

Capital structure and financial performance of commercial banks in Rwanda

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Abstract

Since the traditional theory, the conundrum on whether capital structure affect the value and cost of capital of the firm has remained unsolved. Thus, this study assessed the influence of capital structure on financial performance of five selected commercial banks in Rwanda. The study used a time series data from 2010-2019 in five major commercial banks in Rwanda. Capital structure was measured using debt to equity ratio and debt to asset while financial performance was measured using Return on Equity, Return on Asset, and Net Interest Margin. The results showed an unstable up-and-down (fluctuation) movement in capital structure indicating that there was no targeted optimum debt to equity ratio (leverage ratio) that any banks aimed to reach –which is contrary to what static trade-off theory of capital structure would predict. In addition, financial performance was also unstable with fluctuation movements in all five banks which indicate a somewhat risky environment for investment. In Bank of Kigali and Equity bank, the two main ratios namely: return on equity ratio and debt to equity ratio have well proven that the more levered BK and Equity are, the higher return to investors. Differently to BPR Atlas Mara, there was a negative relationship between the two ratios; ROE and D/E. The findings showed that there is no relationship between Return on Asset, Net Interest Margin and Debt to Equity in all bank's ratio proved the Modigliani and Miller irrelevancy theory of capital structure. To the finance managers of the banks this means that they can design, change their banks capital structure up to desired leverage and that will not the effect of their financial performance.

Key Terms: *Capital structure, financial performance, commercial banks*

1. Introduction

The purpose of this study is to examine the influence of capital structure on the financial performance of commercial banks in Rwanda. Capital structure is defined as the combination of various long – term sources of funds in the capital of a firm. A good combination of debt and equity will yield to maximize the earning of shareholders. The use of long –term debt and preference share capital (fixed charge fund along with equity share capital) is known as financial leverage or trading on equity. Financial leverage helps to magnify the earning of shareholders under favourable business conditions. When the firm is able to earn a return on borrowings (fixed charge funds) which is higher than their cost, the earning of the shareholders will increase. However, if the firm earns a return which is lower than the cost, the earning of the shareholders will decline. Nevertheless, the more the debt, the more the firm becomes risky, thus the higher the cost of equity required by investors (Abeywardhana, 2017).

Financing decision is one of the major decisions that financial managers need to make. The decision involves evaluating the different sources of finance, the cost of each source and the combination of different sources. Firms can finance their operation either using equity, debt or a combination of debt and equity. A combination of debt and equity is what defines the capital structure of the firm. The more debt the firm uses, the more its gearing level thus the more the financial risks. Banks by nature are geared business. There is a contradicting debate on the influence of capital structure on the financial performance of banks. While some researchers have identified a positive relationship, other researchers have identified a negative relationship between capital structure and financial performance. The debate on capital structure dates back in the 1950s with the idea that finding an optimal ratio between equity and debt would minimize the capital cost and would maximize the companies' value (Elena, Georgeta, & Stefan, 2018). In the Stewart Myers capital structure decision puzzle, selecting between internal sources or external source is a big challenge given different costs and issues arising to each source (Hashemi & Shivaraj, 2014).

The theories on capital structure originates from the debate on whether there is an optimal capital structure and whether capital structure affects the firm's value. The traditional theory posits that there is an optimal capital structure and there is a relationship between capital structure and the firm value. In contrast to this theory, in 1958 Modigliani and Miller in their tax-free theory pointed

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out that, in a situation where there is no tax, capital structure and firm value are not related. However, a year after that is in 1959 after incorporating tax, Modigliani and Miller concurred with the traditional theory that capital structure and firm value are related. In 1977 Myers came up with the pecking order theory which stipulates that there is optimal capital structure and thus every firm has a preferred hierarchy of financing decision.

The tradeoff theory to capital structure is based on the fact that there are various cost and benefits associated with the choice made either to use debt or equity. The theory shows that, in running a business, a decision maker should evaluate different alternatives debt and equity mix plans in terms of their cost and benefits (alternative leverage plans) (Popescu & Visinescu, 2009). Basing on the conclusion by Modigliani and Miller that firm should borrow as much as possible to benefit from the debt tax shield, it was realized that the tax advantage is to a great extent compensated by the costs of financial distress (Hashemi & Shivaraj, 2014).

As per the trade-off theory, each fund source has pros and cons and there is an optimal capital structure, which balances the trade-off that the firm should strive to achieve. The use of Debt presents a lot of advantages such as interest tax deduction and a signaling device. Hence, it reduces the agency costs as there is no equity used. It is also argued that debt has psychological effects on managers.as it reduces the agency cost of management [by] disciplining managers” (Hashemi & Shivaraj, 2014). On another hand, disadvantages of using debt includes the increase the cost of financial distress/ bankruptcy. Borrowing may cause managers to harm debt holders in the interest of equity holders by committing the company to risky investments or by raising debts to pay out dividend to shareholders (Popescu & Visinescu, 2009).

At the onset, the theory focused on explaining that managers mainly strive to balance the tax advantage and higher risk of financial bankruptcy. Later on, they included the agency cost as one of other major advantages. Agency costs arise from conflicting interests among various stakeholders of the firm due to information asymmetry (Popescu & Visinescu, 2009). In a dynamic trade-off theory, a firm decision not only depends on the trade-offs but also on the firm financial need and margin that it expects in the next period (Popescu & Visinescu, 2009).

Capital structure of banks has great impact on the function of the overall financial system because bank funding and financial crises are heavily intertwined (Adrian & Gabriele, 2013). An accumulation of debt due to expansion into risky business areas leads to imbalances in bank

funding structures which is reflected into high degrees of leverage. Such excessive recourse to debts financing may trigger deterioration of bank asset quality (Adrian & Gabriele, 2013). Weakness on the asset side of banks' balance sheets pushes firms to get rid of the assets hastily which in turn leads to further decline in asset prices. The sudden decline of asset prices creates a financial distress for the banks and banks' borrowers/lenders which is in turn pervaded the entire financial system. Any distress in financial system which is not carefully addressed may as well lead to financial crisis as observed in 2007.

There are a number of factors that influence financial performance of a particular bank. According to Athanasoglou, Brissimis, and Delis, bank financial performance is influenced by internal (bank specific) and external factors (Athanasoglou, Brissimis, & Delis, 2008). External factors are mostly macroeconomic and industry specifics which are beyond management control but have strong impact on the bank's profitability. External factors often called exogenous variable are factors such as: economic growth, inflations, market concentration, ownership, etc, just to name a few. On the other hand, efficiency, liquidity, and capital structure are some of examples of firm specific factors that influence financial performance. There have been many studies conducted on the internal determinants of bank profitability.

Jamili, Dadson Awunyo-Vitor and Badu (2012) investigated the relationship between capital structure and performance of listed bank in Ghana covering data from 2000 to 2010. A regression model was used to analyze the data. The findings highlighted that capital structure is inversely related to the financial performance. Ibrahim, Sardar SH (2019) analyzed the effect of capital structure on the performance of Iraqi Private banks. Panel data from 2005 – 2015 was collected from the published financial reports. A least regression square model was used to analyze the relationship between variables. The findings revealed that capital structure does not have impact on the return on capital but have a positive impact on the return on equity.

Ipesha E.F. & Moshi J.J. (2014) assessed the impact of capital structure on performance of banks in Tanzania. Panel data covering a period of five years was collected from 38 banks. Findings revealed that banks use more debt than equity. the findings further revealed a negative tradeoff between capital structure and performance of banks. Prakash Iqbal, Quadras and Nympha (2017) examined the influence of capital structure on the financial performance of banks in India. The study used panel data of five years from 2011 to 2015. A regression analysis was used to analyze

the relationship between the study variables. Findings show that capital structure has a significant impact on the financial performance of commercial banks in India.

Siddik, Kabiraj & Joghee (2016) examined the impact of capital structure on the performance of Banks in developing Economy taking evidence from Bangladesh. Panel data was collected from 22 banks covering a period from 2005 to 2014. A pooled ordinary regression model was used to analyze the relationship between study variables. Findings show that capital structure inversely affect firm performance. Muhammad, Ammar and Muhammad (2013) examined the impact of capital structure on the banking performance. Panel data from 2007 to 2011 was collected. A multiple regression model was used to determine the relationship between variables. Findings show that determinants of capital structure have a positive relationship with performance. Serwadda (2019) examined the effect of capital structure on the performance of banking sector in Uganda. Panel data was collected from 2006 – 2015 from a sample of 20 commercial banks. Findings revealed that there is a positive relationship between capital structure determinants and performance of banks in Uganda. There is a negative relationship between tangibility of assets and interest margin.

Nelson, Johnny, Peter, & Ayunku (2019) investigated a relationship between capital structure and firm performance evidence from microfinance in Nigeria. Panel data covering a period from 2009 – 2018 was collected from the financial reports of the selected microfinance banks. Findings revealed an insignificant relationship between debt to equity and return on equity and positive and insignificant relationship between total debt and return on equity. Mathewos (2016) investigated the effect of capital structure on the financial performance of firms. Data covering a period of five years was collected from the selected commercial banks. A multiple regression model was used to analyze the relationship between variable. Findings show that capital structure has a negative and significant relationship with performance of commercial banks.

Banking system in Rwanda is characterized as solvent, profitable, and dominated mostly by commercial banks. Banking sector comprises 66.7 percent share of financial sector assets in Rwanda and commercial banks have grown from three banks before 1994 to eleven (11) banks as of 2019 (Christian & Callixte, 2019). The banking sector is dominated by five major commercial banks (Bank of Kigali, I&M Bank, Equity Bank, BPR Atlas Mara, and CogeBanque) with almost 76% of all bank assets in the country (Export.Gov, 2019). Recently, Rwandan banking industry

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has recorded an annual growth of 11% in net income after tax. Furthermore, the industry average profitability, as measured by Return on Equity, has increased to 10% while the return on asset remained relatively unchanged at 1.7% (I&M Bank, 2018).

In the quest to understand where Rwandan banks' financial performance comes from, Okello, Memba, and Kigabo studied the influence of liquidity on the Rwandan commercial banks' financial performance and found a strong positive influence of profitability as measured by return on assets and return on equity. However, they also found a negative influence on the operation efficiency as measured by net interest margin (Okello, Florence, & Kigabo, 2008). In the study conducted on the effect of banks deposit mobilization on financial performance, it was found that a deposit mobilization through innovative banking technology leads to low-cost deposit and increases deposit volume, which in turn, boost the return of asset, return on equity, and net profit as well. In addition, a positive correlation between deposits mobilization and financial performance was found to exist in the commercial banking sector in Rwanda (Richard & Zenon, 2015).

As a regard to funding structure, banks remain challenged by short term funding. As of June 2017, short-term deposits –deposits with maturity of up to 12, consisted of approximately 85% of the total banks' deposits (I &M Bank, 2018). As put forth by Abeywardhana, financing structure is very important and capital structure decision should be carefully analyzed in relation to debt and equity mix (Abeywardhana, 2017). The source of money's supply to finance a business endeavor is probably the most important and inescapable decisions managers need to be confronted with at some point.

At the time when banks needed to raise capital, Rwanda faced (and is still facing) a challenge of Staggeringly low domestic long-term savings. For instance, as of June 2017, short-term deposits –deposits with maturity of up to 12, consisted of approximately 85% of the total banks' deposits (I &M Bank, 2018). At the same time, Rwandan capital market was and still is small and underdeveloped to enable businesses to accessing long-term financing from the general public (Minecofin, 2013). On the other hand, Foreign commercial banks operating in Rwanda have had advantage of tapping funding markets beyond national borders. This pushed some banks to look for external loan as a financing option to supplement a rather small long-term deposit. As a result,

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the capital structure of banks in Rwanda is a whole complex mix of loan, long-term deposit, as well as equity.

With the rapidly expanding Rwandan banking sector and constant influx of foreign banks, current banks operating in Rwanda need to be alerted and learn how to quickly raise money for constantly investment in their businesses in order to keep up with the very competitive environment. In doing so, to ensure the financial stability of a company, it is important to maintain a healthy capital structure in that company. Bank management should be aware of the financial leverage of their businesses in order avoid any financial distress that may result from an excessive financial leverage. Therefore, this study was intended to alert private commercial banks whether there is any significant effect played by capital structure on their business financial performance.

Over the years, matters related to capital structure have been puzzling finance scholars. Much has been written and proposed to what is seemed to be a better explaining theory about capital structure but yet there has not been consensus among researchers. Nonetheless, three major theories have emerged and gained popularity namely: tradeoffs theory, pecking order theory, and timing theory (Hashemi & Shivaraj, 2014).

2. MATERIAL AND METHODS

The study aimed at assessing the influence of capital structure on the performance of commercial banks in Rwanda.

Research Design

A quantitative research approach was used to collect needed data in assessing existing situation to provide the basis for data analysis for a better decision making. The main objective of this study was to assess the pattern of capital structure of commercial banks in Rwanda and to investigate if there is a correlation between capital formation and business performance in the Rwandan banking sector.

Target Population and Sample size

The entire target population of this study is composed by financial statements and reports of all eleven (11) commercial banks in Rwanda. In this study only five banks (Bank of Kigali PLC, I

&M bank, Equity bank Rwanda, BPR Atlas Mara and COGEBANQUE) were selected as they represent more than 70% of identifiable assets of the entire population.

Data collection and Analysis Methods

For analyzing the data, Trend analysis and regression analysis were used. Trend analysis was used to assess the capital structure and financial performance of the selected commercial banks in Rwanda while the regression analysis was used to explore the statistically significant relationship between capital formation and business performance in banking sector.

The following model was employed:

$$y = \beta_0 + \beta_1 X + \varepsilon$$

Where y = dependent variable (financial performance of commercial banks) such as return of equity, return on asset, and net interest margin; β_0 and β_1 were model coefficients while x represents explanatory variables such as: debt-to-equity (gearing ratio) and debt-to-assets ratio, ε is the error term.

3. RESULTS

The data collected from the financial reports of the commercial banks were analysed and the summary of the findings is as follow:

Table 1: Descriptive statistics of the study variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Debt					
Equity	44	6.147	1.677	3.5	11.4
Debt Asset	44	0.852	0.0323	0.78	0.919
ROE	44	14.310	11.89	37.48	27.4
ROA	44	2.226	1.561	3.281	4
NIM	44	9.658	2.155	4.9	14.9

Table 1 show the descriptive statistics about the financial health of banking sector in Rwanda. Findings show a high debt to equity ratio and a lower debt to assets ratio as evidenced by a mean of 6.147 and 0.852 respectively. Findings further revealed that the financial health of the banks is good. This is evidenced by an average return on equity of 14.310 and Net interest margin of 9.658. This implies that shareholders' funds are well employed by the management.

Table 2: Trend observation of variables

Year	Debt equity	Debt asset	ROE	ROA	NIM
2010	6.088	0.858	21.2	2.893	8.575
2011	5.81	0.846	17.4	2.583	9.75
2012	6.355	0.856	14.5	2.244	10.18
2013	7.465	0.873	6.705	1.562	9.755
2014	6.983	0.867	13.55	2.031	9.28
2015	6.548	0.851	10.54	1.876	9.426
2016	5.38	0.841	14.18	2.175	9.986
2017	5.828	0.852	13.8	2.036	9.294
2018	5.72	0.846	15.98	2.382	10.08
2019	5.575	0.842	15.95	2.585	10.22
Total	6.147	0.853	14.310	2.226	9.658

Table 2 show the trends of variable observed in the selected commercial banks under this study. Findings show unstable trend in the performance of banks. The high debt to equity were observed in 2013 and lowest in 2019, which indicates a decrease in the level of gearing. High profitability as measured by ROE was observed in 2010 and lowest in 2015. An average ROA of 2.226 was observed with the highest performance in 2010 and the lowest in 2013. The findings further revealed unstable growth of net interest margin with an average of NIM of 9.658. The highest NIM is observed in 2012 and The lowest in 2010. Findings revealed that capital structure and financial performance are moving independently.

Table 3: Performance of each bank

	debt to equity	Debt to asset	ROE	ROA	NIM
BK	4.4	0.812	20.42	3.68	9.97
BPR	7.306	0.873	-1.051	0.152	12.443
COGE	7.311	0.878	15.77	1.906	6.978
Equity	5.14	0.833	15	2.34	9.42
I&M	6.192	0.861	21.91	3.075	9.092
Total	6.147	0.853	14.31	2.22575	9.658

Table 3 show the level of gearing and financial performance of each bank. Findings show that Bank of Kigali (BK) has the lowest level of gearing followed by equity and I&M. Cogebank and BPR have the highest level of gearing. Findings further show that I&M has the highest return on equity followed by Bk, Cogebank, Equity and BPR with the lowest. Findings further show that BK has the highest return on assets followed by I &M, equity, Cogebank with BPR having the lowest. In relation to the net interest margin, high performance was observed in BPR, followed by BK, Equity and I&M having the lowest. The findings contradict slightly the dominant assumptions on which existing theories of capital structure are constructed. According to the Modigliani and Miller with taxes, high level of gearing high value. This is not reflected in the banking sector.

Table 4 Correlation among variables

	Debt Equity	Debt Asset	ROE	ROA	NIM
Debt Equity	1				
Debt Asset	0.9466	1			
ROE	-0.5539	-0.3907	1		
ROA	-0.6764	-0.5746	0.9479	1	
NIM	0.0403	-0.024	-0.4816	-0.3811	1

Table 4 shows correlation coefficients between variables in the selected commercial banks in Rwanda. Findings show that there is a negative relationship between capital structure and return on assets and equity. This implies that an increase in the level of leverage leads to a decrease in the financial performance as measured by return on assets and return on equity.

Table 5: Linear regression model

	(1)	(2)	(3)
	ROA	ROE	NIM
Debt Equity	-0.994*** (-4.37)	-10.56*** (-5.44)	0.0486 (0.13)
Debt Asset	35.92*** (2.77)	437.1*** (3.97)	3.624 (0.17)
cons	-22.32** (-2.28)	-293.6*** (-3.53)	6.202 (0.39)
N	44	44	44

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5 contains the linear regression outcome of the study variables. The result showed the following keys observation: there is a significant and negative relationship Return on equity, return on asset and debt to equity ratio as evidenced by P-value less than 0.05. This implies that an increase in the level of leverage leads to a decrease in the return on asset and return on equity respectively. Findings further revealed a significant positive association between ROA, ROE with debt to asset ratio. Furthermore, findings show that there is no significant relationship between debt to equity, debt to asset and net interest margin.

Table 6: Additional results

	(1)	(2)	(3)
	ROA	ROE	NIM
Debt to Equity ratio	-1.400*** (-3.63)	-13.87*** (-4.61)	0.955 (1.25)
Debt to Asset ratio	37.82** (1.98)	514.9*** (3.45)	-44.78 (-1.19)
2011	-0.254 (-0.30)	-1.598 (-0.24)	0.914 (0.54)
2012	-0.265 (-0.31)	-2.867 (-0.43)	1.333 (0.79)
2013	0.0307 (0.03)	-3.117 (-0.45)	0.537 (0.30)
2014	0.0699 (0.08)	0.379 (0.06)	0.231 (0.13)
2015	-0.115 (-0.13)	-0.773 (-0.11)	0.107 (0.06)
2016	-1.080 (-1.33)	-8.288 (-1.30)	1.343 (0.84)
2017	-0.985 (-1.22)	-7.806 (-1.24)	0.689 (0.43)
2018	-0.556 (-0.68)	-3.930 (-0.62)	1.301 (0.81)
2019	-0.401 (-0.46)	-3.861 (-0.57)	1.395 (0.82)
Cons	-21.03 (-1.48)	-336.1*** (-3.04)	41.19 (1.47)
N	44	44	44

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6 is used to test the association between study variables taking yearly data as a moderating variable. Findings further showed that level of leverage as measured by debt to equity and debt to asset have a significant relationship with the financial performance of banks. Debt to equity has a negative relationship with financial performance while debt to asset has positive relationship. Taking into consideration the yearly effect, findings revealed an improvement in the association between variables. Results further revealed that there is no association between level of leverage and net interest margin.

4.0 Discussion of findings

The findings provided two important insights in the literature. Firstly, for large banks (Bank of Kigali and Equity bank), The results indicated that there is no significant relation relationship between debt to equity and the return on asset. This contradicts with the findings from the study conducted by Jamil et al. (2012) who observed an inverse significant relation between capital structure and bank performance. The findings further revealed that there is a positive and significant relationship between debt to equity and interest margin and the return on equity. This implies that there is a positive and significant relationship between capital structure and the return on equity and net interest margin. This conforms with the findings from the previous studies that observed a positive and significant relationship between capital structure and financial performance (see for example Prakash, Iqbal, Quadras & Nympha, 2017; Muhammad, Ammar & Muhammad, 2013; Serwadda, 2019; Ayunku, 2019). However, the findings contradict with studies conducted by Siddik, Kabiraj & Joghee (2016) and Mathewos (2016) who observed an inverse relationship between capital structure and financial performance of banks. Contrary to the findings in the large banks, findings in the small banks (I&M bank and Cogebaque) revealed that there is no significant relationship between capital structure and financial performance. Findings revealed also that there

is no significant relationship between debt to equity, return on equity, return on asset and the net interest margin.

5.CONCLUSION

This study sought to explore whether there is a relationship with the capital structure and financial performance in selected Rwandan commercial banks. To achieve that objective, capital structure was characterized by a leverage ratio particularly: debt to equity ratio often referred to as gearing ratio and Debt to Asset. Financial performance, on the other hand, was measured by three important ratios which are: Return on Equity, Return on Asset, and Net Interest Margin. The results showed an unstable up-and-down (fluctuation) movement in capital structure. This means that there was no targeted optimum debt to equity ratio (leverage ratio) that any banks aimed to reach –which is in slight contraction with static trade-off theory of capital structure. In Bank of Kigali and Equity bank, return to Equity and Debt to equity ratio were positively associated with a suggestion that the more levered these banks are the higher return to investors. This indicates that debt advantages such as: interest tax shields and agency cost reductions dominate advantages of using more Equity. On the contrary, there was a negative relationship between ROE and D/E ratio in BPR Atlas Mara. Finally, we noted that there is no relationship between Return on Asset, Net Interest Margin and Debt to Equity in all bank's ratio which is in slight contradiction with the Modigliani and Miller theory. These findings suggest that the specific context in which each bank operates matters when one want to understand their strategic orientations and these orientations are not necessary aligned on existing theoretical framework.

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