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Earnings management, funding and diversification strategies of banks in Africa

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Abstract

Purpose – This paper aims to investigate the implications of earnings management for funding and diversification strategy within the context of developing and emerging economies.

Design/methodology/approach – The authors raise two issues pertinent to bank earnings management: first, whether there is evidence of earnings management of banks in the selected African countries; and second, what must have accounted for the banks to engage in such practices?

Findings – The results show that almost all the 330 banks in the 29 African countries sampled are found to have engaged in some management of their earnings during the period 2002-2009. The authors also find evidence that bank activity mix and funding modes explain bank earnings quality. Overall results indicate that the sensitivity of earnings management to revenue diversification across interest income decreases, as bank market shares increases.

Originality/value – The authors investigate how earnings management is affected by banks intermediation strategies.

Keywords Diversification strategy, Earnings management, Funding modes

Paper type Research paper

1. Introduction

The aim of this study is to shed more light on the relationship among bank funding sources, diversification strategy and discretionary accruals as a proxy for earnings management in a specific sample of banks in Africa. Studies on earnings management has continue to attract attention from the following incidents of the accounting fraud at Enron, WorldCom, Xerox, Royal Ahold and HealthSouth (Shen and Chih, 2007). A case of interest is that of Lehman Brothers repurchase agreement known in accounting jargon as "Repo 105"[1]. Levitt (2000) also contends that the increasing attention to the quality of reported earnings makes the study of earnings management important. According to Healy and Wahlen (1999, p. 368), earnings management occurs:

> […] when mangers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

This implies that earnings management can be used to reduce outsider interference and to protect insiders' private control benefits. For instance, Schipper (1989) argues that

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insiders can use their discretion in financial reporting to overstate the true level of earnings and conceal unfavourable earnings realisations which would prompt outsiders to take actions against insiders. Moreover, in the event of extensive earnings management, financial reports inaccurately reflect firm performance and consequently weaken outsiders' ability to monitor the firm (Leuz *et al.*, 2003).

Extant literature has documented a number of studies that attempt to measure earnings management (Jones, 1991; Dechow *et al.*, 1995; Burgstahler and Dichev, 1997; and Leuz *et al.*, 2003), to identify situations where earnings management is likely and assesses if earnings management can be detected (Perry and Williams, 1994; and Teoh *et al.*, 1998) and to examine particular structure of the firm and investigate whether earnings management is facilitated or mitigated by those structures (Klein, 2002; and Xie *et al.*, 2003). Similarly, prior research in banking regarding factors that affect earnings management have been centred on auditor reputations (Kanagaretnam *et al.*, 2010), management of loan loss provisions (LLPs), (Fronseca and Gonzalez, 2008), banks under financial duress (Shrieves and Dahl, 2003), corporate governance (Shen and Chih, 2007) and initial public offerings (Adams *et al.*, 2009). Strikingly, none of these studies addresses the influence of bank funding sources and diversification strategy on earnings management. This gap is what the paper is seeking to address.

The motivation for this paper is that, while traditional portfolio and intermediation theories and promotion of information asymmetry provide a link between earnings management, funding and diversification strategies by banks, there is very little empirical evidence on the effect of funding and diversification on earnings management. The study therefore seeks to respond to a number of these remaining research questions:

RQ1. Do banks in Africa engage in earnings management?

RQ2. Is funding and diversification strategy responsible for creating and facilitating an environment where earnings management is practiced?

RQ3. Is there any relationship between earnings management on one hand and bank diversification and funding sources on the other?

Jiraporn *et al.* (2008) argue that diversification exacerbates earnings management, as diversification strategy provides banks with the opportunity to escape debt holders' monitoring activities and is thus able to mitigate the impact of debt on earnings management. It should be noted that, though most studies view earnings management as opportunistic, particularly in the light of recent bank scandals/failures, some studies argue that earnings management can be used to improve the informativeness of the reported earnings (Subramanyam, 1996). This means that earnings management may serve as a signal that conveys information to the public and the stockholders. On the other hand, the offsetting of accruals hypothesis contends that diversified banks tend to finance their operations from diverse sources to manage their earnings. For instance, Amidu and Wolfe (2012) reveal that banks that use internal funding have a propensity to diversify into non-interest-generating activities. The accruals generated by these funds are less than perfectly correlated and thus neutralise each other. It is therefore difficult for managers of diversified banks to manage earnings substantially. Thus, by this argument, diversified banks finance their operations from various sources, giving them the opportunity to reduce earnings management, as some sources provide a less potent instrument for earnings management.

This paper blends the research on diversification and funding modes with that of a study on earnings management. Apart from an extension in the scope of the current literature, the paper also makes the following two important contributions regarding developing and emerging economies: first, the study contributes to the earnings management literature by arguing that earnings management could be mitigated in banks that have diversified their activities, and the second contribution to the literature relates to bank revenue diversification strategy. Research on bank diversification has been varied and extensive, covering the impact of diversification across markets on deposit rates (Barros, 1999), the effect of diversification on bank market valuation (Laeven and Levine, 2007) and the linkage between diversification and performance (Berger *et al.*, 2010; and Amidu, 2013). To this end, this paper analyses how earnings management is affected by banks intermediation strategies.

The accruals-based earnings management measure is used to find out the relationship between banks earnings management, funding modes and diversification strategy. This methodology has been used in a large number of studies in earnings management (Altamuro and Beatty, 2010; Kanagaretnam *et al.*, 2010 and Leuz *et al.*, 2003)[2]. We focus on diversification into business lines and use measures of diversification between net interest income and non-interest income generating activities. Three funding modes have been identified in the sample as bank funding strategies: deposits, non-deposits/wholesale and internal capital funds.

Our results demonstrate that almost all the banks in the 29 African countries sampled have managed their earnings during the period 2002-2009. With regard to the relationship among the key variables, we find evidence that supports the fact that the bank activity mix and funding modes explain bank earnings quality. Overall, our results point to the fact that earnings management among banks with a higher market share is significantly more sensitive to internally generated funds (IGFs) than it is with deposits and wholesale funding.

The remainder of this paper is organised into four additional sections. Section 2describes the recent evolution of banking in Africa and reviews relevant literature on earnings management, funding and diversification strategy. Section 3 discusses the research methodology, the measurement of key variables used in the study and data and descriptive statistics. Section 4 discusses the regression results and robustness tests, and finally, Section 5 provides the conclusions and policy implications.

2. Background and literature

This section provides a brief discussion of recent developments in banking in Africa. It also provides an overview of salient literature on earnings management, funding and diversification strategy of banks.

2.1 Banking in Africa

Africa's financial systems are predominately bank-based and the level of financial intermediation is low compared with the rest of the world (IMF, 2006). Credit to the private sector stands at an average of 78 (as a percentage of gross domestic product [GDP]) for Sub-Saharan African (SSA) banks as compared to 132.5 per cent in 2011 for other emerging markets in East Asia and the Pacific. The poor bank credit in Africa, according to Honohan and Beck (2007), is in itself a function of widespread poverty and the large share of the population engaged in subsistence agriculture. More so, the large

concentration of populations in subsistence production limits the financial resources available for intermediation. Demirguc-Kunt *et al.* (2004) argue that low-income countries' private sector correlates positively with GDP per capita income and negatively with the size of the agricultural sub-sector. The low performance of banks in SSA in the area of credit has occurred in an environment of high liquid reserves, broad money and extreme risk aversion in the banking system. In addition to excess liquidity and the high ratio of non-performing loans in the SSA banking system, the debt position of SSA countries has also accounted for the poor performance in bank credit extension (Nissanke and Aryeetey, 2006). Furthermore, SSA has the lowest deposit institutions in the world with an average of 16.6 per cent compared to 63.5 per cent in developing economies with the level of penetration of 166 banks per 1,000 adults for the SSA region (Kimenyi and Ndungu, 2009).

In the past three decades, African countries have embarked on financial sector restructuring involving deregulation and gradual opening up of the financial sector to foreign participation. The reform of the financial sector and developments are a crucial channel for global integration and keeping Africa at the cutting edge of best international practices (Senbet and Otchere, 2006). The reforms and financial policy changes were conducted along seven different dimensions: credit controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, prudential regulations and supervision of the banking sector and restrictions on the capital account. The reforms saw the establishment of capital markets in many countries including the regional market that serves CFA countries – Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. Capital markets provide capital mobilisation and allow for risk allocation and risk sharing among market participants. The intervention also saw the nationalisation of private banks, establishment of entirely new state banks and non-bank financial institutions. These developments appear to have improved the financial soundness of SSA banks in the past decade including the 2008 global financial crisis.

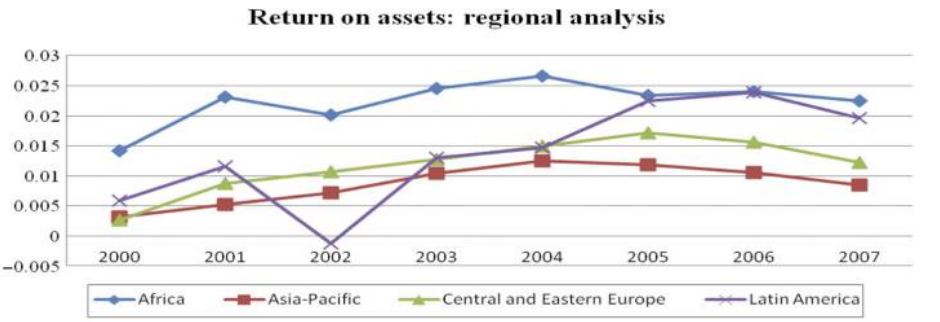
Inspite of the low level of credit to the private sector, there is evidence to suggest that over the past decade, average bank earnings were significantly higher than the earnings in other parts of the world (Flamini *et al.*, 2009). A close look at Figure 1 suggests that African banks earnings are higher and stable while the rest of the world has been low and fluctuating. For example, during the period 2000-2007, while the average earnings change in growth rate of African banks was (9.1 per cent), that of Asia-Pacific was 18.9 per cent, Central and Eastern Europe 39.9 per cent and Latin America −155.5 per cent. The relative size of cross-African profits also appears to be persistent over the period. What is not certain is whether the funding and diversification strategies are responsible for the higher and persistent earnings in these economies. This is what the paper seeks to address.

2.2 Literature review

The theoretical principles underlying the earnings management, funding and diversification strategy of banks can be described either in terms of information asymmetry or internal capital market frameworks. The information asymmetry hypothesis suggests that banks that operate in many sectors[3] are likely to have more complex structure than those that operate in single industry. Similarly, banks that operate in many countries need to have their resources spread out over wide

geographical areas. There is, thus, a need for more sophisticated structures to control the operations of the bank. More so, banks that are both industrially and geographically diversified are likely to have the most complex structure. In analysing earnings reports of diversified banks, the public and analysts may require more resources and expertise to accurately examine earnings that emanate from the various sources and from different countries. Thus, the level of information asymmetry is likely to be more acute in diversified banks. Furthermore, managers in diversified banks may exploit the additional informational asymmetry and engage in earnings management than they otherwise would be if the bank is more focused. Accordingly, informational asymmetry hypothesis suggests that banks that are more diversified engage in a larger degree of earnings management.

Corollary to this is that the degree of information asymmetry between managers and outsiders may be significantly greater for diversified banks than stand-alone banks. For a diversified bank, outsiders must rely on the information provided by the bank, whereas internal managers can identify the performance of each unit of the bank. Despite the regulatory and supervision efforts to mandate diversified banks to disclose information at the segment level, investors in these banks may face higher information asymmetry compared to those of focused banks, for at least two reasons. First, reporting of divisional information is subject to considerable managerial discretion. Managers could simply transfer funds across different units, as they wish for reporting purposes. Second, even if correct information is available, deciphering of such information requires considerable time, effort, resources and expertise that are not likely present for an average investor. Managers intentionally smooth earnings to gain some benefits (Trueman and Titman, 1988), achieve a better reflection of the fundamental firm value (Watts and Zimmerman, 1986), improve predictability of earnings (Degeorge *et al.*, 1999) and for career concerns (DeFond and Park, 1997). However, it could be argued that those in diversified firms would have less need for earnings management, as the imperfect correlation in funds across different units would naturally result in less variability in loanable funds. We also argue that if funds of units offset each other due to imperfect correlation, the unit accruals would likewise counterbalance each other, leaving fewer accruals at the firm level. Thus, the managers of diversified banks would have fewer



Source: Bankscope and authors' estimation

Figure 1.
ROAs in developing countries from four different regions including SSA, Asia-Pacific, Central and Eastern Europe and Latin America (the grouping of countries into different regions follows the World Bank Development Indicators classification). The profitability of the banks is proxied by the ROAs

accruals to manipulate as compared to those of focused banks. This argument is in line with Thomas's (2002) in which the errors in analysts' forecast for units in non-financial firms are considered to offset one another, mitigating the overall deviation of the analysts' earnings forecasts from the actual earnings for a diversified firm.

The internal capital market or the notion of "corporate socialism" argues that the allocation of capital among different units within the same bank is more efficient than raising capital from external sources. Again, the presence of internal funds within a diversified bank lends further support for a possible negative relation between diversification and earnings management (Stein, 1997). Thus, earnings management can be explained between two different time dimensions: the current and the future. For instance, a bank manager would borrow (save) "current" earnings in anticipation of promising (undesirable) "future" earnings. In contrast, in diversified banks, earnings management could be achieved contemporaneously across different units on the condition that divisions are not perfectly correlated. A manager could therefore attempt to alleviate the poor performance of a division by "borrowing" earnings from a profitable unit. Consequently, the earnings of a diversified firm would be more stable, thus requiring less earnings management at the firm level. On the basis of this and given the various funding sources of a bank, this study predicts the existence of a negative relationship between diversification and earnings management.

3. Data and methodology

3.1 Diversification strategy

In line with Sanya and Wolfe (2011), revenue diversification strategy is measured by constructing the Herfindahl-Hirschmann Index for each bank. This measure accounts for diversification between major activities: net interest income (*NET*) and non-interest income (*NON*). The revenue diversification $DIV_{(REV)}$ for each bank is therefore calculated as follows:

$$DIV_{(REV)} = \left(\frac{NON}{NETOP}\right)^2 + \left(\frac{NET}{NETOP}\right)^2 \quad (1)$$

where *NON* represents non-interest income, net interest income is captured as *NET* and *NETOP* stands for net operating income. $DIV_{(REV)}$ is a very simple measure of revenue diversification which measures the shift into non-interest income. Equation (1) is interpreted to mean that a rise in $DIV_{(REV)}$ shows an increase in revenue concentration and less diversification. This process is repeated to construct diversification within non-interest activities:

$$DIV_{(NON)} = \left(\frac{COM}{NON}\right)^2 + \left(\frac{TRD}{NON}\right)^2 + \left(\frac{OTOP}{NON}\right)^2 \quad (2)$$

where $DIV_{(NON)}$ is diversification within non-interest activities. Revenue from commission income is captured by *COM*. *TRD* is trading income and *OTOP* captures other operating income. Higher values indicate greater concentration.

3.2 Funding modes

Three funding modes have been identified in the samples as bank funding strategies: deposits, non-deposits/wholesale and internal funding. *DEPOSIT* as a source of bank

funding includes demand, saving and time deposits. Customer deposits are traditionally considered to be the main funding source of banks and to be cheaper relative to other sources of funding, and allow banks to maintain relatively high profits (Ianotta *et al.*, 2007). Deposits funding is measured as the total deposits as a percentage of total assets. The *NON-DEPOSIT is* the funding resource from other banks and other sources that include notes, debenture, short-term bills and all other related debts not covered in the deposits modes. It is short-term funding with relatively higher interest cost compared to deposits from customers. Non-deposit funding is calculated, as all other debts (except deposits) divided by total assets. The measurement of IGFs is similar to that of Houston *et al.* (1997), as the sum of net profits before extraordinary items and LLPs relative to bank loans at the end of the period.

3.3 Measures of earnings management: abnormal LLP

Previous studies show that earnings management in banks commonly occur using LLPs. Similarly, Adams *et al.* (2009) and Nichols *et al.* (2009) document the use of loan loss reserves to manage accounting earnings. In addition, Hasan and Wall (2004, p. 132) summarise the accounting process used to determine the level of the balance sheet loan loss allowance (LLA) and the income statement account LLPs as follows:

> Banks operating under US generally accepted accounting principles (USA GAAP) follow a multistep process to determine their allowance for loan as well as lease losses (LLA). At the end of each accounting period, a bank determines the probable value of the loan losses in its existing portfolio. The bank then debits its loan loss expense or provision by an amount equal to the difference between its estimated loan losses and the current balance in its LLA. The offsetting credit increases the bank's LLA. The LLA is shown on the balance sheet as a reduction in the value of its outstanding loans (in what is termed in accounting as contra-assets account). As the period progresses, a bank will recognise that it is unlikely to collect the full value of selected loans and charges off the portions of those loans that are unlikely to be collected. As individual loans are charged off, the offsetting entry is a reduction in the LLA. In some cases, the bank will find that it can recover part or all of the value of a loan that had been previously charged off. The offsetting entry for these recoveries is an increase in the LLA. The combined effect of charge-offs and recoveries is the LLA which is often simply referred to as charge-offs net of recoveries, or net charge-offs. At the end of the period, the process repeats. The bank compares the remaining values of its LLA with the losses in its existing portfolio. This process is equally used for those who prepare their accounting under International Financial Reporting Standards (IFRS) or any local GAAP.

As discussed above and given the nature of discretionary choices associated with the banks, we examine the income statement account of LLP for evidence of earnings management. In addition to increasing loan loss reserves in the balance sheet, increases in LLP decrease net earnings, return on assets (ROAs) and return on equity (ROE). Therefore, to analyse the influence of managerial discretion on intermediation strategy, a two-stage approach is used to identify discretionary LLP. In the first stage, the normal or non-discretionary component of LLP is estimated by regressing LLP on beginning LLA, net loan charge-offs, growth in loan, change in total loan outstanding, total loans outstanding, non-performing loans, market share of loans, earnings before tax and LLPs and country-specific variables using the following model:

$$LLP_{it} = \beta_0 + \beta_1 LLA_{it} + \beta_2 CHGOFF_{it} + \beta_3 GLOAN_{it} + \beta_4 \Delta LOANS_{it} + \beta_5 LOANS_{it} + \beta_6 DNPA_{it} + \beta_7 MKTS_{it} + \beta_8 EBTP_{it} + \sum_{j=4}^{k} \alpha_j M_j + \lambda_t YEARDUMMY_t + \varepsilon_{it} \quad (3)$$

where LLP_{it} is the expected level loan loss provision based on coefficient estimates from the sample of African bank during the period 2002-2009, LLA_{it} is the beginning loan loss allowance of a bank i in period t, $CHGOFF_{it}$ is the net loan charge-off of bank i in period t, $GLOAN_{it}$ is the growth in loans of bank i in period t, $\Delta LOANS_{it}$ is the change in total loan outstanding of bank i in period t, $LOANS_{it}$ is the loan portfolio of bank i in period t and $DNPA_{it}$ is an indicator variable that equals to one if the value for non-performing loan is missing and zero if otherwise[4]. $MKTS_{it}$ is the loan market share of bank i in period t, $EBTP_{it}$ is the earning before tax and profit of bank i in period t, the variables M are a set of $\{k\}$ variables controlling for the respective countries' macro-economic environments and regulatory variables and ε_{it} is the error term. The estimation of discretionary loan loss provisions (DLLP) is computed by subtracting the predicted level or the non-discretional component of LLP from the actual level of LLP[5].

In the second stage, we test the link between our proxies for funding and diversification strategy and the absolute value of negative DLLP. Again, we control for bank-specific variables (bank size, the level of leverage, market share and performance) and country-level variables (such as inflation, GDP growth and GDP per capita), as presented in the following model:

$$DLLP_{it} = \beta_0 + \beta_1 DIV_{it} + \beta_2 FS_{it} + \beta_3 DNPL_{it} + \beta_4 SIZE_{it} + \beta_5 MKTS_{it} + \beta_6 LOANS_{it} + \beta_7 LEV_{it} + \sum_{j=4}^{k} \alpha_j M_j + \lambda_t YEARDUMMY_t + \varepsilon_{it} \quad (4)$$

$DLLP_{it}$ is the estimated loan loss provision of a bank i in period t, DIV_{it} is revenue diversification of a bank i in period t, FS_{it} is the funding strategy of bank i in period t, $DNPL_{it}$ is an indicator variable that equals to one if the value for NPL is missing and zero if the logarithms of total assets is used as a measure of bank $SIZE_{it}$, $MKTS_{it}$ is the loan market share of bank i in period t, $LOANS_{it}$ is the loan portfolio of bank i in period t, LEV_{it} is the leverage of bank i in period t, the variables M are a set of $\{k\}$ variables controlling for the respective countries' macro-economic environments and regulatory variables and ε_{it} is the error term.

3.4 Data and descriptive statistics

Micro-bank-level and macro-country-level data are used. Bank-level data (financial statements) is taken from BankScope database maintained by Fitch/IBCA/Bureau Van Dijk. Series are yearly, covering a sample of 330 banks across 29 countries in Africa during the eight-year period, 2002-2009. We focus the study on the African banking sector. Given the relationship between finance and the real economy, the benefits of conducting research in these sectors have a chance to make an impact beyond African countries. Thus, the benefits and the subsequent impact of research on emerging economies like Africa on economic growth cannot be merely measured in

absolute dollar terms, but in the number of people that are elevated from a desperate subsistence level to a more adequate standard of living (Bekaert and Harvey, 2002). This period covers both the stable period (2000-2006) and the world financial crisis (2007-2009). The sample includes all commercial banks, cooperative banks, development banks, savings banks, real estate and mortgage banks for which annual data are available for some period of the years during the period 2002-2009. To ensure that banks that are important players in the deposit and/or loan markets are not omitted, medium- and long-term credit banks and specialised government institutions are included, as they remain important in African countries. Observations with outliers such as zero and/or negative capitalisation are dropped. Also, observations for capitalisation above the 98th percentile were dropped. In addition, loan growth rate observations above the 99th percentile of the distribution were equally dropped. This is to correct for mergers, acquisitions and start-ups during the study period. Macro-country-level data are obtained from the International Financial Statistics database of the International Monetary Fund and the World Bank Development Indicator.

Table I shows summary statistics for the key variables used in this study. All bank-specific variables are averaged by bank during the period 2002-2009, while that of the country-level variables are averaged by country over the period under study. Banks in Botswana are the most profitable with an average ROE ratio of 0.3473. This means that shareholders return on investment in Botswana banks is more than 34 per cent. However, banks operating in South Africa (SA) are the most efficient in terms of utilising their assets to generate earnings. The average ROAs of banks in SA is 5.46 per cent, the highest within the sample. Sudanese banks provide the highest LLP in their income statement while banks in Tunisia have the least quality assets as they have the highest LLA. The quality of asset of banks operating in Tunisia has resulted in operating losses in terms of ROAs. The average ROAs of banks in Tunisia is −0.0004. Ugandans banks are more diversified in terms of generating non-interest incomes, while diversification strategy of Tunisian banks is geared towards interest income generating activities. Total asset measure denominated in USA dollars, is used as a proxy for bank size. Banks in SA are the largest banks in terms of size. The average size of the bank in South Africa is more than $18, 251.52 million. Banks in Zimbabwe mostly use IGFs to finance their assets.

Table II presents the pair-wise correlation coefficient as a preliminary analysis of the relationship between earnings management, activities mix and funding modes. Both diversifications across interest income (DIV_{REV}) and within non-interest-generating activities (DIV_{NON}) reduce the incidence of earnings management. Likewise the banks that finance their operation using deposit funds. As expected, banks in Africa engage in earnings management through non-performing loan allowance (LLA).

4. Empirical results

This section presents results in three parts. The first part analyses the distribution of annual net income of 330 banks across the 29 African countries. The net income is scaled by total equity of the banks for the period 2002-2009. The results from the first part are then used in the second part to test the response of bank earnings management to diversification and funding strategy while controlling for bank-specific variables and the macro-economic environment. The third and the

Sampled countries	Earnings		Provisions and reserves		Diversification strategy		Funding strategy		Other controls			
	ROE	ROA	LLP	LLA	$DIV_{(REV)}$	$DIV_{(NON)}$	DEPOSIT	NON-DEPOSIT	IGF	MKTS	LOAN	SIZE
Algeria	0.1266	0.0147	0.038	0.0265	0.615	0.4663	0.5743	0.2227	0.0856	0.0825	0.4308	4,112.9
Egypt	0.1315	0.0077	0.029	0.0655	0.565	0.5611	0.7251	0.1048	0.0439	0.0357	0.4898	3,811.39
Morocco	0.1485	0.0139	0.0144	0.0347	0.7104	0.4851	0.6865	0.2181	0.0801	0.1013	0.4989	8,048.41
Sudan	0.1714	0.0224	0.0713	0.0237	0.5835	0.4573	0.5041	0.1194	0.1431	0.1458	0.3383	1,561.69
Tunisia	0.069	−0.0004	0.0255	0.0944	0.5037	0.5555	0.6331	0.0851	0.0244	0.0593	0.782	1,367
Benin	0.1318	0.0044	0.031	0.0342	0.5524	0.4437	0.7154	0.1423	0.0403	0.2162	0.5615	291
Burkina Faso	0.204	0.0163	0.0291	0.0368	0.5244	0.466	0.7959	0.0669	0.0554	0.186	0.6001	256.04
Cameroon	0.1758	0.0189	0.0214	0.0423	0.5338	0.3585	0.7717	0.0804	0.0776	0.1702	0.5043	515.83
Cote d'Ivoire	0.1926	0.0187	0.0199	0.0456	0.5191	0.4893	0.7478	0.093	0.0491	0.1778	0.6332	566.99
Ethiopia	0.2255	0.032	0.0139	0.0383	0.5159	0.3899	0.7273	0.046	0.0747	0.1273	0.5604	538.85
Ghana	0.2523	0.035	0.0337	0.0372	0.5611	0.594	0.6377	0.1047	0.1199	0.0656	0.4283	248.56
Kenya	0.1455	0.0244	0.0249	0.0701	0.574	0.4201	0.7243	0.0575	0.0678	0.0426	0.5596	337.48
Mali	0.1386	0.0165	0.0217	0.0686	0.5459	0.4391	0.7292	0.124	0.0489	0.1905	0.5938	323.11
Mauritania	0.1074	0.0241	0.0388	0.1773	0.572	0.4955	0.553	0.0393	0.0728	0.1951	0.561	124.61
Nigeria	0.1756	0.0244	0.031	0.0427	0.5335	0.4122	0.6354	0.0713	0.1152	0.0519	0.3658	2,139.35
Rwanda	0.1681	0.0197	0.0429	0.0887	0.5498	0.4799	0.7121	0.0714	0.0647	0.2051	0.5254	76.22
Senegal	0.1909	0.0193	0.0155	0.017	0.6076	0.4314	0.7707	0.0772	0.0473	0.4192	0.5989	426.78
Sierra Leone	0.2727	0.0528	0.046	0.0379	0.5317	0.4508	0.6998	0.154	0.2159	0.2286	0.2907	36.42
Uganda	0.2829	0.0371	0.0249	0.0118	0.7131	0.3759	0.58	0.6229	0.1359	0.0909	0.4256	176.82
Angola	0.244	0.0182	0.0792	0.0108	0.5577	0.5317	0.612	0.192	0.1691	0.1013	0.2855	1,274.59
Botswana	0.3473	0.0381	0.0149	0.0194	0.6059	0.6236	0.7273	0.0409	0.0872	0.1404	0.5296	538.57
Malawi	0.2627	0.0432	0.0276	0.0122	0.5392	0.4975	0.7055	0.0888	0.1914	0.1404	0.3669	99.1
Mauritius	0.1082	0.0134	0.012	0.0309	0.6018	0.5204	0.6388	0.183	0.0363	0.1081	0.5637	962.95
Mozambique	0.232	0.0266	0.0222	0.0295	0.5627	0.4669	0.7058	0.0919	0.0945	0.1455	0.4632	331.5

(*continued*)

Table I.
Bank-specific variables: averages for the period 2002-2009

Table I.

Sampled countries	Earnings		Provisions and reserves		Diversification strategy		Funding strategy		Other controls			
	ROE	ROA	LLP	LLA	$DIV_{(REV)}$	$DIV_{(NON)}$	DEPOSIT	NON-DEPOSIT	IGF	MKTS	LOAN	SIZE
Namibia	0.1673	0.0325	0.0151	0.0376	0.5909	0.5701	0.601	0.0839	0.0901	0.1935	0.7224	899.69
South Africa	0.2042	0.0546	0.017	0.0394	0.6389	0.5008	0.5612	0.2135	0.0785	0.0972	0.6478	18,251.5
Swaziland	0.1992	0.0332	0.0075	0.0647	0.5467	0.5177	0.6571	0.1823	0.0509	0.2121	0.7253	149.84
Tanzania	0.2302	0.0236	0.0195	0.0179	0.5549	0.4055	0.7371	0.0933	0.0967	0.0778	0.4578	249.42
Zimbabwe	0.4582	0.1318	0.0587	0.0144	0.6879	0.3502	0.1867	0.5674	0.5556	0.2222	0.3525	2,227.26

Notes: Table I presents the mean values of countries' bank-specific variables; ROE is the bank earning per equity capital; ROA is the return on asset and calculated as profit before tax divided by total assets; LLP is the non-discretionary component of LLP; LLA is the non-discretionary component of loan loss reserves; $DIV_{(REV)}$ and $DIV_{(NON)}$ measure revenue diversification across interest income and within non-interest income generating activities respectively; DEPOSIT is deposit sources of funding while NON-DEPOSIT is the wholesale fund and is calculated as all other debts (except deposits) divided by total assets; IGF is the funds generated internally; LOAN is the loan portfolio of bank scaled by total assets; MKTS is the market share of the respective bank; SIZE is the average total assets. The mean values of the selected banks for the respective countries over the period 2002-2009 are in percentage terms except for bank size which is in millions of US dollars. All the calculations are in percentages except bank size which is in million of US dollars

Sources: Bankscope and authors' calculations; the data set comprises of 330 banks in 29 Africa countries

	DLLP	LLA	CHGOFF	LOAN	DNPL	LEV	SIZE	MKTS	$DIV_{(REV)}$	$DIV_{(NON)}$	DEPOSIT	NON-DEPOSIT	IGF
DLLP	1.000												
LLA	0.2159*	1.000											
CHGOFF	0.0200	0.2130*	1.000										
LOAN	0.0256	0.3670*	0.1590*	1.000									
DNPL	0.2393*	0.0998*	−0.1001*	−0.0477*	1.0000								
LEV	0.0153	−0.1832*	−0.2026*	−0.0805*	−0.0243	1.0000							
SIZE	−0.0315	−0.0362	−0.1002*	0.0673*	−0.0437*	0.2652*	1.0000						
MKTS	−0.0275	0.006	0.024	0.1351*	−0.0895*	0.1703*	0.2530*	1.0000					
$DIV_{(REV)}$	0.0755*	0.012	0.0839*	0.0136	0.0950*	−0.2586*	−0.0237	−0.0357	1.0000				
$DIV_{NON)}$	0.0509*	0.0302	−0.0172	0.0395	0.1312*	−0.0294	0.0973*	−0.0777*	−0.0387	1.0000			
DEPOSIT	−0.0672*	−0.0893*	−0.1225*	−0.0559*	−0.0494*	0.5090*	0.0806*	0.0689*	−0.2299*	−0.0319	1.0000		
NON-DEPOSIT	0.0166	−0.1249*	−0.0368	−0.0396	0.0217	−0.0207	−0.0885*	−0.0773*	0.3292*	−0.0888*	−0.6889*	1.0000	
IGF	−0.0146	−0.1572*	−0.0098	−0.4863*	−0.0159	−0.2153*	−0.1371*	0.0012	0.1143*	−0.0096	−0.1331*	0.1430*	1.000

Notes: Table II presents pair-wise correlation coefficient estimated on sample of 330 banks across 29 Africa countries; * implies significant at 5% or more; DLLP is the discretionary component of LLP; LLA is the non-discretionary component of loan loss reserves; CHGOFF is the ratio of net charge-offs to average loans during the period; LOAN is the loan portfolio of bank scaled by total assets; LEV is the leverage of bank scaled by total assets; SIZE is natural log of total assets. MKTS is the market share of the respective bank; $DIV_{(REV)}$ and $DIV_{(NON)}$ measure revenue diversification across interest income and within non-interest income generating activities respectively; DEPOSIT is deposit sources of funding while NON-DEPOSIT is the wholesale fund and is calculated, as all other debts (except deposits) divided by total assets; IGF is the funds generated internally and measured as the sum of net profit before extraordinary items and LLPs relative to bank loans at the end of the period

Source: Bankscope and authors' own calculation

Table II. Pair-wise correlation coefficient between selected variables

final sub-section analyses the change in bank earnings quality in response to a change in market share of banks.

4.1 Do banks in Africa manage earnings to exceed thresholds?

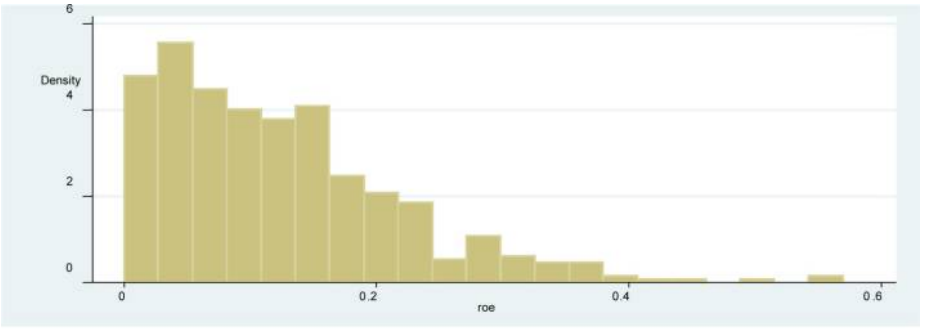
This sub-section analyses the results with the aim of identifying whether banks operating in Africa engage in earnings management. We group the countries on the basis of regional location of the banks. The groupings are northern, central and southern Africa countries. This categorisation of countries is made by the World Bank[6]. This allows us to examine whether there are regional differences as to how banks manage their earnings over time. To begin with, Figure 2 presents the earnings histogram of banks. The earnings are scaled by banks equity capital. The results of the histogram of banks earnings show a half-normal distribution shape for all the three regions of Africa. Earnings less than zero occur much less frequently and occur only in central zones of the continent. These results mean that the incentive to manage earnings of banks varies among banks in Africa.

To explain these different levels of earnings management among banks, we turn to the respective 330 banks earnings distribution across 29 African countries from 2002 to 2009[7]. Similar to the regional results, all the banks, except those banks operating in Angola, exhibit half bell-shaped distribution. We draw two inferences from these particular results. First, the half bell-shaped of majority of banks earnings shows that distribution of earnings differs from one bank to the other. Second, even for those that do not clearly exhibit this half-normal distribution, the left hand of the distribution is withered. These results provide us with the important stylised facts and motivate us to further investigate whether banks in Africa manage earnings and whether the managers of these banks use either particular funding source or specific activity mix or both.

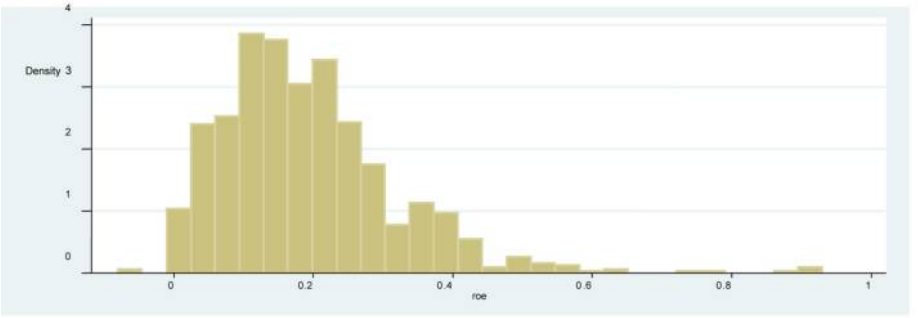
4.2 Evaluation of earnings management: funding and diversification strategies

In this subsection, we present the results for the abnormal LLP test. A two-stage approach is used to investigate the impact of diversification and funding strategy on abnormal LLP. We begin with the estimation of non-discretionary component of LLP. The result of the first-stage regression is presented in Table III. As expected, the LLA is positively and significantly related to LLP, as a lower initial LLA will require a higher LLP in the current period. Consistent with earlier studies, net charge-off, growth in loan and loan outstanding have positive association with LLP (Adams *et al.*, 2009; Kanagaretnam *et al.*, 2010). These results means that an increase in current LLP is as a result of a corresponding increase in the net charge-off loans, the growth in loans and an increase in the outstanding bank loans. The managers of banks in Africa thus will manage their earnings by manipulating the net charge-off of loans and extending loans without thorough screening and monitoring of the borrowers. A case of interest here is that of the Lehman Brothers strategy of advancing loans and selling their assets just to meet the regulatory capital requirements.

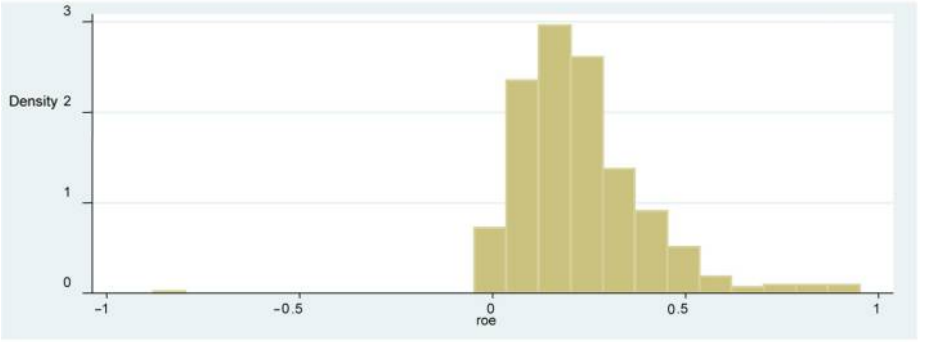
Next, we investigate whether the adoption of a particular activity mix or using a particular funding strategy enables banks managers' to engage in earnings management. Table IV presents the results of the second-stage regression and that has DLLP as a dependent variable. The different columns reported relate to different empirical approaches to diversification strategy ($DIV_{(REV)}$ and $DIV_{(NON)}$) and varieties of



(a)
Northern region of Africa



(b)
Central region of Africa



(c)
Southern region of Africa

Figure 2
(a) Northern region of Africa; (b) Central region of Africa; (c) Southern region of Africa

funding modes (DEPOSIT, NON-DEPOSIT and IGF). Following Adams *et al.* (2009), equation (4) is estimated using country and time fixed effects and clustering at the bank level. Fixed effects are used to control for other bank-specific characteristics that remain relatively stable over the sample period. Again, of the most interest to us are the

Explanatory variables	Coefficient	Standard error
Intercept	−0.00846***	0.00260
LLA	0.05175***	0.00674
CHGOFF	0.01250***	0.00439
GLOAN	0.00850***	0.00276
ΔLOAN	−0.01567**	0.00766
LOAN	0.01397***	0.00302
DNPL	−0.00783***	0.00228
MKTS	−0.00475	0.00406
EBTP	0.07784***	0.01372
GDP per capita	−0.15563**	0.07011
GDP growth	0.14241**	0.06622
INFL	−0.00008**	0.00003
Diagnostics tests		
Obs		614
R^2		47.9
Fixed effect within		N
Year dummy		Y
Country dummy		N
Wald (p-value)		161.77**

Notes: The dependent variable is LLP which is the non-discretionary component of loan loss provision; this is regressed against LLA, the non-discretionary component of loan loss reserves; CHGOFF is the ratio of net charge-offs to average loans during the period; GLOAN is the growth in loan; ΔLOAN is the change in total loan outstanding; LOAN is the loan portfolio of bank scaled by total assets; DNPL is an indicator variable that equals to one if non-performing loan is missing and zero if otherwise; MKTS is the market share of the respective bank; EBTP is earnings before tax and provisions, and GDP per capita, GDP growth and INFL are the macroeconomic variables representing GDP per capita, GDP growth and inflation respectively; parameter estimates are reported with the small sample adjusted standard errors; ***, ** and indicates statistical significance at the 1%, and 5% level respectively

Table III.
Stage-one regression in estimating abnormal loan loss provisions

coefficients on the diversification strategy and the funding sources (i.e. β_1 and β_2, respectively). The positive sign for β_1 and the negative sign on that of funding modes suggest less engagement in earnings management. More so, as absolute values are used, smaller values of DLLP will also indicate less engagement in earnings management.

Consistent with our expectation, the coefficient on β_1 in equation (4), where revenue diversification strategy is measured by the Herfindahl – Hirschman Index ($DIV_{(REV)}$), is positive and statistically significant at 5 per cent level. This result supports our argument that banks that diversify across interest income tend to engage in less earnings management. This means that managers who adopt a strategy to diversify their operations across interest-generating activities are less likely to manage their earnings either to mislead some stakeholders about the underlying economic performance of their bank or to influence any contractual agreement. However, the results on revenue diversification within non-interest income ($DIV_{[NON]}$) is insignificant. That is, diversification within non-interest-generating activities does not provide any incentive for the managers to dwell in earnings management. On the funding sources, the results suggest that banks that finance their assets using deposits engage less in

Explanatory variables	1	2	3	4	5	6
LEV	0.0840***	0.0906***	0.1029***	0.0855***	0.0849***	0.1719***
	(0.0173)	(0.0189)	(0.0149)	(0.0178)	(0.0147)	(0.0264)
LOAN	0.0124*	0.0161**	0.0080	0.0114	0.0151**	0.0317***
	(0.0071)	(0.0076)	(0.0060)	(0.0070)	(0.0073)	(0.0109)
DNPL	0.0104***	0.0097***	0.0101***	0.0101***	0.0103***	0.0099***
	(0.0019)	(0.0021)	(0.0018)	(0.0019)	(0.0017)	(0.0024)
SIZE	0.0009	0.00005	0.0003	0.0002	0.00007	0.00008
	(0.0016)	(0.0018)	(0.0014)	(0.0017)	(0.0015)	(0.0024)
MKTS	−0.0047	−0.0031	−0.0084	−0.0039	−0.0045	−0.0215
	(0.0106)	(0.0108)	(0.0096)	(0.0117)	(0.0098)	(0.0146)
COM. INCOME^2	0.0042	0.0087				
	(0.0069)	(0.0079)				
$DIV_{(REV)}$	0.0188**					0.0356***
	(0.0095)					(0.0123)
$DIV_{(NON)}$		0.0066				0.0054
		(0.0069)				(0.0077)
DEPOSIT			−0.0304***			−0.0781***
			(0.0062)			(0.0143)
NON-DEPOSIT				0.0096		−0.0328**
				(0.0062)		(0.0153)
IGF					0.0244	0.0378
					(0.0164)	(0.0258)
EBTP	0.0245	0.0296	0.0815**	0.0526*	0.0298***	0.0595
	(0.0294)	(0.0302)	(0.0328)	0.0314	(0.0510)	(0.0897)
GDP per capita	−0.9966**	−0.9880**	−1.2977***	−1.1559**	−1.0288**	−1.5332**
	(0.4608)	(0.4953)	(0.4004)	(0.4754)	(0.3896)	(0.6214)
GDP growth	0.9212**	0.9114*	1.2228***	1.0912**	0.9670**	1.4626**
	(0.4516)	(0.4852)	(0.3921)	(0.4663)	(0.3815)	(0.6062)
INFL	0.00004	0.00005	−0.00003	−0.0007**	0.0010	−0.0045
	(0.00006)	(0.00006)	(0.00007)	(0.00008)	(0.00198)	(0.0074)
Obs	1,711	1,597	1,841	1,653	1,910	1,321
R^2	7.1	6.7	9.13	6.88	7.25	11.91
Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
F-test	5.88***	5.07***	8.93***	5.83***	7.24***	6.60***

Notes: The dependent variable is discretionary loan loss provisions, DLLP; this is regressed against leverage LEV; bank loan outstanding LOAN; an indicator of non-performing loan DNPL; the size of the bank SIZE; the market share of the respective banks MKTS; the square of commission income COM. INCOME^2; diversification across $DIV_{(REV)}$ and $DIV_{(NON)}$ interest and non-interest income; DEPOSIT is deposit sources of funding while NON-DEPOSIT is the wholesale fund and is calculated as all other debts (except deposits) divided by total assets; IGF is the funds generated internally; earnings before tax and provisions EBTP; and macroeconomic variables, GDP per capita, GDP growth and INFL; standard errors are reported in parentheses; ***, ** and * indicates statistical significance at the 1, 5 and 10% level, respectively

Table IV.
Evaluation of earnings management: funding and diversification strategies

DLLPs. This result is consistent with the argument that managers normally tend to manage earnings to meet the contractual obligation of wholesale funds. Furthermore, even though the results is insignificant, the positive relationship between DLLP and non-deposit fund and IGFs give credence that bank managers are motivated to manage

earnings to meet the obligation of both debt holders and the shareholders. The positive coefficient on leverage (LEV) and statistically significant results irrespective of the funding sources and the activity mix means that highly leverage banks engage in earnings management.

4.3 Earnings management and change in market share

To provide precise inference on the relationship between earnings management, funding structure and bank activity mix, we interact market share with these variables. We control for possible endogeneity of funding choices, activity mix, market share and earnings management. Banks with high earnings quality may systematically choose deposit funds to diversify across interest income generating activities. Similarly, banks with high market power use IGFs to diversify into non-interest generating income (Amidu, 2013). We therefore use the Heckman (1979) two-stage least square (2sls) to address this concern. First, we develop a model that relates to funding mode, activity mix, market share and discretionary earnings management as follows:

$$DLLP_{it} = \beta_0 + \beta_1 DLLP_{it-1} + \beta_2 DIV_{it} + \beta_3 (DIV_{it} \times \Delta MKTS_{it}) + \beta_4 FS_{it} + \beta_4 (FS_{it} \times \Delta MKTS_{it}) + \sum_{j=4}^{k} \alpha_j M_j + \lambda_t YEARDUMMY_t + \varepsilon_{it} \quad (5)$$

The model given in equation (5) includes interaction terms that are the product of the change in market share with the activity mix, funding modes and a vector of bank-specific and country-level characteristics. $DLLP_{it,}$ is the estimated LLP of a bank i in period t, $DLLP_{it-1}$ is the observation on the same bank in the same county in the previous year, DIV_{it} is the revenue diversification of a bank i in period t, (DIV_{it} * $\Delta MKTS_{it}$) is the interactions of activity mix and market share of a bank i in period t, FS_{it} is the funding strategy of bank i in period t, (FS_{it} * $\Delta MKTS_{it}$) is the interactions of funding modes and market share of a bank i in period t, the variables M are a set of {k} variables controlling for the respective countries' macro-economic environments and regulatory variables and ε_{it} is the error term.

The positive coefficient on lagged *DLLP* means that banks in Africa that engage in discretionary earnings management in current year managed their earnings in the previous year especially with the banks that diversify into non-interest-generating activities. Also, the lagged-dependent variable, DLLP among the explanatory variables, is positive and statistically significant, illustrating the importance of accounting for previous values of the dependent variable. The relationship between market share and DLLP is positive and statistically significant across all the models except Column 4 where changes in market share interact with wholesale fund. This means that as a bank acquires more market share, its earnings quality reduces. Thus, the earnings quality reduces when banks in Africa with higher market share use the IGF to diversify into non-interest income. However, we could not ascertain in this current study that managers engage in earnings management to maintain their market share. More so, banks that extend credit in the form of loan delivery have less incentive to engage in earnings management. In Table V, we also report the interaction of the market share and the funding and diversification strategies of banks. This is to enable us to investigate whether changes in market share sensitivity of earnings quality depends on the funding strategies or activity mix of the banks. The results

Explanatory variables	1	2	3	4	5
$DLLP_{-1}$	0.0997***	0.0858***	0.0956***	0.0888***	0.0989***
	(0.0142)	(0.0133)	(0.0135)	(0.0133)	(0.0140)
MKTS	0.0580**	0.0462**	0.0460**	0.0383	0.0583*
	(0.0271)	(0.0224)	(0.0264)	(0.0300)	(0.0322)
LEV	−0.0085	−0.0038	0.0097	−0.0027	−0.0093
	(0.0075)	(0.0065)	(0.0085)	(0.0118)	(0.0095)
LOAN	−0.0085**	−0.0075**	−0.0075*	−0.0054	−0.0094**
	(0.0038)	(0.0033)	(0.0039)	(0.0042)	(0.0045)
DNPL	0.0115***	0.0108***	0.0109***	0.0117***	0.0114***
	(0.0009)	(0.0007)	(0.0008)	(0.0009)	(0.0009)
SIZE	−0.0010**	−0.0007*	−0.0009**	−0.0007	−0.0009*
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)
$DIV_{(REV)}$	0.00145				
	(0.0034)				
$DIV_{(NON)}$		0.0061**			
		(0.0031)			
DEPOSIT			−0.0080***		
			(0.0024)		
NON-DEPOSIT				0.0018	
				(0.0029)	
IGF					−0.00708
					(0.0074)
$\Delta MKTS \times DIV_{(REV)}$	−0.0342*				
	(0.0196)				
$\Delta MKTS \times DIV_{(NON)}$		−0.0307			
		(0.0217)			
$\Delta MKTS \times DEPOSIT$			−0.0114		
			(0.0146)		
$\Delta MKTS \times NON\text{-}DEPOSIT$				0.0047	
				(0.0323)	
$\Delta MKTS \times IGF$					−0.0935*
					(0.0493)
EBTP	−0.0117	−0.0007	−0.0056	−0.0007	0.0037
	(0.0188)	(0.0136)	(0.0223)	(0.0249)	(0.0338)
GDP growth	0.0043	0.0069	0.0041	0.0030	0.0057
	(0.0104)	(0.0102)	(0.0103)	(0.0102)	(0.0112)
INFL	−0.00003	−0.00005	−0.00005	−0.00008	0.0001
	(0.00004)	(0.00003)	(0.00003)	(0.00005)	(0.0009)
Diagnostics tests					
Sargen $N * R^2$ test	2.886	2.12	2.651	3.9	3.938
Obs	1,589	1,404	1,546	1,402	1,608
R^2 (uncentered)	12.36	17.79	19.96	24.24	10.76
F-test (p-value)	30.15***	28.61***	33.48***	32.00***	29.79
Wu-Hausman test	4.883**	3.971**	3.072*	1.622	3.768*
Durbin-Wu-Hausman	4.909**	3.997**	3.092*	1.635	3.789*

(*continued*)

Table V. Earnings management and change in market share

Explanatory variables	1	2	3	4	5
Anderson canon test	19.144***	23.074***	17.174***	13.481**	13.35**
Cragg-Donald Wald	3.195	3.863	2.863	2.241	2.221

Notes: Table V reports the second stage of the 2sls regression results; the dependent variable is DLLP which is the discretionary component of loan loss provisions; this is regressed against the lagged DLLP; the market share of the respective banks MKTS; the leverage LEV; bank loan outstanding LOAN; an indicator of non-performing loan DNPL; the size of the bank SIZE; diversification across $DIV_{(REV)}$ and $DIV_{(NON)}$ interest and non-interest income; deposit funds DEPOSIT; wholesale funds NON-DEPOSIT; internal generated funds IGF; earnings before tax and provisions, the interaction of market share with funding structure and activities mix; EBTP; and macroeconomic variables, GDP growth and INFL. All regressions are conducted using dynamic panel data estimation, 2sls; parameter estimates are reported with the small sample adjusted standard errors. ***, ** and * indicates statistical significance at the 1, 5 and 10% level, respectively; the R^2 measures goodness of fit; the F-test measures the joint significance of coefficients; the following diagnostic tests are conducted: the Sargan test for over-identifying restrictions measures instruments exogeneity. The Andersons likelihood ratio test is a test of instrument relevance; the Durbin-Wu-Hausman (DWH) chi-square test and the Wu-Hausman F-test also measure the efficiency of the 2sls over OLS in estimating the model; the Anderson likelihood ratio test suggesting that the instrument set used is not valid; the dependent variables and year dummies are treated throughout as endogenous; bank fixed effects are not included in the estimation

Table V.

indicate that the sensitivity of earnings management to revenue diversification ($DIV_{[REV]}$) decreases, as bank market share increases. Similar results are obtained for IGFs. However, there is no evidence to suggest that earnings quality increases for banks with market share and with deposits and non-deposits funding.

5. Conclusion

This paper contributes to empirical literature on banks' earnings management in developing countries. We analyse the relationship between bank activity mix and the funding pattern of banks on one hand and the earnings quality on the other. We use macro-economic variables to account for differences in economic development. We sample 330 banks across 29 countries during the eight-year period, 2002-2009. To account for endogeneity and to provide precise and consistent parameter estimates, we use 2sls (Section 4.3) in the estimation process, while in Sub-section 2, we include country and year fixed effects and clustering of the errors at the bank level. Two stage procedures are used:

(1) the construction of a DLLP as a proxy for the degree of bank earnings management; and

(2) to use the results to test its relationship with diversification and the funding modes.

We find that banks' net income are half-normally distributed for the entire sample except banks in Angola. These results suggest the possibility of earnings management of banks in Africa. Consistent with our expectation, our results, support the argument that banks that diversify across interest income tend to engage in less earnings management. On the funding sources, the results reveal that banks that finance their assets using deposits engage less in DLLPs. These results are consistent with the argument that managers tend to manage earnings to meet the contractual obligation of

wholesale funds. Our study finds evidence that bank activity mix and funding modes explain bank earnings quality. In addition, the study reveals the benefits of revenue diversification, as it contributes to the quality of corporate financial reporting through reduction of earnings management. Overall, our results suggest that earnings management among banks with higher market share is significantly more sensitive to IGFs than it is with deposits and wholesale funding. The results indicate that the sensitivity of earnings management to revenue diversification across interest income decreases, as bank market shares increases.

Regarding policy implications, Mayers and Smith (2004) argue that detecting earnings management in highly regulated industries is important, as it demonstrates that, to the extent, earnings management is a problem, regulatory oversight may not prevent self-serving accounting choices by managers. Our results show that even in a highly regulated industry such as banking, activity mix and funding pattern play an important role in reducing earnings management. Moreover, in the developing countries banking sector context, our study can be regarded as documenting an important internal decision mechanism (activity mix and funding choices) in addition to previously identified external factors, bank monitoring and international institutional factors limit earnings management in banks. Finally, to the extent that the level of loan and the net charge-off of loans are used by the bank managers to manipulate the earnings, supervisory authorities in Africa must increase their reporting requirements for banks. Banks should also be made to adopt IFRS. These measures will prevent the Lehman Brothers-induced type of banking crisis in Africa.

Notes

1. See A. R. Valukas Chapter 11 Case No. 08-13555 (*JMP*) in Re: Lehman Brothers Holding Inc., *et al.* Volume 3, 11 March 2010, available at: http://lehmanreport.jenner.com/
2. Banks focus on manipulation of LLP because they have substantial latitude in determining the amount of provision. Also, banks with high leverage make them quite vulnerable to volatility in asset values, prompting adequate LLP, which become banks' main accrual (Fronseca and Gonzalez, 2008).
3. In this context, bank divisions, units or sector connote the business of the bank that allow the banks to engage in activities that generate non-interest income. That is, a unit of a commercial bank that participates in securities markets, insurance and real estate activities. It is a measure used to describe diversification (Sanya and Wolfe, 2011).
4. As a large number of NPL observations are missing, we use the modified zero-order regression method suggested by Maddala (1977) for estimating equation (4). This method substitutes a zero for missing value and adds an indicator variable coded one if the corresponding variable is missing.
5. This is based on the coefficients from the first-stage regression in equation (4).
6. Countries included in analysis for northern region of Africa are Algeria, Egypt, Morocco, Sudan and Tunisia; the central Africa countries included are Benin, Burkina Faso, Cameroon, Cote d'voire, Ethiopia, Ghana, Kenya, Mali, Mauritania, Nigeria, Rwanda, Senegal, Sierra Leone and Uganda, while Angola, Botswana, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland and Zimbabwe are included for southern Africa countries.
7. The results are not reported but available upon request.

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