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REVENUE DIVERSIFICATION, RISK AND PROFITABILITY OF BANKS: EVIDENCE FROM ZAMBIA

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ABSTRACT

The aim of this study was to evaluate the extent to which banks in Zambia were enhancing their performance as a result of undertaking revenue diversification activities. The study was quantitative in design. Panel data from 12 of the 18 banks in Zambia were analysed using several techniques such as the Herfindahl-Hirschman Index to measure income diversification, Z-Score to measure bank income volatility and the risk adjusted returns on assets to measure profitability. The study indicated that while some banks failed to enhance their profit performance through non- interest income diversification, others yielded better profit performance in some years, but not always. The overarching finding, however, was that non-interest income diversification improves profitability of banks in Zambia. With regard to bank risk, the study suggests that while some banks fail to minimize their income volatility through diversification into non-interest income, others reduce income volatility in some periods, but not always. The overall picture, however, is that larger banks use diversification to minimize their income volatility better that smaller banks. Considering the reduction in bank income diversification activities and the consequent decline in profitability of banks in Zambia, the Bank of Zambia should relax the regulatory regime for banks to encourage revenue diversification. On the other hand, given that bank income diversification is not a panacea for improving bank performance, banks should scrutinise whether their business models support non-bank activities as they make revenue diversification decisions.

KEYWORDS: *Bank Risk, Diversification, Income Volatility, On-Interest Income, Profitability.*

1.0 INTRODUCTION

The aim of this study is to evaluate the extent to which banks in Zambia are enhancing their performance as a result of undertaking revenue diversification activities. Bank performance was measured in terms of profitability and income volatility. Bank revenue diversification is the extent

to which banks engage in non-interesting earning activities such as commissions, fees and foreign exchange transactions.

The importance of this study is that it establishes the extent to which non-interest income activities enhance the profitability of banks in Zambia and/or reduces their riskiness. Statistics provided by the Bank of Zambia show that banks in Zambia have continued to divest their non-interest income activities over the last decade. For example, whereas non-interest income accounted for 41% of total bank revenue in 2010, that proportion reduced significantly to only 27% in 2019 (Bank of Zambia, 2020a). Regardless of the effect of bank revenue diversification on bank performance, the current divestment trend is worrying and needs to be investigated. Findings from the investigation should be useful to regulators and bank managers as they make decisions about the appropriate mix between traditional interest-earning and non-interest activities.

The findings from this study indicate that although the extent of bank diversification reduced during the study period, the banking sector in Zambia is quite diversified, as evidenced by the Herfindahl-Hirschman Index (HHI) range of between 50% in 2010 to 54% in 2019. In terms of bank diversification and bank size, the study finds that larger banks diversified into non-interest activities more than smaller ones, echoing Maudos' findings in respect of European banks (Maudos, 2017).

With respect to profitability, the study indicates that diversifying into non-interest activities does not improve profit performance of some banks. For other banks, diversifying into non-interest income yields better profit performance in some years, but not always. Notwithstanding the foretasted, the overarching scenario in Zambia, just like other developing countries (Karakaya and Er, 2012; Senyo, Olivia and Musah, 2015; Hamdi, Hakimi and Zaghdoudi, 2017), is that non- interest income improves the profit performance of banks.

In line with similar studies on bank diversification and bank risk, the findings suggest that some banks fail to reduce their income volatility by diversifying into non-interest activities (Mnasri and Abaoub, 2010; Senyo, Olivia and Musah, 2015; Ammar and Boughrara, 2019). For other banks, diversification reduces income volatility in some periods, but not always. Notwithstanding the fore stated, the overarching picture in Zambia, just like in other countries, is that non-interest income diversification reduces bank risk for larger banks as opposed to their smaller counterparts (Mercieca, Schaeck and Wolfe, 2007).

The remainder of the paper is organised as follows. Section 2 provides a brief review of the prior literature, while the methodology and dataset are described in Section 3. Empirical results are presented in Section 4 and Section 5 offers concluding remarks and policy implications.

2.0 LITERATURE SURVEY

The extant finance literature on the effect of bank revenue diversification on bank performance can be categorised into three strands. One strand suggests that bank revenue diversification enhances profit performance and reduces bank income volatility; the second category finds the exact opposite, while the third strand is inconclusive. A review of the extant literature is provided in this section in order to anchor the study on the bank income diversification – bank performance nexus literature.

2.1 MODERN PORTFOLIO THEORY

As a pioneer of Modern Portfolio Theory (MPT), Markowitz demonstrated that diversification yielded better returns, given a certain level of risk, than an investment in a single asset (Markowitz, 1952). Elton *et al.* (2014) used the "expected return – variance of return" (E-V) rule to reaffirm this theory. They demonstrated the superiority of diversification by illustrating that the E-V rule is effective under three adverse portfolio selection scenarios. Firstly, for assets with good and poor returns at reverse periods, investing in a portfolio of those assets drastically reduces the dispersion from investing in one of the assets. Secondly, where the returns on assets are independent of each other, an investment portfolio of those assets reduces the dispersion or risk compared to individual assets. Thirdly, where returns on assets are affected by the same events in the same way, the dispersion of an investment portfolio of the assets reduces below that of the individual assets. The implication of the MPT for the current study is that banks that diversify their income sources should ideally perform better than those that do not.

2.2 DIVERSIFICATION AND PROFITABILITY OF BANKS

In the banking sector, De Young and Roland posit that the long-held conventional wisdom is that non-interest income stabilises bank income and reduces insolvency risk via diversification (DeYoung and Roland, 2001). Chiorazzo *et al*. (2008) further assert that imperfectly correlated or uncorrelated income streams result in stable bank profits overall. Many researchers assert that diversification yields economies of scope, resulting in enhanced profit performance and reduction in riskiness of banks (Klein and Saidenberg, 1998; Elsas, Hackethal and Holzhäuser, 2010).

With respect to bank profitability, the case for bank diversification is very strong as many researchers have established a positive correlation between the two, be it in developed, emerging or developing economies. Many researchers support non-interest income diversification as a means to enhance profitability of banks in developed countries (Johnson and Meinster, 1974; Boyd and Graham, 1986; DeYoung and Roland, 2001; DeYoung and Rice, 2004; Elsas, Hackethal and Holzhäuser, 2010), emerging economies (Sanya and Wolfe, 2011; Meslier, Tacneng and Tarazi, 2013), and developing countries (Karakaya and Er, 2012; Senyo, Olivia and Musah, 2015; Hamdi, Hakimi and Zaghdoudi, 2017; Ammar and Boughrara, 2019).

However, some studies have not found a rosy relationship between bank income diversification and bank profitability (Mercieca, Schaeck and Wolfe, 2007; Lee, Yang and Chang, 2014; Paltrinieri *et al.*, 2020). Diversifying into non-interest income may therefore not be a panacea for enhancing every bank's profit performance; instead, the bank's business model and environmental conditions should be considered before a decision to diversify is made. Therefore, the first proposition for this study is:

P1: Revenue diversification positively affects the profit performance of banks in Zambia.

2.3 DIVERSIFICATION AND RISKINESS OF BANKS

Studies carried out by Johnson and Meinster, and Boyd and Graham on USA banks have long established a positive correlation between diversification and riskiness of banks at the industry average and firm level (Johnson and Meinster, 1974; Boyd and Graham, 1986). Many similar studies carried out in the USA such as those by DeYoung and Roland (2001) and Brunnermeier *et al*. (2012) conclude that an increase in non-bank activities increases bank income volatility. Similar findings have been reported in studies of banks in other developed countries (Smith, Staikouras and Wood, 2003; Mercieca, Schaeck and Wolfe, 2007; Maudos, 2017).

De Young and Rice (2004) attribute the increase in earnings volatility to a reduction in stability of the bank's income streams as the bank takes on a greater degree of total leverage. They claim, for example, that it is impossible to increase non-interest income without simultaneous adverse adjustments in either capital gearing, interest revenue, variable inputs or fixed inputs. Additionally, whereas traditional interest-earning activities are based on time-honoured relationships with customers and hence more stable, non-bank undertakings are not, hence less stable.

Other researchers have argued that the perceived or actual benefits of bank diversification can become elusive due to risky loans in a bank's portfolio (Cebenoyan and Strahan, 2004a), or if banks diversify into activities in which they lack expertise (Mercieca, Schaeck and Wolfe, 2007). Similarly, due to liquidity shortage, a bank with relatively small asset size, or one that geographically spreads its assets, may not benefit from diversification (Carlson, 2004). Consequently, many studies have revealed that bank income volatility increases with an increase in non-interest earning activities (Johnson and Meinster, 1974; Boyd and Graham, 1986; DeYoung and Roland, 2001; Smith, Staikouras and Wood, 2003; DeYoung and Rice, 2004; Mercieca, Schaeck and Wolfe, 2007; Brunnermeier, Dong and Paliab, 2012; Maudos, 2017).

In emerging and developing countries, studies carried out on the effect of diversification on bank riskiness have yielded differing results. For example, while some researchers suggest that non-interest income generating activities increase riskiness of banks (Senyo, Olivia and Musah, 2015; Ammar and Boughrara, 2019), other scholars such as Mishi and Khumalo (2019) found no significant relationship between bank diversification and insolvency. Yet many other studies revealed that bank income diversification reduces income volatility (Hamdi *et al*., 2017; Meslier *et al*., 2013; N. Nguyen, 2019; Nguyen *et al*., 2015; Sanya & Wolfe, 2011).

The foregoing inconclusive empirical evidence regarding the effect of diversification on bank riskiness suggests the existence of moderating factors to this relationship. For example, in their comparative study of 135 commercial and 34 Islamic banks, Paltrinieri *et al*. (2020) discovered that although commercial banks improved their income stability with diversification, Islamic banks did not experience such fortunes. They therefore, concluded that firm specific and the environmental conditions must be at play. Several other researchers have reached similar conclusions (Köhler, 2013; Lee, Yang and Chang, 2014). Due to the inconclusive evidence regarding the effect of bank income diversification on riskiness of banks outlined above, the following proposition is made in the context of the current study:

P2: Revenue diversification does not positively affect the riskiness of banks in Zambia.

3.0 DATA AND METHODOLOGY

This section provides a description of the data and data sources used in the study. The measures adopted for diversification, profitability and risk are defined, followed by the dependent and outcome variables. Lastly, a description of the empirical model used is provided.

3.1 DATA AND SOURCES

Data for this study were obtained from the country's central bank, the Bank of Zambia (BoZ). The data comprised bank level financial statements and extracts from individual banks' prudential returns. Since there were only 18 commercial banks in the country, the BoZ provided data for all of them. However, due to missing data for some of the years, six banks were eliminated. This left 12 banks in the sample. The 12 banks accounted for 94% of total bank net income and 77% of total

bank average assets, hence the sample was considered large enough to represent characteristics of the sector.

3.2 DIVERSIFICATION MEASURES

As in many similar studies, Herfindahl Hirschmann Index (HHI) measures were constructed for each bank and for the sector to account for diversification between interest and non-interest activities (Stiroh, 2006; Mercieca, Schaeck and Wolfe, 2007; Sanya and Wolfe, 2011; Meslier, Tacneng and Tarazi, 2013; Ammar and Boughrara, 2019). The lower the HHI is, the greater the level of diversification, and vice versa. The following formula was used to calculate the revenue HHI (HHI_{REV}) for each bank:

$$HHI_{REV} = (NON/TOP)^2 + (NET/TOP)^{2,}$$

where NON, TOP and NET denote non-interest income, total operating revenue and net interest income respectively. As advised by Mercieca *et al*. (2007), any bank that had negative non-interest income and interest income for a particular year was excluded from the sample.

3.3 RISK-ADJUSTED PERFORMANCE MEASURES

Since the study evaluates the effect of revenue diversification on banks' risk-adjusted profitability and risk, three measures of bank performance namely, the Risk Adjusted Return on Average Assets (RAROAA), the Risk Adjusted Return on Average Equity (RAROAE) and the Z-score were used as suggested in the literature (Chiorazzo, Milani and Salvini, 2008; Paltrinieri *et al.*, 2020). Stiroh (2006) defines RAROAA and RAROAE as "average profits divided by the standard deviation of profits", that is profits per unit of risk. The RAROAA and RAROAE were calculated by dividing the return on average assets and return on average equity by their respective standard deviations.

With respect to bank risk, three measures namely the standard deviation of RAROAA and RAROAE, and the Z-Score were used to determine earnings volatility. The Z-Score was proposed by Altman (Altman, 1968) and has since been used by many researchers (Stiroh, 2006; Mercieca, Schaeck and Wolfe, 2007; Paltrinieri *et al.*, 2020). Stiroh (2006) posits that the Z-Score is a substitute for insolvency risk, measured by the number of standard deviations a bank is from insolvency.

The Z-Score was considered as a reliable measure for bank risk because the computation integrates profitability (mean level of bank profits) and equity (mean equity ratio) features. In line with previous studies, the following formulae were used to calculate the Z-Score for each bank (Stiroh, 2006; Mercieca, Schaeck and Wolfe, 2007; Paltrinieri *et al.*, 2020):

$$\text{Z-Score} = \frac{\text{ROAA + capitalisation}}{\text{SDROAA}} \text{ and}$$

$$\text{Z-Score} = \frac{\text{ROAE + capitalisation;}}{\text{SDROAE}}$$

wherein ROAA stands for Return on Average Assets, ROAE represents Return on Average Equity, and SDROAA and SDROAE are their respective standard deviations. Capitalization represents the equity to assets ratio (or capital ratio). Empirically, the higher the Z-Score the greater the bank's stability. Table 1 below outlines the variable definitions for all the variables used in the study.

TABLE 1 VARIABLE DEFINITIONS

Variable	Proxy	Definition
Panel A: Dependent Variables		
RAROAA	Risk adjusted return on average assets	Return on average assets divided by the standard deviation of return on average assets.
RAROAE	Risk adjusted return on average equity	Return on average equity divided by the standard deviation of return on average equity.
Z-Score	Z-Score	The Z-Score is a substitute for insolvency risk, measured by the number of standard deviations a bank is from insolvency.
Panel B: Diversification Variables		
HHI_{REV}	Herfindahl Hirschmann Index	Measures degree of diversification between interest and non-interest income.
NON	Non-interest income	Non-interest income
TOP	Total operating revenue	Non-interest income plus net interest income.
NET	Net interest income	Total interest income minus total interest expense.
Panel C: Bank-specific variables		
CAR	Capital Adequacy Ratio	Tier 1 capital plus Tier 2 capital divided by risk-weighted assets.
NPLR	Non-Performing Loan Ratio	Non-performing loans divided by total loans.
NIR	Non-interest income ratio	Non-interest income divided by total income.

Adapted from (Ammar and Boughrara, 2019)

4.0 EMPIRICAL RESULTS

4.1 DESCRIPTIVE STATISTICS

Descriptive statistics for the sample based on 2019 figures are presented in Table 2 below. The minimum and maximum HHI ranged between 50% and 69% suggesting that the level of diversification among banks in Zambia was varied. Individual bank profitability also varied significantly among banks (minimum and maximum RAROAA of 0.02 and 5.38 respectively), as was bank riskiness (minimum and maximum ROAA Z-Score of 2.79 and 81.55 respectively).

TABLE 2 BANKING SECTOR AGGREGATE DESCRIPTIVE STATISTICS FOR 2019

HHI		**RAROAA**		**RAROAE**		**Z-Score ROAA**		**Z-Score ROAE**	
N	12	*N*	12	*N*	12	*N*	12	*N*	12
Mean	0.58	Mean	2.12	Mean	2.11	Mean	22.82	Mean	5.76
Median	0.55	Median	2.07	Median	0.59	Median	19.99	Median	3.50
Standard Deviation	0.07	Standard Deviation	1.77	Standard Deviation	3.18	Standard Deviation	21.69	Standard Deviation	7.09
Minimum	0.50	Minimum	0.02	Minimum	0.02	Minimum	2.79	Minimum	0.49
Maximum	0.69	Maximum	5.38	Maximum	11.10	Maximum	81.55	Maximum	26.01

4.2 EXTENT OF BANK REVENUE DIVERSIFICATION IN ZAMBIA

Banks in Zambia are quite diversified, as evidenced by HHI of between 50% in 2010 to 54% in 2019. However, the degree of diversification reduced during this period, particularly from 2017 onwards. The reduction in non-interest income can be attributed, in part, to deliberate efforts by the Bank of Zambia to limit banks from charging unwarranted charges and fees. For example, the Bank of Zambia passed legislation that prohibited banks from charging unwarranted charges and fees in 2018 (Bank of Zambia, 2018). Consequently, income from Commissions, Fees and Service Charges dropped from 20% in 2018 to 15% in 2019 (Bank of Zambia, 2020a).

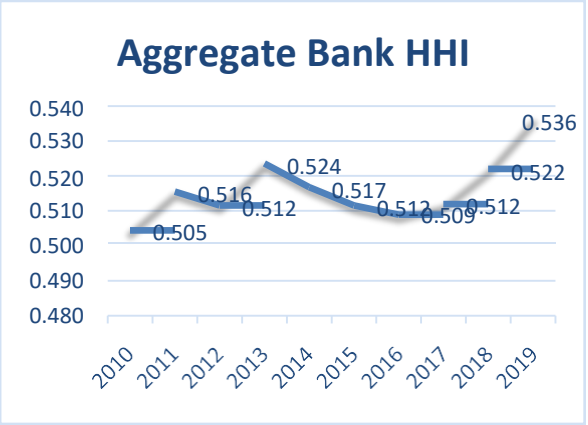
Further scrutiny of the HHI indicates that larger banks diversified more into non-interest earning activities that smaller ones. For example, HHI for the three largest banks by average asset size ranged from 51% to 54% in 2019, compared to HHI of between 54% and 69% for the three smallest banks in the sample. This finding echoes Maudos' (2017) results in respect of European banks where it was established that larger banks tended to diversify more than their smaller sized counterparts.

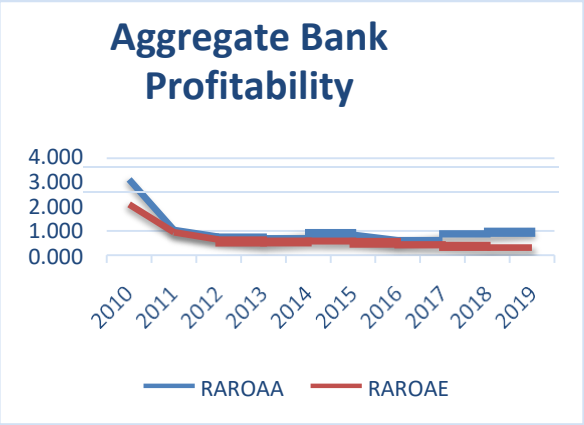
4.3 BANK INCOME DIVERSIFICATION, PROFITABILITY AND STABILITY

4.3.1 BANK INCOME DIVERSIFICATION AND PROFITABILITY OF BANKS IN ZAMBIA

The first proposition for this study was that: *Revenue diversification positively affects the profit performance of banks in Zambia.* Figure 1 below illustrates the causal effect of bank income diversification on profitability of banks in Zambia. It can be seen that, in general, as banks became more concentrated (higher HHI), bank profitability reduced (lower RAROAA). It is also evident that bank profit performance improved (higher RAROAA) during periods of greater diversification, such as in 2011 and 2013 (lower HHI).

Figure 1 Correlation between overall bank diversification/ concentration and profitability





The performance of individual sampled banks is summarized in Table 3 below.

The summary suggests that 75% of the 12 banks in the sample enhanced their profitability as a result of diversifying into non-interest earning activities. Many other researchers have reached similar conclusions (Karakaya and Er, 2012; Senyo, Olivia and Musah, 2015; Hamdi, Hakimi and Zaghdoudi, 2017).

TABLE 3 CORRELATION BETWEEN INDIVIDUAL BANK INCOME DIVERSIFICATION AND PROFITABILITY

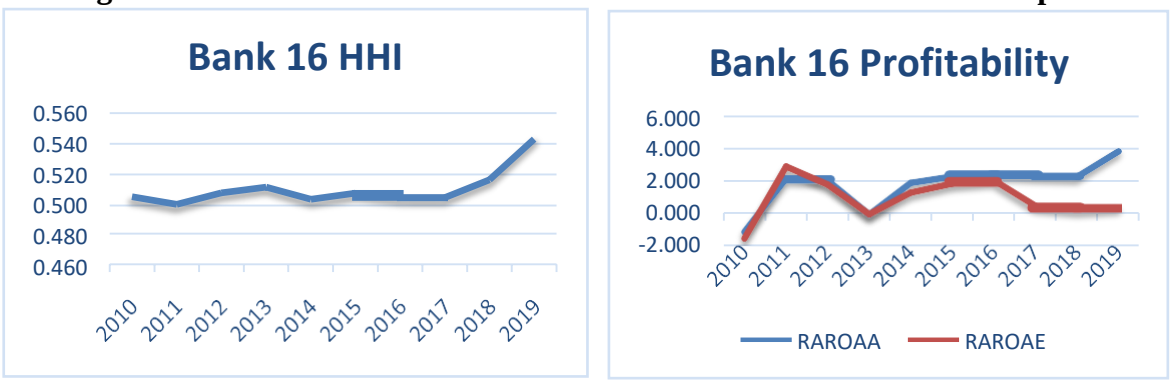
SL/ No.	Bank (smallest to largest by average assets size)	Correlation between Bank Income Diversification and Profitability
1	B18	Apart from the first two years, more diversification, better profit performance
2	B9	More diversification, better profitability
3	B3	More diversification associated with reduced profitability
4	B7	More diversification, better profitability
5	B8	More concentration, higher profitability
6	B15	More diversification, better profitability
7	B2	More diversification, better profitability
8	B12	More diversification, better profitability
9	B5	More concentration, higher profitability
10	B19	More diversification, better profitability
11	B4	More diversification, better profitability
12	B16	More diversification, better profitability i.e. 2010 - 2016, but negative correlation from 2017 onwards

On the other hand, there is a notable negative correlation between bank income diversification and profitability in three banks namely B3, B5, and B8, a finding echoed by some scholars (Mercieca *et al*., 2007; Nguyen, 2019; Paltrinieri *et al*., 2020). As observed by Delpachitra and Lester (2013), it is possible that these banks were over- exposed to non-interest activities, hence divesting those activities improved profitability. Therefore, as Lee *et al*. (2014) assert, bank specialisation and country income size have differing effects on performance of individual banks, which seems to apply to banks in Zambia. Consequently, banks should monitor the effect of income diversification activities on their profitability to minimise exposure.

It is also noteworthy that two banks showed positive and negative correlation between income diversification and profitability during the study period. For example, as shown in Figure 2 below, Bank 16 recorded enhanced profitability during periods of greater diversification and reduced profitability during periods of greater concentration between 2010 to 2016. Thereafter, the bank continued to record higher profits despite a reduction in non-interest income. Likewise, Bank 18's profit performance improved between 2010 and 2012, despite the bank's income generating activities becoming more concentrated. The positive correlation between income diversification and profitability only normalised from 2013 onwards. These observations are unique as none of the literature reviewed suggested similar findings. As discussed in the literature survey above, researchers have concluded either that bank income diversification enhances profitability (Johnson and Meinster, 1974; DeYoung and Roland, 2001; Elsas, Hackethal and Holzhäuser, 2010; Karakaya and Er, 2012; Ammar and Boughrara, 2019) or that it does not (Mercieca, Schaeck and Wolfe, 2007; Nguyen, 2019; Paltrinieri *et al.*, 2020). Other studies have been inconclusive (Saunders, Lewis and Thornhill, 2016; Mishi and Khumalo, 2019).

Therefore, the observation that for the same bank income diversification enhances profitability in some periods, while divesting activities in other periods also enhances profitability suggests that the bank could have diversified into activities it could not run efficiently in the long term. Consequently, divesting those activities enhanced efficacy and improved profitability.

Figure 2 Unusual correlation between bank income diversification and profitability



With reference to the research proposition postulated at the beginning of this subsection, it can be concluded, based on the findings, that while income diversification does not enhance profitability for some banks, for others profit performance improves in some periods but not always. However, the principal finding in Zambia is that banks enhance their profit performance by diversifying their income sources into non-interest earning activities.

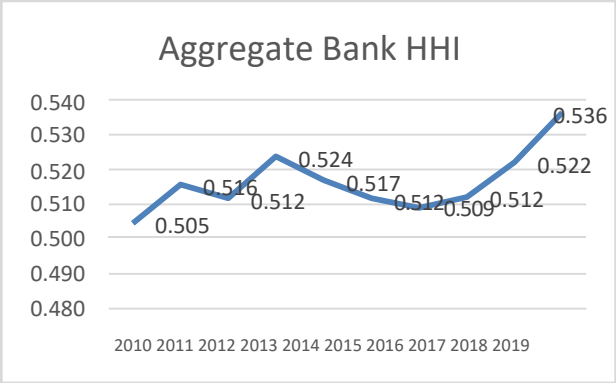
4.3.2 BANK DIVERSIFICATION AND RISKINESS OF BANKS IN ZAMBIA

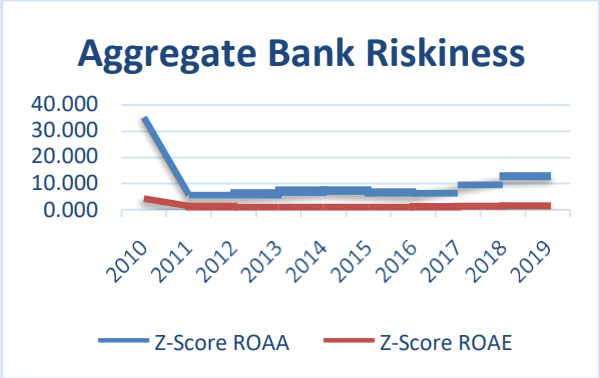
The second proposition for this study was that: *Revenue diversification does not positively affect the riskiness of banks in Zambia.* As can be seen from Figure 3 below there is no obvious causal relationship between overall bank income diversification and income volatility of banks in Zambia. For example, as the non-interest income ratio rose between 2013 and 2016 (signifying more diversification or lower HHI), income stability rose slightly (higher Z-Scores). However, despite the sector becoming more concentrated from 2016 onwards (higher HHI), income stability continued to rise significantly (very high Z-Scores). Therefore, no conclusion as to whether bank revenue diversification enhances or worsens the overall riskiness of banks in Zambia can be reached without scrutinizing the performance of individual bank activities.

Table 4 below is a summary of the correlation between individual bank income diversification and riskiness. As in other similar studies, some of the banks reduced their income volatility as non-interest income interest ratio increased (Hamdi *et al*., 2017; Meslier *et al*., 2013; Nguyen, 2019; Nguyen *et al*., 2015; Sanya & Wolfe, 2011) (50% in this case), while other banks achieved similar outcomes despite higher levels of concentration (Mnasri and Abaoub, 2010; Senyo, Olivia and Musah, 2015; Ammar and Boughrara, 2019) (25% in this study). The rest of the sampled banks recorded positive and negative results between diversification and income stability at different times during the study period.

These findings suggest that bank income diversification reduces income volatility for some banks but not so for others. In some cases, the same bank reduces income volatility through revenue diversification in some periods, and surprisingly still continues to maintain income stability when it divests some activities.

Figure 3 Correlation between overall bank diversification/concentration and riskiness





Finally, the causal relationship between bank income diversification and bank riskiness in terms of bank size is scrutinized. As shown in Figure 4 below, larger banks diversify more and stabilise their incomes better than smaller banks. For example, the three largest banks by average asset size diversified more with an HHI range from 51 to 54% (and enjoyed higher Z-Scores) compared to HHI of between 54 and 69% for the three smallest banks (and lower Z-Scores). As Mercieca *et al*. (2007) assert, smaller banks suffer income volatility by diversifying their income sources because of diseconomies of scope and scale.

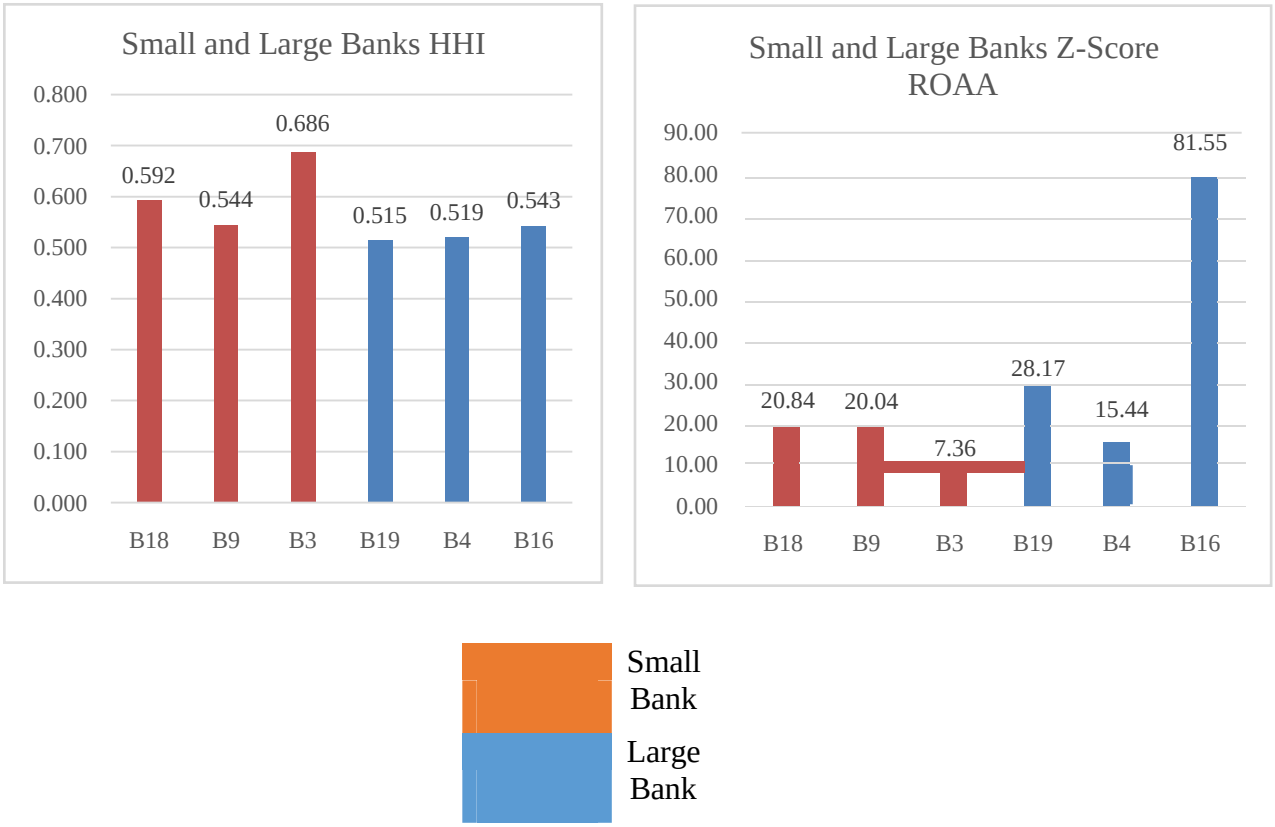
TABLE 4 CORRELATION BETWEEN INDIVIDUAL BANK DIVERSIFICATION AND INCOME VOLATILITY

SL/No.	Bank (smallest to largest by average asset size)	Correlation between Bank Diversification and Riskiness
1	B18	More diversification, less income volatility
2	B9	More concentration, less income volatility
3	B3	More diversification, less income volatility
4	B7	More diversification, more income volatility only up to 2013
5	B8	More diversification, less income volatility
6	B15	More diversification, less income volatility
7	B2	More diversification, greater income volatility except between 2010 - 2012
8	B12	More diversification, less income volatility
9	B5	More concentration, less income volatility
10	B19	More diversification, less volatility
11	B4	More diversification, reduced income volatility until after 2013
12	B16	More concentration, less income volatility

With reference to the research proposition postulated at the beginning of this section, it can be concluded, based on the findings, that some banks fail to reduce their income volatility by diversifying into non-interest activities. For other banks, diversification reduces income volatility in some periods, but not always. Notwithstanding the forestated, the overarching picture in

Zambia, just like in other countries, is that non-interest income diversification reduces bank risk for larger banks as opposed to their smaller counterparts.

Figure 4 Diversification and bank risk: big versus small banks



4.3.3 ROBUSTNESS CHECKS

Following many other researchers, several robustness tests are used to enhance the credibility of the findings (Mercieca, Schaeck and Wolfe, 2007; Saunders, Lewis and Thornhill, 2016; Paltrinieri *et al.*, 2020). These include alternative measures of the dependent variables i.e. profitability and bank risk measures. In this case, two measures of bank profitability i.e. RAROAA and RAROAE are used. As shown in Figures 2 – 4, RAROAE, the alternative measure of profitability to RAROAA, shows similar results with bank revenue diversification as the RAROAA, suggesting robustness of findings. With respect to bank risk, three measures namely, the standard deviations of ROAA and ROAE, and the Z-score are used.

5.0 CONCLUSIONS AND POLICY IMPLICATIONS

5.1 CONCLUDING REMARKS

The aim of this study was to evaluate the extent to which banks in Zambia are enhancing their performance as a result of undertaking revenue diversification activities. The first research proposition set was about the extent to which bank revenue diversification positively affects the profit performance of banks in Zambia. Based on the findings, it can be concluded that while income diversification does not enhance profitability for some banks, for others profit performance improves in some periods but not always. However, the overarching finding regarding the banking

sector in Zambia is that banks enhance their profit performance by diversifying their income sources into non-interest earning activities.

The second research proposition was that revenue diversification does not positively affect the riskiness of banks in Zambia. Based on the findings, it can be concluded that some banks fail to reduce their income volatility by diversifying into non-interest activities. For other banks, diversification reduces income volatility in some periods, but not always. Notwithstanding the fore stated, the overarching picture in Zambia, just like in many other countries, is that non-interest income diversification reduces bank risk for larger banks as opposed to their smaller counterparts.

5.2 POLICY IMPLICATIONS

5.2.1 BANK OF ZAMBIA

It has been noted, with concern, that the extent of bank revenue diversification has continued declining in Zambia over the past decade. The legislation passed by the Republic of Zambia in 2018 that prohibited banks from charging unwarranted bank fees and charges (Bank of Zambia, 2018) has worsened the situation. The findings suggest that bank profitability and income stability will continue to be adversely affected as a result of lack of bank income diversification, thereby exposing banks to insolvency risk.

Therefore, the Bank of Zambia should to address bank income diversification cautiously. Following the 2018 legislation that reduced bank non-interest income, the Central Bank should monitor individual bank profitability and income volatility very closely. The Bank of Zambia could also encourage individual banks to diversity their non-interest income earning activities by setting minimum non-interest income ratios for the sector.

5.2.2 INDIVIDUAL BANKS

This study, like many others, has concluded that in general bank income diversification enhances profitability of banks and minimises their income volatility. However, diversifying into non- interest income earning activities is not a panacea for resolving every bank's performance challenges. For example, as discussed in Subsection 4.3, the performance of some banks actually improved as the level of diversification reduced. Similarly, in terms of income volatility, larger banks benefited more from diversification than smaller banks.

Bank management are therefore advised to consider various factors as they decide on the extent of revenue diversification. In particular, bank managers should consider their level of financial and operating leverage (DeYoung and Roland, 2001), the number of risky loans in their portifolios (Cebenoyan and Strahan, 2004b), their expertise in a particular business area (Mercieca, Schaeck and Wolfe, 2007), and the bank's area of specialization (Lee, Yang and Chang, 2014).

Furthermore, bank management are encouraged to consider the bank's business model. For example, research elsewhere has found that retail-oriented banks such as savings and cooperative banks are able to enhance income stability by diversifying into non-interest income activities (Köhler, 2013). However, investment-oriented banks may not benefit from revenue diversification as they already have a significant portion of fee-based activities.

Finally, management of small-sized banks need to strike a balance between enhancing profitability and worsening income volatility as a result of diversifying revenue sources. As this study has shown, small-sized banks can easily over-expose themselves to non-income generating activities, thereby increasing insolvency risk.

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