Evaluating Competition in the Loan and Deposit Market using the Boone Indicator Approach

S. Abel, H. Khobai & P. Le Roux

A B S T R A C T

The study evaluates competition in the loan and deposit market using the new empirical industrial organisation method of the Boone indicator for the period 2010 to 2015. The study reveals a number of interesting results. Competition was more intense in the market for loans than in the deposit market. There was more competition among domestic banks than among foreign banks. The study also reveals that there was marginal differences in the intensity of competition for loans and deposits among domestic banks. On the aggregate level, competition in the loan and deposit markets declined significantly during the period. A number of developments that took place in the banking sector can be used to explain the decline in competition. These include an increase in non-performing loans (NPLs), increased regulatory intervention and economic slowdown. The regulator, perceiving that banks were overcharging the banking public, has been intervening through pricing guidelines on the market, reducing bank charges and interest rates and influencing the pricing behaviour of the market, hence removing banks' incentive to compete. The study renders support to the skimping and the bad management hypotheses, which argue that owing to competition bank managers are forced to make bad decisions, which in this case led to the collapse of banks and an increase in NPLs.

Key words: Competition, loan and deposit market, Boone indicator approach, Zimbabwe

Introduction

There has been a number of developments in the financial services sector since the 2008/9 global financial crisis that resulted from the collapse of the market for subprime mortgages in the United States of America. Governments around the world have introduced a number of policy measures to restore financial sector stability in

Dr S. Abel, Dr H. Khobai & Prof. P. Le Roux are in the Department of Economics, Nelson Mandela Metropolitan University.
E-mail: hlalefangk@gmail.com

the wake of the devastating crisis. These measures include central bank liquidity support; state guarantees to financial institutions; targeted facilities; and increased capital requirements (Edey 2009; Karr 2012). On the other hand, banks have been facing pressure from increased competition from non-bank financial institutions and mobile money (Karr 2012). The financial system has been responding to this competition by adopting new methods to contain costs, deepening customer relationships and repricing their products. Karr (2012) notes that developments after the global financial crisis call for continuous measurement of the performance of the banking sector.

The measurement of banking performance helps compare the performance among peers and establish trends over time (Berger & Humphrey 1997). Performance measurement assists policymakers in taking proactive steps to avert or cope with any adverse developments before they can spread throughout the whole system. Performance measurement is a framework for assessing the effect of government policies such as deregulations, mergers and interest rate restrictions, and how they could affect social benefits. The anticipated benefits include the ability to reduce resource wastage and to lower the market prices of financial products (Berger & Humphrey 1997). Bank management use measurement results to assess the success or failure of organisations (Kennerley & Neely 2003). Banks also use performance measures for identifying and tracking progress, identifying opportunities, and improving and comparing performance (Berger & Humphrey 1997).

The performance of the financial sector can be measured in a number of ways. The financial sector can be evaluated in terms of competition, concentration, efficiency, productivity and profitability (Bikker & Boss 2008). Competition in the banking sector is important given that banks are active players in intermediating between savers and borrowers, and channelling resources to productive users. The need for competition in the banking sector has been justified for a number of reasons. Claessans (2009) argues that banking competition leads to efficient allocation of capital, ensures balanced development in different regions of a country through transferring surplus funds from developed areas to the less developed regions, and consequently increases investment, trade and production in the economy. Claessans (2009) further argues that competition enhances the efficient production of financial services, the quality of financial products and the degree of innovation in the sector. Antwi and Antwi (2013) and Yildirim and Philippatos (2007) argue that competition contributes to greater financial stability and product innovation, and gives households and firms access to financial services, thus improving the prospects for economic growth.

Limited competition in the banking system reduces access to finance by the key productive sectors of the economy. Banking competition increases access to a wide

range of product offerings at a lower price and enhances financial inclusion. Banks that operate in uncompetitive markets which suffer from intermediate monitoring costs are likely to increase credit risk, setting the stage for subsequent problems such as an increase in non-performing loans (NPLs). Despite the advantages of competition, bank competition should be allowed to a certain extent, beyond which it becomes counterproductive (Bikker 2010). Competition to a certain level leads to reduced profits and banks failed to build extra buffers to protect them from shocks (Bikker 2010). Competition is not supposed to be a sudden process given that it can potentially cause bank insolvency, which can affect financial stability (Bikker & Bos 2005).

This study evaluates competition in the loan and deposit market in Zimbabwe during the period 2010 to 2015 using one of the new empirical industrial organisation methods, the Boone indicator. Of interest during the period was the increase in deposits, loans, balance sheets as well as the profitability of the banks. With the increase in loans over time also came an increase in NPLs and the collapse of a number of banking institutions. This raises questions about the role of competition in the banking sector. This study seeks to answer the following two questions: How has competition evolved during the period 2010 to 2015? Is there a significant difference in competition between local banks and foreign banks?

There has been little research on the performance of the banking sector in Zimbabwe. One of the studies of banking sector competition in Zimbabwe was undertaken by Abel and Le Roux (2016). The study revealed that the banking sector in Zimbabwe operated under monopolistic competition. The study found that banks were able to generate more revenue because of the uniqueness of their features such as brands, image and advertising. Given the scarcity of studies on banking competition in Zimbabwe, the current study contributes to theory and the unique methodology of the Boone indicator (Boone 2001), using the Zimbabwean banking sector as the laboratory.

The rest of the paper is organised as follows: Section 2 gives some background to the banking sector during the study period. Section 3 discusses literature on competition in the banking sector, while section 4 outlines the research methodology employed. Section 5 presents the results of the study, and is followed by conclusions and recommendations in section 6.

Stylised facts about the Zimbabwean banking sector

The Zimbabwean economy suffered a severe crisis during the period 2000 to 2008. The crisis was characterised by hyperinflation rates in the 21st century, deep economic decline, failure to honour international obligations, sustained balance

of payments deficits, and both internal and external payment arrears. During the crisis, a number of bank failures were recorded. Bank failures reduced the amount of competition and innovation in the banking system. Financial deepening slowed down as people began to avoid banks owing to increased uncertainty. The proportion of deposits to the gross domestic product declined (Kanyenze, Kondo, Chitambara & Martens 2011).

In response to the myriad of economic and banking sector challenges, the government of Zimbabwe abandoned the local currency in February 2009. Since then the country has operated under a multi-currency regime, where a basket of currencies acts as legal tender with the US dollar and South African rand as the main currencies. The predominant currency is the US dollar, which constitutes over 90 per cent of transactions, while the rand is used for about 5 per cent of transactions. The country now uses the US dollar as the penultimate unit of account and settlement. The sources of the monetary base in the economy (US dollars) are exogenous and depend on export earnings, diaspora remittances, offshore credit lines, and foreign direct and portfolio investment inflows. These sources are outside the control of the monetary authorities.

The abandonment of the local currency and the subsequent adoption of the multi-currency system made the traditional monetary policy instruments redundant. The multicurrency system makes it very difficult for the monetary authorities to control and manage liquidity in the economy, and this has had a negative impact on the banking sector. For example, the absence of a baseline interest rate in the economy has left banks without a benchmark interest rate to guide their pricing. Given the absence of the benchmark interest rate, the central bank has been intervening in the market through moral suasion in the setting of the interest rates. In September 2016, the central bank set the maximum lending rates for both productive and consumptive lending at 15 per cent; this was reduced to 12 per cent in February 2017. The high nominal lending rates which banks were quoting were mostly driven by high liquidity risk because of the absence of an active money market, coupled with a high perceived country risk. The absence of money market instruments, such as treasury bills (TBs), often left banks without collateral to use for borrowing on the interbank market until 2014. Furthermore, the absence of the lender of last resort exacerbated the already precarious tight liquidity environment.

The total amount of loans has been increasing since 2009, as shown in figure 1. Of the total loans, the top five banks, each with loan books in excess of US$200 million, had total loans and advances amounting to US$2.35 billion, accounting for 64.5 per cent of total banking sector loans and advances as at 30 September 2016. The
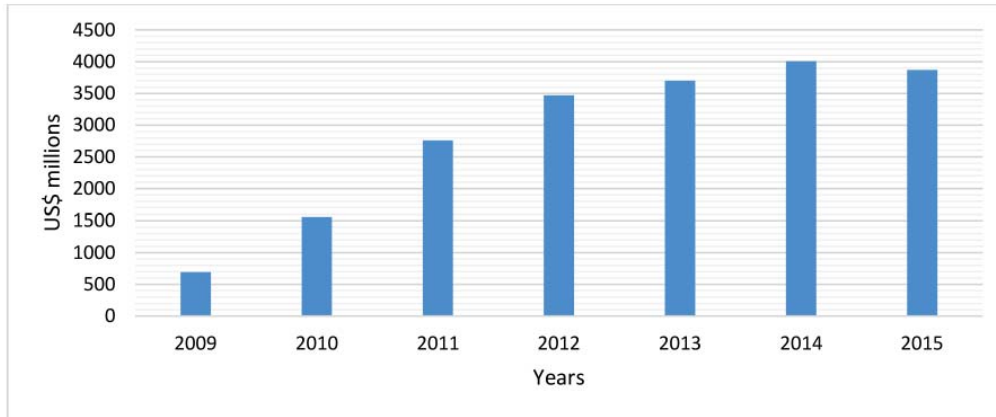
Figure 1: Banking sector Loans (2009–2015)
Source: Reserve Bank of Zimbabwe (2015)

increase in loans and advances was driven by the demand for capital by industry as well as consumptive borrowing by individuals. Given the economic crisis that engulfed the country before 2009, economic growth registered therefore forced the majority of banks to aggressively seek markets for their loan products. One of the mistakes which was made by the majority of the banks was the failure to exercise due diligence in dealing with the majority of bank customers, both individuals and corporations. Most of the customers who were offered loans were multibanked and started to default on their repayment obligations when the growth in the economy subsided. This saw the amount of NPLs increasing in the banking sector. NPLs reached an all-time high of 20.1 per cent in June 2014, which created a challenge for the banks.

Figure 2 shows that banks were profitable during the period 2009 to 2015. The annual total net profit that banks were generating increased annually, but not in 2013. The deepening in the net profit that was experienced in 2013 was mostly a result of government intervention, which reduced interest rates, bank charges and fees that banks were charging their clients. These actions were taken based on a memorandum of understanding which was signed by the central bank and all operating banks, and which dictated the pricing of banking products. With the removal of the memorandum at the end of 2013, net profits for the banks took a positive turn, reaching around US$82 million in 2015. The average return on assets and the average return on equity were 1.6 per cent and 8.9 per cent respectively in the period 2009 to 2015.

Figure 3 shows that the banking sector experienced a high cost-to-income ratio in the period 2009 to 2015. The high cost-to-income ratio is characteristic of the high
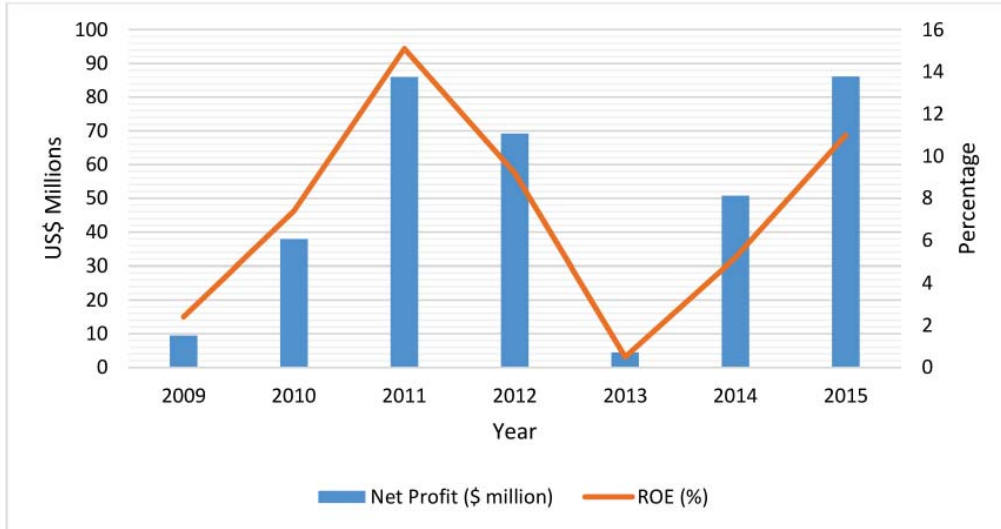
Figure 2: Profitability indicators
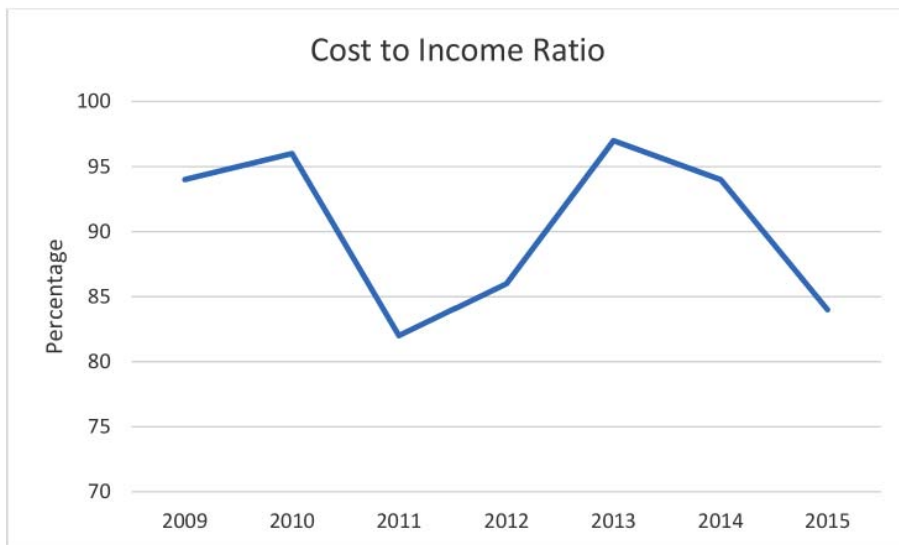
Source: Own calculation

Figure 3: Cost-to-income ratio in the banking sector

Source: Reserve Bank of Zimbabwe (2015)

cost environment that has been affecting the Zimbabwean economy. The high cost structures in the economy have been accused of affecting the competitiveness of the

economy and therefore of the banking sector. High cost in the banking sector has been identified as the source of high interest rates and bank charges.

Since 2011, Zimbabwean banks have been taking various measures to improve their earning capacity. They have reduced the cost-to-income ratio through business model re-engineering, which includes embracing technology, cost-cutting measures, and branch and staff rationalisation.

Literature review

The importance of banking competition can be deduced from the perceived effects of monopoly power in the banking system (Guzman 2000). Monopoly power allows banks to price their products above competitive prices, which discourages managers from keeping costs at reasonable levels. Secondly, it causes managers to pursue objectives other than profit maximisation. Thirdly, managers may actually deploy resources in the maintenance of market power. Fourthly, exploitation of monopoly power may allow the persistence of inefficient managers, leading to increased cost inefficiency. Fifthly, monopoly power allows banks to charge higher loan rates and compensate savers with lower deposit rates, which reduce the equilibrium quantities of funds available for credit and subsequently the growth rates of economies.

The relationship between competition and efficiency remains controversial and has generated a number of theories. Of interest also are interrelationships among competition, efficiency and NPLs. Berger and De Young (1997) propose four hypotheses to explain the relationship between NPLs and the efficiency of the banking sector. Berger and De Young (1997) term these the bad luck, bad management, skimping behaviour and moral hazard hypotheses. The bad luck hypothesis posits that a surge in NPLs can be a result of unanticipated events outside the control of bank management, such as economic slowdown (Berger & DeYoung 1997). In such a scenario, a bank will incur additional expenses in monitoring these NPLs, which will ultimately impact negatively the efficiency of the bank. The bad management hypothesis postulates that the low level of efficiency of the bank is a result of a poor management decision which is reflected in poor credit management (Berger & DeYoung 1997). According to the hypothesis, the poor credit monitoring by bank management includes poor screening of borrowers, which will lead to an increase in the amount of NPLs. The skimping hypothesis posits that those banks that are profitable in the long run might appear more efficient in the short run if they use less resources in the monitoring and underwriting loans (Berger & Young 1997). According to skimping hypothesis, NPLs are not apparent in the short run – they only become apparent in the long run when a higher proportion of borrowers start defaulting. The risk averse management hypothesis (Koutsomanoli-Filippaki

& Mamatzakis 2009) suggests that bank managers are risk averse. The risk averse managers incur huge loan monitoring and screening costs, which then decrease the efficiency of the banks (Berger & Young 1997). The increase in the cost of monitoring and screening is meant to compress defaults in credit portfolios. The negative relationship between efficiency and NPLs is a result of managements' fear of a financial crisis and information asymmetry.

The performance of banks has traditionally been measured using financial ratio analysis (Ncube 2009). The main weakness associated with the use of ratio analysis is the inability of ratios to capture the essence of multifaceted banking operations. This weakness has led to the proliferation of alternative methods of assessing banking sector performance. These other methods embrace more aspects of performance, including the quality of assets, the funding capacity and the risk associated with the production of value. The new empirical industrial organisation (NEIO) approach is one of the alternative approaches that have been adopted to circumvent the weaknesses of the ratio approach to measuring competition. The NEIO reaches conclusions about competitive pressure from directly observing the conduct of firms in the market (Leon 2014). These methods use formal competition measures that proxy the reaction of output to input prices. The NEIO methods are meant to circumvent the weaknesses of the structural approaches. The weakness of the structural approaches lies in their assumption of one-way causality from market structure to performance. These methods fail to account for the conduct of banks in the market and the impact of performance on market structure. The NEIO infers firms' conduct directly from the firm's performance (Leon 2014). The approaches use optimisation models from which are derived indicators of competition: the Lerner index, the Panzar and Rosse test, the H-statistic, the conjectural variation parameters and the Boone indicator.

Boone (2001) proposes a measure, based on relative profits, which is more robust than the different ways in which competition can be parameterised in theory. The intuitive idea behind the relative profits measure is that in a more competitive industry, firms are punished more harshly for cost inefficiency. In other words, when two firms in an industry are compared and one is more efficient than the other, the more efficient firm will have higher profits than the less efficient firm. As the industry becomes more competitive concerning the efficiency levels of firms, the profits of the more efficient firm go up relative to the profits of the less efficient firm. The Boone indicator model (Boone 2001) assumes that banks with lower marginal costs are more efficient and gain more market share or profits. This view is dominant in cases where there is substantial competition on the market.

The Boone indicator model has been credited for its ability to compare competition over a long period of time, to measure competition for several specific product markets and categories, and to measure competition of loan or deposit segments of the banking sector separately (Kar & Swain 2014). The challenges associated with the model include that it suffers from a multicollinearity problem if the efficiency hypothesis holds; it assumes that at least some profit gained by more effective banks is transferred to their clients; it does not account for differences in the quality of products; and it neglects design across banks and their incentive for innovations (Boone 2000, 2001 & 2004; Boone, Griffith & Harrison 2005; CPB 2000; Schaeck & Čihák 2008).

Leuvensteijn, Sørensen, Bikker and Adrian (2007) assessed the impact of competition on the interest rates on loans in the Euro area during the period 1994 to 2004 using the Boone indicator method. Their study found that stronger competition is associated with lower spreads between bank and market interest rates for loan market products. The results revealed that banks priced their loans based on the prices prevailing in countries with greater competitive pressures. The study further found that bank interest rates in competitive markets respond more strongly to changes in market interest rates.

Schaeck and Čihák (2008) applied the Boone indicator method to two complementary data sets for Europe and the United States of America. The results showed that smaller banks responded more strongly to competition than larger banks. The two-stage quantile regressions indicate that the soundness-enhancing effect of competition is larger in magnitude for sound banks than for fragile banks. Deygun, Shaban and Weyman-Jones (2013) employed the polynomial quantile regressions to test a panel data sample of banks in different emerging economies. The results indicated that the trend towards more intense competition among banks in emerging economies continued during the period of the financial upheaval in 2005 to 2008, and that India and China (among others) were leading this process.

Kar and Swain (2014) measured competition among micro-finance institutions using the Boone indicator. Their study sought to ascertain the effect of competition on the outreach, financial performance and quality of loan portfolios of micro-finance institutions (MFIs). The study used the generalised methods of moments (GMM) estimation technique to circumvent the problems of endogeneity. It found that increased competition in the micro-finance sector led to an increase in the amount of loans and a decline in financial self-sustainability. The results also concluded that competition negatively affected the loan portfolio quality.

Creusen, Minne and Van der Wiel (2006) used the Boone indicator to study competition in a number of Dutch markets during the years 1993 to 2001. Their

results showed that there was a decline in the intensity of competition during that time. Bikker and Leuvensteijn (2008) used the Boone indicator to study the Dutch life insurance market. Their study involved calculating the Boone indicator using three different approximations of the marginal costs: average variable costs; marginal costs derived from a trans-log costs function; and scale-adjusted marginal costs. The results showed that there was weak competition in the Dutch life insurance industry compared to other industries. Boone et al. (2005) evaluated the importance of the modified Boone indicator based on relative profits. They employed data from companies listed on the London Stock Exchange over the period 1986 to 1999. The results revealed that there was a positive correlation between the Boone indicator and the price–cost margin (PCM), but no correlation with the Herfindahl index.

Methodology

The study employs one of the new empirical industrial organisation methods, the Boone indicator. The Boone indicator measures the degree of competition, calculated as the elasticity of profits to marginal costs. The derivation of the Boone indicator follows the work of Leuvensteijn et al. (2007) based on the model developed by Boone et al. (2004).

$$p\left(q_i, q_{j \neq i}\right) = a - bq_i - d \sum_{i \neq j} q_j \tag{1}$$

The industry has a constant marginal cost mc_i. The bank profit function is given by

$$\pi_i = (p_i - mc_i)q_i \tag{2}$$

The bank is therefore supposed to choose the optimal level of output q_i. Assuming that $a > mc_i$ and $0 < d \leq b$, the first order condition for the Cournot-Nash equilibrium becomes

$$a - 2bq_i - d \sum_{i \neq j} q_j - mc_i = 0 \tag{3}$$

Equation 3 shows the relationship between output and marginal costs. The equation shows that profits depend on marginal costs in a quadratic way. The competition in the market can increase when the products of the banks become close substitutes, that is when d increases but remains below b. Alternatively competition can increase when entry costs declines.

When N banks are producing positive output levels, the N first-order condition can be solved yielding

$$(q_i(c_i)) = \left[\left(\tfrac{2b}{d} - 1\right)a - \left(\tfrac{2b}{d} + n - 1\right)mc_i + \sum_j mc_j\right] / \left[2b + d(N-1)\left(\tfrac{2b}{d} - 1\right)\right] \quad (4)$$

Profit π_i is defined as a variable profit excluding the entry costs; ε means the bank enters the sector only if $\pi_i \geq \varepsilon$.

From equation 4, market share can be defined as $s_i = {q_i}/{\sum_j q_j}$

$$Ln\ s_i = \alpha + \beta \ln(mc_i) \quad\quad\quad (5)$$

The market shares of banks with lower marginal costs are expected to increase so that β is negative. The market share can be calculated for either the loan or the deposit market segment separately. The stronger the competition, the stronger the effect and the larger in absolute terms the value of β. The β parameter is the Boone indicator.

The calculation of the Boone indicator requires the calculation of marginal costs (MC). MC are calculated from the trans-log cost function shown in equation (6). The cost function is derived from the works of Pruteanu-Podpiera, Weill and Shobert (2008) and is specified below.

$$ln\left[\tfrac{TC_{it}}{w_{3it}}\right] = \alpha_0 + \alpha_1 \ln Y_{it} + \tfrac{1}{2}\alpha_2 (\ln Y_{it})^2 + \alpha_3 ln\left(\tfrac{w_{1it}}{w_{3it}}\right) + \alpha_4 ln\left(\tfrac{w_{2it}}{w_{3it}}\right) + \alpha_5 ln\left(\tfrac{w_{1it}}{w_{3it}}\right) ln\left(\tfrac{w_{2it}}{w_{3it}}\right) +$$

$$\tfrac{1}{2}\alpha_6 \left[\ln\left(\tfrac{w_{1it}}{w_{3it}}\right)\right]^2 + \tfrac{1}{2}\alpha_7 \left[\ln\left(\tfrac{w_{2it}}{w_{3it}}\right)\right]^2 + \alpha_8 \ln y\ ln\left(\tfrac{w_{1it}}{w_{3it}}\right) + \alpha_9 \ln y\ ln\left(\tfrac{w_{2it}}{w_{3it}}\right) + \varepsilon_{it} \quad (6)$$

The model assumes that the cost function has one output (y) representing loans or deposits and three input prices: w_1 = price of labour; w_2 = price of physical capital; and w_3 = price of borrowed funds. The cost function takes the form of a trans-log cost function. The assumption of linear homogeneity in input prices is imposed by normalising total costs and input prices by one input price. The estimated coefficients of the cost function (6) are then used in the calculation of the marginal cost in equation (7).

$$MC_{it} = \frac{TC_{it}}{Y_{it}}\left[\alpha_1 + \alpha_2 \ln Y_{it} + \alpha_8 \ln\left(\frac{w_{1it}}{w_{3it}}\right) + \alpha_9 ln\left(\frac{w_{2it}}{w_{3it}}\right)\right] \quad (7)$$

The marginal cost is equal to the product of the derivative of the logarithm of total cost to output and total cost over output.

The study employs quarterly data for the period 2010 to 2015. A total of 12 commercial banks constituted the sample, with equal numbers of observations across the banks reflecting a balanced panel. Of the 12 banks, six are domestic banks while the other six are foreign banks operating in the Zimbabwean financial system. The banking system in Zimbabwe has 19 operating banking institutions of which are 13 are commercial banks, four building societies and one a savings bank. The study relied on MMC Capital reports as the main sources of data. The MMC is a research institution which collects and collates financial institutions' performance data in Zimbabwe.

Presentation of results and analysis

The study estimated the Boone indicator for both the loan and deposit markets in Zimbabwe during the period 2010 to 2015. The study further categorised the domestic and foreign banks with a view to determining whether ownership matters for competition. The results are shown in table 1. All the results retained a negative sign for the Boone indicator, hence for ease of discussion only the absolute value is shown.

Table 1: Overall Boone indicator for the period 2010 to 2015

	Loans	Deposits
All banks	0.4950	0.2781
Domestic banks	0.5418	0.5404
Foreign banks	0.3891	0.0864

Source: Own calculation

Table 1 shows that there was more intense competition in the loan market than in the deposit market. The absolute Boone indicator for the loan market of 0.4950 was greater than that of the deposit market, which was 0.2781 for the period 2010 to 2015. This means that there was greater competition in the deposit market than in the loan market. This can be explained by both the skimping and the bad management hypotheses (Berger & DeYoung 1997).

The results further reveal that competition was more intense among domestic banks than among foreign banks. The reason for the intense competition among the domestic banks was that the majority of banks had lost some of their clients during the crisis period owing to bank clients' flight to quality. This could be explained by the skimping hypothesis, which attributes the phenomenon to poor management decisions as reflected in the poor credit management (Berger & DeYoung 1997). Most

bank customers sought refuge in foreign banks as the custodians of their finances. This was mostly a result of the collapse of the domestic banks during the crisis period. The phenomenon persisted in the post-crisis period, with a number of local banks collapsing. This then forced the local banking public to seek shelter in the foreign banks and the few local banks they still perceived as strong.

The results further show that there was greater competition for the issuance of loans than for the mobilisation of deposits, with competition more pronounced in the domestic banks. The intense competition in the domestic market resulted largely from the need of domestic banks with smaller client bases to create assets and increase profitability. The intensity of competition was characterised by poor credit management in the domestic banks, which ended up being the holders of the majority of NPLs in the market. This supports the skimping hypothesis (Berger & DeYoung 1997). Banks were too keen to increase the size of their loan portfolios and therefore advanced loans to the market without undertaking adequate client due diligence, while the majority of these clients were bank hopping owing to the laxities prevalent in the system.

Another observation based on the results is that there was a marginal difference between the intensity of competition for loans and deposits in the market segments served by domestic banks. This is also explained by the phenomenon of customer flight discussed above, which was experienced during the crisis period that preceded the study period. Domestic banks were forced to attract deposits through promises to give bigger loans over generous repayment periods. This reflected the race-to-the-bottom phenomenon: domestic banks attracted lower income classes, thus compounding the accumulation of NPLs. This credit-led deposit acquisition model for local banks led to a situation where the competition for deposits was simultaneously perceived to be competition for loans by the local banks. It also led to generally lower levels of asset and revenue quality among the domestic banks during the period.

Among the foreign banks there was more competition in the loans segment than in the deposit segment. The limited competition in the deposit market among foreign banks can be explained by the fact that foreign banks had managed to preserve their clients during the crisis when there was depositor flight. Testimony to this was the fact that foreign banks continued to impose stringent requirements to open accounts with them. They were also perceived as safer havens, and so effortlessly attracted clients and rigorously screened them, taking the middle and upper income classes as their clients.

Figure 4 depicts the downward evolution of the Boone indicator in the period 2009 to 2015, showing decreasing competition in the loan and deposit markets during the period. The overall trend depicted by the graph shows that competition in the loan

and deposit markets declined significantly during that period. There is a number of factors that could explain the developments in the banking sector which led to the decline in competition. Firstly, competition was high during 2009 to 2011 period, with banks trying to build up their assets and liabilities following the decimation of their balance sheets in the hyperinflation period. Post this period, the scope for intensifying competition was reduced since the client base had been exhausted to some extent. This was further worsened by the bank closures experienced during the period. With the majority of the banks failing, the remaining banks took a cautious approach, especially towards taking aboard new clients and the issuance of new loans. In 2012, the amount of new loans started to decline because banks were now feeling the heat emanating from the increasing NPLs. With an increase in NPLs, banks had to cut down the loans they could advance to their clients and also had to adhere to best practices in credit-risk management, which meant the majority of the clients could no longer qualify for loans or had to be issued with smaller loans in line with bank credit criteria.
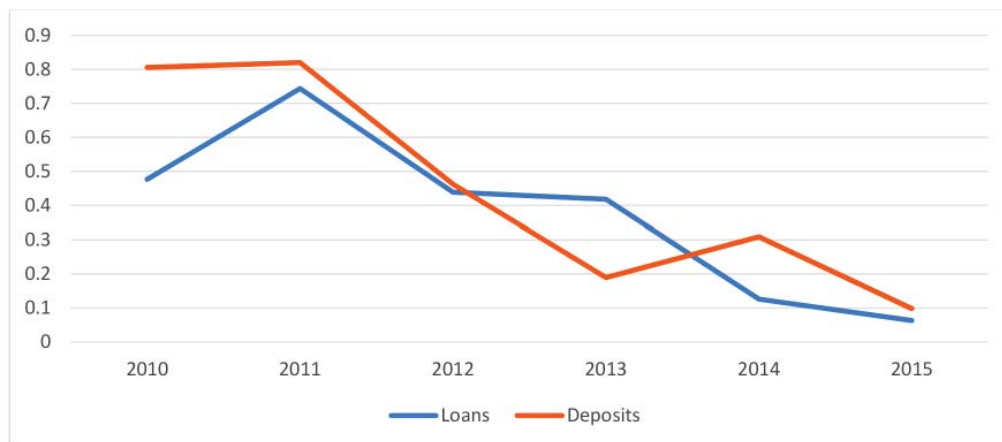

Figure 4: Evolution of Boone indicator on loans and deposit markets

Source: Own calculation

As the result of developments in the economy, which was experiencing declining growth rates, increasing unemployment and company closures, banks were forced to cut down on their lending while the number of bank clients also declined. This then forced banks also to slow down their lending in order to operate at levels consistent with declining economic activity. The situation was further worsened by the liquidity challenges that affected the economy during the period. The combination of the

liquidity squeeze and the declining economy led to a credit crunch in the economy, which impacted deposit mobilisation as well as lending in the economy.

The regulatory environment also played a role in stabilising competition in both the loan and the deposit markets. This resulted in margin compression in the banking system. Regulatory interventions of both prudential and non-prudential nature were experienced by banks. On the prudential side, the timelines for meeting new bank capital thresholds were increased, hence banks' aggressive expanding of their balance sheets lessened. Stringent prudential lending guidelines were instituted in a bid to force banks to improve asset quality and to slow down competition. On the non-prudential side, the central bank issued several pricing guidelines and used moral suasion tools to influence the pricing behaviour of the market. The effects of the central bank's price floors and caps for various banking services, as well as the effective caps on interest rates for loans and floor rates for deposits, all had negative consequences for competition in the sector. Banks were forced into a memorandum of understanding by the central bank in 2013, and more recently directives limiting lending rates and electronic bank charges have been issued. This has seen the lending rates being capped at around 12 per cent by February 2017.

Conclusion

The study investigated the evolution of competition in the Zimbabwean banking sector during the period 2010 to 2015. The study employed one of the new empirical industrial organisation methods, namely the Boone indicator. The intuitive idea behind this method is that in a more competitive industry, firms are punished more harshly for cost inefficiency. Put differently, if we compare two firms in an industry and one is more efficient than the other, the more efficient firm will have higher profits than the less efficient firm. The study has found that competition was more intense in the loan market than in the deposit market. The results further revealed that competition was more intense among domestic banks than among foreign banks.

The overall trend in competition shows that competition in the loan and deposit markets declined significantly during the period 2010 to 2015. The decline in competition can be attributed to bank closures, an increase in the NPLs and an economic slowdown. The regulatory environment also played a role in reducing competition in both the loan and the deposit markets, which resulted in margin compression in the banking system. Regulatory interventions of both prudential and non-prudential nature were instituted by the central bank. On the prudential side, bank capital threshold timelines were increased and stringent prudential lending guidelines were instituted in a bid to force banks to improve asset quality. On the

non-prudential side, the central bank issued several pricing guidelines and used moral suasion tools to influence the pricing behaviour of the market.

A number of conclusions are drawn from the study. There is a need for the continuous monitoring of competition in the financial services sector given the proliferation of different products being offered by both banks and non-bank financial institutions. Regulators should always undertake impact assessments of the various policies in the system that may have an impact on the competition landscape. Policy-makers should move towards the adoption of various methods of measuring performance that measure competition holistically rather than depend solely on the traditional ratio analysis.

References

Abel, S. & Le Roux, P. 2016. 'An Application of Panzar-Rosse Approach in Assessing Banking Sector Competition in Zimbabwe.' *Journal of Economics and Financial Sciences*, 9(2): 455–470.

Antwi, G.O. & Antwi, J. 2013. 'Do Financial Sector Reforms Improve Competition of Banks? An Application of the Panzar & Rosse Model: The Case of Ghanaian banks.' *International Journal of Financial Research,* 4(3): 1–19.

Berger, A. & DeYoung, R. 1997. 'Problem Loans and Cost Efficiency in Commercial Banks.' *Journal of Banking and Finance*, 21: 849–870.

Berger, A.N. & Humphrey, D.B. 1997. 'Efficiency of Financial Institutions: International Survey and Directions for Further Research.' *European Journal of Operational Research*, 98: 175–212.

Berger, A. & DeYoung, R. 1997. 'Problem Loans and Cost Efficiency in Commercial Banks.' *Journal of Banking and Finance*, 21: 849–870.

Bikker, J.A. 2010. 'Measuring Performance of Banks: An Assessment.' *Journal of Applied Business and Economics*, 11(4): 141–159.

Bikker, J.A. & Bos, J.W.B. 2005. Trends in Competition and Profitability in the Banking Industry: A Basic Framework. Suerf Series, No. 2005/2. [Online] Available: https://ideas.repec.org/h/erf/erfssc/35-1.htm. Accessed: 15 December 2017.

Bikker, J.A. & Bos, J.W.B. 2008. 'Bank Performance: A Theoretical and Empirical Framework for the Analysis of Profitability, Competition and Efficiency.' *Routledge International Studies in Money and Banking*. London & New York: Routledge.

Bikker, J. and van Leuvensteijn, M. 2008. 'Competition and efficiency in the Dutch life insurance industry', Applied Economics, 40(16), 2063–2084.

Boone, J. 2001. 'Intensity of Competition and the Incentive to Innovate.' *International Journal of Industrial Organization*, (19): 705–726.

Boone, J., Griffith, R. & Harrison, R. 2005. Measuring Competition. AIM Research Working Paper, No. 022. [Online] Available: www.aimresearch.org/uploads/pdf/working paper/022rgpaper.pdf. Accessed: 12 January 2017.

Claessens, S. 2009. Competition in the Financial Sector: Overview of Competition Policies. IMF Working Paper, No. 09/45. [Online] Available: https://www.imf.org/external/pubs/ft/wp/2009/wp0945.pdf. Accessed: 12 January 2017.

CPB. 2000. Measuring Competition: How are Cost Differentials Mapped into Profit Differentials? The Hague: CPB Netherlands Bureau of Economic Research. Working Paper, No. 131. [Online] Available: https://www.cpb.nl/sites/default/files/publicaties/download/measuring -competition-how-are-cost-differentials-mapped-profit-differentials.pdf. Accessed: 8 November 2016.

Creusen, H., Minne, B. & Van der Wiel, H. 2006. Competition in the Netherlands: An Analysis of the Period 1993–2001. The Hague: CPB Netherlands Bureau for Economic Policy Analysis. CPB Document, No. 136. [Online] Available: https://www.cpb.no/sites/default/files/publicaties/download/competition-netherlands-analysis-period-1993-2001.pdf. Accessed: 8 November 2016.

Deygun, M., Shaban, M. & Weyman-Jones, T. 2013. Measuring Competition Using the Boone Relative Profit Difference Indicator: An Application to Banking Systems in Emerging Economies, Discussion Paper, No. 5, Department of Economics, Loughborough University. [Online] Available: http://www.lboro.ac.uk/departments/sbe/RePEc/lbo/lbowps/Weyman_Jones_WP2013_05.pdf. Accessed: 23 November 2016.

Edey, M. 2009. 'The global financial crisis and its effects.' *Economic Papers: A Journal of Applied Economics and Policy*, 28(3): 186–195.

Guzman, M. 2000. 'Bank Structure, Capital Accumulation, and Growth: A Simple Macroeconomic Model.' *Economic Theory*, 16(2):421–455.

Kanyenze, G., Kondo, T., Chitambara, P. & Martens, J. 2011. *Beyond the Enclave: Towards a Pro-poor and Inclusive Development Strategy.* Harare, Zimbabwe: Weaver Press.

Kar, A.K. & Swain, R.B. 2014. 'Interest Rates and Financial Performance of Microfinance Institutions: Recent Global Evidence.' *European Journal of Development Research*, 26(1): 87–106.

Karr, J. 2012. Performance Measurement in the Banking Industry. Business Finance, Mar 27, 2012. [Online] Available: http://businessfinancemag.com/treasury/performance-measurement-banking-industry. Accessed: 12 December 2016.

Kennerley, M. & Neely, A. 2003. Measuring Performance in a Changing Business Environment. Cranfield, UK: Cranfield University, Centre for Business Performance, Cranfield School of Management. [Online] Available: www.emeraldinsight.com/doi/abs/10.1108/ 01443570310458465. Accessed: 15 December 2016.

Koutsomanoli-Filippaki, A. & Mamatzakis, E.C. 2009. 'Performance and Merton Type Default Risk of Listed Banks in the EU: A Panel VAR Approach.' *Journal of Banking & Finance*, 33(11): 2050–2061.

Leon, F. 2014. Measuring Competition in Banking: A Critical Review of Methods. HALSHS-01015794v2. [Online] Available: https://hal.archives-ouvertes.fr/halshs-01015794/document. Accessed: 12 January 2017.

Leuvensteijn, M., Sørensen, C.K., Bikker, J.A. & Adrian, A.R.J.M. 2007. A New Approach to Measuring Competition in the Loan Markets of the Euro Area. ECB Working Paper 768. [Online] Available: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp768.pdf. Accessed: 12 January 2017.

Ncube, M. 2009. Efficiency of the Banking Sector in South Africa. Africa Development Bank. [Online] Available: https://www.researchgate.net/publication/229490316_Competition_and_Efficiency_in_the_Banking_Sector_in_South_Africa. Accessed: 15 September 2014.

Pruteanu-Podpiera, A.M., Schobert, F. & Weill, L. 2008. Banking competition and cost efficiency: A micro-data analysis on the Czech banking industry. Comparative Economic Studies, 50(2): 253-273.

Reserve Bank of Zimbabwe. 2015. *Bank Annual Report*. Reserve Bank Publications, Harare, Zimbabwe: Reserve Bank.

Schaeck, K. & Čihák, M. 2008. How does Competition Affect Efficiency and Soundness in Banking? New Empirical Evidence. ECB Working Paper Series, No. 932. [Online] Available: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp932.pdf. Accessed: 20 January 2017.

Yildirim, H.S. & Philippatos, G.C. 2007. 'Restructuring, Consolidation and Competition in Latin American Banking Markets.' *Journal of Banking & Finance*, 31: 629–639.