The Effect of Size on Financial Performance of Commercial Banks in Kenya

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Abstract

The question of whether size influences financial performance of commercial banks has not been conclusively settled empirically. The objective of the study was therefore to establish the effect size has on the profitability of commercial banks in Kenya. The study used an unbalanced panel of all commercial banks in Kenya for the ten year period 2007 to 2016 (the number ranged from 39 to 43). Regression analysis was used to relate size (proxied by log of total assets) against financial performance (Return on assets and return on equity). Size was found to have a positive effect on financial performance of commercial banks in Kenya. In addition, the effect was stronger the larger the commercial bank. The study recommends that policy initiatives geared towards increasing the size of the commercial banks be considered and shareholders/managers could also adopt growth strategies (internally generated, fund raising or mergers and acquisitions).

Keywords: Commercial banks, size, financial performance, Kenya

Introduction

Commercial banks are institutions that are involved in financial intermediation in addition to other services. They play an important role in an economy especially financing economic activities. Improvement in the performance of commercial banks would in turn increase their role in an economy (Terraza, 2015; Sufian, 2011; Pasiouras & Kosmidou, 2007). One of the key factors that improves performance of firms is size – among others, their ability to harness market power, and the crystallization of economies of scale. Market power manifests itself through, for example, the ability of larger more concentrated firms' to charge relatively higher prices than smaller firms. Economies of scale work through the average unit cost decreasing as marginal cost drops with increases in output (Dahmash, 2015; Alkhazaleh & Almsafir, 2014; Goddard, Molyneux & Wilson, 2004a; Berger & Humphrey, 1997).

In Kenya, as at 31st December, 2016, there were 23 local private, 3 local public and 13 foreign owned commercial banks in Kenya all having total net assets of KShs 3.7 trillion. Profit before tax was KShs 147.4 billion for the year. They had employed 33,000 people as in December 2016 (Central Bank of Kenya, 2016). The commercial banks contributed about 5.5% of the gross domestic product in 2016, which had risen from 4.8% in 2012 (Kenya National Bureau of Statistics, 2017).

Empirical results of tests of the relationship between size and profitability of commercial banks are divided and inclusive. For example Abel and Le Roux (2016), Onuonga (2014), Sufian and Kamarudin (2012) found positive relationships; Aladwan (2015) found a negative effect; while Shamki, Alulis and Sayari (2016); Dahmash (2015); and Shehzad, Haan and Scholtens (2013) found no relationship. The objective of this study was to establish the relationship between size and financial performance of commercial banks in Kenya. In addition, the study sought to evaluate whether the effect of size on financial performance varied at different firm sizes. The null hypotheses were therefore: H_{10}: The effect of size on financial performance of commercial banks in Kenya is not significant. H_{20}: The relationship between size and financial performance was the same at varying size levels. The rest of the paper is organised as follows: The theoretical and empirical literature is briefly reviewed; the methodology that was employed is explained; the results of the empirical analysis are provided; and the paper ends with a conclusion.

Literature Review

Larger firms' performance is expected to be better than for smaller entities. This is due to their ability to harness market power and existence of economies of scale and scope. Larger firms would have a higher ability to charge more than the average prices than smaller firms. Holding costs constant, these higher prices would translate into higher profitability for the larger firms as compared to the smaller ones. The scale concept argues that the bigger the firms become the more they enjoy reduction in average costs of production. This is because marginal costs tend to decrease as output increases. As the average unit cost decreases, essentially representing higher production efficiency, this results in increased profitability of the firms. The two factors, market power and economies of scale, would translate into increase in size of firms leading to increase in their profitability (Abiodun, 2013; Shin & Kim, 2011; Athanasoglou, Brissimis & Delis, 2008; Goddard, Molyneux & Wilson, 2004b; Demirguç-Kunt & Huizinga, 1999Scherer, 1973; Hall & Weiss, 1967; Stekler, 1964; Alexander, 1949)

Numerous empirical studies have been carried in developing and developed economies with a view to assessing whether economies of scale exist in practice. Shamki et al (2016) investigated the influence of bank capital

ratio, size and loans on the profitability of Jordanian commercial banks. They used a panel of 13 commercial banks in the period 2005 – 2013. Size did not significantly influence profitability, contrary to prediction by theory. Various determinants (liquidity risk, credit risk, asset composition and management, expense management and capital size) of commercial bank profitability were studied by Abel and Le Roux (2016) using commercial banks in Zimbabwe for the period 2009 – 2014. Size was found to be positively related to profitability as would have been theoretically expected.

Aladwan (2015) investigated the effect of bank size on the profitability of commercial banks in Jordan. He used a panel of 15 commercial banks for the period 2007 – 2012. Size was found to be inversely related to profitability, smaller asset base commercial banks being more profitable. The effect of size on profitability of firms listed at the Amman Security Exchange for the period 2005 – 2011 was assessed by Dahmash (2015). For commercial banks, size did not significantly influence profitability. The findings of these studies (Aladwan, 2015; and Dahmash, 2015) were contrary to expectations.

Onuonga (2014) assessed whether, for the top six commercial banks in Kenya for the period 2008 – 2013, banks assets, capital, loans, deposits and asset quality had an effect on profitability. With respect to size, the study found a positive relationship. Shehzad (2013) investigated the relationship between size, growth and profitability of commercial banks . They used a panel of 15,000 commercial banks from 148 countries for the period 1988 – 2010. Profitability and size were found not to be significantly positively related. Sufian and Kamarudin (2012) assessed the relationship between bank-specific and macroeconomic determinants of profitability of commercial banks in Bangladesh using 31 commercial banks for the period 2000 - 2010. Size significantly positively affected profitability.

Methodology

The population of the study comprised all commercial banks operating in Kenya for the ten year period 2007 to 2016. They ranged in number from a maximum of 43 (in 2010) to 39 (2015 and 2016), and gave an unbalanced panel of 414 data points. In pursuit of the research objective, the following linear regression model was used:

$FP_i=\alpha+\beta SZ_i+\varepsilon$ Where: FP_i= Financial performance of commercial bank i;

α = Intercept, a sample-wide constant; SZ_i = Size (log of total assets) of commercial bank i; ε = error term; β = coefficient for size.

Several regressions were run with respect to financial performance. These were:

a) FP = Return on assets (ROA) = Profit before tax/Total assets
b) FP = Return on equity (ROE) = Profit before tax/Total equity

c) FP as in b) but in four quarters partitioned using ascending order of size of the panel data

Operationalisation of size and financial performance was similar to Shamki et al (2016), Abel and Le Roux (2016), Aladwan (2015), Dahmash (2015), Shehzad et al (2013), Sufian and Kamarudin (2012). The partitioning of the data by size, which is essentially testing whether the financial performance to size relationship holds at different sizes of commercial banks, is along the lines adopted by Terraza, (2015), who partitioned banks into large, medium and small, Dahmash, (2015) who compared top 30% with bottom 30%, and Chang, Nieh & Peng (2011), who partitioned the panel data into four quarters.

Results and Discussions

The results are provided in two sections, the descriptive statistics and then the test of the hypotheses.

Descriptive Statistics

The profit before tax ranged from an annual loss of KShs 2.9 billion to a maximum of KShs 28.5 billion, with an arithmetic mean of KShs 2.3 billion. Total assets were from KShs 519 million to KShs 505 billion (arithmetic mean of KShs 54 billion), while shareholder's funds were from KShs 315 million to KShs 81 billion (arithmetic mean of KShs 8.3 billion).

The annual trend of arithmetic mean of profit before tax is shown in Figure 1 (the Figures are included as Appendices in this article). It shows a generally up ward sloping trend. The annual trend of arithmetic mean of total assets is shown in Figure 2. The line depicts an up ward sloping trend. Shareholder's funds increased over time as shown in Figure 3. The annual trend of arithmetic mean of return on equity is shown in Figure 4. It shows a cyclical movement but with the overall trend being downward sloping. The annual trend of arithmetic mean of return on assets is shown in Figure 5. It shows a trend similar to that of return on equity as depicted in Figure 4. Log of total assets trend over time as shown in Figure 6 shows a generally up ward sloping trend.

Hypotheses Testing

The first null hypothesis was: H_{10} - The effect of size on financial performance of commercial banks in Kenya is not significant. The results (Table 1) showed that the effect of size on profitability (ROA) of commercial banks in Kenya was significant ($\beta = 2.416$, Sig. =< 0.05). Size accounted for 23% of the variance in profitability of commercial banks. The analytical model which was: $FP_i=\alpha+\beta SZ_i+\varepsilon$, is therefore specified as: $ROA_i = -8.024+2.416*Log_{10}Total\ assets_i$

Table 1: Regression Results for Return on Assets as Dependent Variable and Log of Total Assets as Predictor

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.482[a]	0.232	0.230	2.610

a. Predictors: (Constant), Log of total assets

b. Dependent Variable: Return on assets

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	847.799	1.000	847.799	124.427	.000[b]
	Residual	2,807.216	412.000	6.814		
	Total	3,655.016	413.000			

a. Dependent Variable: Return on assets

b. Predictors: (Constant), Log of total assets

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	-8.024	0.950	-8.445	0.000
	Log of total assets	2.416	0.217	11.155	0.000

a. Dependent Variable: Return on assets

When profitability was measured using ROE, the results are as shown in Table 2. The effect of size on profitability (ROE) of commercial banks in Kenya was also significant ($\beta = 14.532$, Sig. =< 0.05). Size accounted for 22% of the variance in profitability of commercial banks. The analytical model which was: $FP_i=\alpha+\beta SZ_i+\varepsilon$, is therefore specified as: $ROE_i = -46.458+14.532*Log_{10}Total\ assets_i$

Table 2: Regression Results for Return on Equity as Dependent Variable and Log of Total Assets as Predictor

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.472[a]	0.222	0.220	16.134

a. Predictors: (Constant), Log of total assets

b. Dependent Variable: Return on equity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30,662.147	1.000	30,662.147	117.786	.000[b]
	Residual	107,251.986	412.000	260.320		
	Total	137,914.133	413.000			

a. Dependent Variable: Return on equity

b. Predictors: (Constant), Log of total assets

Coefficients[a]

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	-46.458	5.873	-7.910	0.000
	Log of total assets	14.532	1.339	10.853	0.000

a. Dependent Variable: Return on equity

The second null hypothesis was: H_{20} - The relationship between size and financial performance was the same at varying size levels. The results when the data points were disaggregated in descending order by size are shown in Tables 3 to 6. The dependent variable used was ROE. Results for the largest quartile (Table 3) show a significant effect of size on ROE ($\beta = 14.825$, Sig. =< 0.05). Size accounted for 9% of the variance in profitability of commercial banks for the largest quartile. The model for this quartile is specified as: $ROE_i = -47.701+14.825*Log_{10}Total\ assets_i$.

Table 3: Regression Results for Return on Equity as Dependent Variable and Log of Total Assets as Predictor – Largest Quartile

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.320[a]	0.102	0.094	9.715

a. Predictors: (Constant), Log of total assets

b. Dependent Variable: Return on equity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,098.464	1.000	1,098.464	11.639	.001[b]
	Residual	9,626.597	102.000	94.378		
	Total	10,725.061	103.000			

a. Dependent Variable: Return on equity

b. Predictors: (Constant), Log of total assets

Coefficients[a]

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	-47.701	22.428	-2.127	0.036
	Log of total assets	14.825	4.346	3.412	0.001

a. Dependent Variable: Return on equity

Results for the second largest quartile (Table 4) show a significant effect of size on ROE ($\beta = 21.161$, Sig. =< 0.05). Size accounted for 4% of the variance in profitability of commercial banks for the second largest quartile. The model for this quartile is specified as: $ROE_i = -76.743+21.161*Log_{10}Total\ assets_i$.

Table 4: Regression Results for Return on Equity as Dependent Variable and Log of Total Assets as Predictor – Second Largest Quartile

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.219[a]	0.048	0.039	17.488

a. Predictors: (Constant), Log of total assets

b. Dependent Variable: Return on equity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,561.915	1.000	1,561.915	5.107	.026[b]
	Residual	30,887.754	101.000	305.819		
	Total	32,449.668	102.000			

a. Dependent Variable: Return on equity Y

b. Predictors: (Constant), Log of total assets X

Coefficients[a]

		Unstandardized Coefficients		t	
Model		B	Std. Error		Sig.
1	(Constant)	-76.743	42.301	-1.814	0.073
	Log of total assets	21.161	9.363	2.260	0.026

a. Dependent Variable: Return on equity

Results for the third largest quartile (Table 5) show an insignificant effect of size on ROE (Sig. > 0.05).

Table 5: Regression Results for Return on Equity as Dependent Variable and Log of Total Assets as Predictor – Third Largest Quartile

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	0.026	0.016	20.110

a. Predictors: (Constant), Log of total assets x

b. Dependent Variable: Return on equity y

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,090.926	1.000	1,090.926	2.697	.104[b]
	Residual	40,846.971	101.000	404.425		
	Total	41,937.897	102.000			

a. Dependent Variable: Return on equity y

b. Predictors: (Constant), Log of total assets x

Coefficients[a]

		Unstandardized Coefficients		t	Sig.
Model		B	Std. Error		
1	(Constant)	160.163	89.891	1.782	0.078
	Log of total assets	-36.255	22.074	-1.642	0.104

a. Dependent Variable: Return on equity

Results for the smallest quartile (Table 6) also show an insignificant effect of size on ROE (Sig. > 0.05).

Table 6: Regression Results for Return on Equity as Dependent Variable and Log of Total Assets as Predictor – Smallest Quartile

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.249[a]	0.062	0.053	15.188

a. Predictors: (Constant), Log of total assets

b. Dependent Variable: Return on equity

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,550.763	1.000	1,550.763	6.723	.011[b]
	Residual	23,527.343	102.000	230.660		
	Total	25,078.106	103.000			

a. Dependent Variable: Return on equity

b. Predictors: (Constant), Log of total assets

Coefficients[a]

		Unstandardized Coefficients		t	Sig.
Model		B	Std. Error		
1	(Constant)	-56.339	24.352	-2.313	0.023
	Log of total assets	17.310	6.676	2.593	0.011

a. Dependent Variable: Return on equity

The results of the study were that size (ROA or ROE) had a positive effect on financial performance of commercial banks in Kenya. These results were similar to those of Abel and Le Roux (2016), Onuonga (2014), and Sufian and Kamarudin (2012). They were however different from those of Aladwan (2015) (who found a negative effect) and those of Shamki et al (2016), Dahmash (2015) and Shehzad et al (2013) (all who found no relationship). The effect of size on profitability (ROE) was found to be greater the larger the commercial bank.

Conclusion

The study sought to establish the effect of size on the financial performance of commercial banks in Kenya. It further sought to assess whether the relationship between size and financial performance was similar across the entire size spectrum. The findings were that size had a positive effect on financial performance of commercial banks in Kenya. The null hypothesis, H_0: The effect of size on financial performance of commercial banks in Kenya is not significant, was therefore rejected. Further the effect was stronger for larger commercial banks.

The implication of the findings is that there are positive performance benefits that accrue to commercial banks in Kenya as they become larger, which is in line with the theoretically expected position. The results would suggest that policy initiatives geared towards increasing the size of the commercial banks (such as raising minimum capital requirements) would be beneficial, and especially to the owners of equity. Shareholders and managers could also adopt growth strategies, including internally generated growth, additional fund raising or even mergers and acquisitions. The study proposes that further research be carried out to establish the route through which size influences performance, that is the mediator in the relationship between size and profitability of commercial banks.

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APPENDICES

Figure 1: Arithmetic mean of profit before tax

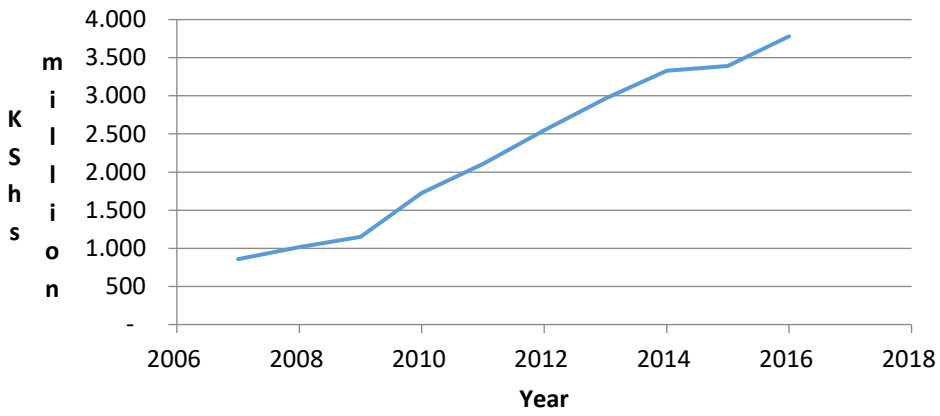
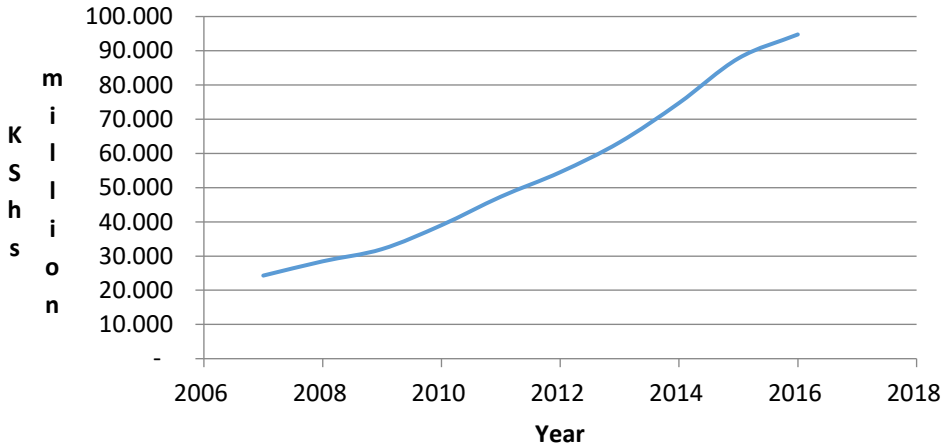
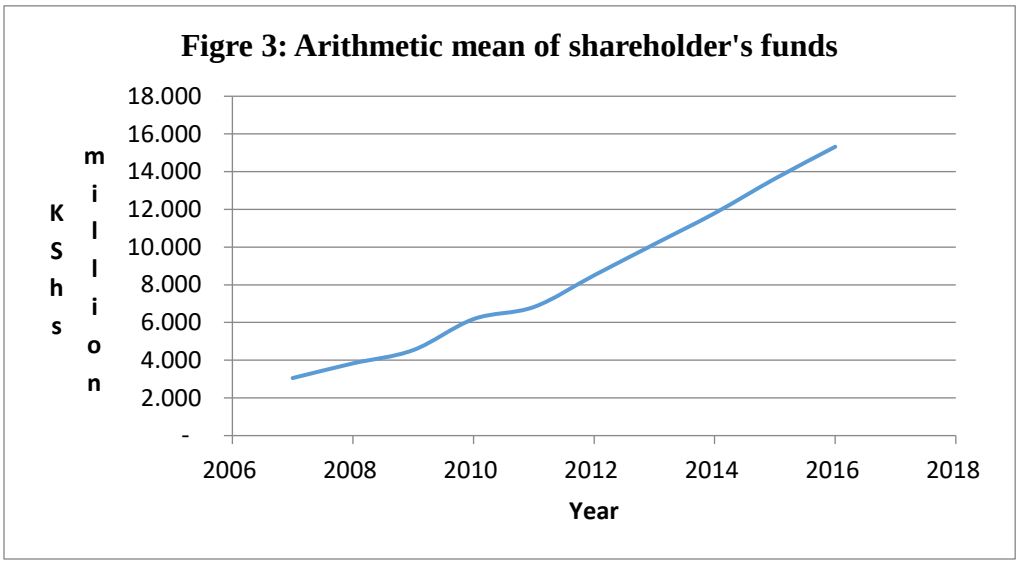


Figure 2: Arithmetic mean of total assets




Figre 3: Arithmetic mean of shareholder's funds
KShs million
18.000
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
-
2006
2008
2010
2012
2014
2016
2018
Year

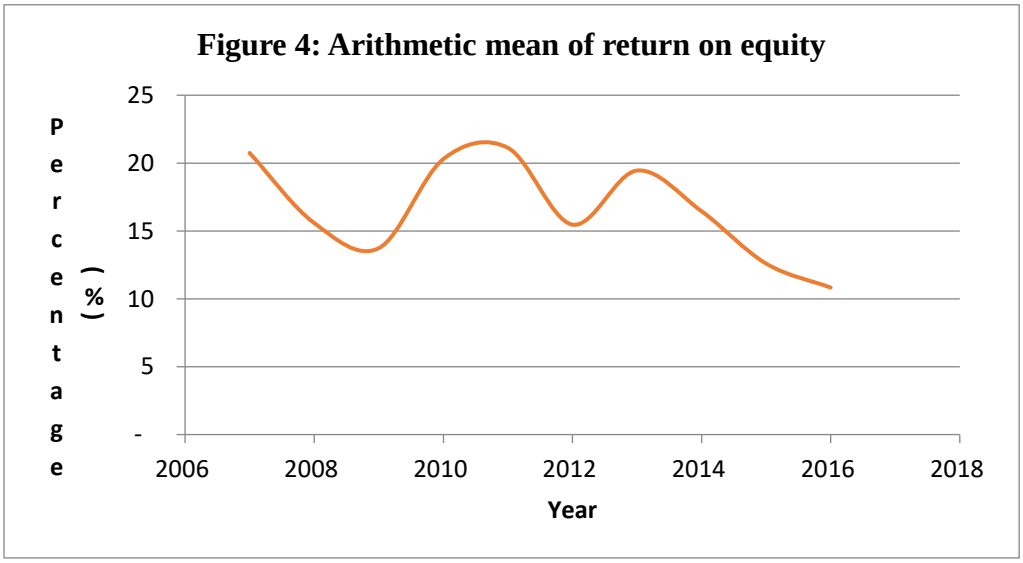


Figure 4: Arithmetic mean of return on equity
Percentage (%)
25
20
15
10
5
-
2006
2008
2010
2012
2014
2016
2018
Year

Figure 5: Arithmetic mean of return on assets

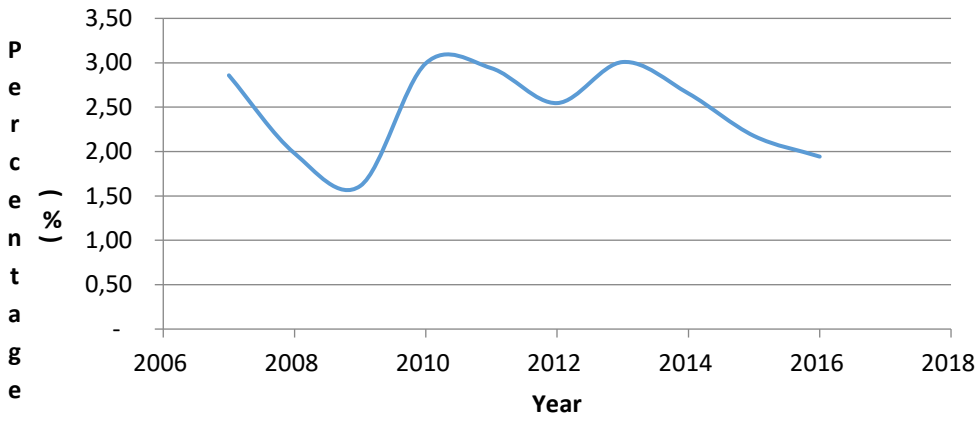


Figure 6: Arithmetic mean of log of total assets