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Domestic or Foreign Banks? Who Wields more Market Power?

Sanderson Abel^{1*}, Hlalefang Khobai², Pierre Le Roux³

¹Nelson Mandela Metropolitan University, South Africa, ²Nelson Mandela Metropolitan University, South Africa, ³Nelson Mandela Metropolitan University, South Africa. *Email: abelsza.mwale@gmail.com

ABSTRACT

The study distinguishes the market power between domestic and foreign banks in Zimbabwe using the Lerner index. The study established that the banking sector is operating under monopolistic competition conditions. The result shows banks price their products above the marginal cost of production. Domestic banks have more market power as compared to foreign firms. The foreign banks serves the high end consumers whose risky profile is low while the other end of the market is served by the domestic banks who are very risky. This then translates to higher prices for the clients served by the domestic banks. Bank regulators should promote competition to improve the efficiency of domestic banks to reduce their market power.

Keywords: Market Power, Lerner Index, Marginal Cost

JEL Classifications: D4, G21, L1

1. INTRODUCTION

Financial sector competition is important for the efficient production of financial services, the quality of financial products and product innovation. Competition improves the access to financial services by firms and households, which in turn affects overall economic growth (Claessens, 2009). A banking system that is competitive is able to efficiently allocate the capital in the economy leading to a balanced development in different regions of the country by transferring surplus capital from developed regions to less developed regions, consequently increasing investment, trade and production in the economy (Claessens, 2009). Bikker et al. (2007) categorised the determinants of competition into market structure, contestability, inter-industry competition, institutions and macro-economic conditions. Delis (2012) noted that banking competition is increased with financial reforms in countries with stronger institutions and argues that the result does not apply in situations where the banking sector is characterized by weak institutions. Financial reforms and the quality of institutions play a role in promoting competition in the banking sector. Competition in the banking sector can be improved by allowing foreign entrants, removing barriers to entry and instituting flexible institutional framework. The institutional framework includes the regulatory and supervisory practices on entry restrictions and barriers to foreign investment (Claessens, 2009).

Banking sector frameworks that allow foreign banks to enter their market, and those that does not restrict entry and activities have been identified to be competitive (Claessens and Laeven, 2004). Studies (Delis, 2012; Gelos and Roldos, 2004; Hasan and Marton, 2003) shows that restricting foreign bank participation in the local market and restricting the scope of banking activities reduce the degree of competition. Adoption of the liberal policies toward foreign bank involvement enhance competition. Banking sectors which are not subject to restrictions on bank entry and scope of activities are competitive, more stable and efficient (Hasan and Marton, 2003; Claessens and Laeven, 2004).

There are a number of advantages that have been associated with competitive frameworks that allow entry of foreign banks. These advantages include improvement in the quality and availability of financial services enhancing the application of modern banking skills and technology. It also stimulates development of the underlying bank supervisory and legal framework and enrich a country's access to international capital (Levine, 1996). Foreign bank entry reduces income, profits and costs of domestic banks while improving the functioning of national banking markets through increased market competition and improved efficiency of domestic banks (Claessens et al., 2001). Banking sectors which are not subject to restrictions on bank entry and scope of activities are competitive, more stable and efficient (Hasan and Marton, 2003; Claessens and Laeven, 2004).

The entrance of foreign banks into the domestic banking market poses some challenges. They bring stiff competition among domestic banks as they compete with large international banks associated with established reputation. They reduce the market for domestic banks since foreign entry reduces the access of financial services by small enterprises since foreign banks generally concentrate on multinational firms. Dages et al. (2000) argues that foreign-owned financial institutions decreases the stability of aggregate domestic bank credit since they act as the avenues for capital flight. Foreign financial institutions deal with clients in the higher end of the market whose risk profile is low. This then leaves domestic institutions to serve the risky customers and increasing the risk borne by domestic institutions which culminates in poor asset quality for domestic banks. Foreign banks brings about challenges to supervision raised by complex financial institutions active in a number of jurisdictions, the factor accentuated by asymmetries in information between home and host country supervisors (Dages et al., 2000).

A number of studies have been undertaken on the market power of banks in a number of jurisdictions using the Lerner index approach which has produced different results. Fernandez de Guevara et al. (2005) studied the evolution of market power in the European Union banking sector using the Lerner index. The study showed that bank size, risk, efficiency and economic cycles are significantly related to the market power of European banks. Fernandez de Guevara and Maudos (2007) studied the market power in the Spanish banking sector during 1986-2002 and found that there was an increase in market power starting from the mid-1990s. Market power was determined by bank size, efficiency and specification in the Spanish banking sector. Pruteanu-Podpiera (2007) estimated the Lerner index for the period 1995-2005 for the Czech credit market. The study established that the Lerner index was 0.374 implying the banks were operating under monopolistic competition. Fungacova and Weill (2009) using the Lerner index approach studied the fragility of Russian Banks over the period 2001-2007. The results found that the Russian banking sector supported the competition fragility hypothesis implying that more intense competition compromises financial stability. Fungacova et al. (2010) studied Russian banking sector using the Lerner index approach for the period 2001-2007. The results established that market power in Russia was determined by bank size, risk and market concentration. Anzoátegui et al. (2012) examined competition in the Russian banking sector and found that greater market power was held by larger and state owned banks compared to other banks.

The foregoing discussion have shown that foreign bank entry into the banking sector has a threefold effect. It impacts banking sector competition; influences the efficiency of domestic bank and also on the stability of the domestic banking system. Tetteh (2014) argues that from a rationality perspective, domestic banks are supposed to have comparative advantage over foreign based institutions operating in the domestic market. However a review of literature shows that this rarely happens to foreign rivals. Sturm and Williams (2009) does show that foreign bank institutions are more efficient as compared to the local rivals. Tetteh (2014) attributes the superiority performance of the foreign banks to

advanced technology, easy access to capital and the ability to employ resources to the best advantage which allows them to amass economic rent.

The discussion on the pros and cons of banking competition; and the effects of foreign bank competition motivates the current study which seeks to undertake an empirical investigation on the existence of market power as well as establish if any, the difference between domestic and foreign banks market power in Zimbabwe. The paper therefore seeks to contribute to the literature on banking sector market power which remains inconclusive. The study employs one of the new empirical industrial organization (NEIO) methods of Lerner index. Knowledge about the competition or market power in the banking sector is important from a regulators perspective since it helps inform necessary reforms which ensures that the social costs associated with the existence of monopoly power are reduced (Fernández de Guevara and Maudos 2007). Monopoly power is associated with the imposition of anticompetitive behaviour, leading to inefficiency or market failure among banks (Mirzaei and Moore, 2014).

The rest of the paper is organized as follows: Section two discusses the salient features of the competitive landscape of the Zimbabwean banking sector followed by the outline of the methodology in section 3. The study results and analysis are presented in section 4 while section 5 provides the study conclusions.

2. SALIENT FEATURE OF COMPETITIVE LANDSCAPE OF THE BANKING SECTOR (2009-2015)

The banking sector landscape in Zimbabwe was characterized by a number of developments in the period 2009-2015 which had an impact on the competition/market power dynamics. Despite the economy operating under a stable economic environment a number of bank failures and consolidations were registered. The failures and consolidations reduced the number of banking institutions from 88 in 2008 to 18 in 2016. The reduction in the number of financial institution led to a consolidated banking sector potentially reducing competition. Of all bank failures that were witnessed during the period were domestic banks. This raises the important question of what makes the domestic banks more vulnerable as compared to the foreign based banking institutions to bank failures. The reason for the bank failures were attributed to poor corporate governance, insolvency and imprudent lending activities (Reserve Bank of Zimbabwe, 2014). Does this imply that domestic banks are poorly managed or it is just bad luck affected them? Is the environment too competitive or complicated for these domestic banks?

Another interesting observation during the study period is the increase in deposit concentration. The deposit concentration measured by the Herfindahl-Hirschman Index (HHI) for deposits increased from 1,300 in 2009 to 1,540 as at 31 December 2015 (Figure 1). This shows that the deposit concentration rose during the period in question. This implies that the majority of the deposit in the sector were held by a few banks while the majority of the

banks held only a small proportion of the total deposits. The question that arises is that “Does the increase in the concentration ratio reflected by the increasing HHI imply that the market power of banks was increasing between 2009 and 2015?”

Figure 2 displays the first quartile concentration ratio for the period 2009-2014. A look at the first quartile concentration ratio reveals that in 2009, the sector was heavily concentrated in terms of deposits and loans. The concentration took a downward trend in 2010 and 2011 showing an increase in competition before it started to decrease in 2012. The graph confirms that the level of concentration hence competition in the banking sector has not been constant during the period.

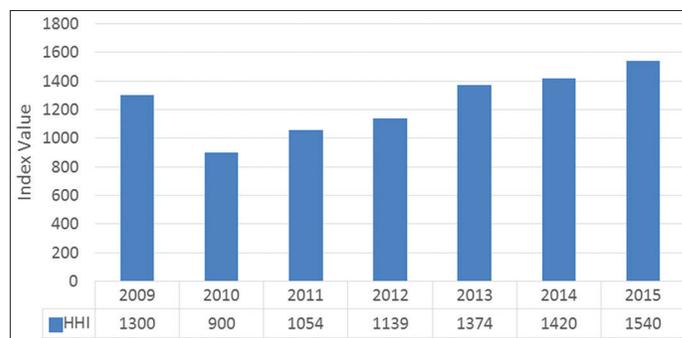
Of concern in the Figure 2 is that loans and deposits remain concentrated in a few number of banks. Over the period on average more than 50% of the deposits and loans are held by a small number of banks while the majority compete for the <50% of both deposits and loans.

The banking sector was also negatively affected by the increase in the amount of non-performing loans (NPLs). The NPLs ratio increased from 1.8% in February 2009 to 20.1% by September 2014 (Figure 3). The effect of the growth in NPLs was to limit the capacity of banks to expand financial intermediation. As a reaction to the increase in NPLs, banks had to cut down on their lending and requested borrowers to pledge collateral, even for small loans. The increase in the NPLs was attributed to the high cost of borrowing, weak credit risk management, absence of robust credit reference systems, insider loans, over indebtedness and inappropriate loan structuring (Reserve Bank of Zimbabwe, 2013).

The decline in the NPLs experienced starting from September 2014 was mostly a result of the interventions by the Central Bank. The Central Bank set up a special purpose vehicle, the Zimbabwe Asset Management Company (ZAMCO) to deal with collateralised non-performing assets. ZAMCO was established in 2014 with the main objective of acquiring eligible NPLs from banks. As at 30 June 2016, ZAMCO had acquired NPLs amounting to \$528.92 million. These loans pertained to big corporates as well as small and medium enterprises. The main challenge associated with high NPLs is their wider implications on the performance of the banks. NPLs increase uncertainty with regard to the capital of the banks which reduces the capacity of banks to access financing (Diawan and Rodrik, 1992). NPLs lead to the deterioration in the quality of the assets of a bank, its capital as well as its profitability (Clementina and Isu, 2014). NPLs exert operational costs which reduce the capital and liquidity of the banks, distorting the process of credit growth and ultimately the performance of the banks.

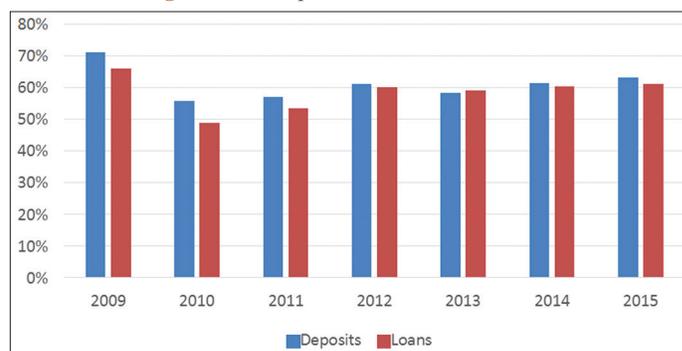
In February 2013, the government perceiving that the banking sector was profiteering from excessive interest rates margins, instituted a memorandum of understanding (MoU) between the Central bank and other banks. The MoU outlined the pricing structure of the various banking products. It stipulated that lending rates were not to exceed 12.5% points above the participating financial institutions weighted cost of funds. It was also expected that all savings accounts were supposed to accrue interest while

Figure 1: Evolution of the Herfindahl-Hirschman index



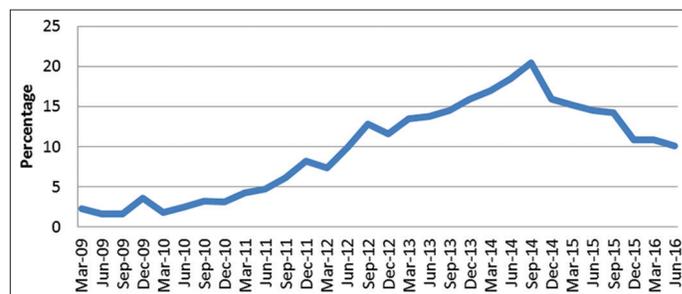
Source: Own computation

Figure 2: First quartile concentration ratios



Source: Reserve Bank of Zimbabwe, 2016

Figure 3: Trends in non-performing loans 2009-2016



Source: Reserve Bank of Zimbabwe, 2016

penalty rates on default were not supposed to exceed ten percent per annum. The MoU effectively became the pricing guide for the banking sector. It can be deduced that the MoU was meant to reduce the market power of banks and provide relief to the banking public. The institution of the MoU raises an important questions on whether banks were abusing their market power by or through increasing interest rate margins or not.

3. METHODOLOGY

There are a number of methods of measuring competition/market power. Among these are the traditional Industrial Organization, new structural and the NEIO approaches. The traditional methods or structural approaches are mostly premised on the structure-conduct-performance (SCP) analysis. The SCP assumes that the likelihood of collusion increases with market concentration. The

method infers competition from the market structures. The NEIO departs from the traditional methods by measuring competition from the firms conduct directly rather than inferring competition from market shares or market structure. The NEIO approaches are based on optimization models from which are derived indicators of competition, and these include the Lerner index, the Panzar and Rosse test H-statistic, the conjectural variation parameters and the Boone indicator.

The current study employs one of the NEIO method, the Lerner index. The advantage of the Lerner index is that it can be calculated for each bank and can be calculated for different market segments and is not dependent on the equilibrium in the banking sector. The Lerner index is a relative mark-up of price over marginal cost (Lerner, 1934). Coccorese (2009) argued that the Lerner index is a true reflection of the banks' degree of market power because it represents the behavioral departure from monopoly and perfect competition. The index also recognizes the need for endogenised market structures in testing market power (Delis et al., 2008). The market power of a firm is identified by the divergence between the firm's price and its marginal cost. The price and marginal cost should be equal in perfect competition, but will diverge in less competitive environments. A bigger difference between price and marginal cost shows that there is greater monopoly power (Fernandez de Guevara et al., 2005, Berger et al., 2009; Fungacova et al., 2010). The Lerner index is not a long-run equilibrium measure of competition and can be calculated at each point in time (Demirgüç-Kunt and Peria, 2010).

The Lerner index represents the extent to which a particular bank has market power to set its price above marginal cost. The marginal cost is derived from the cost function. A trans-log cost function is computed for each year through the introduction of fixed effects for banks. The assumption of linear homogeneity in input prices is imposed by normalizing total costs (TC) and input prices by one input price.

The translog cost function following Pruteanu-Podpiera et al. (2008) is shown in equation 1:

$$\begin{aligned} \ln \left[\frac{TC_{it}}{w_{3it}} \right] = & \alpha_0 + \alpha_1 \ln Y_{it} + \frac{1}{2} \alpha_2 (\ln Y_{it})^2 + \alpha_3 \ln \left(\frac{w_{1it}}{w_{3it}} \right) \\ & + \alpha_4 \ln \left(\frac{w_{2it}}{w_{3it}} \right) + \alpha_5 \ln \left(\frac{w_{1it}}{w_{3it}} \right) \\ & \ln \left(\frac{w_{2it}}{w_{3it}} \right) + \frac{1}{2} \alpha_6 \left[\ln \left(\frac{w_{1it}}{w_{3it}} \right) \right]^2 \\ & + \frac{1}{2} \alpha_7 \left[\ln \left(\frac{w_{2it}}{w_{3it}} \right) \right]^2 + \alpha_8 \ln y \ln \left(\frac{w_{2it}}{w_{3it}} \right) + \varepsilon_{it} \end{aligned} \quad (1)$$

Where, TC = total cost, y = output, w_1 = price of labour, w_2 = price of physical capital, w_3 = price of funds. The marginal cost is calculated as the product of the derivative of the logarithm of TC to output shown in equation 2.

$$MC_{it} = \frac{TC_{it}}{Y_{it}} \left[\alpha_1 + \alpha_2 \ln Y_{it} + \alpha_3 \ln \left(\frac{w_{1it}}{w_{3it}} \right) + \alpha_4 \ln \left(\frac{w_{2it}}{w_{3it}} \right) \right] \quad (2)$$

Bank level marginal cost (MC_{it}) and corresponding output price, measured as total income divided by total bank assets (P_{it}) are in turn used to calculate the bank specific time varying Lerner index.

$$Lerner_{it} = \frac{[P_{it} - MC_{it}]}{P_{it}} \quad (3)$$

The Lerner index lies between zero and one, with higher values implying greater market power. Under perfect competition, price is equal to marginal cost giving a Lerner index of zero. This means that firms have no market power. On the other hand, any divergence from market power resembles imperfect competition. The greater the divergence, the greater the market power. The Lerner index can assume negative values as a result of predatory conduct or of external factors, such as an economic crisis, which leads to prices to go below the marginal cost. This then causes the mark-up to be negative (Coccorese, 2009). Negative Lerner index can also be attributed to superior competition (Simpasa, 2013).

To determine whether the mean Lerner index for the domestic bank differs from that of the foreign banks. In this case we proceed on the basis that there is no reason to suspect that one population might have a larger mean than any other, the null and alternative hypotheses ought to be:

$$H_0: \mu_D = \mu_F \text{ versus } H_1: \mu_D \neq \mu_F$$

Where,

μ_D represents the mean Lerner index of domestic banks.

μ_F represents the mean Lerner index of foreign banks.

H_0 and H_1 are the null hypothesis and alternative hypothesis.

The form of the alternative hypothesis here indicates a two-sided (often called a two-tailed) test. The appropriate test statistic is then given as:

$$Z = \frac{X_D - X_F}{\sqrt{\frac{SD_D^2}{n_D} + \frac{SD_F^2}{n_F}}}$$

Where, SD_D^2 and SD_F^2 represents the variances of the domestic and foreign samples respectively since the samples are large.

The rejection region for the test is given by $Z > Z_{0.05}$ and $Z < -Z_{0.05}$ since this is a two sided test. The critical test statistic is $Z_{0.05} = 1.645$.

The study distinguishes between the market power of domestic and foreign banks in Zimbabwe for the period 2009-2014 using quarterly data. A total of 11 banks of which 5 are foreign and 6 are domestic banks constituted the sample with equal numbers of observations across the banks. The study relied on published financial statements (balance sheet and income statement) for banks and as the sources of data.

4. RESULT PRESENTATION AND ANALYSIS

Table 1 presents estimation results of equation 1. The estimation of equation is based on the fixed effects model given the Hausman specification tests for panel data ruled out the random effects

model. The Chi-square of 24.08 with probability of zero rejects the random effects in favour of the use of fixed effects model.

The overall average Lerner index for the period 2009-2014 was 0.06 depicting neither monopoly nor perfect competition. This means the Zimbabwean banking sector operates under monopolistic competition conditions. This means institutions in the banking sector possess some market power though the magnitude of the power held is low indicated by the low value of the Lerner index. Table 2 further shows that the Lerner index for the total banking sector ranged between -0.9696 and 0.7663 . The negative Lerner index was recorded in the post crisis period in 2009 and 2010. There was moderate variation in the Lerner index during the period as reflected in the standard deviation.

A comparison between the domestic banks and foreign banks confirms that the average Lerner Indices were 0.10 and 0.009 respectively implying competition is intense among the foreign banks. This means that on average, foreign banks are operating closer to perfectly competitive conditions as compared to the domestic banks. The table shows that the Lerner index for the foreign banks varied more than that of the domestic. This is reflected in the slightly higher standard deviation of the foreign banks as compared to the one for the domestic banks.

Figure 4 displays estimates of the evolution of the Lerner index for all banks and by ownership. The Figure reveals that the Lerner index has not been stable over the period. The Lerner index was negative for the years 2009 and 2010. The negative index arises when the marginal cost of producing bank output falls faster than the decline in the price. In the Zimbabwean case 2009-2010 is the period the country was coming out of a 10 year economic crisis and the majority of banks had suffered deposit flight. In an effort to regain market share there was intense competition for deposits and loans. This result is consistent with what Simpasa (2013) found in the case of Zambia, where it was found that the Lerner index was negative in 2010-2011. The Zambian case was attributable to intense competition with banks emerging out of the financial crisis and fighting for market share.

The Lerner index for the domestic banks increased from 2009 to 2012 before declining significantly in 2013 after which it rose in 2014. An interesting observation on Figure 4 is that the market power of the domestic bank was affected by the MoU in 2013. This is evidenced by the decline in its Lerner index while that of the foreign banks increased during that period. This could be a signal that domestic banks were forced to reduce their prices as a reaction to the stipulation of the MoU. The reduction in their markup means that they reduced their pricing power in the sector. Once the MoU was rescinded the domestic banks experienced an increase in their pricing mark up.

The Lerner index for the foreign banks displays an upward trend throughout the study period implying that the foreign banks had been increasing market power during the study period.

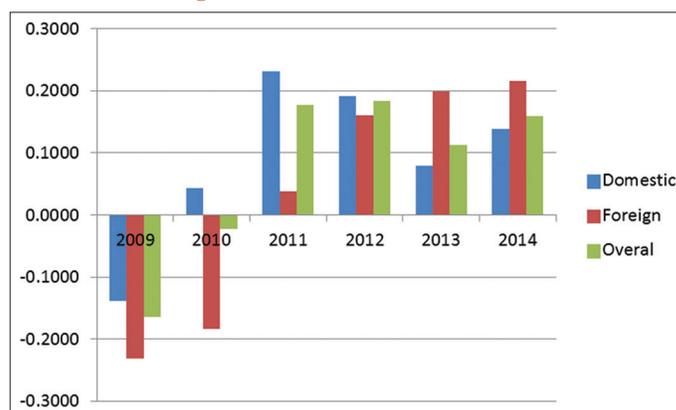
An interesting observation in the evolution of the Lerner index is that during the period 2009-2012, there was relatively low

Table 1: Estimation of the translog cost function

Variable	Parameter	Coefficient
Intercept	α_0	5.635695 (3.009)
$\ln y$	α_1	1.093367 (0.6759)
$\frac{1}{2}(\ln y)^2$	α_2	0.011214 (0.0095)
$\ln\left(\frac{w_1}{w_3}\right)$	α_3	0.783307 (0.1990)
$\ln\left(\frac{w_2}{w_3}\right)$	α_4	0.795831*** (0.1838)
$\ln\left(\frac{w_1}{w_3}\right)\ln\left(\frac{w_2}{w_3}\right)$	α_5	-0.044725*** (0.0100)
$\frac{1}{2}\left[\ln\left(\frac{w_1}{w_3}\right)\right]^2$	α_6	0.207064*** (0.01381)
$\frac{1}{2}\left[\ln\left(\frac{w_2}{w_3}\right)\right]^2$	α_7	0.013519*** (0.0020)
$\ln y \ln\left(\frac{w_1}{w_3}\right)$	α_8	-0.008965 (0.0110)
$\ln y \ln\left(\frac{w_2}{w_3}\right)$	α_9	-0.037395 (0.0097)

Source: Own computation, ***Significant value is 0.01

Figure 4: Evolution of Lerner index



Source: Own computation

levels of market power among foreign banks in comparison to domestic banks. The Lerner index starting from negative figures reflecting super competition. The high level of competition among foreign banks was a result of the ability to source foreign banks relative to domestic banks. As the economy adopted the use of foreign currencies, foreign banks leveraged foreign currency resources from their parent companies compared to their domestic counterparts who were reliant more on little domestic resource mobilization. Using the advantage of the resources, foreign banks used their resources to attract customers through offering various products and engaging in aggressive promotions. The market

Table 2: Descriptive statistics for the Lerner index

Heading is statistic	Domestic banks	Foreign banks	Overall
Mean	0.1048	0.0091	0.0613
Median	0.1811	0.0767	0.1597
Maximum	0.7663	0.5126	0.7663
Minimum	-0.9696	-0.9165	-0.9696
Standard deviation	0.26	0.30	0.2859
Number of observations	132	110	242

Source: Own computation

power of foreign banks increased significantly between 2012 and 2014 when it increased from 0.16 to 0.21 which means that the mark up that was being charged by foreign banks was now higher than that of domestic banks. During the same period, there was increased competition among the domestic banks. This resulted in the domestic institutions offering loans without due process being followed which led to the increase in the NPLs after 2012 reaching around twenty percent of total loan book in 2014. Poor credit assessment is among the reason of the high levels of NPLs as domestic banks in an effort to attract clients offered loans without undertaking due diligent tests.

The study also sought to establish if there was any difference between the average Lerner index for domestic and foreign banks. The test results for the differences between the mean Lerner index for domestic and foreign banks is shown below:

$$Z = \frac{X_D - X_F}{\sqrt{\frac{SD_D^2}{n_D} + \frac{SD_F^2}{n_F}}} = \frac{0.0091 - 0.1048}{\sqrt{\frac{0.26^2}{132} + \frac{0.30^2}{110}}} = -2.6238$$

Since $Z < Z_{0.05}$ (1.645) we reject the null hypothesis that the mean Lerner index for the domestic and foreign banks are equal. This result implies that the market power held by the domestic banks and foreign banks is different in the Zimbabwean banking sector. In other words the level of competition between the domestic banks and foreign banks was not the same. Domestic banks held more market power as compared to foreign banks evidenced through their higher Lerner index. This result could be a signal that domestic banks are not efficient hence the higher margins they impose on their products. In other words domestic banks are pricing their product and services above their marginal cost of production greater than foreign banks. There is need for the authorities to keep in check the pricing of the banking products by the domestic banks so ensure that they produce efficiently. On the other hand the domestic banks should take a cue from the pricing regimes adopted by foreign banks which are premised on international best practice. The higher price margin by the domestic banks could have been the trigger for the MoU that was put in place between the central banks and the banks which dictated the banking sector pricing structure in 2013.

5. CONCLUSION

The study established that the banking sector is neither monopoly nor perfect competition meaning the sector is operating under monopolistic competition conditions. The result implies that the banking sector possess some market power to price their products

above the marginal cost of production. The results indicate that there is a difference in the market power between domestic banks and foreign banks. Domestic banks have more market power compared to foreign banks evidenced by the higher average Lerner index for the study period. The difference between the market powers between the two categories could a result of the type of the clients served by the two banking categories. In most cases the foreign banks serves the high end consumers whose risky profile is low while the other end of the market is served by the domestic banks who are very risky. This then translates to higher prices for the clients served by the domestic banks and lower prices for those served by the foreign banks.

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