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A Study of the Factors that affect the Risk Weighted Asset Density of the Banking Sector in Zambia.

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ABSTRACT: The study aimed at investigating the factors that impacted the Risk Weighted Asset (RWA) Density of the Banking Sector in Zambia. The study examined how each of the factors considered influenced the levels of the Risk Weighted Asset Density. The factors were segmented into Liquidity Risk, Credit Risk, Other Assets and Sources of Funding. Secondary data collected from consolidated prudential reports from 2005 to 2023 was used in the study to examine how the variables related to each other. The key theories applied were the Buffer Capital Theory and the Pecking Order Theory. The study concluded that the factors considered had a significant influence on the levels of the Risk Weighted Asset Density. Credit Risk and Other Assets led to significant growth in Risk Weighted Assets compared to other variables. Capital and Debt had a negative impact on Risk Weighted Asset Density while deposits had a positive impact. The negative capital impact was in line with the Buffer Capital Theory which supports the concept that in times of excess capital, the banks will use excess capital as cushion against risk and may not use it to build up Risk Weighted Assets. The Pecking Order Theory did not necessarily hold for the Banking sector as the sector used deposits to grow the Risk Weighted Assets and not capital (retained earnings) and debt. Though, the theory can be deemed to hold from the pricing perspective as deposits would be a cheaper source of financing than debt and capital. The findings also showed that policy aimed at compelling banks to increase capital to lend would not be too effective as banks will not lend their capital but put it in government securities such as Treasury Bills. Policy encouraging deposit taking, such as reduction in statutory reserve ratios, would lead to increase in lending to the real sector which could drive economic activities. Measures impacting on the levels of deposit negatively would lead to reduction in lending to the real sector.

Key words: Risk Weighted Asset Density, Liquidity Risk, Credit Risk, Other Assets

I. INTRODUCTION

The financial sector stability and resiliency are key to economic steadiness and growth, given the role that the sector plays in supporting various sectors of the economy. Bank stability significantly contributes to economic growth and at the same time, economic growth falls significantly during crisis periods caused by bank failures, pointing to the importance of a resilient banking sector during crisis periods (Ijaz, Hassan, Tarazi, & Fraz, 2020). The ability of a bank to contain more than enough capital to cover its Risk Weighted Assets above a given minimum limit is largely considered as a key measure of the resilience of the banking sector. Kishore (2018) noted that Risk Weighted Assets (RWAs) constituted the risk profile of bank's assets portfolio. The ratio of RWAs to total asset exposure provides a measure of riskiness of assets. The ratio has come to be known as RWA density and its variance from year to year indicates change in risk profile of asset portfolio of the bank. An increase in RWA density over a period shows that overall risk profile of bank assets has deteriorated. Avramova & Le Leslé (2012) defined the risk density as the levels of RWAs as a percentage of Total Assets. Higher density could mean higher risk of a bank although there was change in perception of this with higher levels pointing to prudent risk measurement approach. Typically, a high proportion of RWAs would tend to indicate a higher share of riskier assets, and regulators and market participants should prefer banks with a low RWA density.

The introduction of comprehensive financial sector reforms in Zambia in the second half of the 1990s provided some push towards the stability of the sector following bank failures experienced around the 1990s.

The reforms were pushed through under a Financial Sector Development Plan (FSDP) that was implemented to address weaknesses in the financial sector, identified in a Financial Sector Assessment Programme (FSAP) conducted by the International Monetary Fund (IMF) and the World Bank in 2002 (Fundanga, 2010). However, the risk of bank failure in Zambia has remained despite the introduction of comprehensive financial sector reforms in the second half of the 1990s and the capital reforms in 2007 and 2012. Mwape, (2014), in discussing the post 2008 financial crisis reforms and the implication for bank regulation in Zambia noted that though some of the measures that were introduced by the Bank of Zambia post the 2008 crisis that were addressing capital, accounting, and liquidity coverage will reasonably help reduce failure probability, there will remain a residual risk of bank failure that requires contingent measures. Beyani & Kasonde (2009) highlighted that banks in Zambia needed to learn from other financial crisis that pointed to the fact that weak and inefficient risk management systems and taking on greater risks contributed to banks incurring huge losses.

II. LITERATURE REVIEW

This study was based on two theories around capital. These were the Buffer Capital Theory and the Pecking Order Theory.

The Buffer Capital Theory. This was largely applied as this is most suitable for this study as it links bank risk taking to capital levels. The theory relates capital to risk-taking activities of Commercial Banks. The risk-taking activities are supposed to increase in line with the capital levels where there is no excess capital and reduce or turn negative where there is excess capital. At the same time, excess capital means that banks have capacity to absorb more losses and thus banks also hold excess capital as an action against risk of losses. The excess capital could also be an indicator that banks are more averse to risk taking and thus would rather invest in less risk assets. The theory asserts that an excessive rise in capital than required reduces bank risk. Thus, the theory suggests that a bank reaching a minimum capital ratio has the incentive to increase its capital to avoid the risk of failure and regulatory costs arising because of the breach of the capital requirement (Oke & Ikpesu, 2022).

The Pecking Order Theory - Frank, Goyal, & Tao (2021) noted that the theory was part of the capital structure theories and Myer (1984) was referenced majorly when it came to the Pecking Order Theory. The basis of the theory was that entities do not look for an optimal capital structure but would focus more on the aspect of preference, in that companies would prefer to use internal finance, such as retained earnings, over external finance. The Pecking Order Theory of corporate capital structure states that firms finance deficits with internal resources when possible. If internal funds are inadequate, firms obtain external debt. External equity is the last resort (Frank, Goyal, & Tao, 2021).

Capital Levels

Empirical review has noted that capital levels can be linked to risk levels as higher risk levels should be covered by capital as per regulatory guidelines. A bank would not be allowed to take on further risks beyond its capital capacity reflected in the risk weighted assets. Higher capital levels can contribute to financial stability by providing cushion for loss absorption. At the same time, higher bank capital improves screening and monitoring by banks, and it tends to curb risk-taking because shareholders have more skin in the game. Regulatory capital requirements set out minimum ratios of capital that banks must maintain relative to their risk-weighted and unweighted assets. However, increasing capital requirements can lead some banks to cut lending in the short run (The World Bank, 2020). Agoraki, Delis, & Pasiouras, (2009) noted that capital requirements can have influence on competition and risk-taking in various ways. These can include barriers to entry due to high minimum capital requirements, high fixed costs due to high capital levels, and stringent approach to loan creation.

Liquidity

Liquidity is represented by liquid assets. Aspal & Nazneen (2014) when doing an empirical analysing of Capital Adequacy in India of Private sector banks concluded that liquidity (Liquid Asset to Total Asset Ratio) had a significant impact on Capital Adequacy, a ratio of Capital against Risk Weighted Assets. On the other hand, Setiawan & Muchtar (2021) when looking at factors affecting Capital Adequacy Ratio of banks in Indonesia concluded that liquidity had no significant impact on capital adequacy ratios.

Credit Risk

Credit risk has also been used as a variable by several researchers. Credit risk is represented by loans and advances as well as other off-balance sheet items. Bateni, Vakilifard, & Asghari (2014) used the variable and noted that loans and advances had a positive influence on the capital adequacy ratio. Aspal & Nazneen (2014) and Setiawan & Muchtar (2021) also noted that the ratio of loans and advances to assets had a significant impact on the Capital Adequacy ratios. Aspal & Nazneen (2014)'s conclusion was a positive relation with Capital Adequacy Ratio while Setiawan & Muchtar (2021) noted a negative relationship.

Financial Assets

Investments in government securities is not widely used by researchers as a variable. Karadayi (2023), however, used the Financial Assets as an independent variable of Capital Adequacy Ratio. The study noted that banks do invest heavily in government securities, and this was the most important income generating assets of banks after loans. Short term and highly liquid fixed income government securities in the bank's securities portfolio are an important return option for a bank. The study concluded that financial assets affected the capital adequacy ratio significantly.

Empirical Review

Hussain, Musa, & Omran (2019) when looking at the impact of regulatory capital on risk taking noted that there was a significant positive relationship between regulatory capital and risk-taking activities. This was also supported by Lotto (2016) when examining the relationship between capital and risk-taking behaviour of banks in Tanzania where it was noted that there was a direct relationship between capital ratios and bank risk taking activities. This meant that increase in bank's risk was in line with increase in capital ratios.

On the other hand, Abbas, Ali, Moudud-Ul-Huq, & Naveed (2021) when investigating the impact of traditional capital ratio, risk-based capital ratios and capital buffer ratio on the risk-taking of commercial banks between 2002 and 2019, could not confirm whether the increase in bank capital was enough for risk-taking in the turmoil time. Abbas & Ali, (2020) concluded that risk-based capital had a significant impact on reducing risk of large commercial banks. The relationship between risk-based capital ratios, capital buffer ratios, and banks' risk-taking was negative. Abbas, Butt, Masood, & Kiran (2019) studies showed that the capital buffer and total risks were negatively correlated. The higher the buffer the lower the total risk. The findings showed that capital buffer had influence on the total risk and net interest margins differently in pre, during and post crisis. Milne & Whalley (2001) noted that altering capital had no long run impact on incentives for risk-taking. While it was the buffer of free capital over and above the regulatory minimum that determines bank attitude towards risk but once there has been an opportunity to build up capital towards the desired level, then changes in capital requirements have no impact on bank behaviour. Quirk (2022) when evaluating whether the Bank of Zambia Policy achieved its purpose of strengthening the financial sector with the setting a higher minimum capital limit concluded that broadly banks were able to meet the new rules by rising more capital. In addition, banks improved their capitalisation rates and increased their total assets by getting treasury assets rather than additional loans.

Literature Gaps

The subject has been extensively covered by several researchers in Africa and beyond, however, there has been little study around variables affecting Risk Weighted Assets. Much of the focus has been on the impact that variables have on Capital Adequacy Ratio. At the same time, there has not been much discussion around Risk Weightings assigned to various assets that impact on the level of Risk Weighted Assets. Though the issue of sovereign risk has remained and has been rising, researchers have not focused much on studying the effect that changes to risk weights assigned to Government Bonds might have on the capital levels and risk weighted assets of banks. The researchers that have looked at the topic have largely pointed to the weakness the application of risk weights while insisting that their views do not suggest changes to risk weights. On the other hand, number of studies done have not incorporated aspects of Operational Risk and Market Risk when looking at Capital Adequacy levels of Banks.

The current research aims at bridging the gap in the study around Capital Adequacy Ratios and Risk Weighted Assets by adding a perspective of the factors influencing Risk weighted Assets, which has not been undertaken by several researchers. This will add knowledge to the topic by answering the critical question.

How does balance sheet and off-balance sheet variables impact on the building of Risk Weighted Assets to provide more light on the subject matter for industry players and regulators?

To answer the research question above, the following objectives were designed.

RO1 – Ascertain the attributes of variables that impact on the Risk Weighted Assets.

RO2 – Recommend policy direction and management action arising from the interaction between Risk Weighted Assets and the variables impacting on it.

III. RESEARCH METHODOLOGY

The philosophical approach was based on Positivism. Park, Konge, & Artino, (2020) noted that Positivism is aligned with the hypothetical deductive model of science. The hypothetico-deductive method is a process that largely starts with theory from the literature to build testable hypotheses, which can be tested to prove the theory. In positivism studies, the role of the researcher is limited to data collection and interpretation in an objective way. In these types of studies research findings are usually observable and quantifiable. The study was based on secondary data obtained from the Bank of Zambia. The research used the data collected by the Bank of Zambia on the consolidated prudential positions of commercial banks. Collection of secondary data is an approach that uses data that was collected by someone else for similar purpose or for other purposes

(George, 2023). The time horizon was from 2005 to 2023. The data covered the various capital framework regimes established in this period. This allowed for the incorporation of the impact that various independent variables had streaming from the changes in the capital regimes.

Sampling Frame and Sample size

The focus of the study was on the banking sector in the country. The number of banks in Zambia was 17 at the time of doing the research. However, the data considered was consolidated data for the entire banking sector. The Central Bank normally consolidates data of the banking sector covering all banks, and this made it possible to study all the banks from a consolidated position. Secondary data collection for this study was obtained from the Bank of Zambia website of the consolidated monthly prudential reports of the financials for banks from the prudential returns submitted monthly by all commercial banks operating in Zambia. The prudential returns include Income Statements, Statements of Financial Position, Capital Computation and Risk Weighted Assets.

Data Processing and Analysis

Descriptive data analysis was applied, using excel data analysis tools, to process and analyse the data collected. Multiple linear regression analysis was used to process the data and test the hypothesis. This was used to determine the relationship between the dependent variable (Risk Weighted Assets Density) and the independent variables.

Analytical Model

The study used regression analysis and correlation coefficient as outlined below.

$$RWA=\alpha+\beta 1FIF+\beta 2FIZ+\beta 3TBS+\beta 4GBDS+\beta 5LNS+\beta 6OBS+\beta 7OTS+\beta 8RGC+\beta 9DET+\beta 10DEP+\varepsilon$$

Where, RWA = Risk Weighted Assets Density
FIF = Balances with Foreign Financial Institutions over Total Assets
FIZ = Balances with Domestic Financial Institutions over Total Assets
TBS = Treasury Bills over assets over Total Assets
GBDS = Government Bonds over Total Assets
LNS = Net Loans over Total Assets
OBS = Off-balance Sheet Items over Total Assets
OTS = Other Assets over Total Assets
RGC = Regulatory Capital over Total Assets
DET = Debt over Total Assets
DEP = Deposits over Total Assets

Reliability Test

Reliability of data was tested using the Cronbach's alpha. The variables are measured against each other using the Cronbach's test to get the score. The score is expected to be between 0 and 1. When the Cronbach alpha is high, it shows reliability, and it means that the measuring instrument is consistent in its measurement. A common accepted rule of the thumb which is used to evaluate internal consistency using Cronbach alpha is presented in the table below (Ng'eno, 2019).

	>	**0.9**	**Excellent**
0.7	to	0.9	Good
0.6	to	0.7	Acceptable
0.5	to	0.6	Poor
	<	0.5	Unacceptable

IV. DATA ANALYSIS AND FINDINGS

Descriptive Analysis

The descriptive analysis was used to identify the general flow of the data about the variables used in the study. The results are presented in table 4.1.

Table 4.1: Descriptive Analysis

	RWA	FIF	FIZ	TBS	GBD	LNS	OBS	OTS	RGC	DET	DEP
Mean	0.52	0.16	0.01	0.13	0.08	0.36	0.11	0.08	0.11	0.02	0.73
Median	0.52	0.17	0.01	0.14	0.08	0.36	0.11	0.08	0.12	0.02	0.73
Standard Deviation	0.04	0.04	0.01	0.03	0.029	0.059	0.03	0.01	0.02	0.01	0.02
Minimum	0.433	0.09	0.003	0.06	0.024	0.25	0.05	0.06	0.01	0.01	0.67
Maximum	0.639	0.26	0.05	0.19	0.14	0.471	0.20	0.13	0.15	0.04	0.79

Test of Significancy

Table 4.1: Model Summary

Regression Statistics	
Multiple R	0.963563128
R Square	0.928453903
Adjusted R Square	0.925110627
Standard Error	0.012122367
Observations	225

The results showed that the predictor variable influenced the outcome up to 92.5 percent with only 7.5 percent being influenced by other factors outside the model as reflected in the adjusted R square statistic (0.925). This meant that the model could be relied upon to explain up to 92.5 percent the effects that the independent variables had on the dependent variable.

Table 4.2: ANOVA for determinants of Risk Weighted Assets Density

	df	*SS*	*MS*	*F*	*Significance F*
Regression	10	0.408096659	0.040809666	277.7078587	1.2312E-116
Residual	214	0.031447682	0.000146952		
Total	224	0.439544341			

The sum of squares residuals (SS) looks at outcome due to randomness and due to model. From the table the outcome is largely due to the model up to 0.4081 while only 0.0314 was attributed to randomness of the total figure of 0.4395. Degree of freedom was 10 given the 10 independent variables and the intercept. The F value shows how jointly significant the independent variables are in predicting the dependent variable. The higher the F statistic the better the model. The figure of 277.7 showed that the independent variables were jointly significant in explaining the dependent variable.

The significance test (F) in table 4.2 shows the usefulness of the overall regression model to accept or reject the null hypothesis. It explains the significance of the F value. The general rule is that figures below a value of 0.05 will result in the null hypothesis being rejected and while accepting the alternative hypothesis. The Significant test in table 4.2 is significantly below the 0.05 value and thus the null hypothesis is rejected, and the alternative hypothesis accepted. The significant test is supported by a high F value of 277.7.

Coefficients of the Model

Table 4.3: Regression Results

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.0524	0.0444	-1.1800	0.2393	-0.140	0.0352	-0.140	0.0352
FIF	0.1632	0.0487	3.3512	0.0010	0.0672	0.2592	0.0672	0.2592
FIZ	0.4503	0.1682	2.6776	0.0080	0.1188	0.7818	0.1188	0.7818
TBS	-0.3348	0.0416	-8.0421	0.0000	-0.417	-0.253	-0.417	-0.253
GBDS	0.4197	0.0508	8.2631	0.0000	0.3196	0.5198	0.3196	0.5198

LNS	0.8198	0.0333	24.6482	0.0000	0.7542	0.8853	0.7542	0.8853
OBS	0.7201	0.0397	18.1217	0.0000	0.6418	0.7984	0.6418	0.7984
OTS	0.8586	0.0928	9.2571	0.0000	0.6758	1.0415	0.6758	1.0415
RGC	-0.1321	0.0661	-1.9974	0.0470	-0.262	-0.002	-0.262	-0.002
DET	-0.4284	0.2005	-2.1368	0.0338	-0.824	-0.033	-0.824	-0.033
DEP	0.1721	0.0559	3.0816	0.0023	0.0620	0.2823	0.0620	0.2823

The intercept term showed that when all independent variables were held constant at zero, the Risk Weighted Assets Density Ratio will be -0.0524. Several variables had positive coefficients pointing to positive effect on the RWAs Density. The included Balances with Foreign Financial Institutions (+0.1632), Balances with Domestic Financial Institutions (+0.4503), Government Bonds (+0.4197), Net Loans (+0.8198), Off-balance sheet exposures (+0.7201), Other Assets (+0.8586), and Deposits (+0.1721). The variables with negative coefficients included Treasury Bills (-0.3348), Regulatory Capital (-0.1321), and Debt (-0.4284).

RWA=-0.0524+0.163FIF+0.45FIZ-0.335TBS+0.42GBDS+0.82LNS+0.72OBS+0.859OTS-0.132RGC-0.428DET+0.172DEP+0.0121

Discussion of the findings

The study had examined the factors that impact on the Risk Weight Density level of the banking sector in Zambia. The research looked at variable factors that covered Liquidity Assets, Sovereign Risk Exposures, Credit Risk, Other Assets, Regulatory Capital, Debt and Deposits. Liquidity assets included exposures to both domestic and foreign financial institutions as well as Treasury Bills. Sovereign Risk mainly covered Government Bonds. Other Credit Risk covered net loans and off-balance sheet items. Other variables were Other Assets, Regulatory Capital, Debt, and Deposits. The model explained up to 92.5 percent of the variation in the RWAs density with the remaining 7.5 percent being explained by variables that were not part of the study. The model revealed that the independent variables had a significant effect on RWAs density of the banking sector in Zambia with F factor of 277.7 and a Significant Factor of less than 0.0001.

Under liquid assets, the model revealed that exposures to financial institutions had a positive effect on the Risk Weighted Assets Density. Exposures to Foreign Financial Institutions (FIF) and exposures to Domestic Institutions (FIZ) had coefficients of 0.1632 and 0.4503 respectively. This meant that an increase in one unit of FIF would lead to 0.1632 increase in RWAs density while a unit increase in FIZ would lead to 0.45 increase in RWAs-Density. This meant that an increase in exposures to financial institutions would lead to an increase in risk weighted assets though at varying levels. Exposures to domestic financial institutions would have a higher impact of 0.45 compared to 0.16 from foreign financial institutions.

However, holding of Treasury Bills had a negative impact on the RWAs-Density with a coefficient of -0.3348, meaning one unit growth in Treasury Bills reduces the RWAs-density by 0.3348. Growing of Treasury Bills will lead to reduction in the Risk Weighted Assets. In an event that a financial institution wanted to reduce its risk weighted assets, investment in Treasury Bills would have a reducing impact of -0.3348 on the RWAs density. Exposures to sovereign risk in form of Government bonds had a positive impact on the RWAs density with a positive coefficient of 0.4197. This meant that an increase on exposures to Government Bonds by one unit will lead to 0.4197 increase in RWA density. That is increase in Government Bonds has almost the same impact on as with exposures to domestic financial institutions.

The major impact on the density came for exposures to other credit risk and from other assets. Exposures to credit risk in form of Net Loans and Off-Balance Sheet items had positive coefficients of 0.8198 and 0.7201 respectively. An increase in once unit of net loans and off-balance items would lead to an increase of 0.8198 and 0.7201 respectively of the RWAs density. This meant that a rise in loans and off-balance sheet exposures had significant impact on RWAs. The impact of increase in one unit of Other Assets would be a 0.8586 increase in the RWAs density.

On the other hand, regulatory capital and debt had a negative impact on the RWAs density with growths of -0.1321 and -0.4284 respectively expected when each of these variables are increased by one unit. These findings are supported by the buffer capital theory which charges that Banks would prefer to keep capital as a buffer when there is excess capital. At the same time, increase in debt is used to meet other needs other than growth in risk assets. These could be invested in Treasury Bills. However, deposits had a positive impact with an increase of 0.1721 expected for one unit increase in deposits. Which meant that deposits are used to drive growth in risk weighted assets other than capital and debt.

Regulatory Capital Impact on Risk Weighted Assets

Based on the P-Value of 0.047 which was below the 0.05 level it was established that Regulatory Capital had a significant impact on Risk Weighted Assets. At the same time, the relationship between Regulatory Capital and

Risk Weighted Assets was negative. Further, the market had excess capital throughout except for a short stint in 2012 when new capital requirements were introduced. The excess capital and the negative relationship supported the Buffer Capital Theory that regulatory capital does not lead to creation of risk assets when there is excess capital.

Debt has an impact on risk weighted assets.

On account of the P-Value of 0.033 which was below the limit level of 0.05. Debt was found to have a significant impact on the risk weighted assets. However, debt was not used to create risk weighted assets as the relationship was negative. This is in contradiction with the Pecking Order Theory supporting the use of debt and capital in creating risk assets. However, the Pecking Order Theory will hold when deposits are considered as deposits would largely be cheaper than debt and they will be used in creating assets more than debt and equity.

V. CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The study showed that Liquidity Risk had a mixed impact on the creation of assets with investments in Treasury Bills having a negative relationship while exposures to Financial Institutions had a positive impact. Credit Risk as well as exposures to Other Assets had a positive relationship. Though credit risk and exposures to other assets had the highest impact as increase in these assets led to significant increase in Risk Weighted Assets compared to other assets. On the funding side, both regulatory capital and debt had a negative relationship with risk weighted assets. However, deposits had a positive impact as increase in deposits resulted in the increase of risk weighted assets.

Conclusion

The study concluded that increase in credit risk can significantly impact on the risk profile of an entity. The increase in credit risk such through creation of loans and overdrafts must be done with caution or supported by mitigants recognised by the regulator that can reduce on the risk weighted assets. Exposures to Sovereign Risk in form of Government Bonds also led to an increase in risk weighted assets by about 0.42. This meant that increase in the exposure to Government Bonds would lead to significant increase in the risk profile of the banking sector. On the other hand, when liquid assets were broken down into specific assets, it was noted that exposures to financial institutions would lead to an increase in risk weighted assets. However, exposures to Treasury Bills led to a reduction in risk weighted assets. This meant that by investing in Treasury Bills, banks were able to reduce on the risk weighted Assets.

At the same time, the banking sector grew its risk weighted assets from deposits and not from capital or debt. The relationship between Regulatory Capital and Risk Weighted Assets was negative, meaning that increase in regulatory capital led to banks being cautious with their capital position by creating less of risk weighted assets. In addition, increase in debt led to reduction in risk weighted assets, leading to the conclusion that debt was also being used to create safer assets such as Treasury Bills. These findings from the research were supported by the Buffer Capital Theory. The Buffer Capital Theory pointed to a negative relationship between capital and risk weighted assets where there was excess capital. The findings were in line with Quirk (2022) who, when evaluating whether the Bank of Zambia Policy achieved its purpose of strengthening the financial sector with the setting of a higher minimum capital limit, concluded that broadly banks were able to meet the new rules by rising more capital, which was invested in Treasury Bills, other than building the loan book. The findings were also in line with the Buffer Capital theory and the Pecking Order Theory, to the extent that it was modified to incorporate other cheaper sources of funds such as deposits.

Recommendations

The finding that regulatory capital has a negative relation with risk weighted assets means that policy encouraging banks to lend should not really focus on the increase in regulatory capital. While increased levels of capital will create capacity for lenders to create bigger tickets as their Single Obligor Limits will grow, the impact on the creation of risk assets will be negative. Higher capital led banks to play it safe by investing their capital into less risky assets such as Treasury Bills. This could be a form of preservation of capital. Thus, regulation such as introduced in 2012 where minimum capital requirements where significantly increased, should be aimed at making the banking sector more resilient and build capacity such as increase single obligor limits. However, they should not be meant to drive increased appetite for lending. At the same time, policies driving towards the easing of acquiring deposits for the sector will result into more lending as deposits are largely used to create loans, compared to other sources of funds. As policy makers drive implementation of both fiscal and monetary policies, it should be noted that policies that impact on deposits would also impact on the ability of banks to lend to the real economy. These measures could include increase in statutory reserve ratios,

which might reduce on the capacity of banks to lend to the real sector. On the other hand, favourable movements in the reserve ratios were expected to increase appetite to lend.

The outcome of the research can be used to optimism asset mix of player in the industry by looking at the impact that each asset growth has on the risk profile. The awareness of the behaviour of each asset can assist in structuring the balance sheet both in terms of liquidity and risk profile. Some liquid assets will have an incremental effect on the risk profile while some have a negative effect. Growth in risk assets will have varying impact and thus the understanding of such can assist in optimising capital via asset creation. At the same time, growth in Government Bonds seem to contribute to the risk profile with an increase of 0.42 per one unit growth. Thus, the bonds have a significant effect on the risk profile. Management can also use Treasury Bills to reduce the risk profile of their balance sheet as these led to a reduction in risk weighted assets up to 0.33 per increase in a unit of Treasury Bills.

Limitations

The first limitation is that only balance sheet and off-balance sheet items were considered for the research. However, Basel capital framework incorporates other measurement like market risk, liquidity, and operational risk measurements. In the case of Zambia, which is still on Basel I, some aspect of market risk is incorporated when coming up with the final position of the risk weighted asset. This aspect was not considered as focus was mainly on the structure of the balance sheet and its impact on the risk profile. However, it must be noted that the balance sheet items still account for a significant portion of the total risk weighted assets. On the other hand, the study done considered a consolidated position of the banking sector and not at individual level. The profile created was for the industry. However, at a micro level the behaviour of banks could be different. Several research done grouped banks into smaller and bigger banks and consideration given to the levels of capital, whether in excess or deficit. However, it must be noted that the outcome of this research would be like the one done where banks are segmented. Nonetheless, it will be necessary that a study is done at a granular level as well.

REFERENCES

[1]. Abbas, F., & Ali, S. (2020). Dynamics of bank capital ratios and risk-taking: Evidence from US commercial banks. *Cogent Economics & Finance*, pp. 8:1, 1838693, DOI: 10.1080/23322039.2020.1838693.

[2]. Abbas, F., Ali, S., Moudud-Ul-Huq, S., & Naveed, M. (2021). Nexus between bank capital and risk-taking behaviour: Empirical evidence from US commercial banks. *Cogent Business & Management*, pp. 8(1), 1947557.

[3]. Abbas, F., Butt, S., Masood, O., & Kiran, J. (2019). The effect of bank capital buffer on bank risk and net interest margin: Evidence from the US. *Global Journal of Social Sciences Studies*, 72-87.

[4]. Agoraki, M.-E. K., Delis, M. D., & Pasiouras, F. (2009, June 1). Regulations, competition and bank risk-taking in transition countries. *Munich Personal RePEc Archive*, p. MPRA Paper No. 16495.

[5]. Aspal, K. P., & Nazneen, A. (2014). An Empirical Analysis of Capital Adequacy in the Indian Private Sector Banks. *American Journal of Research Communication 2(11)*, 28-42.

[6]. Avramova, S., & Le Leslé, V. (2012). Revisiting risk-weighted assets. *IMF Working Papers*, (090).

[7]. Bateni, L., Vakilifard, H., & Asghari, F. (2014). The Influential Factors on Capital Adequacy Ratio in Iranian Banks. *International Journal of Economics and Finance; Vol. 6, No. 11*, 108-116.

[8]. Beyani, M., & Kasonde, R. (2009). Financial innovation and the importance of modern risk management systems – a case of Zambia. *IFC Bulletins*, pp. chapters, 31, 283-293.

[9]. Frank, M. Z., Goyal, V. K., & Tao, S. (2021). *The Pecking Order Theory of Capital Structure: Where Do We Stand?* Retrieved from https://www.zbw.eu/econis-archiv/bitstream/11159/427983/1/EBP076356124_0.pdf

[10]. Fundanga, C. (2010, May 3). *Measures To Improve Financial Regulation And Supervision Of The Financial System In Zambia Remarks At The United Nations Working Group Meeting On The World Financial And Economic Crisis.* Retrieved from United Nations: https://www.un.org/esa/ffd/wp-content/uploads/2015/08/ie-03052010-Fundanga.pdf

[11]. George, T. (2023, June 22). *What is Secondary Research? | Definition, Types, & Examples*. Retrieved from Scribbr: https://www.scribbr.com/methodology/secondary-research/

[12]. Hussain, S. M., Musa, M. M., & Omran, A. (2019). The impact of regulatory capital on risk taking by Pakistani banks: An empirical study. *SEISENSE Journal of Management*, 94-103.

[13]. Ijaz, S., Hassan, A., Tarazi, A., & Fraz, A. (2020). Linking Bank Competition, Financial Stability, and Economic Growth. *Journal of Business Economics and Management*, 200–221.

[14]. Karadayi, N. (2023). Factors Affecting Capital Adequacy Ratio. *International Journal of Economics, Commerce & Management Vol. 11, Issue 3*, ISSN 2348 0386. Retrieved from https://ijecm.co.uk/wp-content/uploads/2023/03/1131.pdf

[15]. Kishore, K. (2018). Risk Weighted Assets Density as a Parameter of Risk Profile of Bank Assets: A Study of Indian Banks. *IUP Journal of Financial Risk Management*, 15(2).

[16]. Lotto, J. (2016). Efficiency of capital adequacy requirements in reducing Risk-Taking behavior of Tanzanian commercial banks. *Research Journal of Finance and Accounting*, 110-118.

[17]. Milne, A., & Whalley, E. A. (2001, December). Bank capital regulation and incentives for risk-taking. *Cass Business School Research Paper, WBS Finance Group Research Paper*, p. 17.

[18]. Mwape, A. (2014). *Post-crisis Financial System Regulation: Implications for Zambia. Building Prosperity from Resource Wealth, 158.* Retrieved from Research Gate: https://www.researchgate.net/profile/Alan-Whitworth/publication/299887307_Transport_Policy/links/63b9a67903aad5368e71dc67/Transport-Policy.pdf#page=180

[19]. Ng'eno, J. C. (2019, September). *Capital adequacy framework, funds allocation strategy and financial performance of deposit taking Sacco's in Kenya.* Retrieved from Kenya Methodist University: http://repository.kemu.ac.ke/

[20]. Oke, B. O., & Ikpesu, F. (2022, May). Capital Adequacy, Asset Quality and Banking Sector Performance in Nigeria. *AUDOE, Vol. 18, No. 5/2022*, pp. 37-46.

[21]. Park, S. Y., Konge, L., & Artino, A. R. (2020). The Positivism Paradigm of Research. *Journal of the Association of American Medical Colleges*, 690-694.

[22]. Quirk, T. (2022, May 3). When Basel-inspired capital regulations are insufficient: Evidence from Zambia's use of absolute minimum bank capital requirements. *SSRN*, p. Available at SSRN 4095879.

[23]. Setiawan, A., & Muchtar, S. (2021). Factor affecting the capital adequacy ratio of banks listed in Indonesia Stock Exchange. *Jurnal Ekonomi*, 153-169.

[24]. The World Bank. (2020). *Global Financial Development Report 2019/2020.* Washington, DC: International Bank for Reconstruction and Development. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwidvbvn6pqBAxWp3gIHHUBTCqAQFnoECBEQAQ&url=https%3A%2F%2Fwww.worldbank.org%2Fen%2Fpublication%2Fgfdr&usg=AOvVaw2eeCIKhzTeYrWmAX2eTuaV&opi=89978449

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