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Determinants of Net Interest Margins of Commercial Banks in Kenya: A Panel Study

Daniel K. Tarus^a*, Yonas, B. Chekol^b, Milcah Mutwol^c

^aDepartment of Accounting and Finance, Moi University, P.O Box 3900, Eldoret, Kenya

^bSchool of Business and Economics, Moi University, P.O Box 3900, Eldoret, Kenya

^cDepartment of Finance, Moi University, P.O Box 3900, Eldoret Kenya

Abstract

This study investigates the determinants of net interest margin of commercial banks in Kenya using secondary data. We apply pooled and fixed effects regression to a panel of 44 Kenyan banks that covers the period 2000-2009. The estimation results show that operating expenses and credit risk has a positive and significant effect on net interest margin of the commercial banks in Kenya. The paper also finds that the higher the inflation, the wider the net interest margin, while growth and market concentration have negative effect on net interest margin.

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1. Introduction

Commercial banks play a fundamental role in the economy by undertaking intermediation functions. Banking business involves receiving funds from the public by accepting demand, time and saving deposits or borrowing from the public or other banks, and using such funds in whole or in part for granting loans, advances and credit facilities and for investing funds by other means (Chirwa, 2001). This process of accepting deposits and lending takes place at a cost in the form of interest to the depositor as well as to the borrower. The interest paid to the depositor and the interest charged on the borrower creates a spread called interest margin on the banks because ideally the banks pay lower interest to the depositors and charge higher interest to the borrowers. In this sense, net interest margin is the difference between interest earned and interest expended by a bank divided by its total assets.

* Corresponding author. Tel.: +254721437531.

E-mail address: kdtarus@yahoo.com; kdtarus@gmail.com.

A competitive banking system foster greater efficiency which is reflected in lower net interest margins (Rudra and Ghost, 2004). High margins create impediments for the deepening of financial intermediation in the country, as lower deposit rates discourage savings, and high loan rates reduce the investment opportunities of banks (Zuzana and Tigran, 2008). Consequently, banks are expected to carry out intermediation function at the lowest cost possible in order to promote overall economic growth.

In developing economies where capital market is underdeveloped and where most firms and individuals rely on commercial banks for financing, banking institutions play a crucial role in economic growth (Martinez Peria and Mody, 2004). It is therefore important that commercial banks provide these services at the lowest possible cost. Given the importance of banking institutions in facilitating financial intermediation, several studies have been conducted to unravel the determinants of interest margins. The pioneering work of Ho and Saunders (1981) addressed two variables; the effect of competition, and the interest rate risk to which the bank is exposed. Allen (1988) extended this study by introducing different types of credits and deposits to the model; while McShane and Sharpe (1985) modified the measurement of interest rate risk from interest rates on credits and deposits to uncertainties of the money market. Agbanzo (1997) extends the original model of Ho and Saunders (1981) to include credit risk and interest rate risk. Other notable extensions to the model include Demirgüç-Kunt and Huizinga (1999) which introduced ownership variable, tax variable, financial leverage, and legal and institutional variables, Saunders and Schumaker (2000) tested the model to a multi-country setting and decompose bank margins into a regulatory component, a market structure component and a risk premium component; while Maudos and Fernandez de Guevara (2004) introduced the influence of operating costs into the model and used direct measurements of market power. Most recently, Lopez-Espinoza et al., (2011) analyzed the determinants of interest margins in the years leading to the 2008 financial crisis and the effect of different accounting reporting standards.

This study analyzes the determinants of interest margin in Kenya by categorizing the factors into bank specific factors, industry specific factors, and macroeconomic factors. In the recent past many studies have been done mostly in developed economies (Maudos and Fernández de Guevara, 2004; Zuzana and Tigran, 2008), and in some cases a combination of samples from both developed and developing economies. These developing economies are in Latin America and Asia, however, little attention has focused in a developing economy like Kenya.

1.1 Banking Sector in Kenya

According to Central Bank of Kenya (CBK) Bank Supervision Report (2009) there are 44 commercial banks operating in Kenya. The net interest margin for the period 2000-2009 is summarized in Figure 1. The banking sector in Kenya has experienced higher interest rate spreads, for instance, annual average lending rate and deposit rate for the last six years 2006-2010 were 14% and 4%, respectively (compiled from CBK database). The average growth of the net interest margins of the banking industry in Kenya for the last five years (2005-2009) grew by 1.62 %. A Financial Sector Assessment Program in early 2004 indicated Kenya has higher net interest margin (9.1%) than sub-Saharan Africa countries at 8.1% (Thorsten and Michael, 2004). In Kenya interest rates were liberalized in July 1991 with the aim of improving efficiency in the intermediation process by reducing the interest margins. However, this seems not to have been realized in Kenya.

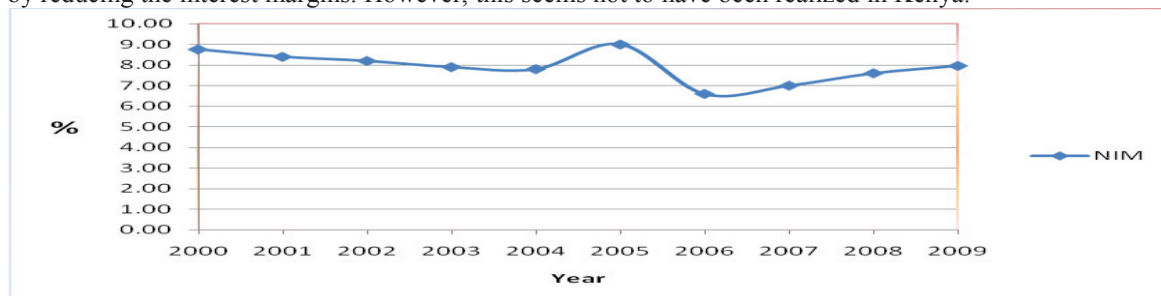


Figure 1: Net Interest Margins in Kenya

Source: CBK Bank Supervision Annual Report 2000-2009

Total interest income and net interest expense for the period 2000-2009 of the commercial banks also summarized in Figure 2 below. For the period 2000-2009, the interest income increased by 12.4% and accounted 63.7 percent of total income in 2005-2009 in the industry. Interest expenses increased by 14.2% and account 25.9 percent of total expense in 2000-2009.

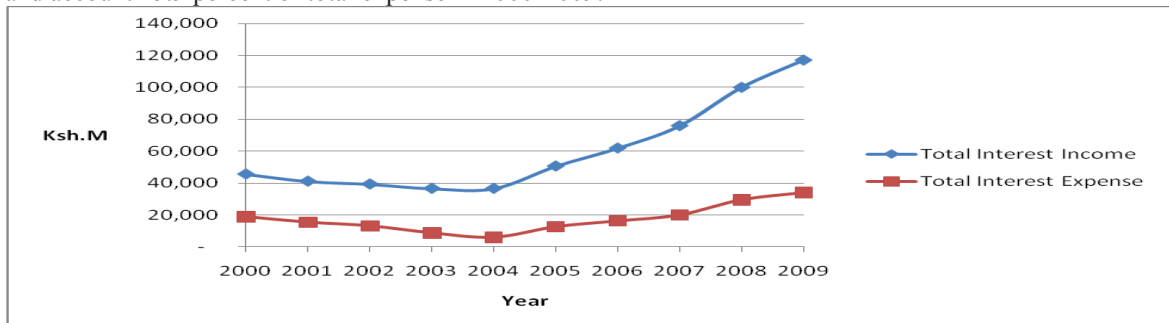


Figure 2: Interest Income and Interest expense in Kenya

Source: CBK Bank Supervision Annual Report 2000-2009

2. Theory and Hypotheses Development

The best-known theoretical model to analyze the determination of bank interest margins is “dealership model” developed by Ho and Saunders in 1981. Under this model, the banks are considered as “a dealer” essentially a demander of one type of deposit and supplier of one type of loan. In undertaking this function banks face a major type of uncertainty and, hence, cost. This cost occurs because of the stochastic behavior of deposit suppliers and loan demanders. In effect, deposit suppliers and loan demanders tend to arrive at different times resulting in the bank having to hold either a long or short position in the short-term money market. The bank will therefore demand positive interest spread as the price of providing intermediary (depository and/or loan) service in face of the uncertainty generated by asynchronous deposit supplies and loan demands.

The dealership model is developed from the literature on bid-ask prices for security market dealers. A bank is viewed as paying for funds (deposits) at one price (a “bid” price) and lending funds at another (the “ask” price). Consequently, the banks have to deal with the demands for loans, and offers of deposits in an uncertain environment characterized by interest rate fluctuations in the money market (Maudos and Fernandez de Guevara, 2004) and for this reason; banks set their interest rate as a margin relative to the interest rate of the money market.

2.1 Operating Expense and Interest Rate Margin

Theory indicates that variation in operating expense is reflected in variation in bank interest margins, as banks pass on their operating costs to their depositors and lenders. Several studies show that there is a positive relationship between operating expenses and net interest margin of commercial banks (Claessens *et al.*, 2001; Abreu and Mendes, 2003; Carbo and Rodriguez, 2007 and Maria and Agoraki 2010). This is because banks bearing higher average operating expenses may resort to charge higher margins to offset higher operating costs (Maudos and Fernández de Guevara, 2004; Martinez Peria and Mody, 2004). On the other hand, higher operational efficiency may induce banks to pass the lower costs onto their customers in the form of lower loan rates and/or higher deposit rates, thereby lowering interest margin (Claeys and Vander Vennet, 2007).

Abreu and Mendes (2003) supported a positive relationship between operating expense and interest margins on their cross-country study of Portugal, Spain, France, and Germany. Such a positive relation

between operating expense and net interest margin has been supported by Carbo and Rodriguez (2007) in a study of seven EU countries, and Maria and Agoraki (2010) of South Eastern Europe countries. Samy (2003) found a positive relationship between overhead cost and net interest margin of Tunisia banks. Ahmet and Hakan (2010) indicated a positive relationship between operating expense and interest margins on Turkey banks. Using bank level and country level data in Latin America, Gelos (2006) find that net interest margin is as a result of less efficient banks. We argue that operating costs and interest margins is positively related because banks that incur high costs will work with higher margins to enable them cover the high costs.

H1: Operating expenses is positively related to net interest margin such that as operating expenses increase, net interest margin increase.

2.2 Credit Risk and Interest Rate Margin

Credit risk is the risk to earnings and capital arising from an obligor's failure to meet the terms of any contract with the bank or if an obligor otherwise fails to perform as agreed (CBK, 2005). Angbazo (1997) indicates that default risk is positively associated with bank interest margin in US banks. Demirgüç-Kunt and Huizinga (1999) find credit risk measured based on loan to total asset ratio to have positive effect on interest margins on 80 developed and developing countries. Abreu and Mendes (2003) found a positive relationship between loan to total asset ratio and interest margins on their cross-country study of Portugal, Spain, France, and Germany. Carbo and Rodriguez (2007) show that credit risk is positively related with net interest margins of seven EU countries

Extant literature indicates that banks that make risky loans may be obliged to hold a higher amount of provisions. In turn, this may force them to charge higher margins in order to compensate for the higher risk of default, leading naturally to a positive relationship (see also Drakos, 2002; Maudos and Fernández de Guevara, 2004). Empirical evidences show that credit risk affects net interest rate margins positively and so the coefficients of credit risk are expected to be positive because a high proportion of bad loans may cause banks to increase their interest margins with risk premium to compensate for possible default risk.

H2: Credit risk is positively related to net interest margin in commercial banks such that as credit risk increases interest rate margin increases

2.3 Inflation and Interest Rate Margin

Researchers have paid little attention on the impact of inflation on net interest margin (Rasiah, 2010). This notwithstanding, theory predicts a relationship between inflation and bank interest rate margins. For example, Perry (1992) argues that the effects of inflation on bank interest depend on whether inflation is anticipated or unanticipated. If inflation is anticipated, then the banks adjust interest rate accordingly, thereby increasing the interest rate margins. On the other hand, if inflation is not anticipated, then banks may be slow in adjusting their interest rates and so may affect the interest margin negatively because of increased costs occasion by inflation. Which ever case, inflation affects net interest margin.

Demirgüç-Kunt and Huizinga (1999) found a positive relationship between inflation and net interest margin in a study of 80 developed and developing countries. These results are consistent with other studies such as Claessens *et al.*, (2001) in a study of 80 countries; and Drakos (2002) in a study of Greek banks. However, Abreu and Mendes (2003) found negative relationship between inflation and interest margins on a cross-country study of Portugal, Spain, France, and Germany. Maria and Agoraki (2010) also found a negative relationship between inflation and net interest margin on South Eastern Europe countries. Martinez and Mody (2004) show that inflation has a negative impact in Latin-American banks' margins. Samy (2003) indicates a negative relation between inflation and interest margin of Tunisia banks.

Although there is no empirical consensus on the effects of inflation on interest rate margins, we argue that high inflation rates are generally associated with high interest rates and, therefore, higher interest margins. Even if inflation is not anticipated by banks, in the short term interest rates may not reflect the increased inflation, but in the medium and long term, banks will adjust their interest rates to compensate for

the inflation premium and in so doing increase the interest rate margins. We therefore hypothesize that:
H3: The higher the rate of inflation the higher the interest rate margins of commercial banks

2.4 Economic Growth and Interest Rate Margins

Economic growth is an important variable in the determination of interest margin because it affects demand and supply of bank services such as deposits and loans. However, there is no consensus on how economic growth affects interest margins. Some studies argue that economic growth has a positive effect on interest margins (Claessens *et al.*, 2001), others do not find any effect in cross country studies of European countries (Abreu and Mendes, 2003; Maria and Agoraki, 2010), while a majority find a negative effect (Demirgüç-Kunt and Huizinga, 1999; Demirgüç-Kunt *et al.*, 2004; Carbo and Rodriguez, 2007).

We argue that increase in economic growth could result in increase in business activity and improved business performance among the borrowers. Improved performance lowers loan default rates, and so the risk premium is reduced, a situation which prompts banks to reduce their interest margins. In the same vein, low economic growth weakens the debt servicing capacity of domestic borrowers and contributes to an increase of credit risk, and so interest margin increase (Maria and Agoraki, 2010). In this case, we hypothesize that:

H4: Economic growth is negatively related to interest margins, such that as economy grows, the interest margins declines.

2.5 Market Concentration and Interest Rate Margins

There are contrasting views concerning the relationship between bank concentration and net interest margin. On the one hand, concentrated banks may enhance market power and so increase the interest margins (Porter, 1979). Following this view, banks in highly concentrated markets charge higher interest rates on loans, and pay lower rates on deposits (Naceur, 2003), thereby widening interest rate margins. On the other hand, it is easier to monitor a few banks in a concentrated banking system than it is to monitor banks in a diffused banking system and so the interest margins in such markets may not be large (De Haan and Poghosyan, 2012).

Most empirical evidence supports the view that concentrated banking sector increases interest margin. Consistent with this perspective, Demirgüç-Kunt and Huizinga (1999) found that high concentration of banks positively affects interest margins on 80 developed and developing countries. Following the traditional structure-conduct hypotheses, banks in concentrated markets characterized by non-competitive behavior, tend to collude in setting their interest margins and so increase the margin. Similarly, banks with large market share are able to exercise market power in pricing and consequently earn higher margins.

Some studies find narrower interest rate spreads in concentrated banking industry (Samy, 2003) while others by Carbo and Rodriguez (2007) and Maria and Agoraki (2010) found insignificant effect of market concentration on interest rate margins. Based on the literature, we argue that highly concentrated market in which few large banks controls the market collude in setting the margins and a result, widens the interest margins.

H5: High market concentration is positively and significantly related to interest rate margin

3. Methods and Data

We used all commercial banks operating in Kenya over the period from 2000-2009. In total 44 commercial banks were used giving 440 firm year observations. Secondary data was used for the study derived from Central bank of Kenya, Banking Survey, 2010, individual bank financial reports, and World Bank. The study used both pooled and fixed effects model to estimate the results.

3.1 The Model

This paper follows the modeling set out in Demirgüç-Kunt and Huizinga (1999), Abreu and Mendes (2002), and Athanasoglou *et al.*, (2005) to estimate the impact of the factors that may be important in explaining net interest margins in Kenya. The general model to be estimated is of the following linear form:

$$\prod_{it} = c + \sum_{k=1}^k \beta_k X_{it}^k + \varepsilon_{it} \dots\dots\dots (1)$$

Where \prod_{it} is the net interest margin of bank i at time t , with $i = 1, \dots, N$; $t = 1, \dots, T$, α is a constant term, X_{it}^k are k explanatory variables and ε_{it} is the error term. The explanatory variables are grouped into bank-specific factors, industry-specific factors and macroeconomic variables. The general specification of model (1) is as follows:

$$\prod_{it} = c + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{l=1}^L \beta_l X_{it}^l + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it} \dots\dots\dots (2)$$

Where the X_{it}^s with superscripts j , l , and m denote bank-specific variables, industry-specific variables and macroeconomic factors respectively. In this study, bank specific variables are operating expenses and credit risk, industry variables is bank concentration, while macroeconomic variables include inflation and economic growth.

3.2 Variable Measurements

According to the model presented, there are five variables that determine interest rate margins: operating expenses, credit risk, inflation, economic growth, and bank concentration. Operating expense is measured by operating expense or overhead costs divided by total assets (Demirgüç-Kunt and Huizinga, 1999; Abreu and Mendes, 2003; Demirgüç-Kunt *et al.*, 2004). To proxy credit risk, we use loan loss provision to total loans (this measurement is consistent with previous studies such as, Athanasoglou *et al.*, 2005). Inflation is measured by the current rate of Inflation which is consistent with the measure used by Athanasoglou *et al.*, (2005). Following Vong (2009), we proxy economic growth with the real GDP growth rate. To measure the degree of concentration in the banking market two measures are used. First, following Nacuer (2003), we measure using the 3-firm concentration index (CR3) which refers to the ratio of largest three banks’ assets to total banking assets in a given year and the second measure; we use Herfindahl-Hirschman Index (HHI) which is calculated by summing the squared market shares of all firms in the market.

4. Empirical Results

Table 1 shows the panel estimation results based on the pooled model where net interest margin is the dependent variable and bank specific variables (operating expenses and credit risk), industry-specific variable (concentration, using CR3 and HHI) and macroeconomic variables (inflation and economic growth) are predictor variables.

As shown in the pooled model on Tables 1 (a, b) the operating expense is found to be positive and significant at the conventional levels in all the estimations. This is evidence that the higher the operating expense the higher is the net interest margins. Using the fixed effects model the results are consistent. Overall, there is a positive relationship between the operating expense and the net interest margin among the commercial banks in Kenya. This finding is consistent with our hypothesis and other studies that find a positive relationship between operating expense and net interest margin. It is shown that banks that bear higher average operating expenses may opt for higher margins to offset their higher transformation costs, which implies a positive relationship (Maudos and Fernández de Guevara, 2004; Martinez Peria and Mody, 2004). On the other hand, higher operational efficiency may induce banks to pass the lower costs to their customers in the form of lower loan rates and/or higher deposit rates, thereby lowering interest margin (Claeys and Vander Venet, 2007).

The relationship between credit risk and net interest margin is shown on Tables 1 (a, b) and Tables 2 (a, b) in models 2, 7, 10, 11, 12 and 13. Models 2, 10 and 11 in the pooled regression results find the coefficients to be positive and significant at 1 per cent. However, Model 7 found positive but insignificant results. In Models 12 and 13, the estimated coefficients are negative and not significant. This shows that on average, in the pooled model the estimated coefficient of credit risk is positive. Using the fixed effects model (Table 2 a, b) it is shown that the estimated coefficients are positive and significant in all the estimations. This result

supports the proposition that the higher the credit risk the higher will be the net interest margins. This finding supports our hypothesis and views of scholars (e.g. Angbazo, 1997; Demirgüç-Kunt and Huizinga 1999; Abreu and Mendes, 2003; Carbo and Rodriguez, 2007; Maria and Agoraki 2010) that credit risk affects net interest margin positively. Banks that make risky loans may also be obliged to hold a higher amount of provisions. In turn, this may force them to charge higher margins in order to compensate for the higher risk of default, leading to a positive relationship (Drakos, 2002; Maudos and Fernández de Guevara, 2004).

The other independent variable in the model is inflation. In the pooled model [Table 1 a, b] (Models 3, 8, 9, 12 and 13) the coefficients are positive and significant. Model 10 and 11 is positive and not significant. As shown in Table 2 (a, b) in the fixed effects models the results are mixed. In Model 3 the coefficient is positive and significant, while Models 8, 9 and 12, reports positive coefficients that are not statistically significant. On the other hand, Models 10 and 11 indicate negative and insignificant results. In the light of these results, we find a positive relationship between inflation and the net interest margin. This finding is consistent with our hypothesis and other studies (e.g. Demirgüç-Kunt and Huizinga, 1999; Brock and Suarez, 2000) which show that if inflation is not anticipated and banks are sluggish in adjusting their interest rates, then there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect bank margins.

Economic growth is found to be negative and largely significant in all the estimations. This is evidence that the lower the economic growth the higher is the net interest margins. Our hypothesis is consistent with the results as well as other studies (e.g. Demirgüç-Kunt *et al.*, 2004; Carbo and Rodriguez, 2007). One possible explanation is that low economic growth weakens the debt servicing capacity of domestic borrowers and contributes to an increase of credit risk (Maria and Agoraki, 2010). On the other hand, an increase in economic growth is expected to increase bank's income as a result of more lending and lower default rates (Brock and Suarez, 2000; Claeys and Vander Vennet, 2007). Therefore, banks increase the interest margin to compensate for the default risk.

The market concentration variable (CONC or HHI) produced mixed results. Using CR3 ratio or HHI in the pooled model and fixed effects model (Model 8, 10 and 12) report negative and statistically significant results. In Model 5 in the pooled and fixed effect, the estimated coefficient is negative but statistically insignificant. Model 6 indicates positive but statistically insignificant results. Therefore, the results indicate a negative relationship between market concentration and net interest margin among the commercial banks in Kenya.

This finding does not support our hypothesis that in a market characterized by a large few banks there is a tendency of banks to collude and increase the interest margin. Market power, implies that banks may enforce higher interest margins, either by setting lower deposit rates or higher loan rates or even by exercising both of them (Maria and Agoraki, 2010). One possible explanation for the negative effect of concentration on interest rate spread could be the presence of foreign banks which exhibit lower interest margins in Kenya because of higher efficiencies in their operations.

Table 1(a) Pooled Regression Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Operating Expenses	37.53** (15.29)					
Credit Risk		1.76** (5.25)				
Inflation			0.02* (2.00)			
Growth				-0.07* (-2.84)		
*CONC					-0.90 (-0.77)	
*HHI						(-4.68) (-0.94)

Constant	3.51** (26.15)	4.37** (22.79)	5.12** (44.84)	5.43** (88.82)	5.73** (11.12)	5.74** (13.23)
R ²	0.45	0.30	0.41	0.29	0.23	0.19

Significant levels: ** 1 percent; * 5 percent; † 10 percent; N=440, Standard errors are in Parenthesis

Table 1 (b) Pooled Regression Results (Continued)

Variables	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
Operating Expenses	37.364** (14.86)	35.83** (17.02)	35.80** (16.95)			35.844** (16.688)	35.819** (16.614)
Credit Risk	0.20 (0.62)			1.46** (4.34)	1.45** (4.29)	-0.073 (-0.241)	-0.077 (-0.253)
Inflation		0.01† (1.46)	0.01† (1.11)	0.01 (0.57)	0.01 (0.31)	0.02† (1.48)	0.01† (1.13)
Growth		-0.08** (-3.47)	-0.09** (-3.49)	-0.08* (-2.68)	-0.08* (-2.76)	-0.08** (-3.47)	-0.09** (-3.50)
*CONC		-1.74† (-1.47)		-1.47† (-1.06)		-1.76† (-1.48)	
*HHI			-8.41† (-1.51)		-8.306† (-1.276)		-8.49† (-1.53)
Constant	3.41** (17.21)	4.28** (7.18)	4.22** (7.41)	5.19** (7.43)	5.30** (7.91)	4.32** (7.11)	4.32** (7.32)
R ²	0.34	0.68	0.69	0.62	0.59	0.83	0.81

Significant levels: ** 1 percent; * 5 percent; † 10 percent; N=440, Standard errors are in Parenthesis

Table 2 (a) Fixed Effects Model Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Operating Expenses	39.62 ** (9.77)						34.13** (8.84)
Credit Risk		3.34** (6.67)					2.41** (5.15)
Inflation			0.01† (1.29)				
Growth				-0.10*** (-5.02)			
*CONC					-0.15 (-0.15)		
*HHI						(-2.30) (-0.07)	
R ²	0.23	0.27	0.13	0.37	0.11	0.09	0.39

Significant levels: ** 1 percent; * 5 percent; † 10 percent; N=440, Standard errors are in Parenthesis

Table 2 (b) Fixed Effects Model Results (continued)

Variables	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
Operating Expenses	34.13** (8.84)	37.47** (9.61)	37.40** (9.60)			32.64** (8.59)	32.62** (8.61)
Credit Risk	2.41** (5.15)			3.34** (6.27)	3.32** (6.53)	2.41** (5.03)	2.40** (5.02)
Inflation		0.01 (0.66)	0.03 (0.35)	-0.01 (-0.64)	-0.01 (-0.86)	0.01 (0.04)	-0.00 (-0.17)
Growth		-0.09** (-4.48)	-0.09** (-4.51)	-0.11** (-4.75)	-0.11** (-4.97)	-0.07** (-4.51)	-0.09** (-4.50)
*CONC		-1.28† (-1.32)		-1.22† (-1.10)		-1.01† (-1.06)	

*HH1			-6.73† (-1.48)		-6.78† (-1.37)		-5.26† (-1.18)
R ²	0.39	0.48	0.58	0.63	0.54	0.81	0.77

Significant levels: ** 1 percent; * 5 percent; † 10 percent; N=440, Standard errors are in Parenthesis

5. Discussion and Conclusions

In this paper, we analyzed the bank-specific, industry-specific and macroeconomic determinants of interest rate margin. We find that operating expense has a positive and significant impact on net interest margin of the commercial banks in Kenya. Credit risk tends to be positively associated with net interest margin. We found that the higher the inflation the larger the net interest margin. Similarly, economic growth and market concentration influences net interest margin negatively. A negative concentration effect found in the Kenya market may be occasioned by the high concentration of foreign banks which exhibit lower interest margins. Therefore, a market characterized by foreign banks has lower interest margin because of superior management or production technologies.

The study therefore recommends at the bank level, to register lower interest margins in Kenya banking industry commercial banks need to improve operational efficiency by reducing operating expense using appropriate cost reduction strategies and by enforcement of standards in credit risk management (CRM) as a means to prevent banks from taking excessive risks. At the regulatory or supervisory level, the result of the study is relevant for policy makers, since it implies that in order to achieve lower interest margins; public policy should be oriented towards creating the necessary market conditions for banks to enhance their efficiency. So this is achieved by favorable economic situations which include lower inflation rate and sustainable economic growth like GDP per capita. Overall, the results provide evidence that bank specific variables and macroeconomic variables determine the interest spread in Kenyan commercial banks.

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