow for different constants for each group, it includes a dummy variable for each group. Fixed effect estimations also suggest that it is crucial to consider parameter heterogeneity to understand the effects of profitability for the different banks. For better understanding, we consider the following model:

$$PRO_{it} = f(NII_{it}, NPL_{it}, TOC_{it}, INF_{it}, PC_{it}, \varepsilon_{it}) \quad 3.1$$

i = 1, 2, ……., N; t = 1, 2, ……., T.

where PRO_{it} is a vector of profitability; NII_{it} is non-interest income; NPL_{it} is non-performing loan; TOC_{it} is total overheads cost; INF_{it} represents the inflation, $PC_{it,}$

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represents the private credit while , $\varepsilon_{it,}$ is the error term. *i* and *t* are the bank and time indices respectively.

To examine the impact of income on profitability, we re–write equation (3.1) as follows:

$$PRO_{it} = \alpha_1 + \alpha_2 NII_{it} + \alpha_3 NPL_{it} + \alpha_4 TOC_{it} + \alpha_5 INF_{it} + \alpha_6 PC_{it} + \varepsilon_{it} \qquad 3.2$$

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We estimate equation (3.2) using the fixed effects approach where the constant term; βi is taken as group–specific hence allowing for different values for each group. On this score, this approach is also known as the least–squares dummy variables estimator. Following from this, we re–write equation (3.2) in matrix notation of the form:

$$Y = D\varphi + Z\gamma^{|} + \varepsilon \qquad 3.3$$

$$Y = \begin{pmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_N \end{pmatrix}_{NT\times 1} \; ; \; D = \begin{pmatrix} i_T & 0 & \cdots & 0 \\ 0 & i_T & \ddots & 0 \\ \vdots & \vdots & & \vdots \\ 0 & 0 & \cdots & i_T \end{pmatrix}_{NT\times N} \; ; \; Z = \begin{pmatrix} Z_{11} & Z_{12} & \cdots & Z_{1k} \\ Z_{21} & Z_{22} & & Z_{2k} \\ \vdots & \vdots & & \vdots \\ Z_{N1} & Z_{N1} & & Z_{NK} \end{pmatrix}_{NT\times K}$$

While $\varphi = \begin{pmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_N \end{pmatrix}_{NT\times 1}$ and $\gamma^1 = \begin{pmatrix} \gamma_1 \\ \gamma_2 \\ \vdots \\ \gamma_N \end{pmatrix}_{k\times 1}$

where the dummy variable permits different group–specific estimates for each of the constants for all the different banks. Thus, although the constants may differ across the different sections, each individual's intercept is time invariant over time. This notwithstanding, we examine whether to allow the different intercepts for each group using the standard *F*–statistics which test the null hypothesis that all $\beta_1, \beta_2, \ldots, \beta_N$ are homogenous against heterogeneous alternative hypothesis. Our *F* test statistic is computed as:

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$$\mathrm{F} = \frac{\left(R_{FE}^2 - R_{CC}^2\right)/(N-1)}{\left(1-R_{FE}^2\right)/(NT-N-k)} \approx F(N-1, NT-N-k)$$

where R_{FE}^2 represent the coefficient of determination of the fixed effect model while R_{CC}^2 is the coefficient of determination of the common constant model. We have evidence to reject the null hypothesis if the computed *F*–statistic is sufficiently larger than the *F*–critical and the associated *p*–value is less than the conventional significance levels at 1%, 5% and 10%.

3.5.2 The random effects method

The idea behind random effects model is that, unlike fixed effect model, the variation across variables are assumed to randomly uncorrelated with the independent variable. According to Bell and Jones, (2015) the different between fixed and random effect weather the unobserved individual effect embodies elements that are correlated with the regressors in the model not weather the effects are stochastic or not. Hence the variability of the constant for each section comes from the fact that:

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$$\alpha_i = \alpha + v_i \quad (3.6)$$

where v_i is a zero mean standard random variable. The random effects model therefore takes the following form:

$$PRO_{it} = (\alpha + v_i) + \alpha_2 NII_{it} + \alpha_3 NPL_{it} + \alpha_4 TOC_{it} + \alpha_5 INF_{it} + \alpha_k PC_{kit} + \varepsilon_{it} \quad (3.7)$$

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One obvious disadvantage of the random effects approach is that we need to make specific assumptions about the distribution of the random component. Also, if the unobserved group-specific effects are correlated with the explanatory variables, then the estimates will be biased and inconsistent. Nevertheless, the random effects model has fewer parameters to estimate compared to the fixed effects method and also allows for additional explanatory variables that have equal value for all observations within a group.

Again in order to use random effects we have to be very careful to check whether there is any meaning in using them for our model compared to the fixed effects model. Comparing the two methods, one might expect that the use of the random effects estimator is superior compared to the fixed effects estimator, because the former is the GLS estimator and the latter is actually a limited case of the random effects model, as it corresponds to cases where the variation in individual effects is relatively large. However, random effects model is built under the assumption that the fixed effects are uncorrelated with the explanatory variables, an assumption that in practice creates strict limitations in panel data treatment.

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In broad-spectrum, the difference between the two possible ways of testing panel data models is this: the fixed effects model assumes that each variable differs in its intercept term, whereas the random effects model assumes that each variable differs in its error term. Usually, when the panel is balanced that is contains all existing cross-sectional data, one might expect that the fixed effects model will work best. In other cases, where the sample contains limited observations of the existing cross-sectional units, the random effects model might be more appropriate.

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3.6 Conclusion

This chapter considered the scope of the study including the data sources of the study. It also discussed the data description and the various proxies in addition to modeling profitability. It proceeds by the discussion of the methodology employed to analyze the possible threshold effect of income diversification on profit volatility banking sector. The next chapter analyzes and discusses the empirical findings.

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CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents the results and findings of this study. Empirical analysis of this study is based on the methodology employed in the preceding chapter. This section of the study is divided into five sections. The first section introduces the overall chapter while Section two presents the preliminary findings based on the descriptive statistics and correlation coefficients of all the variables under study. The objective is to afford us the chance to have a good understanding into the patterns in the data and the characteristics. The third section presents the main findings and discussions of the empirical results regarding the impact of income diversification on profitability of banks while the fourth section presents the robustness analysis of our main findings using different proxy of profitability. The final section concludes the chapter with some key implications for policy.

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4.1 Descriptive statistics

This section of the study presents the descriptive statistics of the variables in Table 4.1. The aim here is to present some basic statistics on the variables. More specifically, the study discusses the mean, standard deviation, minimum, maximum, skewness and kurtosis of the variables. Beyond this, the study also discusses the correlation coefficients of the variables.

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Table 4.1: Descriptive statistics

	ROA	ROE	NII	NPL	TOC	INF	PC
Mean	2.264	16.332	3.79e+07	-1.552	-6.21e+07	13.430	16.374
St. Dev	3.625	22.750	4.81e+07	3.538	1.03e+08	3.616	2.631
CV	13.146	517.594	2.31e+15	12.519	1.06e+16	13.076	6.927
Min	-17.1	-122.86	0	-33.86	-5.88e+08	8.726	11.093
Max	7.37	50.34	2.56e+08	0	4.56e+07	19.250	20.444
Skeweness	-2.501	-2.555	1.897	-7.336	-2.648	.212	-.067
Kurtosis	12.016	14.677	7.417	65.134	11.140	1.459	2.570
Observations	110	110	110	110	110	110	110

Notes: ROA, ROE, NII, NPL, TOC, INF, PC, CV, Min and Max respectively denote return on assets, return on equity, non-interest income, non-performing loans, total overheads cost, inflation private credit, coefficient of variation, minimum and maximum.

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From Table 4.1, on the measures of profitability, we find that, irrespective of the type of bank, a typical bank makes an average return on assets of 2.264% with a standard deviation of 3.625 while the mean of return on equity is exceedingly higher and measures at 16.332% with a corresponding higher standard deviation of 22.750. Further findings show maximum and minimum values for return on assets of 7.37% and -17.10% respectively compared to 50.34% and -122.86% for return on equity. Return on assets is heavily skewed to the left where the median is greater than the mean. Values of the skewness and kurtosis give pointers to the normality distribution of the variables which requires zero skewness and kurtosis value of three. Given this, our finding shows that the return on assets is not normally distributed suggesting that the return on assets distribution is leptokurtic. Return on equity is even more

leptokurtic, having regard to its non–normal distribution relative to values of its skewness and kurtosis.

With regard to credit risk, we observe an average non-performing loan of -1.552% relative to non-performing loans of 3.79e+07. A finding based on the standard deviation suggests that values of non-performing loans are narrowly spread away from the mean compared to non-performing loans. Except for non-performing loans and total overheads cost, all the bank–specific variables have positive average values. On the macroeconomic variables, financial development proxied by private credit averaged 16.374% with a maximum and minimum value of 20.444 % and 11.093% respectively. The value of the skewness and kurtosis suggest that, the distribution of private sector is almost normally distributed. Thus, the low values of private credit reflect the country's underdeveloped domestic financial market. This is consistent with recent studies on financial sector development in Africa (see for instance Ibrahim and Sare, 2018; Ibrahim, 2018; Ibrahim and Alagidede, 2018). Inflation has an averaged at 13.430% with a maximum and minimum values of 19.250% and 8.726% respectively.

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Turning our attention to the skewness of our variables, we find that all the bank-specific variables are negatively skewed except non-performing loans which is positively skewed to the right. On the other hand, comparing the values of both return on assets and return on equity, it can be observed that our profitability distribution of the banks is non–normal. We also observe varying distribution of the bank-specific variables. In addition, a juxtaposing

value of the skewness and kurtosis suggests that while non-performing loans is closer to normal distribution, non-performing loans and total overheads cost are far from being normal.

Another key thing to elaborate on is the coefficient of variation, which is used to measure the variability of a series of numbers independently of the unit of measurement used for these numbers. In order to do so, the coefficient of variation eliminates the unit of measurement of the standard deviation of a series of numbers by dividing it by the mean of these numbers. Coefficient of variation also evaluates the relative closeness of the predictions to the actual values and the variable with the smaller coefficient of variation is less dispersed than the variable with the larger coefficient of variation. From Table 4.1, return on equity recorded the highest coefficient of variation of 517.59% followed by return on assets with coefficient of variation of 13.15% which suggest that the data set for return far dispersed as compare to the other variables under study. Again, non-interest income and total overheads cost recorded the lowest coefficient of variation of 2.31 and 1.06 respectively.

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The subsequent segment discusses the relationship of the variables beyond the summary statistics.

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4.2 Correlation coefficients

Table 4.2 presents result of the correlation coefficient of all our variables. Here, we pay attention to the strength and direction of relationship between profitability proxies and the independent variables.

Table 4.2: Correlation matrix

	ROA	ROE	NII	NPL	TOC	INF	PC
ROA	1.000						
ROE	0.815	1.000					
NII	0.235	0.218	1.000				
NPL	0.304	0.261	0.082	1.000			
TOC	-0.154	-0.081	-0.778	-0.079	1.000		
INF	-0.112	-0.033	0.226	-0.100	-0.113	1.000	
PC	0.221	0.211	0.522	0.028	-0.309	0.569	1.000

Notes: ROA, ROE, NII, NPL, TOC, INF, PC, CV, Min and Max respectively denote return on assets, return on equity, non-interest income, non-performing loans, total overheads cost, inflation private credit, coefficient of variation, minimum and maximum.

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Result from Table 4.2 suggests that, income diversification proxied by return on assets exhibit weak relationship with all variables excluding return on equity. On direction of association, return on assets has positive relationship with return on equity, non-interest income, non-performing loans and private credit while it has a negative relationship with total overheads

and inflation. Also, return on assets shows weak correlation with all the variables such as non-interest income, non-performing loans, total overheads cost, inflation and private credit, except return on equity correlation is very strong with correlation coefficient of 0.815. On direction of correlation, return on assets positively correlates with all the variables except total overheads cost and inflation. The negative relationship between inflation and return as well as total overheads cost is not surprising as increase in inflation creates macroeconomic instability which slumps return on assets and return on equity. However, the largely positive correlation demonstrated by return on equity with the other variables compared to the largely negative relationship exhibited by return on assets. Also, the positively and very strong correlation between return on assets and return on equity is consistent with Li et al., (2018).

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Further findings suggest that, irrespective of the proxy of income diversification, there exist a positive relationship income diversification and non-interest income with return on assets demonstrating higher strength of correlation with non-interest income compared to return on equity. The nature of profitability relationship with income divarication is dependent on the proxy use to measure income divarication. For instance, there exists positive relationship between profitability and income divarication when proxied by return on assets. Inferring from Table 4.2, there is likelihood that the intermediating role of profitability in the non-interest income nexus is sensitive to the proxied profitability and income divarication. Non-interest income shows negative relationship with inflation irrespective but exhibits positive relationship with the rest of the variables.

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4.3 Empirical findings

This section presents and discusses findings based on the empirical estimations on the effect of income diversification on profitability of banks using fixed and random effects approach. Profitability is proxied using return on asset, return on equity while income diversification and credit risk are measured by non-interest income and non-performing loans respectively. To examine the robustness of the findings, the measures of profitability are alternated. Table 4.3 presents the results on the effect of non-interest income on profitability of banks based on the fixed effects estimation technique.

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Table 4.3: Fixed effects results

	1	2	3	4	5
Constant	1.492765 (.4517) [0.001]	2.1324 (.4425) [0.000]	-1.0401 (2.1632) [0.632]	-1.59807 (2.2441) [0.478]	-1.9281 (2.2298) [0.389]
NII	2.04e-08** (8.61e-09) [0.020]	2.78e-08*** (1.04e-08) [0.009]	1.37e-08 (1.26e-08) [0.279]	-3.90e-09 (2.25e-08) [0.863]	1.02e-08 (2.38e-08) [0.669]
NPL		0.3599*** (0.0847) [0.000]	0.31852*** (0.08193) [0.000]	0.3160*** (0.082029) [0.000]	0.2843*** (0.0832) [0.001]
TOC		5.79e-09 (5.08e-09) [0.257]	6.05e-09 (4.86e-09) [0.216]	7.61e-09 (5.14e-09) [0.142]	6.56e-09 (5.12e-09) [0.203]
INF			-0.2973*** (0.09554) [0.002]	-0.32105*** (0.09886) [0.002]	-0.3006*** (0.0986) [0.003]
PC			0.46717*** (0.17188) [0.008]	0.546616*** (0.19153) [0.005]	0.5399*** (0.1896) [0.005]
NII^2				9.01e-17 (9.56e-17) [0.348]	4.94e-17 (9.76e-17) [0.614]
Transmission channel					7.37e-09* (4.31e-09) [0.091]
Diagnostics					
R-squares:					
Within	0.0536	0.2097	0.2934	0.1997	0.3214
Between	0.0692	0.0013	0.0620	0.1570	0.1641
Overall	0.0553	0.1382	0.2001	0.1997	0.2212
Rho	0.2147	0.2813	0.2994	0.30416	0.3038
F-statistic	5.61	8.58	7.89	6.72	6.29
p-value	0.0198	0.0000	0.0000	0.0000	0.0000

Notes: *, ** and *** denote significance at 10, 5 and 1% levels respectively and ( ) and [ ] denote standard error and *p*-value respectively.

In column 1 where only non-interest income is used as the independent variable, we find a positive and significant effect of non-interest income on profitability proxied by return on

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assets. In particular, the coefficient of non-interest income is 2.04e-08 suggesting that a 1% increase in income diversification increases profitability by 2.04e-08%. The implication is that higher diversification spurs banks' profitability. Thus, non-interest income is expected increase profitability since many authors regularly attribute record bank profitability in recent years to the significant growth of noninterest income. This finding is consistent with Doumpos et al., (2016), concluded that revenue diversification is more beneficial for banks working in developing countries as compared to banks in developed countries.

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In column 2, we control for bank–specific variables in examining their effect on profitability, in this regression, the coefficient of non-performing loans does not only maintain its positive and significant effect on return on assets, the magnitude of effect of increased. More specifically, a unit-percentage increase in non-interest income spurs banks' profitability significantly by 2.78e-08%. The view that, non–interest income is profit–enhancing is consistent with the findings of Ahamed (2017) whose findings show that higher share of non–interest income leads to higher profitability of banks in India. This notwithstanding, our evidence does not support Lee et al., (2014) study where the authors find that, while non–interest activities of Asian banks reduce risks, they do not increase profitability.

On the impact of bank–specific variables, the coefficients of non-performing loans is positive suggesting that increases in these variables support profitability of banks suggesting that increases in these non-performing loans support profitability of banks. In particular, the coefficient of non-performing loans is 0.318 suggesting that a 1% increase in income

diversification increases profitability by 0.318 %. On the other hand, the significant of the non-preforming loan is consistence with (Brewer et al., 2006) of which they concluded that, significant indicator implies low values indicate low risk. The implication is that higher non-performing leads to the higher the loan loss provisioning and this may result in lower profitability of banks.

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Total overheads cost is also positive with coefficient value 5.79e-09 which suggests that 1% increase in income diversification increases profitability by 5.79e-09%. Unlike, the non-performing loans, total overheads cost is statistically insignificant which means that it has no impact on profitability of banks, that is total overheads effect on income diversification is statistically equal to zero. This finding is inconsistent with the study of Eldomiaty et al., (2015) who in their results revealed that operating expenses are positively associated with bank profitability.

To examine how macroeconomic variables influence profitability, we include private credit and inflation as key variables in the return on assets regression in column 3. We observe that, the coefficient of private credit is positive suggesting that increases in financial sector development spur profitability while that of inflation is negatively associated with return on assets. The impact of private credit and inflation is both significant at conventional levels. Indeed, higher inflation may imply higher consumption expenditure and reduced savings and deposits. To the extent that banks make profit based on customer deposits suggest that bank profit falls with lower deposits. Thus, the dampening effect of inflation is intuitive and

consistent with Demirguc-Kunt et al., 1999. They argue that higher inflation rate increases uncertainty and reduces demand for credit. However, the significance of private credit could be attributed to the development of the financial markets. However, financial sector development enables banks become more efficient with sound corporate governance, and reduction in transaction costs which may subsequently translate into higher profit.

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Interestingly, the non-performing loans effect is robust albeit reduced coefficient while the impact of non–interest income loses its significance. Thus, unique bank characteristics do not matter in determining the profitability of banks once macroeconomic variables are controlled for.

Beyond the impact of macroeconomic variables, we determine threshold effect in column 4 by including the square term of non-interest income into the profitability equation in addition to the bank–specific and macroeconomic variables. Our findings show that the coefficients of both non-performing loans and inflation are negative. This suggests that increases inflation decrease profitability. In this specification, the coefficient of non-performing loans maintains its positive and significant effect; evidence revealing a robust amplifying effect of non-performing loans on profitability.

With regard to the transmission channel, we aim to determine how income diversification affects profitability via non-performing loans. Four outcomes are notable. If the coefficient of

both β_2 and ρ are negative, it means income diversification does not promote profitability and non-performing loans increases the negative effect of income diversification on profitability. Also, if the coefficient of both β_2 and ρ are positive, it means income diversification increases profitability and non-performing loans heighten the positive relationship between non-performing loans and profitability. Again, if the coefficient of both β_2 is negative and ρ is positive, it means income diversification does not promote profitability and non-performing loans dampen the negative effects of income diversification on profitability.

Finally, if the coefficient of both β_2 is positive and ρ is negative, it means income diversification increases profitability and non-performing loans dampen the positive effects income diversification on profitability.

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Our findings from Table 4.3 reveal that the coefficient of the transmission channel is positive and statistically significant. Given the positive coefficient of the non-interest income, our evidence based on column 5 implies that income diversification increases profitability and non-performing loans heighten the positive relationship between non-interest income and profitability. The implication of this is that when banks diversify their incomes, it is expected that this diversification will lead to increase in profit levels of the banks. That is, the positive effects in the increase in profitability will allow non-performing loans to further add up to non-interest income to increases further. Our findings in column 5 show that, the level effect of non-interest income coefficient is positive and insignificant at all conventional levels.

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Shifting our focus to the model adequacy based on the diagnostic test, we begin with the overall R-squared which is the proportion of variation in the dependent variable (profitability) proxied by return on assets and return on equity explained by the independent variables (non-interest income, non-performing loan, total overheads cost, inflation and private credit). This is an overall measure of the strength of association and does not reflect the extent to which any particular independent variable is associated with the dependent variable. In column 1, we observe that, about 5.53% of the variability in probability is explained by non-interest income. The study also uncovered an R-square of 13.82%, 20.01%, 19.97% and 22.12% for column 2, 3, 4 and 5 respectively. Indeed, the rather low R-squares suggest that, for most part, majority of the factors influencing banks' profitability in Ghana are outside the models. These notwithstanding, our overall models are significant at conventional levels given the high (low) *F*-statistics (*p*-values).

While the above discussions rely on results based on the fixed effects estimation approach, the next section conducts sensitivity analysis using the random effects technique.

4.3.1 Sensitivity analysis

This section presents findings based on the random effects approach which considers parameter heterogeneity to understand the growth effects of return on equity for different group of banks. From Table 4.4, the results suggest that the estimated coefficients on

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profitability are positive and significant for both non-interest income and non-performing loans but insignificant for the rest of the independent variables under this study.

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Table 4.4: Random effects results

	1	2	3	4	5
Constant	1.5360 (.6399) [0.016]	2.1343 (.6738) [0.002]	-.8724 (2.1457) [0.684]	-1.2188 (2.1877) [0.577]	-1.6429 (2.1940) [0.454]
NII	1.93e-08** (7.76e-09) [0.013]	2.59e-08** (1.02e-0) [0.012]	1.40e-08 (1.18e-08) [0.237]	5.20e-08 (1.98e-08) [0.979]	1.27e-08 (2.12e-08) [0.549]
NPL		0.3437*** (0.0841) [0.000]	0.3069*** (0.0812) [0.000]	0.3084*** (0.0808) [0.000]	0.2775*** (0.0817) [0.001]
TOC		5.08e-09 (4.89e-09) [0.300]	4.84e-09 (4.71e-09) [0.304]	6.26e-09 (4.89e-09) [0.201]	5.62e-09 (4.87e-09) [0.248]
INF			-0.2957*** (.0951) [0.002]	-0.3145*** (.0967) [0.001]	-0.2960*** (.0960) [0.002]
PC			.44934*** (.1627) [0.006]	.5066*** (.1737) [0.004]	.5102*** (.1729) [0.003]
NII^2				8.04e-17 (8.77e-17) [0.359]	4.34e-17 (8.98e-17) [0.629]
Transmission channel					7.40e-09* (4.21e-09) [0.079]
Diagnostics					
R-squares:					
Within	0.0536	0.2097	0.2927	0.2988	0.3207
Between	0.0692	0.0019	0.0217	0.0733	0.0709
Overall	0.0553	0.1387	0.2054	0.2100	0.2280
Rho	0.1751	0.2292	0.2506	0.2919	0.3344
F-statistic	6.16	24.62	38.45	42.564	53.679
p-value	0.0131	0.0000	0.0000	0.0000	0.0000

Notes: *, ** and *** denote significance at 10, 5 and 1% levels respectively and ( ) and [ ] denote standard error and *p*-value respectively.

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From column 1 where non-interest income is used as the independent variable, we find a positive and significant effect of non-interest income on profitability proxied by return on equity. In particular, the coefficient of non-interest income is 1.93e-08 suggesting that a 1% increase in income diversification increases profitability by 1.93e-08%. The implication is that higher diversification spurs banks' profitability. Thus, non-interest income is expected

increase profitability double. This finding is consistent with Doumpos et al. (2016), they concluded that diversification is more beneficial for banks working in developing countries as compared to banks in developed countries.

In column 2, we control for bank–specific variables in examining their effect on profitability. In this regression, the coefficient of non-interest income maintains its positive and significant effect on return on assets even with an increase in it coefficient from 1.93e-08 to 2.59. On the impact of other bank–specific variables, the coefficients of non-performing loans and total overheads cost are positive suggesting that increases in these variables support profitability of banks. However, all bank–specific variables are statistically significant except total overheads cost, which implies that total overheads cost does not have effects on profitability. The assertion that non-interest income is profit–enhancing is consistent with the findings of Ahamed (2017) whose findings show that higher share of non–interest income leads to higher profitability of banks in India. This notwithstanding, our evidence does not support Lee et al., (2014) study where the authors find that, while non–interest activities of Asian banks reduce risks, they do not increase profitability.

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To examine how macroeconomic variables influence on profitability, we include private credit and inflation as key variables in the return on equity regression in column 3. We observe that, the coefficient of private credit is positive suggesting that increases in financial sector development spur profitability while that of inflation is negatively associated with profitability. However, the impact of private credit and inflation is significant. Indeed, higher

inflation may imply higher consumption expenditure and reduced savings and deposits. To the extent that banks make profit based on customer deposits suggest that bank profit falls with lower deposits. Thus, the dampening effect of inflation is intuitive. Still, both non-interest income and total overheads cost are insignificance of which the same results was obtained in Table 4.3, column 3. This suggests that non-interest income and total overheads cost do not have effect on profitability. On the other hand, non-performing loans and private credit are significance, which means both an effects on profitability. Result of private credit might be credited to the financial development of the markets. Remarkably, the non-performing loans and private credit effect is robust albeit reduced coefficient. Thus, unique bank characteristics do not matter in determining the profitability of banks once macroeconomic variables are controlled for.

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Away from the impact of macroeconomic variables, we determine threshold effect in column 4, how income diversification affects profitability which is proxed by return on equity in addition and bank–specific variables and macroeconomic variable. Our findings show that the coefficient of non-interest income is positive but insignificance at all conversional levels. In connection with this, the coefficient of the threshold effect is also positive but insignificance at all conversional levels. Looking this result from model 4, we can conclude that, there is no threshold effect of income diversification on profitability.

On the side of transmission channel, we want determine how income diversification have an effect on profitability via non-interest income and non-performing loans, our findings in column 5 indicates the quantity effect of non-interest profits coefficient is incredible and insignificance the least bit conversional levels. Again, the coefficient transmission channel keeps it super however it massive. Our findings from Table 5 show that each non-interest income and transmission channel (NII×NPL) coefficients are awesome, which means that income diversification will boom profitability and non-interest loans heighten the positive relations non-interest income and profitability. In a nutshell the general model is significance in any respect conventional tiers.

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Focusing on the R-squared measure the proportion of variance in the dependent variable (profitability) proxied by return on assets and return on equity which can be explained by the independent variables (non-interest income, non-performing loan, total overheads cost, inflation and private credit). Starting with column 1, R-square of 5.53% of the variability in probability is explain by non-interest income, which implies that about 94.47% other factors account for profitability but were not captured in model 1. Moreover, in column 2, R-square of 13.87% account for profitability which is explain by non-interest income, non-performing loans and total overheads cost, which implies that about 86.13% affects or account for profitability which were not considered in the model. In column 3, the R-square increase to 20.54%, which means that about 79.46% other factors account for profitability of banks but were not considered in model 3. For column 4, the R-squared recorded was 21% which also implies that about 79% other factors affect profitability which was not captured in model 4.

Lastly, in column the recorded R-square of 22.80% affect profitability of banks whiles about 77.20% other factors account for banks profitability which were not captured in the last model.

4.4 Conclusion and policy implications

Examining income diversification effects on banks' profitability is vital for overall health of the banking sector. In this section, the impact of income diversification is evaluated in addition to other standard controls on banks' profitability relying on data from 10 banks over the period 2006 to 2011 and using the fixed and random effect estimations approach. The findings of the current study have an important implication on the regulators in the implementation of banking policies. In the light of the bank income diversification, the bank increased exposure to non-interest income bearing activities may be inevitable evolutionary process changing the nature of risk and return trade-off in banking and this process should be monitored by regulators of the banks.

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The variable non-interest income is equal to the percentage share of non-interest income in total operating income, where non-interest income of all the 10 banks is the sum of fee-based income, trading income and other non-interest income. The gross values used because there is no categorical expense attributed to these activities alone in the income statement provided in our data. These findings have an important implication on the regulators in the implementation of banking policies. In the light of the bank income source diversification, the bank increased exposure to non-interest income bearing activities may be inevitable

evolutionary process changing the nature of risk and return tradeoff in banking and this process should be monitored by regulators of the banks.

We identified that, in using both fixed and random effects estimation, non-interest income positively and significantly increases profitability measured by return on assets. However, when other variables were added, non-interest income remains positive albeit insignificant. In checking for robustness analysis of individual variables, our evidence shows that credit risk proxed by non-performing loans positively and robustly increases profitability for all banks.

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Focusing on bank–specific indicators, both non-interest income and non-performing loans appears to significantly influence profitability of banks suggesting that banks' income diversification drive improves profit. Indeed, non–interest income appears to matter more for profitability banks in Ghana although the impact is not robust. However, the income diversification drive of banks contributes to increasing overall profitability. The implication is that, a well–diversified bank that generates incomes through the nontraditional interest income sources such as the, fees and commission, investment income, ATM charges, and other services charges actually increase profits.

The positive relationship non-interest income and non-performing loans on return on assets imply that higher credit risk is associated with higher profitability. Thus, the rather higher

lending rates may explain the positive effect. When banks charge reasonable interest rate on their customers,' loan portfolio performances tend to improve hence increasing lender returns. Also, when interest rates reduce it gains traction with new customers with consequent increases in incomes of the banks. Ideally, non-performing loans reduces profitability. Moreover, where non-performing loans proportionally spurs profitability may suggest that the lenders pass the cost of loan default to other customers in the form of higher interest rate on loan facilities. Available data gleaned from the Bank of Ghana shows that the lending rates of banks are costlier.

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The impact of macroeconomic instability proxied by inflation as a macroeconomic indicator is also worth addressing given its steady negative effect on profitability of banks. We draw a key implication from the perspective of consumption and savings dynamics of households. Certainly, when inflation is high, the purchasing power and subsequent consumption of the customer is reduced. In order to be able to consume the basket of goods, the consumer would have to spend more of the income as a result reducing the propensity to save. This at the end of the day affects the deposits mobilization of the banks stemming from the overall reduced savings. Fewer saving also means less deposit for the banks to embark on interest yielding credit creation which may affect their interest income and revenue as a whole hence impacting negatively on their profitability.

Elsewhere, there is indication that whether inflation impedes or stimulates profitability is conditioned on whether inflation is predicted or not (Perry, 1992). Where inflation is

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predicted, interest rates are adjusted in order to generate revenues steady with the general price increase. Such revenue increase may outweigh the inflation rate thus improving on profitability. In cases where banks are unable to forecast inflation in their cost structure to realize profits, interest rates charged do not incorporate inflation and may result in lower profits on the back of inflationary pressures. Given our evidence, we can conclude that banks in Ghana are unable to anticipate future changes in inflation in recalibrating their profit decision.

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CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This is the final chapter of the thesis. It begins with the summary of key findings based on analysis in chapter four and conclusions. This is followed by policy recommendations based on the findings and the study contribution to the literature. We also put forward areas for future research.

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5.2 Summary of key findings and conclusion

The main objective of this thesis was to examine the effect of income diversification on profitability of banking sector in Ghana using the fixed effects and random estimation approach. Data was collected from 10 commercial banks using their annual reports. Data was also gathered from Bank of Ghana annual report and from World Development Indicators (WDI) of the World Bank for the period spanning 2006 to 2016. The proxies used for profitability were return on asset and return on equity whilst non-interest income and non-performing loans were used as measures for profitability and our results are robust in terms of the use of alternative measures of income diversification, profitability and return on assets. We summarize the key findings for each specific objective below:

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5.2.1 Objective one: Determining the effect of income diversification on profitability of banks

Firsthand analysis found a positive and significant impact of income diversification measured by non-interest income on profitability proxied by return on assets. In affirming to a widely held view that non–interest income increases profitability, our evidence add to the view and suggests that, higher non–interest income are associated with higher profitability of banks in Ghana. Interesting, when non-interest income on return on assets were replaced as proxies for profitability in the regression analysis, the results revealed a positive and significant effect of non-interest income on return on assets for banks. The implication is that the higher the non-interest income the higher the return on equity or profitability for banks. Furthermore, it was observed that, introduction of other independent variables did not affect positive effect on profitability measured by return on assets, and it was more than the positive effect of income diversification as proxied by non-interest income, this suggests that the impact of diversification on profitability is dependent on the proxies of diversification and profitability.

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5.2.2 Objective two: Examining possible threshold effect of income diversification on profitability of banks

In assessing possible threshold, both the coefficients of the level effect and the threshold effect are positive albeit insignificant at all conversional levels suggesting that, there is no threshold effect of income diversification on profitability. Thus, the effect of income diversification on profitability is monotonic.

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5.2.3 Objective three: Examining the channel through which income diversification impacts profitability

With regard to the transmission channel, we determine how income diversification affect profitability via non-interest income and non-performing loans. Our findings shows that, the level effect of non-interest income coefficient is positive and insignificant at all conventional levels. Again, the coefficient transmission channel maintains it positive but it significant. We reveal that both non-interest income and transmission channel coefficients are positive, which implies that income diversification increases profitability and non-performing loans heighten the positive relations between non-interest income and profitability.

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5.3 Policy implications and recommendations

Given the relationship between non-interest income and return on assets, to the point that higher non–interest income spurs profitability, we recommend a watchful diversification drive by the banks to increase their non-interest income earnings while decreasing their total overheads cost in order to improve profitability. Since it is the key priority for policy makers now to maintain bank stability and in the quest for profit, banks should carefully consider their risk level as well.

Also looking at the dampening impact of macroeconomic instability on profitability, it is vital for the Central bank to aggressively pursue the inflation targeting approach in order to control inflation at single digits or low levels. On the other hand, banks have a duty to improve on

their research and development units to effectively forecast inflation and incorporate the forecast inflation trends in their decision–making process. Moreover findings of this study have an important implication for the regulators in the implementation of banking policies. In the light of the bank income source diversification, the bank increased risk to non-interest income bearing activities may be inevitable evolutionary process changing the nature of risk and return tradeoff in banking and this process should be monitored by regulators of the banks.

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Indeed, when inflation is high, the purchasing power and autonomous consumption of the customer is reduced. That is, to be able to consume the basket of goods, the consumer would have to spend more of the income as a result reducing the propensity to save, at the end of the day affects the deposits mobilization of the banks stemming from the overall reduced savings. This affects saving and also means less deposit for the banks to embark on interest yielding credit creation which may affect their interest income and revenue as a whole hence impacting negatively on their profitability.

It is known that, economic activity is an essential macroeconomic contributing factor of profitability of banks. Increasing gross domestic product creates initiatives to borrow and invest more in the economy leading to higher net interest income. On the other hand, increasing economic activity requires banks to meet higher demand for transactions and loan portfolio maintenance, that is, banks must raise operating expenses in order to meet high demands as results of competition.

Again, in the light of the bank diversifying their source of income, the bank increased exposure to non-interest income bearing activities and may be inevitable evolutionary process changing the nature of risk and return tradeoff in banking and this process should be monitored by regulators of the banks.

In addition, findings of our results have important implications for managers and regulators in the banking industry in Ghana and other developing countries in the sense that the study revealed that, banks that are still engaged in only interest-generating activities can start non-interest-generating activities to gain the benefits from emerging trends in the banking industry in order to contest with their competitors. Moreover, banks that are already engaged in non-interest income generating activities can judiciously enhance their non-interest income portfolio into other non-interest income opportunities instead of only fees and commission income.

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5.4 Research contribution to existing literature

This study makes significant contributions to the literature. To start with, we present new empirical evidence on the impact of income diversification on profitability in Ghana using different indicators of diversification and profitability. Specifically, we show that, whether diversification positively or negatively affects profitability depends on the proxy of the income diversification and profitability.

Moreover, to the best of our knowledge, this is the first study in Ghana revealing the unique influence of income diversification on profitability for in banks. In particular, we show that, while non-performing loans affect profitability and its effect is robust. The study is therefore instructive in a way that it highlights the income diversification on profitability of Ghana banking sector.

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5.5 Further research areas

This study used 10 banks over a period of 10 years covering 2006 to 2016. It would be interesting to see how the results turn out using more banks over a relatively longer period. In addition, this study used fixed and random effects estimation approach. Thus, future study may consider using estimation techniques to determine the most appropriate technique. It is imperative to note that, both fixed and random effects techniques do not control for potential endogeneity and for that matter, further studies could consider relying on estimation approaches (such as the generalized method of moments) that addresses possible endogeneity eminent in the data. Lastly, we suggest further research in this area in different geographical location in showing whether findings on income diversification–profitability link is location–specific.

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