



## POST GLOBAL FINANCIAL CRISIS AND THE PERFORMANCE OF FIRMS LISTED AT THE NSE, KENYA

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### Abstract

After the well-known financial crisis of 2008, financial institutions came up with stricter regulations on the minimum capital required for banks. The Kenyan banking sector has therefore been well capitalized generally and at a position to support firms in unstable periods. However the performance of firms has not been impressive. The major purpose of this study was to determine the impact of the post global financial crisis on the performance of firms listed at the Nairobi securities exchange. The data was obtained from the Nairobi securities exchange handbooks. The data of 42 non-financial firms from the year 2009 to 2016 was used. Financial firms were left out because they are regulated by the Central bank of Kenya. The data was analysed using SPSS version 20.0. 13 ratios, obtained from the NSE, Kenya non-financial firms, were used in factor analysis. From this factor analysis run, the Kaiser-Meyer-Olkin Measure of sampling adequacy of 0.516 was adequate for factor analysis. Since each variable exhibited communality greater than 0.5 after extraction, none of the variables were removed hence there was no need of running the factor analysis again. Six factors were extracted as a result of this method. These six factors accounted for 86.435 percent of the accumulated variance. Factor 1 had net profit margin, ROA and ROE which can be traced back to the theoretical perspective to represent profitability. Factor 2 has current ratio, total debt to total asset ratio and total debt to total equity ratio which represents solvency and liquidity ratio. Factor 5 has DPS and pay-out ratio representing profitability while Factor 3 and 6 have EPS and P/E ratio respectively which also represent profitability. Factor 4 has total asset turnover and fixed asset turnover which represent the efficiency of operating the business. This showed that financial ratios can be reduced using factor analysis and hence avoid the problems of severe multicollinearity in a regression analysis arising from having many independent variables. It also shows that these many financial ratios tend to explain similar concepts. But you cannot choose one and leave the other since each has a certain contribution to performance of the firms. It was found that there is a significant statistical relationship between factor 2 (current ratio, net profit margin, Total debt to total asset ratio and Total debt to total Equity), and factor 6(P/E ratio) and market to price book value for the Nairobi securities exchange. It was also found that factor 1, factor 3, factor 4 and factor 5 have p values greater than the benchmark value of 0.01 implying there is no statistically significant relationship between these factors (net profit margin, ROA, ROE, EPS, and DPS, pay-out ratio, total asset turnover and fixed asset turnover) with the market price to book value ratio. From the regression equation (1) above, profitability ratios, Operational efficiency ratios and dividend ratios have a positive relationship with the performance of firms of firms listed at the Nairobi securities exchange. However the Returns per share had a negative relationship with the performance of firms listed at the NSE, Kenya. Hence this study contributed to the literature in the sense that the relationship between market price to book value ratio and the profitability ratios, operational efficiency ratios and dividend ratios should be keenly followed as they positively affect the performance of firms during the post global financial crisis. The returns on shares and debt management should also be seriously monitored as it can impact greatly on a firm. The study suggests that firms should have control over current ratio, net profit margin, Total debt to total asset ratio and Total debt to total Equity so as to ensure the firm is on the path of positive performance. They should also control their dividend policy and also ensure their share prices are not overvalued as this can have a negative effect on the performance of firms listed at the Nairobi securities exchange.

### 1.0 Introduction

Unforeseen amongst many investors and firms, 2008 sent many shockwaves; not only in one or two countries, but also across the entire globe. The world indeed differentiated to a global village. Spared was not the developing nor even the developing economies. The stock returns of major economies and the developing ones experienced a drop in return in that year. The following table 1.1 shows the historical index stock market returns of S&P 500 (representing a developed economy) and NSE20 (representing a developing economy) from the year 2003 to 2015. For the year 2016, the historical returns shown on the table are from January to July. August 2016 up to date is excluded since it is in August 2016 that the government of Kenya introduced the interest capping law.

**Table 1.1 Historical Index Stock Market Returns**

Year	Stock market Return for S&P 500(US) (%)	Stock market Return for NSE 20(Kenya) (%)
2003	28.7	6.16
2004	10.9	0.80
2005	4.9	2.62
2006	15.8	3.05
2007	5.5	-0.22
2008	-37.0	-3.21
2009	26.5	-0.20
2010	15.1	2.72
2011	2.1	-2.83
2012	16.0	2.16
2013	32.4	1.57
2014	13.7	0.32
2015	1.4	-1.82
2016	11.9	-2.01

Source: Investing.com database (2017)

From table 1.1 above, the stock market returns of the S&P 500 and NSE 20 are positive from the year 2003 to 2006. However, the stock market returns of the NSE 20 are lower compared to the stock market returns of the S&P 500 during the above stated period. In the year 2007, the stock market returns for the S&P 500 reduce to 5.5% while in 2008 the S&P 500 stock market returns are at -37%, the only negative value for that stock market between 2003 and 2016. For the NSE 20, the stock market returns are at -0.22% in 2007, -3.21% in 2008 and -0.21% in 2009. The S&P 500 records positive stock market returns from 2009 up to 2016 but for the NSE 20 there is -2.83% in 2011, -1.82% in 2015, which increases, to -2.01 in 2016. The highest value between 2009-2016 is 32.4% for the S& P 500 and 2.16% for the NSE 20.

From the year 2008, banks responded by enacting stricter requirements on lending and hence obtaining finances was a nightmare declared for firms. The financial crisis did not spread immediately to developing economies but its effect is still seen by the low and negative stock market returns being posted by the NSE 20 listed firms.

## 2.0 Literature Review

After the well-known financial crisis of 2008, financial institutions came up with stricter regulations on the minimum capital required for banks (Financial Service Authority, 2009). The minimum capital for banks increased from Kenyan shillings 250 million in 2008 to Kenya shillings 1 billion by 2012(Finance Act, 2008), with the belief that a higher capital could be enable banks withstand a future financial crisis and reduce their rates of lending. The Kenyan banking sector has therefore been well capitalized generally and at a position to support firms in unstable periods.

However, (Agurakiet, 2011) argues that high capital requirements are likely to force banks to reduce their lending and charge high interests when they lend. At the same time, they also pay less interest on their deposit to ensure their large investments have a justified return. They go on to argue that increasing their size and capacity is also restricted by this requirement. New banks who want to join the market find it hard due to the high standards set for joining. This implies the source of financing is in the hands of fewer lenders who must break through at the end of every financial year. Capital is now harder to be acquired by firms and when they do, it is costly to repay.

Parallel results have been obtained from studies conducted on capital structure and performance. Jahveed & Akhtar (2012) find that capital structure and performance are directly proportional. However, Fama & French (2002) found an inverse relationship. Berger & Bonacorssi (2006) obtained a direct relationship while (Demigurc et al., 2011) obtained an inverse relationship.

Horriagan (1965) asserts that financial ratios were the gauge used to determine the performance of firms across industries and over a given period. Altman (1968) had an amalgamated analysis of five ratios, which did away with the dependency on one ratio. Mason and Harris (1979) adopted Atman's Z-model to construction companies that had underperformed since 1969. They made improvements on the model. However (Ellis et al., 2006) found a low prediction power of this Mason and Harris (1979) model and they improved by using seven ratios. They have illustrated firm success and failure can be depicted using financial ratios. Nevertheless, how are these ratios chosen? From the financial literature, is it only seven ratios that are available?

## 3.0 Statement of the Problem

To the best of the author's knowledge, a research gap exists on the need to determine the spreading effects of the global financial crisis on the performance of firms. Developed countries were able to bounce back from the crisis and recorded increased stock market returns, but what about the developing countries, which were not able to redeem themselves. Small banks of developing countries cannot withstand the stringent requirements of the central banks (Agorakiet et al., 2011). For the banks, which can withstand the stringent requirements, can this push them to demand high interests and regulated lending hence minimizing financing to firms?

Jahveed & Akhtar (2012) established a positive relationship between leverage and performance. Is it because of capital insufficiency that firms in the developing countries underperform? It is on this basis that the author decided to consider financial crisis and performance, with NSE listed firms as a case study.

#### 4.0 Overview of the NSE, Kenya

(Muturi & Omondi, 2013) assert the importance of the capital market in ensuring availability of long term financing to firms listed in the Securities exchange, ensuring economic development in the country. It is the only stock market in Kenya compared with the US, which has three stock markets: Dow Jones, NASDAQ and the S&P 500, portraying Kenya as an emerging economy.

The companies listed at the NSE are 63 (NSE handbooks, 2017). However according to the CMA annual reports (2016), the following table shows the number of listing and delisting of NSE firms since 1980.

**Table 4.1 NSE Listed and delisted firms**

Period	NSE listed firms	NSE delisted firms
1980-1989	57	3
1990-1999	56	5
2000-2009	55	12
2010 to date	63	4

**Source: CMA annual reports (2016)**

Table 4.1 above shows that the number of delisted firms is on the increase. According to Dorothy Otieno (2017, August 2) NSE faces tough times *Nation Newsplex*. Retrieved from <http://www.nation.co.ke/newsplex>, in 2017 fifteen companies traded at a loss, 25 had a decline in their profits. In 2015, 25 companies signalled reduced profits. According to Business today correspondent (2017, August 31) NSE kicks out two firms from Stock market *The Business today*. Retrieved from <https://businesstoday.co.ke>, NSE delisted Baumann Limited and Hutchings Biemer shareholders for inability to uphold the regulatory requirements, which were set in 2008. (Chebii et al., 2011) asserts that most firms that underwent statutory management were due to insufficiency of capital. It is evident that 2008 was the year the global financial crisis happened.

#### 5.0 Data and Data Collection

The data was obtained from the Nairobi securities exchange handbooks. The data of 42 non-financial firms was used to obtain the data used from the year 2009 to 2016. Financial firms were left out because they are regulated by the Central bank of Kenya. Also the major purpose of this study was to determine the impact of the global financial crisis on firms in the developing countries that are not financiers. This discussion can be traced back to the literature review. The data was analyzed using SPSS version 20.0.

#### 6.0 Results

##### Factor Analysis Findings

13 ratios, obtained from the NSE, Kenya non-financial firms, were used in factor analysis to bring out the following output.

**Table 6.1 Kaiser-Meyer-Oklin Measure of sampling adequacy**

Kaiser-Meyer-Oklin Measure of sampling adequacy		0.516
Bartlett's test of sphericity	Approximate Chi-Square	798.615
	Df	78
	Sig	0.000

According to Field (2009), Kaiser supports a KMO of 0.5 and goes on to say that values between 0.5 and 0.7 are adequate, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are very good and values above 0.9 are excellent. From this factor analysis run, the Kaiser-Meyer-Oklin Measure of sampling adequacy of 0.516 is adequate for factor analysis.

Going on to the communality, that is the variance represented by each factor solution, the following results were obtained.

**Table 6.2 Communalities extracted using Principal Component Analysis**

	Initial	Extraction
Current Ratio	1.000	.827
Total Asset turnover	1.000	.778
Net Profit Margin	1.000	.840
ROE	1.000	.865
Total debt to total asset ratio	1.000	.932
Total debt to total Equity	1.000	.892
ROA	1.000	.903
Operating Profit Margin	1.000	.796
EPS	1.000	.883
DPS	1.000	.903
Payout Ratio	1.000	.887
P/E Ratio	1.000	.903
Fixed Asset Turnover Ratio	1.000	.829

Since each variable exhibited communality greater than 0.5 after extraction as shown in table 5.2 above, none of the variables were removed hence no need of running the factor analysis again. On performing the varimax rotation method, the values obtained are represented in the table below.

**Table 6.3: Cumulative Variance**

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.812	29.321	29.321	3.812	29.321	29.321	2.786	21.433	21.433
2	2.221	17.088	46.409	2.221	17.088	46.409	2.436	18.738	40.171
3	1.731	13.319	59.728	1.731	13.319	59.728	1.822	14.016	54.187
4	1.347	10.358	70.086	1.347	10.358	70.086	1.537	11.824	66.011
5	1.080	8.307	78.393	1.080	8.307	78.393	1.480	11.384	77.394
6	1.045	8.041	86.435	1.045	8.041	86.435	1.175	9.040	86.435
7	.508	3.910	90.345						
8	.381	2.931	93.276						
9	.323	2.485	95.760						
10	.260	2.004	97.764						
11	.159	1.220	98.983						
12	.108	.828	99.811						
13	.025	.189	100.000						

Six factors were extracted as a result of this method. These six factors account for 86.435 percent of the accumulated variance. Factor 1 has the highest percentage of total variance of 29.321% followed by factor 2 at 17.088%. The factor that contributes the least is factor 6 with 8.041 % of the 86.435 accounted for by all the factors. On grouping from the component matrix obtained as shown in the table below, the following classification of the variables as part of the factors was obtained: From table 6.4, the bolded values represent the ratios which had higher contribution to each factor, the basis for categorization of the ratios. The results can be summarized on the table below.

**Table 6.4 Rotated Component Matrix**

	Component					
	1	2	3	4	5	6
Current Ratio	-.033	<b>.801</b>	.041	-.037	-.058	.421
Total Asset turnover	.477	-.378	-.043	<b>-.633</b>	.022	-.066
Net Profit Margin	<b>.822</b>	.253	-.106	.280	.042	-.092
ROE	<b>.872</b>	-.186	.022	-.245	-.053	.078
Total debt to total asset ratio	.178	<b>-.652</b>	.618	.024	-.276	.128
Total debt to total Equity	.493	<b>-.622</b>	.369	-.189	-.238	.184
ROA	<b>.906</b>	-.122	-.039	-.255	.003	-.027
Operating Profit Margin	.045	<b>.834</b>	.159	.242	-.121	.010
EPS	-.111	.109	<b>.910</b>	.061	.080	-.144
DPS	-.068	.006	.642	-.065	<b>.677</b>	-.152
Payout Ratio	.023	-.041	-.024	.108	<b>.912</b>	.202
P/E Ratio	-.019	.126	-.144	.065	.141	<b>.918</b>
Fixed Asset Turnover Ratio	-.073	.042	.017	<b>.902</b>	.086	.035

**Table 6.5 Factor variables**

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Net Profit Margin	Current Ratio	EPS	Total Asset turnover	DPS	P/E ratio
ROA	Total debt to total asset ratio		Fixed Asset turnover	Payout ratio	
ROE	Total debt to total Equity				
	Operating profit margin				

Factor 1 has net profit margin, ROA and ROE which can be traced back to the theoretical perspective to represent profitability. Factor 2 has current ratio, total debt to total asset ratio and total debt to total equity ratio which represents solvency and liquidity ratio. Factor 5 has DPS and payout ratio representing profitability while Factor 3 and 6 have EPS and P/E ratio respectively which also represent profitability. Factor 4 has total asset turnover and fixed asset turnover which represent the efficiency of operating the business. This shows that financial ratios can be reduced using factor analysis and hence avoid the problems of severe multicollinearity in a regression analysis arising from having many independent variables. It also shows that these many financial ratios tend to explain similar concepts. But you cannot choose one and leave the other since each has a certain contribution to performance of the firms.

Factor scores saved as variables from these six factors were then run as independent variables with market price to book values as the dependent variable in a linear regression to obtain the following results:

**Table 6.6 Results from the Linear regression**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.955	.206		9.506	.000
REGR factor score 1 for analysis 1	.109	.207	.035	.526	.600
REGR factor score 2 for analysis 1	.674	.207	.220	3.258	.002
1 REGR factor score 3 for analysis 1	-.170	.207	-.055	-.822	.414
REGR factor score 4 for analysis 1	.157	.207	.051	.758	.451
REGR factor score 5 for analysis 1	.002	.207	.001	.009	.993
REGR factor score 6 for analysis 1	2.241	.207	.731	10.840	.000

The t variables above show the individual significance of the independent variables. With the null hypothesis: H<sub>0</sub>: There is no statistically significant relationship between market price to book value ratio and each independent variable.

H<sub>1</sub>: There is a statistically significant relationship between market price to book value ratio and each independent variable.

The p values of REGR factor score 2 for analysis 1 and REGR factor score 6 for analysis 1 were 0.002 and 0.000 which is less than 0.10 the benchmark value hence the null hypothesis was rejected. Therefore there is a significant statistical relationship between factor 2 (current ratio, net profit margin, Total debt to total asset ratio and Total debt to total Equity), and factor 6(P/E ratio) and market to price book value for the Nairobi securities exchange. However factor 1, factor 3, factor 4 and factor 5 have p values greater than the benchmark value of 0.01 implying there is no statistically significant relationship between these factors (net profit margin, ROA, ROE, EPS, DPS, payout ratio, total asset turnover and fixed asset turnover) with the market price to book value ratio.

The following table displays results obtained from the Anova test.

**Table 6.7 Model Summary Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.768 <sup>a</sup>	.590	.563	2.026

From table 6.7 the adjusted R square is 56.3% implying 56.3 % of the variance is explained by the independent variables.

**Table: 6.8 ANOVA results**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	531.911	6	88.652	21.608	.000
	Residual	369.243	90	4.103		
	Total	901.154	96			

From the table above the hypothesis to be tested was:

H<sub>0</sub>: There is no statistically significant relationship between market price to book value ratio and the cumulative effect of all the independent variables.

H<sub>1</sub>: There is a statistically significant relationship between market price to book value ratio and the cumulative effect of all the independent variables.

With an F computed value of 21.608 a value larger than the p value of 0.000, it was concluded that there is a statistically significant relationship between market price to book value ratio and the cumulative effect of all the independent variables.

Using the regression factors that had a significant relationship with market price to book value ratio, the following regression factor was obtained:

$$MPTBV=1.955+0.195 PROF-0.170 EPS+ 0.157OPER+0.002DIV+e.....(1)$$

Where

MPTBV- Market price to book value ratio

PROF-profitability

EPS-earning per share

OPER- Operational efficiency

DIV –Dividend ratios

e- constant

## 7.0 Conclusion

The major purpose of this study was to determine the impact of the post global financial crisis on the performance of firms listed at the Nairobi securities exchange. It was found that there is a significant statistical relationship between factor 2 (current ratio, net profit margin, Total debt to total asset ratio and Total debt to total Equity), and factor 6(P/E ratio) and market to price book value for the Nairobi securities exchange. It was also found that factor 1, factor 3, factor 4 and factor 5 have p values greater than the benchmark value of 0.01 implying there is no statistically significant relationship between these factors (net profit margin, ROA, ROE, EPS, DPS, payout ratio, total asset turnover and fixed asset turnover) with the market price to book value ratio. From the regression equation (1) above, profitability ratios, Operational efficiency ratios and dividend ratios have a positive



relationship with the performance of firms of firms listed at the Nairobi securities exchange. However the Returns per share had a negative relationship with the performance of firms listed at the NSE, Kenya.

Hence this study is contributive to the literature in the sense that the relationship between market price to book value ratio and the profitability ratios, operational efficiency ratios and dividend ratios should be keenly followed as they positively affect the performance of firms during the post global financial crisis. The returns on shares and debt management should also be seriously monitored as it can impact greatly on a firm

## 8.0 Recommendations

The study suggests that firms should have control over current ratio, net profit margin, Total debt to total asset ratio and Total debt to total Equity so as to ensure the firm is on the path of positive performance. They should also control their dividend policy and also ensure their share prices are not overvalued as this can have a negative effect on the performance of firms listed at the Nairobi securities exchange.

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