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# Analysis of Non-Interest Income of Commercial Banks in Ghana

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## Abstract

Banks in recent times have changed their focus from depending heavily on interest income to generating revenue from fee generating activities. This paper identifies and discusses some factors common with banks that engage in non-interest earning activities in Ghana. It was found that smaller banks are more involved in non-interest earning activities, relative to their larger counterparts. Higher interest income, customer deposits, exposure to risk and liquidity are also found to be common factors among banks in Ghana that concentrate more non-interest income generation. The Central Bank's Prime rates also affect banking operations and is positively related to bank's engagement in nontraditional activities. These results have implications for bank regulators, who must institute regulations toward harmonizing the various sources of bank income as against likely exposures to risk.
**Keywords:** Non-interest Income, Nontraditional Activities, Revenue, Banks, Ghana

## Introduction

Banks are very important organizations which aid in the execution of socioeconomic activities undertaken by individuals, business organizations and even sovereign states. They serve primarily as a medium which bridges the gap between surplus and deficit spending units in an economy. This fundamental function of banks generate interest income which has over the years being their major source of revenue, since loans form a greater portion of the total assets of banks. These assets generate huge interest income for banks which to a large extent determines their financial performance (Mabvure *et al.*, 2012). In recent times however, advancements in information and communication technology, increased competition among banking companies as well as the diversity and complexity of businesses and their demands for financial services have compelled banks to consider other banking activities which offer diverse services to clients and beef up revenue generation through fee income. Non-interest incomes are basically incomes earned from sources other than returns on advances to bank clients. They are usually fee-generating activities which range from underwriting activities to cash management and custodial services as well as derivative arrangements. As part of total bank earnings, non- interest income is gaining prominence in recent times particularly in the

US and Europe, as competition intensifies in the tradition banking business of deposit mobilization and loan making. According to Rogers (1998), the aggregate percentage of intermediated assets held by banks in the US has fallen from 36% in 1965, to 22% in 1996, while fee income as a percentage of total bank income has risen from 7.6% to 17.2% over the same period. Also, Clark and Siems (2002) provided that commercial banks' share of total US financial intermediation assets (interest income) has fallen from 35 percent to 20 percent.

As banks attempt to compete in the broader and evolving financial services industry, they alter their behavior by changing the menu of products and services they offer (Rogers and Sinkey, 1999). Lepetit *et al* (2007) also provided that banks have reacted to the new environment of higher competition and demands from clients by adopting a proactive strategy of widening the range of products they offer to their clients. Following the high levels of competition and increasing demand from individual and corporate clients for relatively more complex products and services, banks have turned their attention to fee generating activities. This paper identifies and discusses some common attributes of banks which are engaged in more non-interest revenue generating activities using a panel dataset constricted from the income statement and balance sheet of 20 universal commercial banks operating in Ghana from 2002 through 2011. The rest of the paper is organized as follows: section 2 reviews some literature in the subject area, followed by a discussion of the variables and the methodology in section 3. The findings are discussed under section 4 and section 5 concludes the study.

**Literature Review**

The decline of traditional banking activities (deposit mobilization and loan making) and a more widespread entry into nontraditional activities (fee-based services) in US banks has been widely reported in recent years, and is so well known that it is taken for granted in discussions on banking. Not only the economic press but also research studies have documented this issue as bank income is increasingly generated through nontraditional activities (Tortosa-Ausina, 2003). Fee income is among the most rapidly growing sources of revenue for depository institutions (Rose and Hudgins, 2008). Since the 1980s, incomes from nontraditional activities have played a more important role in improving total bank operating income (Lepetit *et al.,* 2007). According to Stiroh (2006), US banks are becoming increasingly reliant on fees, fiduciary income, service charges, trading revenue, and other types of non-interest income. They reported that the industry as a whole, earned 42% of its net operating revenue from non-interest sources in 2004, a marked increase from 32% in 1990 and 20% in 1980*.* Recent dynamics in the banking business have made it necessary for banking companies to be proactive and innovative in their operations. In the view of Nachane and Ghosh (2007), an important dimension of this financial innovations process has been an upsurge in off-balance sheet (OBS) activities of banks. Such activities, though not entirely new from a historical perspective, have expanded considerably in range and scope in recent years. While the basic functions of banks and other financial service companies have remained relatively constant over time, the specific products and services through which these functions are provided have changed (Smith *et al.,* 2003). Although a relevant component of total bank earning, non-interest generating activities may increase the overall risk of banks via income volatility. Demirgiic-Kunt and Huizinga (1999) found that banks with relatively high non-interest earning assets are less profitable and banks that rely largely on deposits for their funding are also less profitable. As late as 2000, many bankers continued to believe that fee income would be a stable income stream; indeed, shareholders and analysts alike have grown

fond of the earnings, diversity, growth potential, and market insulation that fees provide (Engen, 2000). This view is not very conclusive as recent evidence using accounting data (e.g. Stiroh, 2006) suggests that an increased reliance on non-interest income raises the volatility of profits without raising average profits.

DeYoung and Roland (2001) suggested and explained three reasons why non-interest income 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 asset-based interest-generating activities to nontraditional fee-based activities tends to increase its "degree of operating leverage". Third, most fee-based activities require banks to hold little or no fixed assets, so unlike interest-based activities like portfolio lending, fee-based activities like trust services, mutual fund sales, and cash management require little or no regulatory capital. According to them, this allows banks to finance a greater amount of their income-generating activities with debt, which increases fixed interest expenses. In other words, fee-based activities allow banks to use a greater "degree of financial leverage" than lending activities. According to Rogers (1998) the exclusion of nontraditional activities in the estimation of bank efficiency actually understates it. Lozano-Vivas and Pasiouras (2010) investigated the relevance of non-traditional activities in the estimation of bank efficiency levels and found that, on average, cost efficiency increased irrespective of whether income from non-interest sources were used, although the results for profit efficiency were mixed. This signifies the relevance of bank's non-interest earning activities in assessing their efficiency.

Technology has brought about a complete paradigm shift in the functioning of banks and delivery of banking Services (Ankrah, 2012). The use of technology in the delivery of banking services is becoming increasingly prevalent as it is being employed to reduce costs and eliminate uncertainties (Joseph *et al.,* 1999) whilst promoting operational efficiency. The role of information and communication technology (ICT) in today's banking is critical and its advancement around the world is a major contributor to the rapidly changing nature of the way business activities are conducted; thus the common adage of the world being a "Global Village". According to DeYoung and Rice (2004), the banking industry has over the past two decades been transformed by sweeping deregulation and rapid technological advances in information flows, communication infrastructure, and financial markets. They posit that deregulation has fostered competition between banks and non-banks in financial markets where such competition was nonexistent. In response to these competitive threats and opportunities, many banks have embraced new technologies which has drastically altered their production and distribution strategies and resulted in large increases in non-interest income. The exact nature of involvement in nontraditional activities at an individual bank may be linked to various bank-specific characteristics.

**Methodology of Research**

Empirically, the level of involvement in nontraditional activities varies considerably across banks and the shift into nontraditional banking activities is illustrated by data on non-interest income of banks (Rogers and Sinkey, 1999). We used the income statement components of fees and commission as well as other income as the measure of bank non-interest income (NII) and estimated two multiple regression equations to test for and establish the significance of some factors that may influence bank's engagement in non-interest earning activities. This approach is a modification of Rogers and Sinkey (1999) who undertook a similar study on US commercial banks. NII was measured by the ratio of total

non-interest income (fees and commission as well as other income) to total assets (TA). This ratio which measures the relative magnitude of bank's engagement in non-interest earning activities at individual commercial banks, serves as the dependent variable in the regression analyses. The parameters included in the estimations are; bank size (S), interest income (INI), customer deposits (Cd), exposure to risk (ExpR), liquidity (Liq), capital adequacy ratio (CapRatio), bank origin (Orig), inflation (Inf) and prime rate (PrmR).

*Data source and Explanation of Variables*

The panel data used for our estimations was constructed from the Ghana Association of Bankers' comparative analysis of balance sheet and income statements of banks in Ghana from 2002 – 2011[1]. The explanatory variables are explained below.

*Bank size (S)*

The size of a bank is obviously likely to influence the magnitude of its engagement in both interest and non-interest earning activities. Participation in nontraditional activities according to Rogers (1998) varies greatly across banks due to differences in size, and other characteristics. According to Rogers and Sinkey (1999), the most obvious factor related to the level of nontraditional activities is firm size. They posit that participation in certain nontraditional activities generally requires some degree of specialization for the bank which may be achieved through the recruitment of staff with special knowledge as well as the acquisition of modern technology. The natural log of bank Total Assets (TA) was used as a measure of bank size. This variable is used under the same assumption provided by Rogers and Sinkey (1999) which suggests that firm size will have a positive relationship with the level of nontraditional activities based on the position of Hunter and Timme (1986) who also found that larger banks are better equipped to use new technology and exploit the resulting cost savings and/or efficiency gains. To capture the potential influence of other variables, as in various empirical analyses, firm size was used as a standard control variable.

*Interest Income (INI)*

The availability of funds to a bank from its traditional activities may also influence the level of its engagement in non-interest earning activities. By inference, once a bank is making relatively higher profits from its margin returns, its involvement in other activities could be reduced to avoid possible exposure to excessive risk. This is because in most cases, non-interest income is meant to augment possible shortfalls in interest income. By this premise, a negative relationship between interest and non-interest income is expected. Interest income is measured as the ratio of net interest income to total assets.

*Customer Deposits (Cd)*

As provided by Rogers and Sinkey (1999), the level of nontraditional activities at a bank might also be related to its liability structure. As a bank is able to mobilize more deposits, there is a higher propensity of it making more loans, hence a higher level of involvement in traditional activities. The contrary becomes the case where the bank's core deposits are limited hence its attraction to other revenue sources. They posit that, if a bank is constrained in the volume of core deposits it can attract, it may produce a larger quantity of nontraditional activities concurrently with finding other sources of funds. Prevailing (low) interest rates and

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[1] The local currency (Cedi) was redenominated in July, 2007. In constructing the panel therefore, all amounts were converted to the new Ghana Cedi.

risk of non-performing loans (NPLs) may also discourage banks from engaging in the lending business even with higher levels of customer deposits and rather concentrate on other sources of revenue such as acquisition of government securities, securitization of existing assets (loans) or engagement in derivatives. From the foregoing arguments, it is clear that non-interest income may be related to the level of customer deposits at a bank and this relationship could be either positive or negative depending on the peculiar situation of each of the banks in question. This variable is expressed as the ratio of deposits and current accounts to total assets (TA).

*Exposure to Risk (ExpR)*

According to Rogers (1998), participation in nontraditional activities varies greatly across banks due to differences in risk and other characteristics. Risk is a very important consideration of most banks in the conduct of their business in both traditional and nontraditional activities hence the relevance of its inclusion in our estimations. In principle, a bank's capacity to absorb unforeseen losses determines its level of risk (Goddard *et al.*, 2004). Loan-loss provisions are the traditional way that banks manage their credit risks or non-performing loans (NPLs). The ratio of provisions for loan losses to total assets (TA) is used as a measure of bank's exposure to risk.

*Bank Liquidity (LIQ)*

Another uncertainty faced by a bank is liquidity risk, which takes the form of unexpected deposit withdrawals and unexpected loan demand. A bank with relatively more liquid assets is better placed to meet these unforeseen contingencies (Rogers and Sinkey, 1999). A highly liquid bank could be described as one with adequate cash to meet ensuing demands for withdrawals and loans. This liquidity, according to Rogers and Sinkey (1999) serves as a cushion or buffer against losses arising from the "fire-sale" of assets to meet liquidity needs since all things being equal, a bank is safer where it has enough reserve liquidity. This liquidity however results in idle funds which turn to reduce returns to shareholders. A bank holding a relatively high proportion of liquid assets is unlikely to earn high profits, but is also less exposed to risk (Goddard *et al.*, 2004). If banks need more liquidity to engage in higher levels of non-interest earning activities, the empirical relationship between these activities and liquidity would be positive. Otherwise, some moral-hazard behavior may exist as captured by less-liquid banks having more nontraditional activities (Rogers and Sinkey, 1999). This variable will be represented by the ratio of cash and short-term investments to total assets (TA).

*Capital Adequacy (CapRatio)*

This variable is measured by the ratio of equity capital to total assets. It answers the question as to how adequate the owners' investment in a bank is to cover its liabilities. In theory an excessively high capital adequacy ratio (CAR) could indicate that a bank is operating over cautiously and ignoring potentially profitable investment opportunities. However, Rogers and Sinkey (1999) posit that, banks with high levels of capital have a greater capacity to absorb asset losses from nontraditional activities. If this argument holds, then a positive relationship between NII and CapRatio is expected. However, if more highly leveraged banks are more involved in nontraditional activities, moral-hazard behavior could be dominating and a negative relationship between NII and CapRatio becomes imminent.

*Origin (Orig)*

An important factor which may come to light in a bank's willingness to undertake more non-interest earning activities is the fact that technological advancement in its home country may influence its activities. For instance, a Ghanaian bank may not be very comfortable with nontraditional activities as it may lack the requisite technological exposure, experience (efficiency) and expertise required to operate in those areas. Domestic banks may also not rely on technology driven fee-earning activities due to the perceived high levels of illiteracy and low exposure to such advanced electronic systems. Dummies variables were introduced to capture bank origin (0 – local banks, 1 – foreign banks) to estimate the significance of bank origin as a factor common with banks which are engaged in non-interest earning activities in Ghana. It is expected that since foreign banks have an upper hand in relation to technology and its related operational efficiencies, they are more likely to engage in nontraditional activities, relative to their local counterparts. Foreign banks are distinguished from Ghanaian banks by the percentage of ownership. Foreign banks are banks with over 50% foreign (non-Ghanaian) ownership.

*Inflation (INF)*

According to Mishkin (2007), inflation is the continual increase in price levels which affects individual businesses; including banks. This may ultimately result in lower profits. According to Boyd *et al* (2001), there is a significant and economically important negative relationship between inflation and banking sector development. This makes inflation a likely contributor to bank's financial performance and involvement in both interest and non-interest earning activities. As the general prices of commodities increase, banks' operation expenses also increase resulting in the need for banks to make upward adjustments to their margins as a means of making up for the increases in operation cost. In some cases, however, some banks may maintain their current transaction charges to retain customers and be ahead in the competition. There are also some empirical evidence of a positive relationship between inflation and non-performing loans (e.g. Fofack, 2005; Khemraj and Pasha, 2009). The annual percentage rates of inflation for the respective years under consideration were used for the analysis.

*Prime Rate (PmR)*

Another important factor that impacts on bank's operation in the traditional lending business is the Central Bank Prime Rate. This is the minimum rate at which the central bank lends money to other commercial banks. The prime rate generally is positively related to bank lending rates and influences the cost of borrowing from commercial banks, even though not proportionately. It may therefore influence the levels of returns from traditional margin revenue, thus compelling banks to turn to non-interest avenues of revenue generation. This study therefore includes the annual average prime rates of the Bank of Ghana[2] for the respective periods under consideration as a possible determinant of bank's engagement in nontraditional activities. The empirical model used is presented as follows:

$$y_{it} = \sum_{k=1}^{K} \beta_k K_{itk} + u_{it}$$

(1)

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[2] This was obtained from the Bank of Ghana Annual Reports from 2002 – 2011.

Where represents non-interest income for bank *i* and at time *t*, represents the value of the *k*th regressor for bank *i* at time *t* and for the macroeconomic parameters (inflation and prime rate) at time *t.* is the error term consisting of the bank specific, time specific and statistical errors.

**Discussion of Findings**

The correlations between the explanatory variables are shown in table 1. This establishes the relationships between the variables and checks for collinearity. It shows a positive and significant relationship between prime rate and inflation with the highest coefficient. For this reason, two models were estimated with and without inflation to eliminate the possible effect of multicolliniarity on overall estimation[3]. The regression result is presented in table 2.

The outcome shows a negative relationship between NII and bank size, which is significant in the model 2. This is an indication that smaller banks in Ghana specialize more in generating non-interest revenue, relative to their larger counterparts. This could also suggest that, in the Ghanaian banking industry, bank's level of engagement in and nontraditional activities reduce as they grow. Surprisingly, the relationship between NII and INI was found to be positive and significant.

This could be indicative of the fact that non-interest income in the Ghanaian banking industry is co-existing with, interest income. Banks regularly analyze the state of their assets (loans) and make necessary provisions to cater for anticipated losses (NPLs), which gives them a fair idea as to how revenue and profits are likely to be in a given period. All else being equal, poor financial performance of banks are most likely to be caused by lower interest income (traditional activities) since this forms an integral source of revenue for banks and this sterns from higher NPLs which are in turn provided for through provisions for bad and doubtful debts. Where poor financial performance in the loan business is anticipated by banks, efforts would be made to remedy the situation by turning to non-interest income to augment the expected shortfall in profits. Further, the relationship between NII and exposure to risk was positive and significant.

This suggests that increased anticipated loan losses result in more involvement in nontraditional activities. It implies that banks which are involved in higher levels of nontraditional activities actually have higher risk exposures from their traditional banking business. This finding is also consistent with that of (Rogers and Sinkey, 1999).

Furthermore, the relationship between liquidity and NII was also positive and significant. It suggests that more liquid banks in Ghana expand their involvement in NII. Finally, the relationship between capital adequacy and NII reveal a negative and insignificant relationship. This finding is inconsistent with the position of Merton and Bodie (1992) who argued that banks need "assurance capital" to enter nontraditional activities and suggests that in the Ghanaian banking industry, engagement in nontraditional activities is independent of bank capital adequacy (higher levels of equity capital). This could possibly be a signal of moral hazard behavior.

The relationships between NII and bank origin as well as inflation rate were insignificant. Albertazzi and Gambacorta (2009) who found a significant relationship (between NII and inflation) explained that fees increase simply because they are correlated to the nominal value of assets under management or since traditional intermediation activity is less

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[3] The estimation was based on a fixed effect model due to the limited sample of 20 banks and data points (98).

profitable during periods of high inflation that penalize lenders, banks reorient their activities to earn more fees. These findings are generally congruent with the findings and position of Rogers and Sinkey (1999) who asserted that collectively, banks with high levels of nontraditional activities tend to be safer, indicating some amount of market discipline.

Table 1
*Correlations Matrix*

| | NII | S | P | Cd | ExpR | Liq | CapR | Orig | INF | PmR |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-interest Income(NII) | 1 | | | | | | | | | |
| Bank Size (S) | -0.11 | 1 | | | | | | | | |
| Interest Income (INI) | 0.33** | 0.19** | 1 | | | | | | | |
| Customer Deposits(Cd) | 0.11 | -0.03 | -0.18* | 1 | | | | | | |
| Exposure to Risk (ExpR) | -0.13 | 0.07 | 0.01 | -0.02 | 1 | | | | | |
| Liquidity (Liq) | 0.17* | 0.08 | -0.16* | 0.11 | 0.16* | 1 | | | | |
| Capital Adequacy (CapR) | 0.07 | -0.00 | 0.12 | -0.05 | -0.10 | 0.04 | 1 | | | |
| Bank Origin (Orig) | 0.08 | 0.11 | -0.01 | 0.18* | 0.25** | 0.26** | 0.06 | 1 | | |
| Inflation (Inf) | 0.11 | -.24** | 0.05 | -0.09 | -0.05 | -0.11 | -0.05 | -0.02 | 1 | |
| BoG Prime Rate (PmR) | 0.272** | -.362** | 0.122 | -0.124 | -0.041 | -0.062 | -0.063 | -0.016 | **0.700**** | 1 |

**. Correlation is significant at 1%
*. Correlation is significant at 5%

Table 2
*Regression Results (t statistic in parenthesis)*

| Variables | Model 1 | Model 2 |
|---|---|---|
| (Constant) | 0.009 | 0.009 |
| | (-1.222) | (1.260) |
| Bank Size | -0.112 | -0.116** |
| | (-1.623) | (-1.675) |
| Interest Income | 0.388*** | 0.393*** |
| | (5.855) | (5.945) |
| Customer Deposits | -0.168*** | -0.168*** |
| | (2.619) | (2.617) |
| Exposure to Risk | 0.164*** | 0.163*** |
| | (-2.551) | (-2.526) |
| Liquidity | 0.243*** | 0.250*** |
| | (3.709) | (3.838) |
| Capital Adequacy | 0.016 | 0.016 |
| | (0.26) | (0.251) |
| Bank Origin | 0.042 | 0.041 |
| | (0.625) | -0.607 |
| Inflation | -0.102 | - |
| | (-1.175) | - |
| BoG Prime Rate | 0.286*** | 0.213*** |
| | (-3.106) | (3.124) |
| R Square | 0.292 | 0.287 |
| Adjusted R Square | 0.258 | 0.257 |

***significant at 1% *significant at 10%

**Conclusions**

The diversity of banking operations in recent times has become a subject of interest to the management of banking companies, regulators, bank customers and other stakeholders. This study examined and established some factors common to banks with more engagement in non-interest earning activities. Controlling for bank size, it was found that interest income (INI), exposure to risk (ExpR), and liquidity (LIQ) are the main driving factors of bank's engagement in non-interest earning activities in Ghana. Our findings also established that smaller banks with lower levels of deposits, banks with higher anticipated loan losses and high liquidity are mostly engage in non-interest earning activities. This is generally consistent with the findings of Rogers and Sinkey (1999) and the banking system in the US, except for bank size and interest income which showed negative and positive signs respectively. The negative relationship between NII and Bank Size contravenes conventional wisdom that nontraditional activities are dominated by bigger banks as smaller banks appear to specialize in areas which are most likely to yield them assured income.

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