



Norwegian University
of Life Sciences

Master's Thesis 2017 30 ECTS
School of Economics and Business

Determinants of Bank Profitability: Panel Data Evidence from Six Commercial Banks in Zambia

Mulenga Chaile
Master of Science in Economics

Dedication

This thesis is dedicated to our children - Mazuba and Ngoza.

Acknowledgements

I am highly indebted to Jehovah God for the strength and grace throughout this study period. I would like to convey my gratitude to my supervisor - Professor Kyrre Rickertsen, for his timely guidance and support throughout the writing of this thesis. I am also indebted to my employer Finance Bank Zambia Limited for granting me study leave to pursue my studies. Special thanks also go to my husband Dr. Hambulo Ngoma for his unwavering support and patience. Last but not least, I would also like to thank my family and friends for their support.

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Abstract

Foreign commercial banks, which are subsidiaries of larger foreign banks, dominate the banking sector in Zambia. The liberalization of the banking sector in 1992 and improved regulatory frameworks following the 2007/2008 financial crisis have made banks to give much attention to profitability. However, no studies have explicitly investigated determinants of bank profitability in Zambia. This thesis contributes towards filling this gap.

In particular, the thesis applied a fixed effects regression model to analyze internal and external factors that affect bank profitability using quarterly panel data on six commercial banks over the period 2010 to 2015 in Zambia.

The empirical results indicate that liquidity risk, bank size and inflation positively affect bank profitability. For example, a 1% increase in liquidity risk increased bank profitability by 2.5%, while a 10% increase in total assets (bank size) raises bank profits by about 3.4%. A percentage point increase in the inflation rate increased profitability by about 1%.

These results imply that the banks under study give out more loans as compared to keeping large amounts of deposits. This gives banks more interest income, which translates into higher profits. In addition, larger banks are able to earn more profits as compared to smaller banks because of economies of scale and from offering a wider range of products. Inflation rate contributes to the profitability of commercial banks in Zambia in that when there is high inflation; interest rates also rise, consequently increasing bank profitability. (However, the effect of inflation is expected to be stronger in nominal terms).

Given, the main results, I recommend that bank managers and staff dealing with credit facilities prioritize giving out loans while also following the lending criteria and putting in stringent

measures to avoid defaults. Banks should also give attention to bank size and put in efforts to grow their loan book as it has a bearing on the profitability levels. With regards inflation, the government can also contribute to banks profitability by loosening monetary policy as this will reduce lending rates, ease access to finance and reduce non-performing loans.

1. Introduction

Zambia's banking sector is dominated by subsidiaries of large commercial foreign banks. Their dominance is reflected in the size of their total assets relative to other types of financial institutions as well as in their relatively wider role in financial intermediation (Bank of Zambia 2004). As of 2012, 19 commercial banks with approximately 280 branches were present in the country. There has been no entry of new banks since then, thus the number remained the same as of December 2014. Of the 19 banks, 8 are subsidiaries of foreign banks, 9 are locally owned and 1 is partly owned by the Zambian, Indian and the Netherlands governments respectively (FSR 2014).

Despite many years since the liberalization of the banking sector in 1992 and improvements in regulatory frameworks following the global financial crises like the 2007/2008 incidence have made banks to give much attention to profitability, no studies have explicitly investigated determinants of bank profitability in Zambia. Simpasa (2010) investigated the performance of commercial banks by looking at cost efficiency, competition and market power during the post-liberalization period. However, this study did not assess factors affecting bank profitability or address the key variables that may influence profitability. The objective of this thesis is to investigate factors affecting bank profitability in Zambia. Specifically, this thesis focuses on internal and external factors. The internal factors include capital adequacy, liquidity risk, credit risk, bank size, operational efficiency while the external factors are ownership and inflation. I examine these particular factors because they have been found to significantly affect bank profitability (Athanasoglou et al. 2006; Bennaceur & Goaid 2008; Dietrich & Wanzenried 2014; Pasiouras & Kosmidou 2007).

Due to limited empirical evidence on factors affecting bank profitability in Zambia, this study is designed to fill this research gap and contribute to a better understanding of the drivers of bank profitability in Zambia using a recent panel dataset. In addition, the study provides policy implications for stakeholders, policy makers and regulators of banks in Zambia.

The remainder of the thesis proceeds as follows. In Section 1, I look at the banking industry in Zambia. Thereafter, I give a literature review of factors that have been found to affect bank profitability in other countries before I develop my research objectives in more detail. In Section 2, the empirical model, variables and data are discussed. In Section 3, I estimate the model and discuss the results. Conclusions and recommendations, limitations and further study are given in Section 4.

1.1 Background on the Banking Industry in Zambia

This section gives a background on the banking industry in Zambia. A brief history is given followed by developments that occurred after the liberalization of the banking industry.

1.1.1 Zambian Banking Sector 1964 – 1991

After independence in 1964, the Zambian government adopted the import substitution industrialization strategy as a development strategy. As part of this strategy and as early as 1968-69, government announced its desire to nationalize financial institutions except foreign commercial banks which dominated the industry (Brownbridge 1996; Harvey 1973). Part of the reason why foreign banks were spared was because foreign banks threatened to remove their management staff from Zambia, a move the Zambian government feared would compromise the

industry. However, these foreign owned banks largely favored the expatriate community and foreign owned companies. In order to serve the interests of indigenous businesses and parastatal companies, the Zambian government established state banks in 1969 (Brownbridge 1996).

During the 1970s and 1980s, the Zambian government pursued a policy of low interest rates for long periods. This resulted in economic distortions in the financial sector such as the huge foreign debt, which was necessitated by low interest rates in an economy that depended on foreign savings. Since inflation rates were high, real interest rates remained negative for the larger part of this period leading to low domestic savings and thus, the financial sector remained generally underdeveloped (Mankolo & Kasonde 2008).

During the 1970s and 1980s when the economy was dominated by state ownership, regulations governing the operations of the banking system were outdated leading to delinquent lending practices (Simpasa 2010). The poor state of banking supervision and prudential regulatory framework was the main cause of undercapitalization of the banking sector. This saw the capital-to-assets ratio fall below the internationally recommended threshold. Worse still, interest rate controls meant that banks could not adequately make allowance for loan maturity or risk.

Between 1980 and 1990, the spread between deposit and lending rates averaged 5% and both rates were negative in real terms because of the high inflation rate. Accordingly, prudence was weakened and by the early 1980s, banks had amassed huge non-performing assets due to non-repayment of loans by state enterprises whose investments were in commercially unsuccessful ventures (Simpasa 2010).

Despite their good intentions, most of the government policies and programs failed to create the financial system government envisioned as the financial system remained small and undiversified. Government involvement in the financial sector coupled with deteriorating

macroeconomic conditions, resulted in an inefficient system. Only a few banks therefore entered the market between 1970 and 1990 as it was not profitable (Maimbo & Mavrotas 2003).

The regulatory authorities also imposed minimum nominal capital requirements for both domestic and foreign banks. However, these requirements did not have much impact because they were never revised even when inflation rates were high. Brownbridge (1996) argues that the reduction in real capital requirements affected the safety and soundness of the financial system.

1.1.2 Post-Liberalization Developments, 1992 to Present

Financial liberalization, which commenced in 1992, offered an opportunity for a revival of the Zambian banking industry. Cognizant of the fact that a well-functioning and competitive financial system is critical to the country's overall economic development, several major obstacles in the banking sector were eliminated. This made it possible for new private banks to enter the sector with ease. The resulting competition from many banks improved efficiency in the sector (Simpasa 2010).

Between 1991 and 1995, nine local private banks entered the banking sector as prospects for profitability increased. However, by the mid-1990s, it became more difficult to maintain the high levels of profitability because inflation began to decline and to maintain their profits, banks resorted to riskier banking activities which resulted in the closure of ten banks between 1995 and 2000 (Mankolo & Kasonde 2008).

The liberalization of the financial sector saw an increase in the number of local private (non-government owned) banks. For example, between 1992 and 1996, 12 new commercial banks entered the market and by mid-1996, the number of local banks operating in Zambia had

increased to 13 increasing the total number of banks to 26. The reason for this rapid increase in the number of banks between 1992 and 1996 was that the entry requirements such as real paid up capital were low (Simpasa 2010).

Local private banks received large amounts of deposits from businesses and individuals whereas lending was mainly to small-scale traders who were left out by foreign owned banks¹. Many banks were exposed to credit risk due to insider borrowing and this was worsened by the unstable macroeconomic environment characterized by high inflation above 30%. This resulted in severe liquidity problems for a number of banks due to an increase in non-performing loans and led to insolvency problems and closure of nine local banks between 1994-1998 (Simpasa 2010).

Despite the bad experiences that banks had, the liberalization of the financial sector brought about an increase in competition mainly because of the stable macroeconomic conditions experienced since 2002. Inflation continued declining from 18.7% in 2001 to 8.9% in 2007 thereby leading to a decrease in lending rates or interest rates on loans. Further, banks were able to compete for the customer deposits and credit that has low risk of default (Mankolo & Kasonde 2008).

The performance of the banking sector between 2006 and 2008 was sound compared to the 1980s and early 1990s when there were several bank failures. During the 2006-2008 period, the financial sector was more profitable with positive growth in total assets, high liquidity ratios and better asset quality (BOZ 2008). Non - performing loans to total gross loans and advances

¹ The local private banks, being aggressive in their marketing strategies, attracted more deposits than the large banks but did not offer as many loans because they concentrated on offering treasury bills. In percentage terms, treasury bills accounted for 28% of total assets as compared to the 15% from loans.

reduced from 11.3% in 2006 to 8.8% in 2007. Total assets also grew by 24.4% between 2007 and 2008 (BOZ 2009b). The increase in profitability was a result of an increase in interest income arising from loan activities and non-interest income earned from deposits and other banking activities (BOZ 2008).

The performance of the financial sector during 2006-2008 described above protected it from the direct impacts of the global financial crisis (Silumbe 2010). The World Bank echoed similar sentiments and claimed that Zambia's resilience in domestic funding and limited exposure to external credit lines shielded the banking industry from the adverse effects of the global financial crisis (The World Bank Group 2008). Therefore, the global financial crisis did not affect the Zambian financial sector immediately or directly. This was mainly due to the sector's limited integration into the international financial markets. Further, the financial sector had no exposure to credit products from abroad, which led to the credit crunch in most developed markets.

However, the subsequent global financial crisis, with the global economic recession that followed, adversely affected Zambia, like most economies (BoZ 2009). The global financial crisis had noticeable impacts on credit markets and this was first observed in the third quarter of 2008. The bank lending rate increased gradually during the first and second quarters and rapidly during the fourth quarter (Manenga et al. 2009). The financial crisis also led to volatility in the local currency against major currencies and the depreciation of the local currency. The number of non-performing loans also increased as a percentage of total assets in the banking sector from 6% in mid-2008 to 13.1% by September 2009 (Manenga et al. 2009), thus, negatively affecting banks profitability.

Commercial banks in Zambia continue to show resilience to the changing financial and macroeconomic environment. This is mainly attributed to their strong capital position. However, The International Monetary Fund (IMF) points out that the Zambian banking sector is concentrated with the top four banks' assets comprising 60% of total sector assets. Meanwhile, the loan-to-deposit ratio is around 65% and this confirms why the lack of bankable projects and borrowers is the main reason for limited credit delivery (IMF 2013). Statistics for other countries indicate a loan-to-deposit ratio of 58.1% for Malawi (Reserve Bank of Malawi 2013), Tanzania had 71.4% (Bank of Tanzania 2014) and Uganda had 42.5% (Bank of Uganda 2013).

The banking sector recorded improvements in the aggregate capital adequacy position, asset quality and liquidity position post the 2008 global financial crisis. The sector continued to expand also in terms of total assets and branch network (BoZ 2013). For example, capital adequacy ratios² increased from 21.3% in 2012 to 24.5% in 2013, and liquidity ratios increased from 44.4% to 49.3% over the same period. The ratio of total loans to non-performing loans also reduced from 8.1% in 2012 to 7.5% in 2013 (BoZ 2013). Compared to Zambia, the figures for other countries such as Malawi had capital ratios reduced from 16.3% to 16.2%, liquidity ratios increased from 45.4% to 58.1% and credit risk increased from 9.4 to 13.6. These changes are as a result of an increase in interest rates that saw a rise in non-performing loans (Reserve Bank of Malawi 2013). In Tanzania, we notice a similar trend to Zambia, the banking sector remained adequately capitalized with ratios increasing from 17.4% to 17.6% and the liquidity ratio increasing from 67.6% to 71.4%, while credit risk reduced from 7.4% to 6.5% (Bank of Tanzania 2014).

² Capital adequacy ratio is the ratio of equity to total assets and liquidity ratio is the ratio of loans to deposits.

However, since the later part of 2015, inflation has been increasing and has continued to be in double digits. As at June, 2016, the inflation rate was 21.3%. This inflation rate that has caused interest rates to increase from 20.5% in 2014 to 23.9% in 2015 and this resulted in some commercial banks to halting issuance of loans due to an increase in non-performing loan (Lisulo 2016).

1.1.3 Brief Overview of the Banks Included in the Sample

This thesis will focus on six commercial banks as shown in Table 1, which shows ownership types and status of the banks being analyzed-ownership type refers to whether the bank is foreign or locally owned while Status indicates if the bank is a private or state owned. These banks have been included out of the 19 banks operating in Zambia because of data availability. The included banks are Zambia National Commercial Bank (ZANACO), Standard Chartered Bank (Stanchart), Standard Bank (Stanbic); Barclays Bank Zambia limited (BBZ), Finance Bank Zambia Limited (FBZ) and Investrust Bank (INVT).

ZANACO is one of the largest banks in Zambia with 49% owned by Rabobank development, a subsidiary of Rabobank of the Netherlands while 51% is owned by the Zambian government. Therefore it is both state and privately owned, hence has mixed ownership. It is one of the top five largest banks in the country in terms of banking assets and has the largest customer base with more than 820,000 customers and the largest debit card base of over 750, 000. The bank has 124 branches and agencies spread across the country (The Business Year 2014).

Stanchart is a subsidiary of the Standard Chartered Bank Group headquartered in London. It is one of the largest commercial banks in Zambia and has been recognized as being the best bank in service excellence by Euromoney Awards for five years in a row since 2010. It employs about

700 employees and has 25 outlets, inclusive of agencies spread across the country. It has 47 Automated Teller Machines (ATMs), of which four are electronic banking centers (Standard Chartered Bank 2016).

Stanbic is a subsidiary of the South African based Standard Bank Group Limited. The bank has a network of over 13 branches in Zambia and is also one of the top banks in Zambia which was also voted for best bank in Zambia 2016 by Euromoney (Stanbic Bank Zambia).

BBZ is a subsidiary of Barclays Bank Plc, an international financial services conglomerate. It has a branch network of 70 offices comprising of full branches and sales centers. BBZ has the widest network of point of sale terminals, which facilitate debit and credit card transactions and employs over 1,200 people (Barclays Bank Zambia 2015).

FBZ is owned by a local private entrepreneur and has sold 40% of its stake to Credit Suisse Group. The bank employs around 800 staff with a branch network of 63 outlets. FBZ has a customer base of 150,000 which include both retail and corporate customers (Finance Bank Zambia Limited 2015).

INVT is the only indigenous bank listed on the Lusaka Stock Exchange. INVT is owned by a local private entrepreneur. It employs over 400 staff and has over 25 outlets, inclusive of branches and agencies around the country (Wikipedia 2013).

Table 1: Ownership Type of Banks under Study as at 31 December, 2014

Bank	Ownership Type	Status
Zambia National Commercial Bank (ZANACO)	Mixed ownership	Private and state
Standard Chartered Bank (Stanchart)	Subsidiary of foreign bank	Private
Standard Bank Zambia (Stanbic)	Subsidiary of foreign bank	Private
Barclays Bank Zambia (BBZ)	Subsidiary of foreign bank	Private

Finance Bank Zambia (FBZ)	Domestic bank	Private
Investrust Bank Zambia (INVT)	Domestic bank	Private

Note: Ownership type refers to whether the bank is foreign or locally owned while Status indicates if the bank is private or state owned.

The financial performance of the included banks according to some key variables is summarized in the Table 2, which also shows summary statistics for the main variables analyzed in this thesis.

In terms of market share Stanchart, Stanbic, ZANACO and FBZ are dominating in that order. In terms of asset and deposit size, these four banks: ZANACO, BBZ, Stanchart and Stanbic accounted for the largest market share for 58.2% and 66.4% of total assets and deposits respectively. Further, in terms of profit, the banks that had the largest market shares of the industry's total profit before tax were Stanchart K376.4³ million (US \$61.70m), Stanbic K275.1 million (US \$45.10m), ZANACO K259.4million (US \$42.52m) , FBZ K258.4 million (US \$42.36m) BBZ K222.4 million (US \$36.46m) , and IBZ K700,000 (US \$114,754) (BoZ 2014).

Table 2 does not outline equity market shares for each bank as this information was not accessible. However, total equity for each individual bank has been included in the appendix.

³ K refers to Zambian Kwacha and the amount in US Dollars is according to the 2014 exchange rate, which averaged at K6.10 to US \$1.

Table 2: Bank Market Shares and Performance Indicators as at 31 December 2014

Bank	Percentage of Assets	Percentage of Deposits	Percentage of Loans	Profit Before Tax (K'm)	Return on Assets (%) (pre-tax)	Regulatory Capital Ratio	Number of Branches	Income After Tax to assets (%)
ZANACO	13.6	14.4	16.9	259.4	2.9	20.5	66	0.205
Stanchart	13.7	14.8	14.9	376.4	5.0	18.7	21	0.317
Stanbic	14.2	14.2	16.3	275.1	4.4	23.5	22	0.114
BBZ	13.9	14.7	14.7	222.4	3.7	14.7	54	0.159
FBZ	6.7	7.1	6.7	258.4	-0.3	36.4	56	0.292
IBZ	3.2	4.0	2.8	0.7	0.5	12.0	23	-0.019

Source: Bank of Zambia Financial Systems Report, 2014.

Looking at the banking sector’s physical delivery channels, in terms of branch network, ZANACO, FBZ and BBZ accounted for the largest market share of the sector’s branch network at 66, 56 and 53 branches respectively as at year-end December, 2014 (BoZ 2014).

In terms of ownership, foreign banks continued to dominate the banking sector’s market share with regards to loans, assets and deposits. Comparing the distribution of after tax profit by ownership type shows that, foreign banks accounted for the largest profit , followed by banks partly owned by the government while local private banks continue to lag behind (BoZ 2014). See Table 3.

Table 3: Percentage Distribution of Assets, Net Loans and Deposits for the Banking Sector and Selected Commercial Banks in Zambia as at 31 December 2014

	2014			
Banking Sector	Assets	Loans	Deposits	PBT
Subsidiaries of foreign banks	65.8	66.5	64.6	69.2
Banks with government stake	18.6	18.5	19.1	18.2
Local private banks	15.7	15	16.3	12.6
Individual Banks				
ZANACO	22.1	21.1	21.6	14.5
Stanchart	21.6	19.7	22.2	26.3
Stanbic	22.3	24.4	21.3	25.7
BBZ	20.5	23.4	20.5	17.3
FBZ	8.9	7.1	9.2	15.2
IBZ	4.7	4.3	5.8	1.0

Notes: PBT denotes profit before corporate tax is factored in. Assets refer to credit facilities, loans and deposits include demand and time deposits.

Source: Bank of Zambia financial systems report, 2014 and individual banks’ balance sheets.

1.2 Literature Review

There is a large and diverse empirical literature dealing with bank profitability and several studies investigate determinants of bank performance in other countries than Zambia. For

example, Short (1979) and Bourke (1989) were among the first to empirically assess bank profitability. Empirical studies have shown that both internal and external factors affect bank profitability (Abbasoglu et al. 2007; Bennaceur & Goaid 2008; Kosmidou 2008). Several variables have been used to assess bank profitability as shown in Table 4. These measures include *ROA*, which is the ratio of income after tax to total assets. *CAPR* is measured as equity to total assets and *CREDR* is the ratio of gross loans to loan provisions. *LIQR* is defined as loans to deposits ratio, *LNTA* is log of total assets which measures bank size, *COST* measures the operational cost, *OWN* measures the ownership of banks and *INFL* is the inflation rate.

ROA depends on the bank's policy decisions as well as uncontrollable factors related to the economy and government regulations. Many regulators believe *ROA* is the best measure of bank profitability (Hassan & Bashir 2003). Further, Rivard and Thomas (1997) suggest that bank profitability is best measured by *ROA* since it is a better representation of how a firm is able to generate returns on its portfolio of assets when compared to Return on Equity (*ROE*). Curak et al. (2012) add that *ROA* incorporates the broadest aspect of the banking business as it shows how bank management is able to generate profits from the available bank asset. This point is reiterated by Badreldin (2009) who states that *ROA* shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments. Therefore, *ROA* is a preferred measure by most analysts (Rosly & Abu Bakar 2003). For these reasons, I choose to use *ROA* as the dependent variable of my analysis.

Profitability can be explained by internal and external factors. Internal factors include capital adequacy, credit risk, liquidity risk, bank size, operational costs while external factors include

bank ownership and inflation. Table 5 summarizes the effects of these factors on profitability found in previous studies.

Capital Adequacy

A sufficient amount of capital given by ratio of equity to total asset allows banks to absorb shocks. When more capital serves as a safety cushion, it implies that a bank may have lower risk of becoming insolvent. In addition, credit-worthiness of better capitalized and safer banks encourage the confidence of depositors. An increase in the number of depositors decreases the need for external financing, lowers interest expenses and thereby increases profits. This is reiterated by Molyneux and Thornton (1992) , who state that higher levels of equity would decrease the cost of capital due to higher levels of liquidity, meaning that since there will be a lower need for external funding, interest expenses will be low and this will lead to higher profits. Bennaceur and Goaid (2008) examined the impact of capitalization, bank ownership, liquidity and credit risk, market concentration and inflation on Net-Interest Margin (NIM) and profitability during the period 1980–2000 in Tunisia. Using a balanced panel data of banks, their findings suggest that banks with a high equity to asset ratio usually, exhibit higher net interest margins and profitability levels but bank size negatively affected profitability. They also found that private banks perform better than state owned banks and that bank loans greatly contribute to profitability. However, bank concentration and economic growth had insignificant effects on bank profitability. Moreover, according to Sufian (2009b), who examined banks in China using balanced panel data , banks with higher levels of capitalization tend to have higher profits. Therefore, as suggested in Curak et al. (2012), higher equity to asset ratio (lower risk) would have a positive relationship with profitability. Apart from this, there are a number of reasons to believe that a better capitalized bank should be more profitable. Athanasoglou et al. (2006) state

that this positive impact can be the result of capital acting as a safety net in the case of financial instability. This relationship would help a bank to finance its assets at more favorable interest rates, increasing expected profitability and offsetting the cost of equity. Based on these results, we expect a positive effect of capital adequacy on bank profitability as indicated in Table 5, which shows the expected signs of all the variables discussed in this thesis.

It is particularly important to assess whether or not capital adequacy contributes to banks' profitability in Zambia, more so, considering that in 2013, the Central Bank of Zambia increased the minimum nominal primary capital from 12 million to K104 million and K520 million for locally and foreign owned banks respectively, this adjustment led to an increase in total regulatory capital by 17.9%. The aim of this framework was to minimize solvency risk and increase lending to the private sector (BoZ 2014). In other countries like Malawi and Tanzania, the regulatory capital is at 10% (Bank of Tanzania 2014).

Credit risk

Using a dynamic panel dataset of Spanish banks over the period 1999-2009, Ponce (2013) found that a low ratio of unpaid loans to total loans had a positive effect on bank profitability but poor credit quality reduced bank profitability. This is because an increase in doubtful assets, which do not accrue income, requires a bank to allocate a significant portion of its gross margin to provisions to cover expected credit losses. Therefore, the effect of credit risk on profitability is negative as reported by (Miller & Noulas 1997), who examined banks in the US using cross-section and time-series data. This result can be explained by taking into account the fact that the more financial institutions are exposed to high risk loans, the higher the number of unpaid loans.

This implies that the unpaid loans tend to lower the returns and consequently lower profits for many commercial banks.

In the same light, Athanasoglou et al. (2006), Demirgüç-Kunt and Huizinga (1999) and Kosmidou (2008) suggest that a higher ratio of loan loss provisions to total loans are expected to negatively influence profitability because they indicate higher risk and a higher probability of non-performing loans. However, it is worth noting that the ratio of bank loans to total assets can also be used as an indicator of credit risk (Kundid et al. 2011). According to the risk-return hypothesis, which states that potential return rises with an increase in risk, higher loan to asset ratio therefore means higher credit risk exposure, which needs to be compensated through higher returns and improved overall profitability. However, a negative relation is possible since a higher loan to asset ratio can also indicate a higher credit risk due to an increasing number of potentially default borrowers (unpaid loans) which can ultimately decrease profitability. In addition, this also means that reductions in interest income because of non-performing loans may deplete bank profits. Thus, the risks outweigh the returns because as more loans are given out, high rates of default loans are expected. Furthermore, Sufian (2009b) using a panel data set of Malaysian banks found that banks with higher credit risk tend to exhibit lower profitability levels. Based on the results of these studies, we expect a negative relationship between credit risk and bank profitability as indicated in Table 4.

During the sample period of this study interest rates on loans have been stable, while during the last part of 2015 there was an increase in interest rates due to high inflation (Lisulo 2016). This increase meant that banks had to allocate more contingency funds as loan loss provisions because of the increase in risk of defaulters.

Liquidity risk

Another decision made by managers of commercial banks is their management of liquidity risk and specifically the process of managing assets and cash flow to maintain the ability to meet current liabilities as they come due. Without the required liquidity and funding to meet its obligations, a bank may quickly fail, or at least be technically insolvent. The exposure to liquidity risk is usually measured as ratio of loans to deposits (Kosmidou 2008). This ratio shows the relationship between loans, which are non-liquid, and deposits and other short term funding. Liquidity risk reflects the possible inability of banks to meet its obligations which can eventually lead to insolvency of a bank. In order to reduce the insolvency problems, banks hold higher amounts of liquid assets (lower loan to deposit ratio) which can be easily converted to cash. However, liquid assets usually have lower rates of return. Hence, higher liquidity (lower loan to deposit ratio) would imply lower profitability. In other words, since the loan to deposit ratio is actually an inverse proxy for the liquidity, the higher the ratio, the higher is the bank profitability. Therefore, the lower the value of this ratio, the more liquid the bank is. Since liquid assets are associated with lower rates of return, a positive relationship is expected between this variable and profitability (Pasiouras & Kosmidou 2007).

Bank size

Bank size is often considered an important determinant of its profitability. Most studies (e.g., (Athanasoglou et al. 2006; Demirgüç-Kunt & Huizinga 1999) indicate that total assets of the bank is used as a proxy for bank size although total assets may not be an ideal measure of bank size especially for large banks. Using this measure of bank size, a study by Goddard et al. (2004) conducted in five major European Union countries using dynamic panel and cross sectional analysis found this relationship to be statistically insignificant.

Bennaceur and Goaid (2008) found a negative relationship between bank size and profitability in Tunisia while Athanasoglou et al. (2006) found that larger Greek banks are more able to take advantage of economies of scale through large volumes of transactions which ultimately result in higher profits. Consequently, a positive relationship is expected between the bank size and its profitability (Kosmidou 2008). However, results from different studies are mixed and not straightforward. A study done in South Eastern European countries (SEE) using a pooled data set of banks, shows that a negative bank size-profitability relationship is explained by diseconomies of scale which are present in larger banks especially after the periods of accelerated growth (Kořak & Āok 2008).

However, Pasiouras and Kosmidou (2007) found a positive and significant relationship between the size and the profitability of banks in the 15 European Union countries that were examined using a balanced panel data set. This is explained by the reasoning that larger banks are most likely to have a higher degree of product and loan diversification and also because they benefit from economies of scale. On the other hand, Micco et al. (2007) find no significant correlation between the relative bank size and the Return on Average Assets (ROAA) for banks studied in developing and industrialized countries. Given the above, positive relationship is expected between bank size and its profitability.

Operational Efficiency

This is used to measure the impact of efficiency in expenses management on banks performance.

It is usually measured using the

cost -to- income ratio. This ratio shows the costs of running a bank, the major element of which is staff salaries and benefits. The income in this case is the total income which encompasses both interest and non-interest income. This differs from profit which is total revenue generated less expenses. The cost-to-income ratio is expected to have a negative relationship with bank's profitability (Pasiouras & Kosmidou 2007). Operational expenses are also a very important determinant of profitability because they are closely related to efficiency management. For example, Molyneux and Thornton (1992), who used a pooled data set of 18 European countries, found a positive relationship between better-quality management and profitability. Therefore, the cost-to-income ratio is used to provide information on variation of bank costs over the banking system. Although the relationship between expenditure and profits appears straightforward implying that higher expenses mean lower profits and the opposite, this may not always be the case. The reason is that higher amounts of expenses may be associated with higher volume of banking activities and therefore higher revenues. It is for this reason that this thesis will use the cost-to-income ratio to measure efficiency in expenses management and expect a negative impact of this variable on bank profitability because efficient banks are expected to operate at lower costs (Kosmidou 2008).

The six banks being analyzed in this thesis are the biggest banks in Zambia with an average of staff of over 700. Since a larger part of operational efficiency is staff salaries, it is important to assess how this cost is affecting profitability of the banks under study.

Ownership Structure

Studies have been done to assess whether a bank having foreign or domestic ownership contributes to its profitability. Claessens et al. (2001) using pooled bank level data across 80 countries during the period 1988-1995 found that foreign banks did not perform as well as domestic banks in developed countries but performed better in less developed countries. while DeYoung and Nolle (1996) using a panel data set find that foreign-owned banks are not as profitable as domestically owned banks in the US. Using the Data Envelope Analysis (DEA) efficiency scores to investigate efficiency on a pooled data set of Australian banks, Sathye (2001) found foreign banks to be less efficient than domestic ones. Moreover, Kosmidou et al. (2004) using panel data of banks in United Kingdom found that domestic banks exhibit higher overall performance compared to foreign banks. Pasiouras and Kosmidou (2007) used a balanced panel data set to examine the performance of domestic and foreign commercial banks in 15 EU countries during the period 1995-2001. They found that the profitability of both domestic and foreign banks is affected not only by a bank's specific characteristics, but also by financial market structure and macroeconomic conditions. Their results suggest that bank size, cost-to-income ratio, capital adequacy, inflation and GDP all have significant relationships with bank profitability, although the impacts and relations are not always uniform for domestic and foreign banks.

Another study by Fries and Taci (2005) examined the cost efficiency using panel data of banks in 15 post-communist countries and found that privatized banks with majority foreign ownership are the most cost efficient while domestic banks were least cost efficient. Both foreign and domestic banks were more efficient than state-owned banks. Micco et al. (2007) assessed the relationship between bank ownership and bank performance for 179 countries using bank level

data, the findings were that state owned banks located in developing countries are less profitable than their private counterparts, thus they tend to have lower profitability and higher overhead costs than their private counterparts and that the opposite is true for foreign owned banks. Similarly, Bennaceur and Goaid (2008) examined among other factors the impact of foreign ownership on net-interest margin and profitability during the period 1980 - 2000 in Tunisia using a balanced panel data set of banks and found that foreign banks realize higher interest margins and profitability than domestic banks in developing countries. One reason for this result is that foreign banks have a strong technological edge in developing countries as opposed to industrial countries. Hence, the effect of ownership structure on bank profitability depends on whether a bank is operating in a developed or developing country.

As alluded to earlier, of the 19 commercial banks operating in Zambia, about half of them are foreign owned. Therefore it will be important to analyze whether ownership type affects a bank's profitability.

Inflation Rate

This thesis follows (Athanasoglou et al. 2006; Pasiouras & Kosmidou 2007; Pervan et al. 2015; Ponce 2013), among others that found inflation to be an important determinant of bank profitability. Bourke (1989) notes that the effect of inflation on bank profitability depends on whether banks' wages and other operating expenses increase at a faster rate than inflation. Thus, the relationship between inflation and banks performance depends on whether the inflation is anticipated or unanticipated (Perry 1992). In the first case when the inflation is anticipated, banks can timely adjust interest rates, which consequently results in revenues that increase faster than costs, with a positive impact on profitability. In the same line, Bennaceur and Goaid (2008)

explain that higher inflation leads to higher costs and more transactions, adding that the positive relationship between inflation and bank profitability suggests that bank profitability increases more than bank costs. It also indicates that high interest rates lead to high interest margins and profitability especially in developing countries. In the second case where the inflation rate is unanticipated, banks may be slow in adjusting their interest rates resulting in a faster increase of bank costs than bank revenues. As Staikouras and Wood (2003) state, inflation may have direct effects such as a rise in the price of labor and indirect effects which may bring about changes in interest rates, as well as increase in unpaid loans in cases when it is unanticipated and this will consequently affect profitability of banks. Thus, unanticipated inflation has a negative impact on bank profitability (Pasiouras & Kosmidou 2007). I include this variable in my thesis because the inflation rate has been stable in Zambia until the last quarter of 2015 when it rose sharply from 7.7% to 14.3% and has continued to increase in double digits. Therefore, it is very important that I assess to what extent inflation affects profitability of banks in Zambia.

Some studies have examined the effects of other variables on bank profitability that have not been included in this thesis. Some of these factors are market power, bank concentration and GDP growth. Short (1979) studied banking concentration in Canada, Western Europe and Japan and found that market power led to significantly high bank profits. While Bourke (1989) in a study of performance of banks in twelve countries in Europe, North America and Australia found that the best performing banks were those with a high degree of market power because they are better able to avoid risks associated with bankruptcy. Results from Pervan et al. (2015) show that concentration, market growth, GDP growth all had significant effects on profitability.

This thesis did not include some variables mainly because of challenges in accessing this information.

Table 4: Variables used in the Regression and the Expected Signs

Variable	Definition	Expected Sign
<i>ROA</i>	Ratio of after tax income to total assets	
<i>CAPR</i>	Ratio of equity to total assets	+
<i>LIQR</i>	Ratio of loans to deposits	+
<i>CREDR</i>	Ratio of non-performing loans provisions to total loans	-
<i>LNTA</i>	Natural logarithm of total assets	+
<i>COST</i>	Ratio of operational costs to total generated income	-
<i>OWN</i>	Dummy variable = 1 if foreign owned, = 0 for locally owned	?
<i>INFL</i>	Consumer Price Indices expressed on a quarterly basis	?

Table 5 shows a summary of the studies discussed in the literature review and their findings. The symbol + indicates that there was a positive relationship between the profitability measure and the variable, while – indicates a negative relationship while 0 means that there was no relationship between the profitability measure and the variable.

Table 5: Summary of Studies Discussed in the Literature Review

Author(s)	Region	Data type	Profitability measure							
				<i>CAPR</i>	<i>CREDR</i>	<i>LIQR</i>	<i>LNTA</i>	<i>COST</i>	<i>OWN</i>	<i>INFL</i>
Miller and Noulas (1997)	United States of America	Cross section and pooled time series	<i>ROA</i>		-	+	-	+		
Kosmidou, Pasiouras and Zopounidis (2004)	United Kingdom	Panel data set	<i>ROA, ROE</i>			0				
Alper Deger and Adem Anbar (2011)	Turkey	Panel data set	<i>ROA, ROE</i>	0	-	-	+			0
Ponce (2013)	Spain	Dynamic panel data set	<i>ROA, ROE</i>				0	-		
Balachandher , Guru, Staunton and Shanmugan (2002)	Malaysia	Pooled cross section time series	<i>ROA</i>			0	0			
Sufian (2009)	China	Dynamic panel data set	<i>ROA</i>	+	+	-	+	-		+
Kundid , Škrabić and Ercegovac(2011)	Croatia	Dynamic panel data set	<i>ROA</i>		0	+	-			+
Pervan, Pelivan & Arnerić (2015)	Croatia	Dynamic panel data set	<i>ROA</i>		-	+	+	+		-
Molyneux and Thornton (1992)	18 European countries	Pooled dataset	<i>NPBT, NPAT as a % of capital and reserves</i>			-		+		-
Athanasoglou and Manthos and Staikouras (2006)	Southern Eastern European region	Unbalanced panel dataset	<i>ROA, ROE</i>	+	-	0	+	-		

Pasiouras and Kosmidou (2007)	15 European Union countries	Balanced panel dataset	<i>ROAA</i>	+		+/-	-	+	+/-
Košak and Čok (2008)	South-Eastern European countries.	Pooled panel dataset	<i>ROAA, ROAE, NIM and PBT over total assets</i>	+	-	0	+	-	
Sufian (2012)	South Asian Countries	Panel dataset	<i>ROA</i>		+		+	+	-
Căpraru and Ilnatov (2014)	Central and Eastern European Countries	Time series data	<i>ROA, ROE, NIM</i>	+	-	0	-	-	+
Demirgiic,-Kunt and Harry Huizinga (1999)	80 Industrialized and developing countries	Bank level data	<i>ROA, NIM</i>	+			+	+	+
Dietrich and Wanzenried (2014)	118 Low, middle and high-income countries	Dynamic panel data	<i>ROAA,ROAE, NIM</i>	+	-		0	-	+

Notes: *ROA* is return on assets, *ROE* is return on equity, *ROAA* is return on average assets, *ROAE* is return on average equity, *NIM* is net interest margin, *PBT* is profit before tax, *NPBT* is net profit before tax and *NPAT* is net profit after tax. *CAPR* is capital adequacy ratio, *CREDR* is credit risk, *LNTA* is log of total assets, *COST* is operational cost, *OWN* is ownership type and *INFL* is inflation rate.

1.3. Research Objectives

I follow (Athanasoglou et al. 2012; Bennaceur & Goaid 2008; Dietrich & Wanzenried 2014) among others and focus on internal and external factors. Internal factors are those, which are influenced by bank policy or management decisions while external factors include the economic environment in which banks operate. Therefore, the objectives of this thesis is to address addresses two main research questions: To what extent do internal factors such as capital adequacy, liquidity and credit risks explain discrepancies in bank profitability? Does the inflation rate affect bank profitability?

2 Data, Empirical Model and Variables

This section presents the data used in this thesis; the model used to analyze this data and outlines and defines the variables used in the analysis.

2.1 Data

This thesis used data compiled from quarterly financial statements for six commercial banks for the period 2010 – 2015 in Zambia⁴. These data were obtained from the Central Bank of Zambia (Bank of Zambia 2015). The macroeconomic variable - inflation rate was compiled from the monthly consumer price indices from Central Statistical Office in Zambia and economic bulletins from the Bank of Zambia (Central Statistical Office Zambia 2015). More details are given in subsection 1.1.3 and in Table 1.

⁴ The data set used in this thesis is in real values; therefore the effect on profitability is also in real terms.

Table 6: Summary Statistics of Variables used in the Regression Analysis of Factors Affecting Bank Profitability in Zambia

Variable		Mean	Standard Deviation	Minimum	Maximum	Observations
<i>CAPR</i>	Overall	0.095	0.036	0.018	0.238	N = 144
	Between		0.020	0.064	0.123	n = 6
	Within		0.031	-0.010	0.210	T = 24
<i>CREDR</i>	Overall	0.098	0.094	0.014	0.530	N = 144
	Between		0.068	0.028	0.223	n = 6
	Within		0.071	-0.095	0.405	T = 24
<i>LIQR</i>	Overall	0.587	0.122	0.260	0.969	N = 144
	Between		0.065	0.510	0.656	n = 6
	Within		0.106	0.337	0.971	T = 24
<i>COST</i>	Overall	0.778	0.436	-0.671	3.617	N = 144
	Between		0.129	0.568	0.915	n = 6
	Within		0.419	-0.806	3.479	T = 24
<i>LNTA</i>	Overall	15.030	0.731	13.221	16.203	N = 144
	Between		0.709	13.860	15.488	n = 6
	Within		0.334	14.316	15.791	T = 24
<i>OWN</i>	Overall	0.500	0.502	0.000	1.000	N = 144
	Between		0.548	0.000	1.000	n = 6
	Within		0.000	0.500	0.500	T = 24
<i>INFL</i>	Overall	8.079	2.309	6.300	18.300	N = 144
	Between		0.000	8.079	8.079	n = 6
	Within		2.309	6.300	18.300	T = 24

Note: N is the total number of observations for each variable, n is the number of banks; T refers to the number of quarters. The variable *CAPR* is the capital adequacy ratio, *CREDR* is credit risk ratio, *LIQR* is liquidity risk, *COST* is operational cost ratio *LNTA* is the log of total assets, *OWN* is the ownership type and *INFL* is the inflation rate.

Table 6 shows the summary statistics of all the variables used in the analysis. As observed from the statistics, there are 144 observations drawn from six banks over 24 quarters between the years 2010 and 2015. The minimum *CAPR* was 0.02 with a maximum of 0.24, on average the *CREDR* was 0.10 with a maximum ratio of 0.53 while *LIQR* and *COST* had maximum ratios of 0.97 and 0.92 respectively. The average *INFL* was 8% with a maximum of 18.3%. The overall standard deviation for all variables was higher than the between and within measures.

Figure 1 compares the average total assets, deposits, equity and income after tax across the banks. Foreign owned banks, i.e., Standard Chartered Bank, Standard Bank and Barclays Bank had the top-three largest total assets and deposits. The Zambia National Commercial Bank had the highest total equity and the second highest income after tax. Finance Bank and Investrust Bank had the lowest total assets, deposits, equity and income after taxes. This comparison does not tell the whole story because it was based on gross values. To gain better insights on bank performance, I also compared capital, credit risk, liquidity risk and operating capital ratios in Figure 2. (See Table 4 for variable descriptions).

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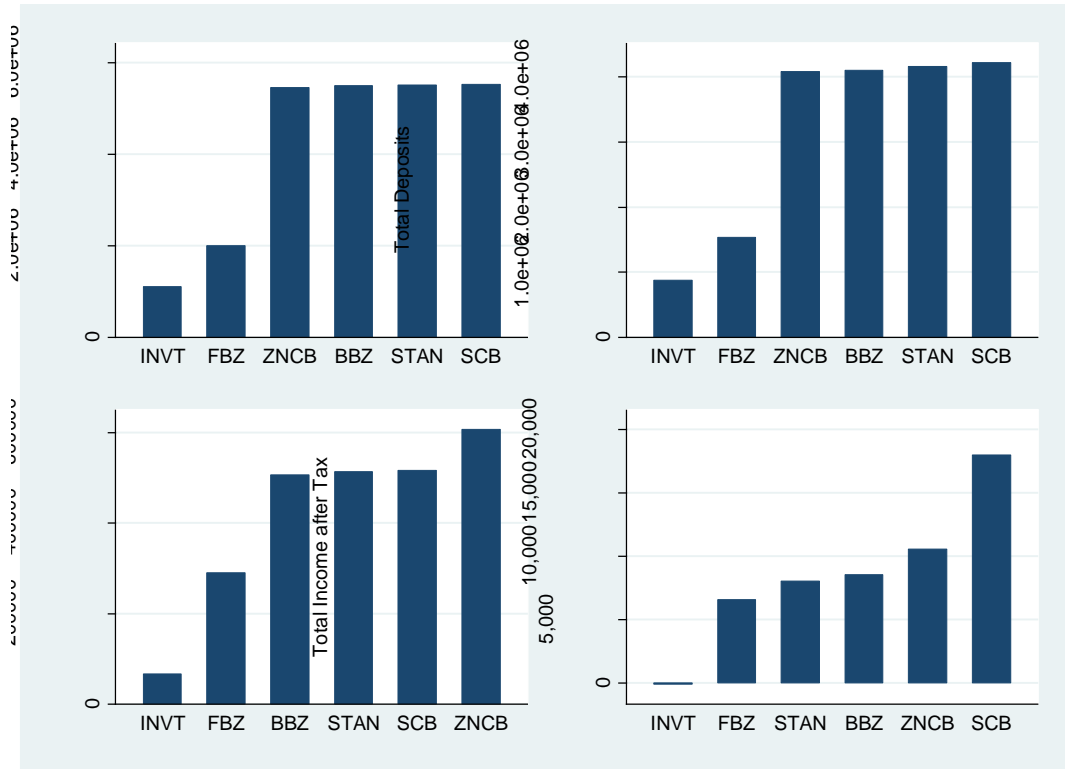


Figure 1: Total Assets, Deposits, Equity and Income after Tax across the Banks

Notes: INVT is Investrust Bank, FBZ is Finance Bank, ZNCB is Zambia National Commercial Bank, BBZ is Barclays Bank Zambia, STAN is Stanbic Bank, and SCB is Standard Chartered Bank.

Consistent with Figure 1, Figure 2 shows that banks with lower total assets, deposits, equity and income after tax performed poorly over the study period. For example, even if Finance Bank had the highest capital ratio, it had the highest credit risk and operating cost ratios and the lowest liquidity ratio. This means that compared to other banks, Finance Bank had higher non-performing loans and operating costs relative to total loans and total income, respectively, and fewer loans relative to deposits.

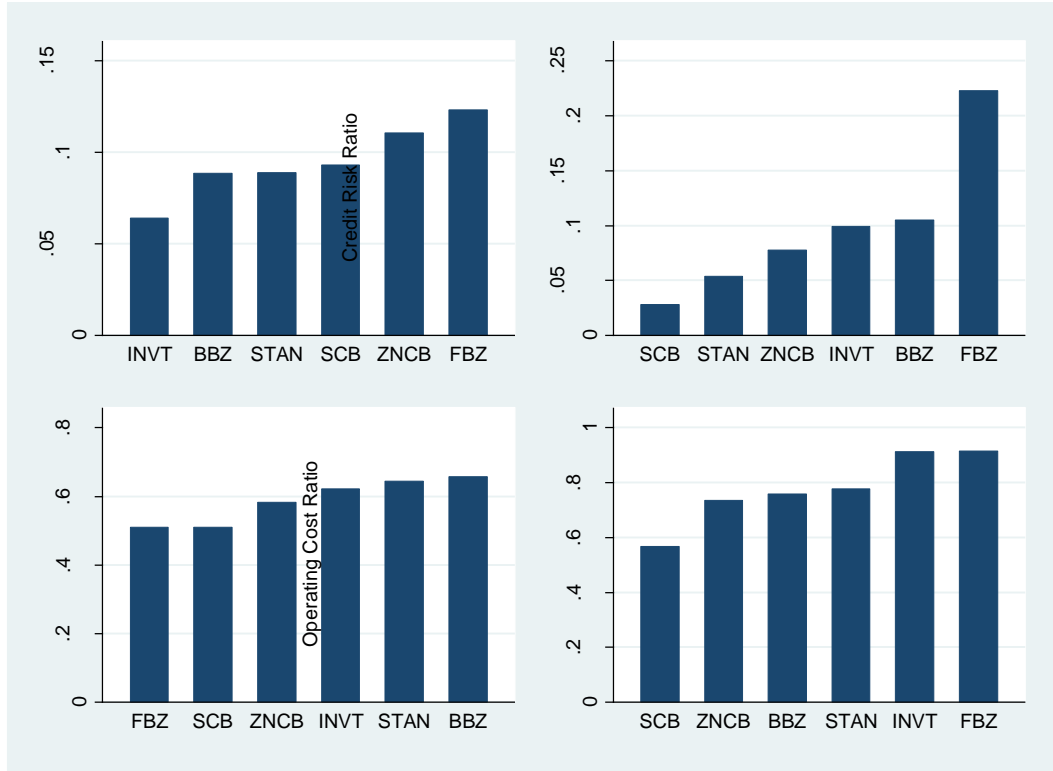


Figure 2: Capital Ratio, Credit Risk Ratio, Liquidity Ratio and Operating Cost Ratio across the Banks Included in the Study

Note: INVT is Investrust Bank, FBZ is Finance Bank, ZNCB is Zambia National Commercial Bank, BBZ is Barclays Bank Zambia, STAN is Stanbic Bank, and SCB is Standard Chartered Bank.

2.2 Empirical Model

The final estimation included square terms for all continuous terms to capture the non-linear effects. I chose this specification following (Athanasoglou et al. 2006; Kosmidou 2008; Sufian 2009a), who used similar specifications to examine the effects of internal and external factors on bank profitability.

Based on the literature reviewed in Section 1.2, I estimated the following empirical model:

$$\begin{aligned}
 ROA_{it} = & \beta_0 + \beta_1 CAPR_{it} + \beta_2 CREDR_{it} + \beta_3 LIQR_{it} + \beta_4 LNTA_{it} + \beta_5 COST_{it} \\
 & + \beta_6 OWN_{it} + \beta_7 INFL_{it} + \beta_8 CAPR2_{it} + \beta_9 CREDR2_{it} + \beta_{10} LIQR2_{it} + \beta_{11} LNTA2_{it} + \beta_{12} COST2_{it} \\
 & + \beta_{13} INFL2_{it} + u_{it}
 \end{aligned}
 \tag{1}$$

where subscripts i and t refers to an individual bank and time period, respectively, ROA is return on assets, $CAPR$ is capital adequacy, $CREDR$ is credit risk, $LIQR$ is liquidity risk, $LNTA$ is bank size, $COST$ is operational efficiency, OWN is ownership structure, $INFL$ is inflation rate. The composite error term $u_{it} = c_i + v_{it}$, where c_i measures bank specific time invariant factors that could affect profitability, e.g., staff and management motivation, and v_{it} is an idiosyncratic error term assumed to be normally distributed with mean zero and constant variance $v_{it} \sim N(0, \sigma^2)$. All variables ending with '2' are square terms for continuous variables. The variables in equation (1) are discussed in more detail in the next section and are summarized in Table 6.

I also compared this specification to one without square terms. Using Akaike's information criterion (AIC), the model with square terms had a lower AIC than the model without square terms (-1273 versus 1262). Thus, the model with square terms had a better fit to my data.

Equation (1) was estimated through a fixed effects panel data model. I used a fixed effects model rather than a random effects model because: "fixed effects allows for arbitrary correlation between the unobserved effect (c_i) and the explanatory variables in any time period and it is almost always much more convincing than random effects for policy analysis" (Wooldridge 2009p.493). This was confirmed using the Durbin-Wu-Hausman test as following Wooldridge (2009). The test results rejected random effects in favor of fixed effects.⁵

⁵ The Hausman test compares two estimates where one is consistent under both the null and alternative hypotheses, while the other is only consistent under the null only. In this case, this tests whether the more consistent estimates from fixed effects (FE) are different from the more efficient random effects (RE) model. The null states that the difference between FE and RE estimates is not systematic implying that RE is consistent. Results suggest a chi square value of 8.8 and a p -value of 0.0664. A significant test result leads to the rejection of the null and a conclusion that FE is favored over RE for my data.

2.3 Variables in the Model

The variables used in equation (1) are summarized in Table 4 expected signs are also included.

Following Abbasoglu et al. (2007), Bennaceur and Goaid (2008), and Kosmidou (2008) among others, my dependent variable is *ROA* measured as a ratio of profit after tax to total assets.

Capital adequacy (*CAPR*) is measured as a ratio of equity to total assets. Capital refers to the amount of own funds available to support a bank's business and, therefore, bank capital acts as a safety net in cases of adverse developments. Therefore, as suggested in Curak et al. (2012), higher equity to asset ratio (lower risk) would have a positive relationship with profitability.

Credit risk (*CREDR*) is measured by the loan-loss provisions to total loans ratio. Liquidity risk (*LIQR*) is measured as the ratio of total loans to deposits.

Bank size (*LNTA*) is measured as the natural logarithm of total assets following (Athanasoglou et al. 2006; Naceur 2003). Since the dependent variable *ROA*, is deflated by total assets, it is appropriate to log total assets before including it in the model to capture the non-linear relationship (Guru et al. 2002).

Operational efficiency (*COST*) is measured as the ratio of operating costs (salaries, administrative costs and property costs) to total generated revenue. Only operating costs can be viewed as the outcome of bank management. The ratio of these costs to total assets is expected to be negatively related to profitability because efficient banks are expected to operate at lower costs (Kosmidou 2008).

Ownership structure (*OWN*) is measured by a dummy variable, which is set to 1 if the bank is foreign owned and zero otherwise (Bennaceur & Goaid 2008; Micco et al. 2007). I defined a bank to be foreign owned when foreigners owned more than 50% of its share capital.

Inflation rate (*INFL*) is measured by the percentage change in the consumer price index on a quarterly basis.

3 Results and Discussions

Empirical results from equation (1) are presented in this section. Thereafter, a discussion of the findings is given followed by a conclusion, recommendation and further study.

I used the Hausman test to select between the fixed effects (FE) and random effects (RE) models.

The test statistics was $\chi^2(4)$ of 8.80 with an associated and a p -value = 0.06, which suggest the FE was favored to RE.

To determine the final specification, I compared the AIC values between a FE model including squared terms of the continuous variables and another model without the squared terms. The former was selected because it had lower AIC values (-1273 versus 1262). The standard errors were clustered⁶ at bank level (using the bank identity variable) to account for inter-bank differences and to obtain White's standard errors, robust to heteroscedasticity.

Table 7 present the main FE results.⁷ Column 1 presents the coefficient estimates, column 2 the robust standard errors and the associated t -statistics are reported in column 3.

⁶ Clustered errors arise when errors are correlated within clusters and are uncorrelated across clusters. For this study, and as is the case for most panel data, there is reason to expect that observations for a particular bank will be likely correlated over time, even if different uncorrelated across banks. Clustering produces White's Heteroscedasticity-robust standard errors.

⁷ Table 8 (attached to the appendix) compares the FE estimates to RE and pooled OLS.

Table 7: Fixed Effects Estimation Results of Factors Influencing Bank Profitability in Zambia

Variable Name	Variable	Coefficient	SE	T-stat
Capital Ratio	<i>CAPR</i>	0.041	0.072	0.574
Credit Risk	<i>CREDR</i>	0.000	0.010	0.031
Liquidity Risk	<i>LIQR</i>	0.026*	0.012	2.223
Log of Total Assets	<i>LNTA</i>	0.034*	0.016	2.147
Operational Efficiency	<i>COST</i>	0.003	0.007	0.386
Inflation	<i>INFL</i>	0.001*	0.001	2.252
Square of Capital Ratio	<i>CAPR2</i>	-0.110	0.270	-0.408
Square of Credit Risk	<i>CREDR2</i>	0.016	0.023	0.682
Square of Liquidity Risk	<i>LIQR2</i>	-0.019	0.010	-1.997
Square of Operational Cost	<i>COST2</i>	-0.002	0.002	-1.022
Square of Log of Total Assets	<i>LNTA2</i>	-0.001*	0.001	-2.045
Square of Inflation	<i>INFL2</i>	-0.000*	0.000	-2.537
Constant		-0.278*	0.120	-2.324
Observations		144		
R-squared		0.331		
Number of banks		6		

Notes: The dummy OWN was dropped during estimation; SE refers to robust standard errors; T-stat is the student T-statistic; * imply statistically significant at 10 % confidence level.

Results shown in Table 7 indicate that liquidity risk, log of total assets and inflation rate significantly affected bank profitability. These results are statistically significant at the 10% confidence level and they have the expected signs. The results are significant only at the 10% level that is why I choose to use it than the typical 5% level.

Liquidity risk was found to positively affect bank profitability, indicating that a 1% increase in liquidity risk increased bank profitability by 2.5%. Bank size as measured by *LNTA* also has the expected sign, which indicates that there is a positive relationship between bank profitability and its size. This means that a 10% increase in total assets raises bank profit by about 3.4%. Inflation was also found to positively affect bank profitability, indicating that as inflation increases by a percentage point, profitability increases by 1%. The coefficient of determination (R-squared) has

a value of 0.33, indicating that about 33% of the variation in *ROA* can be explained by the variables being analyzed.

Although statistically insignificant, capital adequacy ratio (*CAPR*) had the expected positive effect on bank profitability. This is in line with (Bennaceur & Goaid 2008; Molyneux & Thornton 1992; Sufian 2009b), who found that having a higher capital ratio cushions banks in times of financial distress and contributes to bank profitability.

3.1 Discussion of Results

The regression results from the FE model show that the variables liquidity risk, log of total assets and inflation are significant at the 10% significance level. This is in line with what other studies found (Athanasoglou et al. 2006; Kosmidou 2008), while (Pasiouras & Kosmidou 2007) found a negative effect of log of total assets on bank profitability. Liquidity risk was found to positively affect bank profitability. This means that when a bank gives out more loans than it receives in deposits, it will earn more revenue from these loaned funds in form of interest income compared to if the funds are not loaned out. Therefore, the bigger the liquidity ratio, the higher the bank profitability (Pasiouras & Kosmidou 2007).

Bank size also has the expected sign, which indicates that a positive relation exists between bank size and profitability. This result is similar to the results in (Athanasoglou et al. 2006; Kosmidou 2008), who found that a big bank benefits from economics of scale. The regression results from this analysis show that when the size of a bank increases, profitability also increases. This follows the reasoning that larger banks usually have a large number of products and a higher degree of loan diversification as compared to smaller banks. In addition, big banks tend to have higher equity and give out a larger amount of loans compared to smaller banks. This gives bigger

banks a competitive edge because the former will be able to sell more products and give out more loans, which translate into more income. Hence, bigger banks tend to be more profitable. However, context matters. For example, (Bennaceur & Goaid 2008) found that a negative relationship exists between bank size and profitability.

The effects of inflation on bank profitability have been found to be positive or negative (Perry 1992). My results suggest a positive relationship between inflation and bank profitability. On the one hand, a higher inflation rate can lead to higher profits if it was anticipated by banks such that they make the necessary adjustments on interest rates. On the other hand, if an increase in inflation rate is not anticipated, this may cause high default rates and low profitability. This reasoning stems from the observation that when interest rates increase following high inflation rate, assuming that the average incomes do not increase equivalent to the increase in inflation, customers will channel their funds to other immediate needs and neglect servicing loan obligations, which leads to an increase in defaults. This line of thought leads to the conclusion that interest rates negatively affect bank profitability.

However, in my analysis, and similar to (Bennaceur & Goaid 2008), I found that inflation positively affects bank profitability. This means that when the inflation rate is high, it follows that interest rates will also increase, which in turn increases bank profits because the bank will be receiving more interest income from the loans given out. This is usually the case when the rise in inflation is anticipated and banks are able to adjust their interest rates in a way that does not affect the loan repayments. This implies that when inflation is anticipated, bank profits increase more than bank costs while when unanticipated has negative effects (Pasiouras & Kosmidou 2007).

4 Conclusion, Recommendation, Limitation and Further study

Conclusion

This thesis analyzed the factors affecting the profitability of six commercial banks in Zambia over the period 2010 - 2015. Panel data regression analysis was used to determine which factors affect bank profitability in Zambia. Using the fixed effects regression model, results indicate that liquidity risk is important in determining bank profits. The more loans a bank is able to give out compared to its deposits, i.e., the bigger the liquidity ratio, the higher the expected profits because banks can earn more income from interest on loans than if the funds were not loaned out.

Bank size was also found to be significant suggesting that larger banks in Zambia earn more profit than the smaller banks because of economies of scale, wide range of products and loan diversification.

The third contributing factor to bank profits in Zambia is the inflation rate. When the inflation rate increases, interest rates also increase and this will also increase the interest income coming from the loans and ultimately increase bank profitability.

Recommendation

Liquidity risk, bank size and inflation have been found to be determining factors for bank profitability in Zambia. Despite the variables only being significant at the lowest significance level of 10%, they still have policy implications for bank managers and bank regulators. Bank managers should be able to give out more credit facilities and have a variety of credit facilities because credit is the main business for a bank. I recommend that bank managers and staff dealing with credit facilities should prioritize giving out loans while also following the lending

criteria to avoid defaults. Banks should also give attention to bank size as it has a bearing on the profitability levels in the sense that when a bank is big in terms of total assets, it is able to give out more loans and earn more income compared to a small bank. Therefore, a bank could increase its size by offering a wide range of loan products as this will grow its loan book and increase total assets which are a measure of bank size. With regards inflation, the government can contribute to banks' profitability by loosening monetary policy and since having low inflation is the primary objective of monetary policy, this will reduce lending rates, increase access to finance and reduce non-performing loans.

Limitations and Further study

This study encountered a number of limitations, the main one being accessibility to data. It was challenging to obtain information on some variables since I was studying abroad and had to obtain the data from the Central Bank in my home country. This is the reason why some of the factors perceived to affect bank profitability have not been considered.

Further research should be conducted which should include more factors such as market concentration, interest rate spread, treasury bill rates, which were not included in the current study. Also more banks could be covered to get a larger sample because only six banks were covered in this thesis out of a total of 19 commercial banks.

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Appendices

Appendix I: Theories of Banking

According to Baltensperger (1980) and Swank (1996), banking theories fall into two broad categories of incomplete and complete theories. Incomplete theories include credit rationing models, bank regulation models and portfolio models of banking. Complete theories of banking on the other hand are based on industrial organization literature and include real resource cost models which stress a bank's production technology (based on production and cost constraints thereof) and profit maximizing frameworks (Simpasa 2010).

The incomplete theories of banking do not focus on the banking firm as a whole rather they concentrate on one form of banking behavior (Baltensperger 1980). For example, the theory of portfolio stresses the role of banks as investors and not their behavior as a whole (Simpasa 2010). Therefore, these theories do not adequately model a banking firm, as such the development of microeconomic models of banking changed the way the banking firm was modeled (Simpasa 2010). The complete theories of banking are discussed below.

Sealey and Lindley (1977) argue that the lack of success in finding a theory to model a banking firm in previous studies was due to failure to categorize its inputs and outputs and the failure to analyze the technical aspects of production and cost for the financial firm. As such they used a production function to model a banking firm and differentiated between technical outputs and economic outputs. Production in the economic sense means creating a product that is "more highly valued" than the original inputs while in technical production, a firm combines inputs and transforms them into goods and services (Sealey & Lindley 1977). The services from technical production include administration of various payment mechanisms, intermediation services to depositors and borrowers, trust and portfolio advisory services. Further, Sealey and Lindley (1977)

argue that production in a financial firm has several processes which involve inputs such as deposits, capital, labour and material inputs used in the production of loans. Thus this type of production is similar to that of a manufacturing firm. In a similar manner, Klein (1971) also used the theory of production to model bank behaviour and used equity and different types of deposits such as demand and savings deposits as inputs to produce earning assets - loans. While some studies use the production theory, others use the profit function. "The profit function expresses the maximized profit for a firm in a competitive situation as a function of prices of output and variable factor inputs and quantities of the fixed factors of production" (Mullineaux 1978p.260) . Further, Mullineaux (1978) points out that the profit function approach to studying efficiency of banks has a number of advantages over the cost functions because it is difficult to define bank outputs in cost functions. The theory of profit maximization assumes that banks are price takers, although this assumption is testable given that commercial banks are multiproduct firms which operate as price takers for some outputs and price setters for others (Mullineaux 1978). The profit function is expressed as a function of input prices, output prices and fixed factors of production. In this model, output prices are defined in terms of real estate loan rates, consumer installment loan rate, commercial and agricultural loan rate and safe deposit rental fee. Input prices are defined by officers' wage rate, employees wage rate, demand deposit rate, savings and time deposit rate, certificate of deposit rate and computer hardware rental rate. While quantities of fixed factors of production include full service branches, limited service branches, paying and receiving stations and average size of full service branches.

As can be seen from the foregoing, there appears to be no consensus on how to model bank behavior. Besides, given difficulties in defining inputs and outputs of a banking firm (Klein 1971;

Mullineaux 1978; Sealey & Lindley 1977), this thesis does not use any formal economic model.

However, it defines bank profit as a function of internal and external factors.

Appendix II: Comparison of Alternative Model Results

Variables	Variable Names	Fixed effects	POLS	Random effects
<i>CAPR</i>	Capital ratio	0.041 (0.072)	0.041 (0.064)	0.052 (0.059)
<i>CREDR</i>	Credit risk	0.000 (0.010)	0.000 (0.013)	-0.006 (0.014)
<i>LIQR</i>	Liquidity risk	0.026* (0.012)	0.026 (0.017)	0.010 (0.013)
<i>LNTA</i>	Log of total assets	0.034* (0.016)	0.034 (0.027)	0.026 (0.017)
<i>COST</i>	Operational efficiency	0.003 (0.007)	0.003 (0.006)	0.002 (0.007)
<i>OWN</i>	Bank ownership	- -	0.000 (0.001)	- -
<i>INFLTN</i>	Inflation	0.001* (0.001)	0.001 (0.001)	0.001** (0.000)
<i>CAPR2</i>	Square of CAPR	-0.110 (0.270)	-0.110 (0.269)	-0.111 (0.230)
<i>CREDR2</i>	Square of CREDR	0.016 (0.023)	0.016 (0.027)	0.026 (0.027)
<i>LIQR2</i>	Square of LIQR	-0.019 (0.010)	-0.019 (0.014)	-0.010 (0.011)
<i>COST2</i>	Square of COST	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)
<i>LNTA2</i>	Square of total assets	-0.001* (0.001)	-0.001 (0.001)	-0.001 (0.001)
<i>INFL2</i>	Square of inflation	-0.000* (0.000)	-0.000 (0.000)	-0.000** (0.000)
2.bank_ID			0.003 (0.002)	
3.bank_ID			0.002 (0.002)	
4.bank_ID			0.002** (0.001)	
5.bank_ID			-0.000 (0.001)	
6.bank_ID			-	
<i>OWN</i>		-		
Constant		-0.278* (0.120)	-0.280 (0.212)	-0.201 (0.128)
Observations		144	144	144
R-squared		0.331	0.403	

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 8: Correlation matrix of independent variables affecting Bank Profitability in Zambia

	<i>CAPR</i>	<i>CREDR</i>	<i>LIQR</i>	<i>LNTA</i>	<i>COST</i>	<i>OWN</i>	<i>INFLTN</i>
<i>CAPR</i>	1.0000						
<i>CREDR</i>	-0.3347	1.0000					
<i>LIQR</i>	0.1785	-0.3701	1.0000				
<i>LNTA</i>	0.3094	-0.4906	0.0718	1.0000			
<i>COST</i>	-0.0869	0.1515	-0.0635	-0.2032	1.0000		
<i>OWN</i>	-0.1253	-0.3775	0.1320	0.6079	-0.1766	1.0000	
<i>INFLTN</i>	-0.0262	-0.0438	-0.1302	0.0601	0.1851	0.0000	1.0000

Appendix III. Data Set used in this Study

Year	Period	Bank	Total Assets	Total Deposits	Total Equity	Net Loans	Loan Provisions	Gross Loans	Operational Cost	Total Income	Inflation	Income After Tax
2010	quarter 1	BBZ	3 440 237	2 416 095	175 649	2 340 224	526 616	2 340 224	32 123	36 306	9,9	15 460
2010	quarter 2	BBZ	4 064 791	3 078 655	190 520	1 787 495	571 823	2 359 318	30 662	23 121	8,7	4 091
2010	quarter 3	BBZ	3 996547	3 173 901	221 102	1 686 348	533 896	2 220 244	31 213	47 549	8,1	8 682
2010	quarter 4	BBZ	4 041 187	3 177 138	228 218	1 561 301	515 163	2 076 464	106 851	56 418	7,4	-35 629
2011	quarter 1	BBZ	4 314 599	2 975 029	293 014	1 681 494	467 889	2 149 383	28 660	42 990	9	11 498
2011	quarter 2	BBZ	4 567 537	3 406 931	327 142	1 807 945	404 893	2 212 838	28 336	58 486	8,9	18 070
2011	quarter 3	BBZ	4 771 918	3 770 143	369 098	1 832 870	342 177	2 175 047	29 412	56 917	8,4	20 203
2011	quarter 4	BBZ	4 547 184	3 638 726	370 932	1 773 997	275 983	2 049 980	34 366	47 180	8	7 907
2012	quarter 1	BBZ	4 499 774	3 476 385	323 475	1 806 242	274 281	2 080 522	31 021	41 904	6,3	3 393
2012	quarter 2	BBZ	4 501 701	3 441 351	377 448	2 038 320	240 156	2 278 476	31 928	73 582	6,6	39 578
2012	quarter 3	BBZ	4 519 874	3 300 110	498 987	2 304 168	220 699	2 524 867	34 387	49 257	6,4	147
2012	quarter 4	BBZ	5 130 693	3 731 694	500 946	2 904 726	185 029	3 089 755	47 020	56 750	7	-21 305
2013	quarter 1	BBZ	5 228 628	3 572 889	537 125	3 003 223	163 590	3 166 813	34 555	64 000	6,8	21 615
2013	quarter 2	BBZ	5 094 304	3 672 349	555 913	2 915 920	159 948	3 075 868	34 981	45 991	6,9	10 014
2013	quarter 3	BBZ	5 723 122	4 188 999	581 058	2 894 404	154 649	3 049 053	36 524	55 097	7,1	13 627
2013	quarter 4	BBZ	5 600 061	4 269 188	584 540	3 019 126	161 251	3 180 378	39 629	53 251	7	9 040
2014	quarter 1	BBZ	6 128 367	4 722 506	625 625	3 172 922	151 575	3 324 496	36 691	60 069	7,5	19 415
2014	quarter 2	BBZ	6 129 203	4 705 589	666 639	3 447 981	145 697	3 593 678	36 524	56 252	7,8	10 483
2014	quarter 3	BBZ	6 294 301	4 704 091	692 932	3 601 011	148 172	3 749 182	36 089	43 508	7,9	4 780
2014	quarter 4	BBZ	6 776 157	5 124 960	725 079	3 483 335	114 083	3 597 418	36 489	51 296	8	-1 322
2015	quarter 1	BBZ	7 144 985	4 840 056	754 785	3 703 749	113 465	3 817 214	36 870	55 179	7,4	9 272
2015	quarter 2	BBZ	7 265 466	5 214 786	804 018	3 578 693	107 325	3 686 018	42 279	61 814	7,1	11 401

2015	quarter 3	BBZ	9 279 259	6 831 710	830 114	4 122 069	136 788	4 258 857	44 340	49 291	7,4	-4 935
2015	quarter 4	BBZ	9 044 111	6 920 802	908 246	4 065 390	124 787	4 190 176	45 630	80 972	18,3	29 865
2010	quarter 1	FBZ	1 333 772	868 723	194 815	776 731	76 963	776 731	12 055	25 488	9,9	8 160
2010	quarter 2	FBZ	1 326 133	899 824	194 596	704 396	88 664	793 060	11 928	12 195	8,7	260
2010	quarter 3	FBZ	1 409 572,00	1 032 953	160 078	590 271	141 202	731 473	11 884	3 286	8,1	-8 598
2010	quarter 4	FBZ	1 242 720	728 918	163 393	497 353	144 305	641 658	21 991	11 193	7,4	-6 638
2011	quarter 1	FBZ	973 476	802 360	22 473	285 073	269 421	554 494	10 681	10 860	9	108
2011	quarter 2	FBZ	1 030 108	929 646	18 906	241 661	272 699	514 360	9 843	11 908	8,9	1 239
2011	quarter 3	FBZ	1 109 279	1 009 430	21 604	378 508	275 336	653 844	10 549	11 106	8,4	334
2011	quarter 4	FBZ	1 125 696	1 015 169	49 336	521 767	276 596	798 363	14 813	27 413	8	7 560
2012	quarter 1	FBZ	1 215 297	1 083 414	67 508	466 833	271 002	737 835	41 220	48 073	6,3	11 450
2012	quarter 2	FBZ	1 317 206	1 051 459	91 793	428 073	255 732	683 805	13 818	21 675	6,6	4 714
2012	quarter 3	FBZ	1 588 878	1 165 538	192 220	376 967	306 970	683 937	13 939	23 308	6,4	6 090
2012	quarter 4	FBZ	1 889 783	1 507 896	209 458	925 032	277 963	1 202 995	23 106	34 180	7	7 198
2013	quarter 1	FBZ	2 031 669	1 584 940	220 267	922 609	284 578	1 207 187	17 229	26 443	6,8	5 989
2013	quarter 2	FBZ	2 189 968	1 748 685	240 104	878 703	258 103	1 136 806	16 603	26 886	6,9	6 684
2013	quarter 3	FBZ	2 179 429	1 736 309	260 426	887 695	230 828	1 118 523	16 902	27 105	7,1	6 632
2013	quarter 4	FBZ	2 363 426	1 940 324	279 669	894 781	224 458	1 119 239	18 863	28 140	7	6 030
2014	quarter 1	FBZ	2 525 514	2 048 094	297 638	883 693	234 746	1 118 439	16 372	27 439	7,5	7 193
2014	quarter 2	FBZ	2 543 325	2 054 290	310 043	943 506	233 114	1 176 620	20 178	47 069	7,8	17 479
2014	quarter 3	FBZ	2 597 516	2 045 439	397 879	924 912	43 424	968 336	24 244	39 864	7,9	10 153
2014	quarter 4	FBZ	3 268 247	2 470 479	629 209	1 381 554	42 967	1 424 521	26 013	44 283	8	11 875
2015	quarter 1	FBZ	3 028 744	2 148 316	660 253	1 355 265	44 707	1 399 972	24 079	41 105	7,4	11 067
2015	quarter 2	FBZ	3 077 724	2 155 737	732 467	1 341 403	44 721	1 386 124	72 005	39 945	7,1	33 032
2015	quarter 3	FBZ	3 279 406	2 272 935	760 821	998 752	51 352	1 050 104	29 515	46 222	7,4	10 860

2015	quarter 4	FBZ	3 455 592	2 525 737	773 268	960 617	48 835	1 009 452	39 071	37 219	18,3	-1 204
2010	quarter 1	IBZ	551 737	397 934	51 054	296 320	26 283	296 320	5 448	6 033	9,9	585
2010	quarter 2	IBZ	573 435	405 203	49 836	320 128	25 349	345 477	5 147	8 030	8,7	2 883
2010	quarter 3	IBZ	637 921	470 357	49 882	327 788	28 727	356 515	5 972	7 481	8,1	779
2010	quarter 4	IBZ	642 095	476 486	34 635	374 289	46 319	420 608	5 367	-7 995	7,4	-13 362
2011	quarter 1	IBZ	714 613	551 593	40 961	391 104	48 346	439 450	5 819	7 102	9	783
2011	quarter 2	IBZ	737 357	578 388	40 221	396 805	46 937	443 742	5 911	6 282	8,9	221
2011	quarter 3	IBZ	779 901	598 474	68 091	371 410	49 552	420 962	6 833	7 306	8,4	473
2011	quarter 4	IBZ	909 434	710 883	71 689	403 696	51 614	455 310	8 516	12 284	8	1 968
2012	quarter 1	IBZ	929 375	712 283	69 553	436 839	50 260	487 099	6 679	8 222	6,3	1 003
2012	quarter 2	IBZ	979 650	754 198	71 700	447 293	51 258	498 551	6 841	9 487	6,6	1 720
2012	quarter 3	IBZ	1 213 042	915 776	75 445	437 585	52 287	489 872	9 047	10 756	6,4	1 111
2012	quarter 4	IBZ	1 277 857	1 049 199	81 668	734 032	54 770	788 802	11 149	14 450	7	2 146
2013	quarter 1	IBZ	1 230 775	874 818	84 187	706 463	57 494	763 957	9 568	11 173	6,8	1 043
2013	quarter 2	IBZ	1 181 940	931 065	86 404	680 771	59 087	739 858	10 057	13 431	6,9	2 193
2013	quarter 3	IBZ	1 240 347	938 837	84 682	692 343	55 835	748 178	11 842	10 702	7,1	-741
2013	quarter 4	IBZ	1 323 253	1 034 480	90 398	716 726	57 922	774 648	12 472	22 248	7	6 354
2014	quarter 1	IBZ	1 357 855	1 183 772	82 447	670 921	79 734	750 655	7 656	11 846	7,5	4 190
2014	quarter 2	IBZ	1 347 013	1 124 467	83 059	641 396	79 000	720 395	11 543	12 949	7,8	1 128
2014	quarter 3	IBZ	1 525 919	1 275 538	81 498	605 265	79 055	684 320	12 235	12 344	7,9	71
2014	quarter 4	IBZ	1 573 177	1 402 108	83 118	574 247	79 350	653 596	14 558	15 502	8	944
2015	quarter 1	IBZ	1 420 468	1 165 487	74 130	567 111	90 281	657 392	13 029	13 553	7,4	341
2015	quarter 2	IBZ	1 474 610	1 197 510	69 599	555 006	89 569	644 575	17 398	10 742	7,1	(4 327)
2015	quarter 3	IBZ	1 420 699	1 195 416	56 174	603 926	47 581	651 506	16 835	10 698	7,4	-3 989
2015	quarter 4	IBZ	1 368 266	1 112 376	35 479	570 167	53 177	623 345	22 331	7 975	18,3	-9 332

2010	quarter 1	Stanchart	3 254 236	2 424 296	254 771	996 028	57 526	996 028	21 081	38 306	9,9	10 633
2010	quarter 2	Stanchart	3 494 759	2 721 498	265 503	1 046 703	54 773	1 101 476	28 554	36 083	8,7	4 463
2010	quarter 3	Stanchart	3 398 81	2 664 342	269 171	1 136 480	65 544	1 202 024	18 659	35 928	8,1	10 066
2010	quarter 4	Stanchart	4 125 324	3 160 880	297 567	1 169 614	74 290	1 243 904	17 804	38 201	7,4	12 390
2011	quarter 1	Stanchart	4 037 922	2 881 244	333 901	1 091 755	54 557	1 146 312	16 558	37 523	9	12 393
2011	quarter 2	Stanchart	4 708 567	3 503 464	287 979	1 227 966	50 984	1 278 950	19 992	43 248	8,9	13 890
2011	quarter 3	Stanchart	4 492 915	3 468 113	326 103	1 394 948	53 066	1 448 014	21 558	36 558	8,4	8 869
2011	quarter 4	Stanchart	4 572 555	3 557 769	367 059	1 727 518	40 811	1 768 329	26 192	33 052	8	2 157
2012	quarter 1	Stanchart	4 632 422	3 573 812	412 095	1 684 658	54 325	1 738 983	23 715	35 847	6,3	7 352
2012	quarter 2	Stanchart	4 912 399	3 717 326	473 678	1 936 535	48 571	1 985 106	18 660	52 727	6,6	21 882
2012	quarter 3	Stanchart	4 942 537	3 521 698	536 759	2 093 684	44 454	2 138 138	24 220	51 377	6,4	17 536
2012	quarter 4	Stanchart	5 155 518	3 662 368	582 846	2 185 875	35 421	2 221 296	26 139	63 956	7	24 950
2013	quarter 1	Stanchart	5 224 492	3 714 485	632 843	2 281 729	38 355	2 320 084	27 232	57 963	6,8	19 975
2013	quarter 2	Stanchart	5 615 944	4 062 369	687 861	2 501 895	44 016	2 545 911	26 281	49 341	6,9	16 074
2013	quarter 3	Stanchart	5 478 563	4 136 717	659 165	2 693 001	43 929	2 736 930	27 440	61 192	7,1	22 086
2013	quarter 4	Stanchart	5 630 837	4 249 844	727 787	2 755 006	42 217	2 797 223	32 210	71 229	7	25 510
2014	quarter 1	Stanchart	6 707 960	5 326 538	652 177	2 832 920	45 559	2 878 479	31 974	68 668	7,5	23 808
2014	quarter 2	Stanchart	6 704 895	5 344 024	708 265	2 755 224	47 588	2 802 812	32 753	70 216	7,8	24 304
2014	quarter 3	Stanchart	6 487 695	5 051 449	659 868	2 863 643	48 488	2 912 131	38 817	63 390	7,9	46 644
2014	quarter 4	Stanchart	6 666 045	5 163 576	705 031	3 079 368	42 988	3 122 356	64 188	77 050	8	7 668
2015	quarter 1	Stanchart	7 354 087	5 758 371	630 788	3 132 978	51 187	3 184 165	38 117	64 382	7,4	17 054
2015	quarter 2	Stanchart	6 949 296	5 101 727	675 347	3 117 487	67 453	3 184 940	47 740	85 936	7,1	24 748
2015	quarter 3	Stanchart	9 466 780	7 291 389	633 333	3 441 285	67 083	3 508 368	51 650	153 947	7,4	66 083
2015	quarter 4	Stanchart	8 734 530	7 095 706	602 591	3 432 795	93 671	3 526 466	53 454	39 481	18,3	-8 892
2010	quarter 1	Stanbic	2 490 646	1 996 190	224 177	1 072 274	62 598	1 072 274	17 815	27 782	9,9	6 581

2010	quarter 2	Stanbic	2 693 235	2 195 909	182 029	1 053 155	95 671	1 148 826	21 081	20 993	8,7	-54
2010	quarter 3	Stanbic	2 660 414,00	2 221 128	183 894	1 179 710	65 828	1 245 538	24 826	28 325	8,1	2 100
2010	quarter 4	Stanbic	2 938 307	2 428 893	165 210	1 307 326	92 022	1 399 348	73 131	31 158	7,4	-40 237
2011	quarter 1	Stanbic	3 458 275	2 589 683	189 106	1 670 031	79 994	1 750 025	23 795	30 608	9	4 394
2011	quarter 2	Stanbic	3 646 878	2 852 601	202 341	1 680 813	92 169	1 772 982	26 641	39 707	8,9	5 635
2011	quarter 3	Stanbic	3 788 774	3 004 638	225 550	1 719 185	76 708	1 795 893	24 359	42 003	8,4	9 761
2011	quarter 4	Stanbic	4 204 968	3 383 776	242 651	1 956 254	84 164	2 040 418	20 661	33 251	8	7 062
2012	quarter 1	Stanbic	3 989 960	3 181 042	285 586	2 215 088	102 698	2 317 786	24 809	43 691	6,3	12 768
2012	quarter 2	Stanbic	4 542 566	3 521 230	500 223	2 425 730	126 911	2 552 641	29 469	30 310	6,6	533
2012	quarter 3	Stanbic	4 653 319	3 442 406	539 084	2 601 891	154 394	2 756 285	30 911	63 910	6,4	19 854
2012	quarter 4	Stanbic	5 035 912	3 877 843	563 575	2 710 684	178 522	2 889 206	57 992	51 986	7	129
2013	quarter 1	Stanbic	6 423 512	5 133 838	591 482	2 663 677	201 052	2 864 729	36 038	53 303	6,8	9 841
2013	quarter 2	Stanbic	6 268 453	4 807 881	616 739	3 117 409	205 344	3 322 753	35 983	48 198	6,9	8 020
2013	quarter 3	Stanbic	5 814 622	4 298 008	653 856	3 192 968	214 593	3 407 560	35 430	47 842	7,1	7 737
2013	quarter 4	Stanbic	6 309 725	4 816 540	679 280	3 203 700	226 255	3 429 955	38 653	57 587	7	11 739
2014	quarter 1	Stanbic	6 937 401	5 069 354	666 208	3 391 380	225 829	3 617 209	41 513	77 503	7,5	22 721
2014	quarter 2	Stanbic	6 874 763	4 886 948	712 334	3 806 872	203 510	4 010 382	40 821	77 592	7,8	24 451
2014	quarter 3	Stanbic	6 798 480	5 064 335	747 690	3 715 202	223 571	3 938 773	40 832	47 052	7,9	3 601
2014	quarter 4	Stanbic	6 888 497	4 964 231	789 034	3 362 570	190 401	3 552 971	46 685	76 509	8	18 116
2015	quarter 1	Stanbic	7 498 401	5 162 732	847 465	3 800 982	196 103	3 997 085	41 626	75 898	7,4	22 529
2015	quarter 2	Stanbic	7 530 542	5 363 238	787 313	3 851 781	140 604	3 992 385	50 896	77 009	7,1	14 514
2015	quarter 3	Stanbic	10 001 459	7 656 642	832 030	5 010 900	164 114	5 175 014	51 594	69 298	7,4	7 401
2015	quarter 4	Stanbic	10 890 775	7 953 294	883 832	4 766 690	176 218	4 942 908	59 467	85 831	18,3	13 613
2010	quarter 1	ZANACO	2 907 342	2 173 156	347 724	1 215 899	120 640	1 215 899	24 175	52 836	9,9	17 073
2010	quarter 2	ZANACO	3 177 706	2 388 675	340 469	1 105 770	134 509	1 240 279	26 632	41 350	8,7	8 831

2010	quarter 3	ZANACO	3 345 884,00	2 581 488	361 480	1 399 617	152 210	1 551 827	21 990	33 137	8,1	6 776
2010	quarter 4	ZANACO	3 396 391	2 576 583	383 385	1 621 316	158 397	1 779 713	59 441	63 253	7,4	4 602
2011	quarter 1	ZANACO	3 543 992	2 463 381	388 448	1 712 902	135 861	1 848 763	28 391	41 799	9	8 545
2011	quarter 2	ZANACO	4 037 402	3 054 712	419 855	1 839 047	126 657	1 965 704	31 352	47 930	8,9	9 036
2011	quarter 3	ZANACO	4 719 427	3 735 566	452 979	1 940 577	133 609	2 074 186	35 720	55 595	8,4	12 177
2011	quarter 4	ZANACO	4 616 252	3 384 099	509 036	1 809 626	149 126	1 958 752	37 485	40 788	8	8 053
2012	quarter 1	ZANACO	4 777 461	3 480 480	483 634	1 940 703	137 401	2 078 104	31 754	48 363	6,3	10 630
2012	quarter 2	ZANACO	5 118 036	3 789 741	525 848	1 864 036	118 636	1 982 672	38 935	63 847	6,6	15 944
2012	quarter 3	ZANACO	5 346 801	3 805 804	569 512	2 082 852	110 655	2 193 507	41 560	61 419	6,4	10 054
2012	quarter 4	ZANACO	5 744 054	4 255 002	591 970	2 579 752	121 563	2 701 315	67 804	58 093	7	-6 312
2013	quarter 1	ZANACO	6 068 015	4 614 252	600 002	2 741 308	160 551	2 901 859	41 322	42 825	6,8	1 429
2013	quarter 2	ZANACO	6 038 410	4 507 663	610 113	2 840 202	184 292	3 024 494	39 542	56 152	6,9	10 458
2013	quarter 3	ZANACO	6 094 936	4 662 962	651 076	2 860 857	192 147	3 053 004	45 281	67 475	7,1	14 648
2013	quarter 4	ZANACO	6 857 437	5 287 725	722 776	2 902 254	178 204	3 080 458	54 781	90 529	7	28 082
2014	quarter 1	ZANACO	6 797 368	4 906 891	731 915	2 945 141	202 580	3 147 721	44 435	66 731	7,5	14 268
2014	quarter 2	ZANACO	7 343 909	5 474 223	765 717	3 153 304	293 489	3 446 793	49 933	68 120	7,8	11 821
2014	quarter 3	ZANACO	6 506 319	4 952 223	816 870	3 174 448	287 280	3 461 728	44 250	67 280	7,9	14 970
2014	quarter 4	ZANACO	6 630 142	5 020 792	795 464	3 041 812	288 729	3 330 541	68 176	72 318	8	2 220
2015	quarter 1	ZANACO	6 484 133	4 817 704	845 773	2 924 627	319 764	3 244 390	57 933	77 084	7,4	12 448
2015	quarter 2	ZANACO	6 490 612	4 860 486	866 309	2 930 492	315 992	3 246 484	59 144	78 497	7,1	12 579
2015	quarter 3	ZANACO	7 126 533	5 259 207	885 957	3 356 032	415 585	3 771 616	73 019	79 268	7,4	4 062
2015	quarter 4	ZANACO	7 794 926	5 953 338	877 253	3 289 949	400 166	3 690 114	46 479	79 139	18,3	21 227



Norges miljø- og bioscienspolitiske universitet
Norwegian University of Life Sciences

Postboks 5005
NO-1432 Ås
Norway