Factors Affecting Bank Profitability for clearing domestic banks in the Bahamas

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Abstract

The aim of this paper was to determine the main contributors to the profitability for the domestic banks within the Bahamas using the panel random effects model. The model utilized quarterly bank level data spanning the period 2004-2014, for the seven (7) clearing banks within the Bahamas. The results of the model show that bank profitability is mostly due to internal, bank level factors.

[1] The views expressed in this paper are those of the authors and do not necessarily represent The Central Bank of The Bahamas. This paper should be considered a work in progress and as such the authors would welcome any comments on the written text.

Introduction

The Bahamian banking sector comprises 8 domestic banks, two of which are Bahamian owned, while the remainder are comprised of subsidiaries of Canadian Banks. In fact, the presence of Canadian Banks in the country dated back to 1904 with the opening of the first international bank, Royal Bank of Canada. In addition, as at end-2016 there were 232 international banks and trust companies, with a total of approximately $175.7 billion in assets. Historically, the domestic banking sector has been well insulated from external stocks, due to capital controls which server to protect the country's fixed exchange rate. In particular, not until 2017, when the Bank relaxed its exchange controls in order to give support to small and medium sized business, were Bahamian's allowed to borrow in foreign currency. Nonetheless, given that this facility is new and not widely used at this time, the scope of this study will be contained to domestic banks.

Following the 2008 recession, domestic banks were plagued with high non-performing loans and a consequent increase in provisioning demands, which eroded their profits. Further, faced with a smaller pool of qualified borrowers and a riskier lending environment, credit grown slowed notable, and banks' income was impacted. As a result, some banks attempted to recoup losses by increasing the fees charges on miscellaneous bank services and transactions. Moreover, in a global environment with money laundering, tax evasion and the funding of terrorism, banks are required to comply with numerous guidelines and regulations and capital requirements, which may also have implications for their profitability. In this context, the authors found it relevant to conduct study on the determinants of Bank profitability in the Bahamas, thereby adding to the pool of similar research studies on other developing countries. Specifically, is it the oligopolistic nature of the market, or are there economic factors at play? To this end, the paper begins with a review of the literature on the subject matter, followed by trends in the profitability of domestic banks. The final two sections include the results of the model used to determine the factors that contribute to banks' profitability, and the conclusion.

Literature Review

The discussion of factors that contribute to bank profitability is one that has been held across a wide spectrum of views, garnering increasing attention in recent years. Catapulting these discussions has been a number of econometric tests that assess the extent to which certain factors affect the profitability of banks within an economy. While some authors posit that the main determinants of bank profitability are macroeconomic factors, others argue that bank profitability is indeed influenced by improvements in the internal organization and managerial efficiency of the bank. Studies on which factors impact bank profitability and the extent of their impact have been done using linear regression models, particularly Panel Ordinary Least Square (OLS) tests, with variables such as return on assets (ROA), return on equity (ROE), inflation, Gross Domestic Product (GDP), money supply, etc. Though some studies use some of the same variables, their results vary, due to the differences in the structure of the banking systems in their respective countries. The focus of this literature review is to present the possible determinants of bank profitability in different countries. Specifically, this literature review will explore the studies performed for Nigeria, Sub-Saharan Africa, the Philippines, and the European Union.

Eze Osuagwu, of the University of Lagos conducted a study in 2014 of the determinants of bank profitability in Nigeria, using a linear regression. Drawing on the types of linear regressions used by Athanasoglou *et al* (2006), Chirwa and Mlachila (2004) and Brissimis *et al* (2008), Osuagwu manipulated the rules of each author's test to form his own. Using a dataset of selected banks in Nigeria—which accounted for 60% of total banking assets, for the period of 1980–2010—the author tested a series of variables to see their relationship with bank profitability. It is important to note however, that there were missing fields due to the unavailability of information, and this may or may not have had impact on the results of the regression. Osuagwu (2014) used ROE, ROA and net interest margin (NIM) as dependent variables. As for bank specific variables, the author used the opportunity cost of holding reserves at the central bank and the ratio of operating expenses to total assets; as well as industry-related factors including market concentration and competition; and macroeconomic determinants like the exchange rate and the inflation rate as explanatory variables. The results revealed that bank profitability is largely reliant on bank specific variables. Particularly, the estimation results for ROA as a dependent variable revealed that the opportunity cost of holding reserves at the central bank is significant and that the two shared a negative relationship. In fact, the results showed

that when holding all other variables constant, for every change in the reserve requirement by one unit, ROA decreases by 13.3%. This then means that as banks hold more of their reserves at the central bank, their profitability declines. In addition, the results of Osuagwu (2014) concluded that market concentration also contributes greatly to bank profitability, while macroeconomic variables did not prove as significant. Specifically, Osuagwu (2014) presented that the reason for factors such as the inflation rate and the exchange rate not being significant determinants of bank profitability in Nigeria is perhaps due to the macroeconomic policies adopted within the country, with specific reference to the devaluation of the naira since the late 1980s.

Similarly, Flamini, McDonald and Schumacher of the International Monetary Fund (IMF) conducted a study of the determinants of bank profitability in 41 Sub-Saharan African countries using a sample of 389 banks. The authors used the Arellano-Bond (1991) two-step General Method of Moments (GMM) regression, and their variables differed from that of Osuagwu (2014) in that Flamini, Mcdonald and Schumacher (2009) used credit risk, bank activity mix, capital, size, and market power as their bank specific models, and GDP growth, inflation and economic development (via GDP per capita) as their macroeconomic variables. The study used annual bank and macroeconomic data for the period 1998-2006, including balance sheet and income statement information. The empirical results showed that bank size, activity diversification, and private ownership impacted the return on assets, while macroeconomic variables affected bank returns, proposing that boosts in credit expansion may come as a result of macroeconomic policies geared toward low inflation and steady output growth. In contrast to the findings by Osuagwu (2014), Flamini, McDonald and Schumacher (2009) found that macroeconomic variables do indeed affect bank profitability in Africa. The authors go on to suggest that inflation has a positive effect on bank profits, insinuating that bank's forecast inflation accurately and in enough time to change interest rates and margins accordingly. Perhaps the difference in their findings is due to the varying sets of data for each study, inclusive of the difference in sample size and scope, as well as the difference in macroeconomic policies used in each of the respective countries. Moreover, there is only an eight-year overlap between the two time-periods studied, which could also have implications for the varying results.

The use of ROE and ROA as proxies for bank profitability has been used widely, not only for the studies conducted in Nigeria and Sub-Saharan Africa, but also in the European Union (EU). Petria, Capraru and Ihnatov (2013) assessed the main determinants of bank profitability in the EU27[2] group of countries over the period 2004-2011, using both ROA and ROE. Utilizing a linear regression, the authors separated the factors that influence bank profitability into two large groups: internal factors and external factors. Among the internal factors were bank specific and industry specific factors, while the external factors consisted of macroeconomic variables. Their findings showed that credit and liquidity risk, economic growth, market concentration/competition, management efficiency, and the diversification of business influence both ROA and ROE, which in turn means that they are indeed determinants of bank profitability in the EU. The regression statistics revealed that both credit and liquidity risk share a negative relationship with bank profitability, in that when credit or liquidity risk increases, bank profitability decreases. Further, they found that the size of the bank is irrelevant with regard to bank profitability. This differs from the study done by Flamini, Mcdonald and Schumacher (2009) which found that bank size did indeed affect bank profitability; specifically ROA. Petria, Capraru and Ihnatov (2013) present that bank size has a very weak and insignificant effect on ROA, concluding that it is therefore immaterial. Here again, the difference in results could be attributed to the differences between the EU and Sub-Saharan Africa; in particular, the differing sizes of the banking sector in each group of countries.

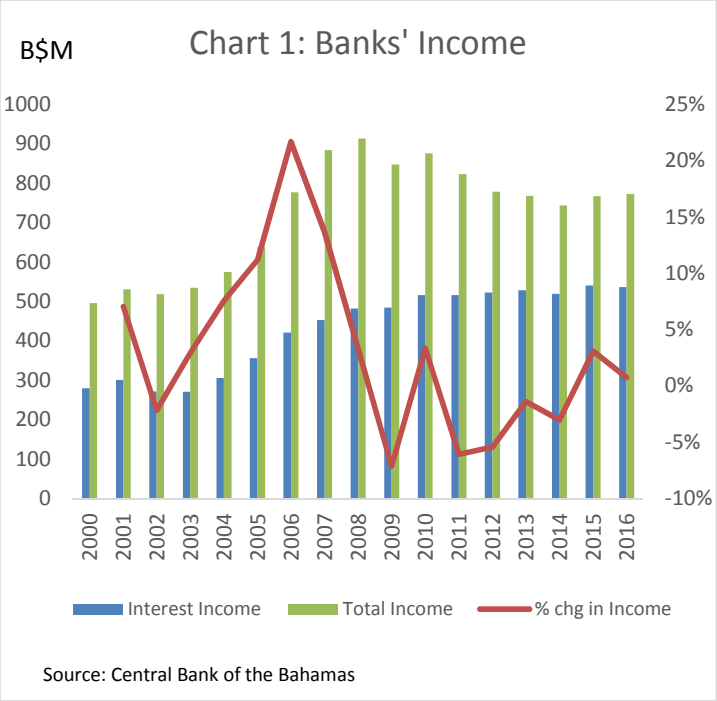
In line with the findings of Petria, Capraru and Ihnatov (2013), Sufian and Chong (2008) found that bank size is negatively related to bank profitability in the Philippines. Along with bank size, the study done by Sufian and Chong (2008) also revealed that credit risk and expense preference behavior shared a negative relationship with bank profitability in the Philippines. However, their study found that non-interest income and capitalization actually had a positive impact on bank profitability. Using the annual data of commercial banks in the Philippines from 1990-2005, the study captured a total of 280 bank-year observations. Consistent with previous studies, Sufian and Chong (2008) used a regression with ROA as the dependent variable. Its

[2] Countries included in the European Union (EU27) at the time of this study include Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

internal variables consisted of bank-specific factors such as the log of total assets, loan loss provisions to total assets, non-interest income to total assets, total overhead costs to total assets and the book value of shareholders' equity to total assets. External variables included GDP, money supply, inflation and market capitalization. The results revealed that out of all of the external variables, GDP was the only factor that influenced bank profitability.

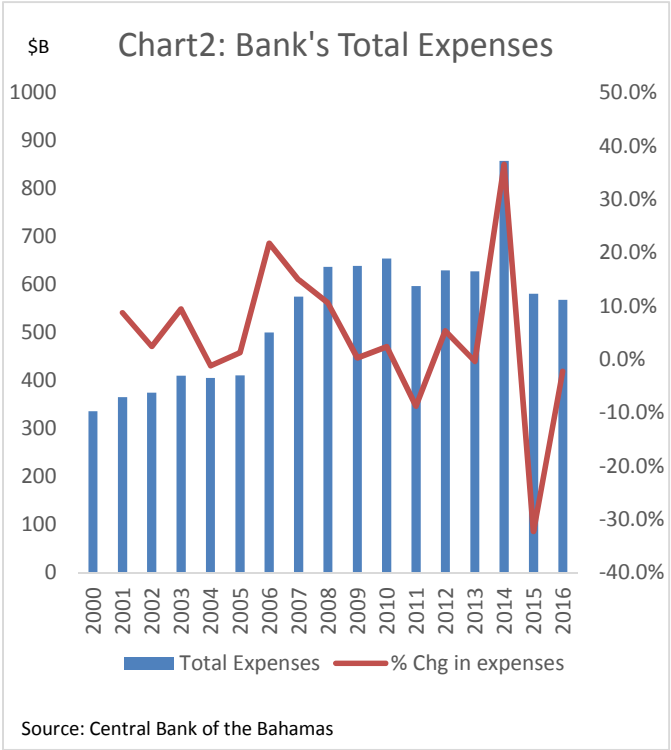
Trends in the Profitability of domestic Bank

A review of the data for the period 2000 – 2016 shows a steady climb in both income and expenses for banks, until the crisis period, when both variables began to trend downward.



Over the sixteen (16) year period, banks' collective income averaged $720.23 million per year, peaking at $912.82 million in 2008 and averaging $857.93 million over the previous three post crisis years. However, in the years following the recession, banks' income weakened, registering a low of $744.2 million in 2014. This as interest income which, on average, make up nearly 60% of aggregate inflows began to wane. Specifically, amid elevated unemployment, and a decline in households' ability to service their debt, interest income slowed to an average of 1.4% per year during the post-recession period, compared to an average of 7.5% during the years prior to the economic downturn. In terms of the growth trends for aggregate income, pre-crisis income growth was much stronger at 8.8%, whereas, post-crisis income declined by 1.4%, on average, with 5 of the 8 post-crisis years revealing negative income growth. During the 2015-2016 period, banks' income began to recover, but remained well below the pre-2008 financial crisis level.

In contrast, banks' expenses, which averaged $540.2 million per year during the 16-year period, rose in years that followed the recession, mostly due to the increase in banks' provisioning expenses, within the high non-performing loans environment. Specifically, during the 8 years prior to the global recession banks' expenses averaged $423.1 million per annum, however, in the year subsequent to the recession, their average expenditure was notably higher at $645.1million each year. The most significant spike in expenses was noted in 2014 and was attributed to the write-off of one bank's goodwill for impaired loans, as well as another bank's increased provisioning for bad debt.



Source: Central Bank of the Bahamas

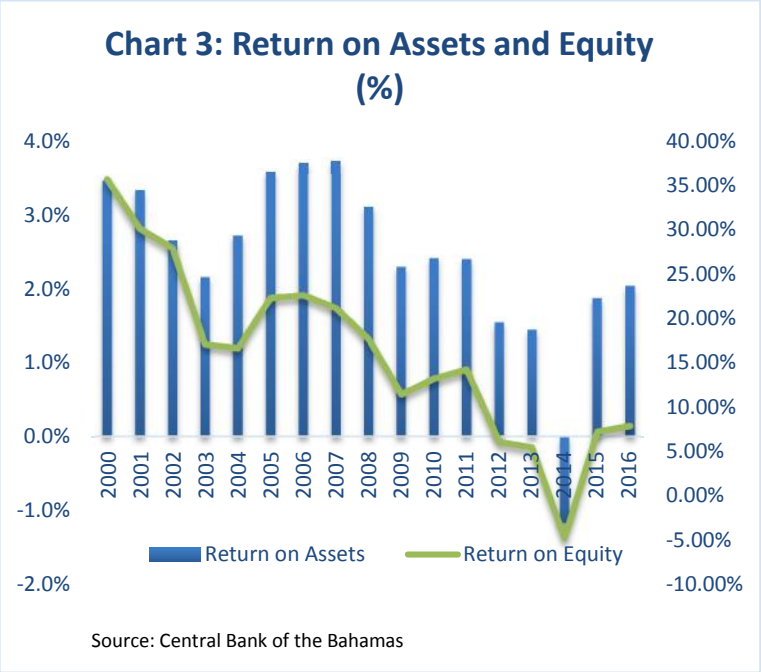
Against this backdrop, banks' pre-crisis net profits averaged $190.10 million, but following the global downturn, profits averaged $165.82 million per annum. Closer analysis reveal that banks' profitability peaked in 2007 at $307.43 million, in contrast to a $115.05 in losses recorded in 2014, owing to the previously mentioned hikes in expenses for two commercial banks.

Shareholder Returns

A further analysis of banks' profitability would entail a review of both its Return on Assets (ROA) and Return on Equity (ROE). These ratios measure the profitability of the banks relative to their overall resources as well as relative to the book value of shareholder equity.

In this regard, the data for commercial banks in The Bahamas for the period 2000-2016 showed that Banks' ROA averaged 2.42% for the period. However, again there was a significant difference between the pre-crisis and post-crisis periods. In the period 2000– 2008, commercial

banks' ROA average 3.15%, whereas in the post-crisis period, ROA averaged 1.76%. The highest recorded ROA was 3.73% in 2007, in contrast to the negative 1.15% noted in 2014.



Similarly, the commercial banks ROE for the review period averaged 15.90% for the period. Again there was a significant difference between the pre-crisis and post-crisis periods. In the period 2000–2008, commercial banks' ROE average 24.04%, with the post-crisis period, ROE averaging 8.66%.

As the trends show, the economic downturn which commenced in 2008, had a significant impact on banks' profitability. Reduced interest income, which contributes over 50% to total income, together with higher expenses—particularly bad debt provisioning—had a negative impact on banks' ability to sustain high profits. The following section outlines the results of the empirical analysis to determine the main drivers of profitability in Bahamian commercial banks.

Methodology

Data

This model uses quarterly bank level data spanning the period 2004-2015, for the seven domestic banks within the Bahamas. The bank specific data were obtained from the Central Bank's database of balance sheet information, as reported by banks, while the macro-economic data was extrapolated using GDP data from the country's statistics departments.

Dependent Variable

Drawing on previous studies as well as the knowledge of the domestic banking sector, the model takes into consideration internal and external factors of bank profitability. Accordingly, although

both ROE and ROA are cited in the literature as measures of profitability, ROA is more widely utilized given that it is an indicator of profits earned for each dollar of assets. As such, this paper employs ROA as the as the dependent variable.

Explanatory Variables

The independent variables come under categories of 'bank specific indicators' and 'external/macroeconomic determinants'. In terms of internal variables impacting banks' profitability, expectations are that liquidity risk, credit quality risk, operational efficiency and size, all play a role in bank profitability. In the context of the Bahamian banking sector, credit risk, business mix/non-interest income were employed as independent variables.

Table 1

Denotation	Variable	Proxy	Expected sign	Explanation
Independent variable				
ROA- Return on Assets				
Dependent variables: Internal				
CRSK	Credit Risk	NPL/Total loans	-	Higher NPL rates, provisioning expenses, are likely to erode profitability
BUSMIX	Business mix	Non-interest Income/total Assets	+	Measures bank's diversity and business mix, as well as its ability to earn income outside of conventional loans
OPEX	Bank Costs	Overhead expenses/total assets	+/-	Higher operating expenses are expected to lead to an erosion of profits, however, depending on what the type of activity being funded (e.g asset management, loan recoveries, etc) the spending may translate into profits.
Dependent variables: External				
GDP	Macroeconomic factor	Logarithm of GDP	+	Better economic conditions should create an environment for higher profits. (increase debt services, increased income from both loans and other operations etc).

Model Equation:

$$ROA = c + \beta_1 crsk1 + \beta_2 bsmx1 + \beta_3 opex \quad + \in$$

The Hausman test was done to determine whether it was best to use the fixed effect model or the random effects model. The results of the test on the Random Effect Model was a p-value greater that 5%, which mean that the Random Effects Model is appropriate to use. The results of the model are outlined in table 2.

Results of the Model

Table 2: Results using Cross-section Random Effects Model **R-squared: 0.433**			
Variable	Coefficient	Std Err	P
C	3.858544	0.681170	0.000
CRSK	-12.33599	2.319626	0.000
BSMX	+810.5156	98.39625	0.000
OPEX	-0.415760	0.036427	0.000

The results of the model indicate that, 43% of banks' profitability is related to internal factors, including credit risk—as measured by the ratio of non-performing loans to total loans—business mix, and banks' operating costs. Based on the results, macroeconomic conditions such as Gross Domestic product does not have a significant influence on the profitability of Bahamian banks, which perhaps is reflection of consumers' limited options in terms of access to credit. Further, as expected, there exists a negative relationship between banks' credit risk and their profitability, suggesting that it is important that banks' address their NPL issues. The high level of NPLs also has implication for banks' noninterest expenses—due to the need for higher bad debt provisioning—which is also negatively correlated with their profitability. For Bahamian commercial banks, the product variety/business mix also has some bearing on their profitability. Noteworthy however, is that the use of non-interest income as proxy for business mix may not be entirely accurate given that high non-interest income may simple mean that the bank has high

fees for miscellaneous transactions and services, and not that they have a variety of lucrative product offerings.

Conclusion

Similar to other studies on the subject, the results of this research indicate that the profitability of Bahamian banks is mostly driven by internal, bank specific factors, namely; credit risk, operational costs, and the business mix—as measured by the ratio of non-interest income to total assets.

With only seven banks catering to the Bahamian populous there is limited competition and the appearance of collusion among banks. This market structure is beneficial to the profit margins of banks, however, it places consumers at a disadvantage when it comes to the cost of borrowing and access to modern financial products for private individuals. Given that "business mix" is positively correlated with banks' profitability, there should be scope for banks to use innovation and technology to enhance their business mix. This would improve profitability and efficiency while benefiting consumers—by reducing the incidences of fraud and increasing financial inclusion. Moreover, the negative relationship between NPL rates and profitability affirms the need for an aggressive approach to recovering bad loans, or removing them from banks' books. Not only does the high incidence of NPL's erode profitability, but it can have implications for financial stability and economic growth. Finally, the opposing relationship between banks' operational expenses and their return on assets shows that there is scope for banks to improve their operational efficiency in order to increase profitability, rather than relying on an increase in fee based income.

As it relates to further areas of study, the authors expect that testing the impact of market structure on Bank's profitability may yield interesting results. Further, the increasing presence of the shadow banking sector, in the form of web shops and payday lending operations may also have some impact on the profits of conventional deposit taking institutions. Further, in an environment with increasing focus on financial stability, and a risk based approach to bank supervision, it may be worthwhile to measure the impact of capital requirements on banks' profit margin.

APPENDIX 1

Original Equation:

$$ROA = c + \beta_1 crsk1 + \beta_2 crsk2 + \beta_3 lrsk1 + \beta_4 lrsk2 + \beta_5 bsmx1 + \beta_6 opex + \beta_7 lnas + \beta_8 lngdp + \in$$

Table 1

Denotation	Variable	Proxy	Expected sign	Explanation
Independent variable				
ROA- Return on Assets				
Dependent variables: Internal				
LNASTS	Bank size	Logarithm of total assets	+/-	Larger banks may enjoy higher profitability levels due to economies of scale, however, larger banks are also subject to more rigidity, and bureaucracy, which may impact profits.
CRSK	Credit Risk	NPL/Total loans	-	Higher provisioning expenses, are likely to erode profitability
LTAS	Liquidity Risk	Loans/total assets	+	Increases in loans lead to increases in profits, given that it is traditionally the highest income earner for the bank **However**, it also has increased implications for liquidity risk.
BUSMIX	Business mix	Non-interest Income/total Assets	+	Measures bank's diversity and business mix
OPEX	Bank Costs	Overhead expenses/total assets	+/-	Higher operating expenses are expected to lead to an erosion of profits, however, depending on what the type of activity being funded (e.g asset management, loan recoveries, etc) the spending may translate into profits.

Dependent variables: External				
GDP	Macroeconomic factor	Logarithm of GDP	+	Better economic conditions should create an environment for higher profits. (increase debt services, increased income from both loans and other operations etc.

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The Central Bank of The Bahamas. Profit & Loss Statement.

The Central Bank of The Bahamas. Statement of Assets & Liabilities.