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Income Diversification and Financial Perfomance. Should Banks Trade?

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Abstract

Purpose: The purpose of this study is to examine the effect of income diversification on the financial performance of commercial banks in Kenya.

Design/methodology/approach: The study used a sample of 31 commercial banks and panel data for the period 2008-2017. Data was extracted from the individual bank's financial reports and the Central Bank of Kenya's bank supervision annual reports. The data was analyzed through descriptive and inferential statistics, while the hypothesis was tested using fixed effect regression based on the results of the Hausman test. Financial performance was measured as return on assets (ROA), while Herfindahl-Hirschman Index (HHI) was used to measure income diversification. The study controlled for firm size, firm age and lending strategy.

Findings: The findings indicated that income diversification had a positive and significant effect on banks' financial performance in Kenya. The control variables had varied effects; firm size had a positive effect, while firm age and lending strategy had a negative effect.

Practical implications: The article offers insights to bank managers and the regulator. First managers should consider an optimal level of diversification to compensate for the deteriorating interest revenue. Second, the regulator should relax laws that limit the extent banks can diversify their revenue streams.

Originality/value: Unlike previous studies which focused on developed and emerging economies, this study centered on a developing economy, and the findings are consistent with the propositions of the modern portfolio theory.

1. Introduction

Over the last two decades, the global banking sector has faced major challenges that have destabilized interest income. Specifically, the sector continues to grapple with rising non-performing loans, competition from nonbanking entities and unprecedented growth in financial technologies (Gololo, 2018; Dimitrios & Mike, 2016; Psillaki & Mamatzakis, 2017). In response, banks have expanded into non-traditional activities such as stock brokerage and underwriting to compensate for the deteriorating interest income (Ferrari *et al.,* 2018; Mohamed & Bett, 2018; Ng'ang' a, 2019). Empirical studies show that noninterest income accounts for around 40 percent of banks' total income operating incomes (Kiweu, 2012; Stiroh, 2002; Busch & Kick, 2009; DeYoung & Rice, 2004). Though, researchers have examined the relationship between income diversification and bank performance, their findings are largely contentious. Some studies claim that income diversification improves banks' financial performance (Jen Huang & Cheng 2006; Alhassan & Tetteh, 2017; Chiorazzo *et al.,* 2008), reduces risk exposure (Saunders *et al.,*2016, Abedifar *et al.,*2014; Calmès & Théoret, 2015), lowers banks' spread (Mujeri & Younus, 2009; Kannan *et al.,*2001) and increases market power (Ovi *et al.,*2014). On the contrary, there are studies that suggest income diversification reduces profitability while exposing banks to income volatility (Berger *et al.,* 2010; Mercieca *et al.* 2007; Delpachitra & Lester, 2013; Chen et al, 2017; Lepetit *et al.,* 2008). Yet, a number of studies contend that income diversification has no effect on performance, implying that banks should focus on financial intermediation (Hahm, 2008). A probable explanation for the inconsistent findings might be contextual since most of these studies focused on developed and emerging economies; America, Europe and Asia, that have advanced legal and financial institutions hence fewer incentives for income diversification (Lepetit *et al.,* 2008; Chiorazzo *et al.,* 2008; Mercieca *et al.* 2007; Stiroh, 2002; DeYoung &Rice, 2004)

Though the banking sector in developing economies is generally inefficient, studies have shown that it has a significant influence on poverty alleviation (Abdin, 2016), education (Sun & Yannelis, 2016), entrepreneurship (Toms & Wright, 2019) and agriculture (Anetor *et al.,* 2016). Against this background, this study seeks to contribute to the scanty literature on the influence of income diversification on bank performance in developing economies, in particular the Kenyan banking sector which is among the most vibrant and innovative

banking sectors in Africa for pioneering in mobile banking (Kasekende & Nikolaidou, 2018; Muthinja & Chipeta, 2018). Moreover, with the enactment of interest capping in 2016 the appetite for noninterest income has increased tremendously (Olaka, 2017)

2. Literature Review

Bank diversification can take different forms. However, due to regulatory limits, focus is on income diversification. Income diversification refers to increasing the share of the fee, net trading profits and other noninterest income within the net operating income of a bank (Gurbuz *et al.,* 2013). Besides, Ebrahim and Hasan (2008) view income diversification as the expansion into new income-earning financial services a way from traditional intermediation services. In principle, income diversification is a shift from lending activities towards non-lending activities such as investment banking, trading and insurance (Busch & Kick, 2009). According to Mujeri and Younus (2009), income diversification entails advisory services, asset management services, and sale of insurance and mutual fund products, payment products, electronic bill payments and sale of credit cards.

Generally, income diversification generates non-interest income which is grouped into fee income and non-fee income Activities that generate fee income include loan processing, bill discounting, letters of credit and guarantee, account keeping, service and management whereas non-fee income arises from foreign exchange transactions, investment in government and corporate securities, rental premises owned by the bank and gains from the sale of premises (Lepetit *et al.,*2008; DeYoung & Roland, 2001; Rushdi & Tennant, 2003).

Both in practice and theory, diversification is aimed at improving firm performance and reducing risk. Markowitz's (1952) modern portfolio theory postulates that a firm can reduce income volatility and improve overall financial performance by engaging in a range of income-generating activities. From this theoretical standpoint, non-interest income and interest income are uncorrelated since they are generated by different activities. Thus, income diversification should compensate firms for any loss of main revenue. Conversely, empirical studies continue to elicit extensive debate among scholars and practioners. Lepetit *et al.,* (2008) analyzed the relationship between bank income structure and risk. The study considered 734 European commercial and cooperative banks drawn from 14 countries and panel data for the period 1996 - 2002. The study found that income

diversification exposed banks to a higher level of risk and income volatilities. Conversely, trading income was favourable to bank risk. DeYoung and Rice (2004) examined income diversification and performance causality. The study considered a sample of 4,712 U.S. commercial banks and data from 1989-2001. The findings indicate that income diversification led to higher, though unstable, profits implying income diversification worsens risk-return tradeoff. A study by Sanya and Wolfe (2010), which used a panel dataset of 226 listed banks across 11 emerging economies, examined the relationship between revenue diversification and financial performance. The study found that income diversification had a positive effect on bank performance. Additionally, the study noted that, compared to other noninterest incomes, fee-based activities had the highest explanatory power. Elsa *et al.,* (2006) examined the anatomy of bank diversification. The authors used a sample of 380 listed European banks and 1,917 observations for years 1996 - 2003. The study found that income diversification improved bank profitability. Baele *et al.,* (2007) studied whether bank diversification influenced bank performance. The study used a data set of 255 banks drawn from 17 European countries and panel data for the period 1989 - 2004. The findings of this study revealed that diversification had a positive and significant effect on bank performance.

Following the inconclusive results as discussed above, DeYoung and Rice (2003) made several observations. First, interest income is earned through relationship-based activities with high switching costs compared to fee-based transactions which occasionally are one-off hence the benefits of diversification are short-term. Second, nonlending activities are likely to impact adversely on banks operating and financial leverage thus lessening diversification gains (DeYoung & Rice, 2003). While Lepetit *et al.,* (2008) claim that through cross-subsidization and cross-selling the effect of income diversification might be invisible. Besides, some researchers argue that income diversification is likely to breed lazy banks (Kumhof & Tanner, 2005; Kumar & Hauner, 2006; Hauner, 2008). Unfortunately, none of this proposition has been validated empirically.

Coming from this background and considering the nature of financial institutions in developing countries, it is important to reexamine the effect of income diversification on bank performance in developing economies. Moreover, extant literature shows that just as

few studies have been done on income diversification in Africa (Senyo *et al.,* 2015; Alhassan & Tetteh, 2017). The research hypothesis is formulated as shown below.

H_0: *Income Diversification has no significant effect on financial performance*

H_a: *Income Diversification has a significant effect on financial performance*

3. Research Design

According to Zikmund *et al.,* (2013) research design denotes methods and procedures for collecting and analyzing the needed information which comprises of sampling methodologies, data collection techniques, data analysis and cost schedules. This study is both longitudinal and explanatory. A longitudinal study uses continuous or repeated measures to follow specific individuals over an extended period of time (Caruana, 2017). In the study, the variables will be examined over the period between 2008 and 2017. Saunders *et al.,* (2011) affirm that explanatory studies seek to establish a causal relationship between variables with the main emphasis being to study a problem.

3.1 Study Population

The study population comprised of all banks licensed by the Central Bank of Kenya; 42 commercial banks and 1 mortgage finance company. The inclusion and exclusion criterion was whether the bank was in operation between 2008 and 2017. After data collection only 31 banks qualified for further analysis, which yielded 310 year-end observations.

3.2 Measurement of Variables

The study had five variables namely; the dependent variable (financial performance), the independent variable (income diversification) and three control variables (firm size, firm age, and lending strategy). Performance was measured as return on assets, which is the ratio of a firm's net earnings to total assets. ROA shows the extent to which a firm is utilizing its assets. A high ROA means that the firm is utilizing its assets efficiently and for value (Van Vu *et al.,* 2018; Juma & Atheru, 2018; Eklof *et al.,* 2018). Banks' operating income comprises of interest income generated from lending activities and non-interest income earned from nonlending activities. The standard measure of income diversification is the Herfindahl-Hirschman Index (Jouida, 2018; Olarewaju, 2018; Nepali, 2018; Batool & Jamil, 2019; Brahmana *et al.,* 2018). The study adopted the Herfindahl-Hirschman Index (HHI) as the measure for income diversification. HHI is computed as follows;

$$HHI= 1- [(NII/NOI)^2 + (NONI/NOI)]^2$$

Where;

NII is the amount of net interest income

NONII represents the amount of non-interest income

NOI symbolizes the net operating income

HHI varies between 0 and 1.00. HHI of 0.50 shows average income diversification while HHI closer to 1.00 represents the highest level of income diversification As HHI increases the bank becomes more diversified. Hence the lower the value of HHI the more concentrated the firm is.

The study controlled for factors that are likely to affect the endogenous variable to rule out alternative explanations and enhance the predictive power of the exogenous variable and the mediator. Specifically, the control variable comprised of;

i) Firm age has an impact on firm performance. This variable was measured as the number of years since the bank started operating. (Lei & Chen, 2019; Ilaboya and Ohiokha, 2016).

ii) Firm size was measured as the natural logarithm of total bank assets (Wan & Zhang, 2018; Pucheta-Martínez *et al.,* 2019; Chiorazzo *et al.,* 2008). Large banks have more resources and opportunities for diversification compared to smaller banks

iii) Lending Strategy denoted as the ratio of total loans to total assets (Edirisuriya *et al.,* 2015; Gurbuz *et al.,* 2013; Buch *et al.,* 2019). This variable controls for the effects of lending strategy on risk-adjusted bank performance

3.3 Empirical model

The study sought to investigate the causal relationship between income diversification and bank performance. The multiple regression equation that was used to test the relationship between the variables is shown below;

$$FP_{it} = \beta_0 + \beta_1 INDIV_{it} + \beta_2 FA_{it} + \beta_3 FS_{it} + \beta_4 LS_{it} + \varepsilon_{it}$$

Where;

FP denotes financial performance

INDIV represents income diversification

FA symbolizes firm age

FS is the firm size

LS represent the lending strategy;

ε_{it} = Error term

$\beta_{0, \ldots\ldots} B_n$ are the beta coefficients

Subscript t corresponds to the examined period,

Subscript i corresponds to the examined bank.

3.4 Data Collection and Analysis

The study employed annual bank-level data from 2008 to 2017 for all the commercial banks registered in Kenya. The inclusion and exclusion criterion was based on whether data was available and complete. Thus, the final sample consisted of 31 banks, which yielded 310 annual observations. Data was extracted from the individual banks and the Central Bank of Kenya bank supervision annual reports. Data analyzed through descriptive and inferential statistics. Specifically, the data was summarized through mean and standard deviations. Correlation analysis was used to establish the nature and magnitude of the relationship between while regression analysis was used to test the research hypothesis. Before regression analysis, the data was log-transformed and several panel data diagnostic tests were done. Specifically, test for normality, unit root, autocorrelation and multicollinearity and the results of these tests are presented in Table A- D in the appendices. All the tests showed that the data was suitable for regression analysis. The results of the Hausman test, Chi (4) = 24.87 and ρ=0.000, are also illustrated in Table E (appendices), which confirms that fixed effect regression was the preferred model.

4. Results and Discussion

Table I illustrates the summary statistics for the research variables. Table II shows the results of pairwise correlation analysis while Table III shows the results of the random effect regression analysis.

Table 4.1: Summary Descriptive Statistics of Research Variable

Variable	Obs	Mean	Min	Max	Std. Dev
Financial Performance	310	0.03	0.00	0.10	0.018
Income Diversification	310	0.40	0.00	0.51	0.09
Lending Strategy	310	0.57	0.02	0.86	0.12
Firm Size	310	76.60	22.89	556.0	96.2
Firm Age	310	34.82	1.00	121.00	29.22

Table 4.1 indicates that the average industry return on asset for the period 2008-2017 was 3%. Additionally, the table shows that the average bank age is 34 years and the mean bank size is Ksh 76.6 billion. Further, the table shows that the average income diversification was 0.40 which can be interpreted as an intermediate level of income diversification.

Table 4.2: Pairwise Correlation Matrix

	FP	INDIV	FA	FS	LS
Financial Performance (FP)	1				
Income Diversification(INDV)	.699**	1			
Firm Age (FA)	.294**	.177**	1		
Firm Size(FS)	.372**	.210**	.542**	1	
Lending Strategy (LS)	-.122*	-0.104	-0.056	-0.032	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The results of the pairwise correlation are shown in Table 4.2. The table illustrates that the correlation of income diversification and performance was positive and significant ($r=0.699$, $\rho<0.01$). Also, the correlation of firm age and firm performance ($r=0.294$, $\rho<0.01$), firm size and firm performance ($r=0.372$, $\rho<0.01$), firm size and firm age ($r=0.542$ $\rho<0.01$), firm size and income diversification age ($r=0.210$ $\rho<0.01$) was positive and significant. However, the correlation of lending strategy and financial performance ($r= -0.122$, $\rho <0.01$), lending strategy and income diversification ($r=-0.104$, $\rho> 0.01$), lending strategy and firm age ($r=-0.056$, $\rho> 0.01$), lending strategy and firm size ($r=-0.032$, $\rho >0.01$) was negative.

Table 4.3: Results of Regression Analysis

Variable	Fixed Effect	Random Effect	GEE
Income Diversification	.322(15.70)**	.337(16.48)**	.336(16.63)**
Firm Age	-.392(2.78)	-.161(-0.24)	-.026(-0.38)
Firm Size	.147(1.74)	.112 (2.38)**	.111(2.29)**
Lending Strategy	-1.35(-1.28)	.112 (2.38)**	-. 190(1.88)
__cons	-2(-3.86)**	-2.26(-7.16)**	-2.24(-6.93)**
sigma_u	0.248	0.125	
sigma_e	0.213	0.212	
R-squared	0.4958	0.4751	
Number of Observations	310	310	310

The study hypothesized that; *H_o income diversification has no significant effect on financial performance.* The hypothesis was tested based on the results of the fixed effect regression, however the results for two additional static panel estimation models; the random effect regression model and the Generalized Estimation Equation as shown in Table 4.3. The output of the fixed effect regression models showed that the relationship between income diversification and financial performance was positive and statistically significant (β= 0.332, ρ <0.05). Similar results were reported by the random effect model (β= 0.337, ρ <0.05) and the Generalized Estimation Equation (β= 0.336, ρ <0.05). Thus, the null hypothesis was rejected and the alternative hypothesis accepted. Empirically, a one percent change in income diversification led to a 32.2 % change in banks' financial performance. Similarly, firm size had a positive and significant effect on bank financial performance (β= 0.147, ρ >0.05). Conversely, the findings indicated that firm age (β= -0.392, ρ > 0.05) and lending strategy (β= -0.135, ρ> 0.05) had an adverse effect on financial performance. Overall, the model predicts a 49.6 % change in bank financial performance. These findings are supported by previous studies (Carroll & Stater, 2008; Elsas *et al.,* 2006; Chiorazzo *et al.,* 2008; Edirisuriya *et al.,* 2015). Additionally, the findings are consistent with the propositions of the modern portfolio theory, that a firm can improve returns and reduce risks through optimal diversification of revenue streams. In line with these findings, the study concluded that banks can improve their financial performance by engaging in nonlending activities, which is attributable to efficient internal capital markets, economies of scale, cross-selling and cross-subsidization. Hence, in an era of interest capping, high competition from non-banking entities and unprecedented growth in financial innovation, bank managers should consider income diversification as a source of competitive advantage and long-term profitability.

5. Conclusion

The study developed a conceptual framework through an extensive literature review that also aided the formulation of the hypothesis. The study's main objective was to investigate the effect of income diversification on banks' financial performance. The unit of analysis was commercial banks in Kenya. The study extracted data from individual bank's annual financial reports and the Central Bank of Kenya's bank supervision annual reports. The findings of this study revealed that income diversification had a positive effect on financial

performance. Thus managers should consider an optimal balance between lending and nonlending activities to boost performance. Conversely, the extent banks can engage in non-lending activities is usually limited under the banking laws and regulations. Specifically, banks are restricted to activities that either complement or are incidental to lending, which weaken the impact of income diversification on financial performance. Thus, regulatory authorities should relax such restrictions to allow banks engage in a wider scope of activities to leverage their intellectual capital resources through nonlending activities and ultimately improve their financial performance. Alternatively, the regulator can impose judicious diversification ceilings that are sufficient cushion banks from interest income volatility. Due to unavailability of data, noninterest income was measured in aggregate form thus prospective researcher can consider decomposing non-interest income into its constituent elements.

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Appendicies

Table A: Jarque-Bera normality test

Jarque-Bera	normality test: 5.37 Chi(2)	0.0682
Jarque-Bera	test for Ho: normality:	

Table B: Unit root test

	Levin-Lin-Chu	Breitung	Im-Pesaran-Shin	Hadri LM test
Financial performance	-8.58	-3.26	-1.63	8.74
p- value	0.00	0.00	0.01	0.00
Income diversification	-32.76	-4.75	9.01	5.04
p- value	0.00	0.00	0.00	0.00
firm age	2.42	10.68	-1.74	25.11
p-value	0.02	0.00	0.04	0.00
firm size	-14.87	-0.63	-1.21	25.48
p-value	0.00	0.05	0.01	0.00
Lending Strategy	-4.48	-0.63	-2.64	25.48
p-value	0.00	0.02	0.00	0.00

Table C: Multicollinearity test

Variable	VIF	1/VIF
Firm Size	1.44	0.693405
Firm Age	1.42	0.701785
Income Diversification	1.06	0.940910
Lending Strategy	1.01	0.986885
Mean VIF	1.24	

Table D: Wooldridge test for autocorrelation in panel data

Ho:	No	first-order autocorrelation
	F(	1, 30) = 0.910
		Prob > F = 0.3478

Table E: Hausman test

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	re	Difference	S.E.
Indiv	.3215606	.3373008	-.0157402	.0009861
Fa	-.3921346	-.0161192	-.3760153	.123633
Fs	.1465791	.1123792	.0341999	.0695262
Ls	-.1347463	-.1894012	.054655	.0265474

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
$\quad$ chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
$\quad\quad$ =   24.87
$\quad$ Prob>chi2 =   0.0001
$\quad$ (V_b-V_B is not positive definite)