Bank-Specific Determinants of Commercial Banks Financial Stability in Kenya

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Abstract

This study sought to identify the bank-specific determinants of commercial banks financial stability in Kenya. This was achieved by examining the effect of; regulatory capital, credit exposure, bank funding, bank size and corporate governance variables on banks financial stability. Altman's Z-Score plus Model for non-US and non-manufacturing firms was adopted as a measure of banks financial stability. Secondary panel data contained in the annual reports and financial statements of study population which consisted of all commercial in Kenya licensed by Central Bank of Kenya for period year 2000 to year 2015 was collected and used for analysis. A census of all 39 commercial banks and quantitative research design was adopted. The study adopted panel regression to capture both cross sectional and longitudinal data characteristics. Specified panel regression model for fixed effects supported by the Hausman test results was estimated. Panel Generalized Method of Moments (GMM) regression results found bank size, regulatory capital; bank funding and corporate governance had a positive and statistically significant effect on financial stability for commercial banks in Kenya. However, credit exposure was found to have negative and statistically significant effect on financial stability for commercial banks in Kenya. Based on these findings the study concluded increase in bank size, regulatory capital, bank funding and corporate governance boasted financial stability for commercial banks in Kenya. On other hand increase in credit exposure lowered the financial stability for commercial banks. Based on these findings, the study recommends commercial banks to adopt appropriate strategies that promote increase in bank size, regulatory capital, bank funding and corporate governance.

Keywords: Financial Stability, Commercial Banks, Bank Size, Regulatory Capital, Credit Exposure, Bank Funding, Corporate Governance

1. Introduction

Commercial banks institutions play intermediary role in the economy through channeling economic resources from surplus economic units to deficit economic units. Through this, they facilitate saving and capital formation in the economy. This bank's core function of financial intermediation involving transforming maturity of investments and providing insurance to

depositors potential liquidity needs makes banks more fragile (Diamond and Dybvig [1]. Banks were at the center of the 2008/2009 global financial crisis, and their distress caused damage to the real economy which has taken more than a decade to recover. This has lead to a heated debate on the optimal organizational complexity, size and varieties of activities the commercial banks need to withstand another financial crisis. Additionally, financial landscape that has evolved markedly over the past two decades, spurred by financial innovation and deregulation. Commercial banks have increased in size, complexity, and involvement in market-based activities hence becoming increasingly global and interconnected.

David & Quintyn [2] defines commercial banks financial stability as a 'steady state in which the commercial banks efficiently performs its key economic functions, such as allocating resources and spreading risk as well as settling payments', if contrary, the banks are in financial instability state. Segoviano, Miguel, & Goodhart [3] states that commercial banks financial instability can arise either through 'idiosyncratic components related to poor banking practices adversely affecting an individual bank's solvency' or from systematic components initiated by macro shocks leading to financial strains for the commercial banks or a combination of both.

Lee, Ryu and Tsmoscos [4] defines 'financial stability' as the ability of the key institutions and markets that go to make up the financial system to perform their key functions. Lee et.al [4] further argues commercial banks financial stability must meet two conditions. First, less fragility of the key institutions in the financial system, hence high degree of confidence hence able to meet their contractual obligations without interruption or external assistance. Secondly, the key markets are stable, meaning the market participants confidently transact in them at prices that reflect fundamentals forces and they do not vary substantially over short periods when there have been no changes in fundamentals. Financial instability occurs when the shocks to the financial system hinders efficiency information flows so that the financial system can no longer perform its key function of channelings funds to those with productive investments opportunities. Banks in financial instability has proven to be economically catastrophic, leading to severe economic losses which take years to recover. The year 2008/2009 global financial crisis occasioned by unsafe banking practices was channeled to real economy via commercial banks which financed the America subprime mortgages. The Mexican crisis of the early f 1994–95 and, and the 1997–98 East Asian crisis was characterized similarly by the banking crisis and economic recessions and extensive default which took many years to recover. Additionally, the 1998 Russian debt default crisis, the Texas banking crisis, and the U.S. Stock Market crash of 1987 illustrate the potential losses occasioned by financially unstable regime generated by extensive default (Segoviano et.al [3], Lee et.al, [4]).

Over the last two decades, Kenya experienced several periods of commercial banks financial instability rather than full-blown commercial banks crises (Kithinji and Waweru [5]). Similarly, in the 1980's and early 1990's, several countries in developed, developing and transition

economies experienced several banking crises and their distress caused damage to the real economy. This necessitated major overhaul of their commercial banks legislation and composition (Vreeland [6]).

Statement of the problem

Financial instability has been a major cause of banks failures in the world, leading to large economic losses that take a decade or more to recover. At the center of the recent 2008/2009 global financial crisis was massive commercial banks failures (Jahn and Kick [7], Lee et.al, [4]). This raised fundamental questions on the optimal bank size, optimal organizational complexity, optimal capitalization levels, adequate disclosure and reporting standards the commercial banks need to withstand a financial crisis. This argument has been compounded by need to take cognizance recent financial development that has evolved rapidly over the past two decades, spurred by financial innovation and deregulation. Globalization has led commercial banks to increase in size, acquire organizational complexity, and involvement in market-based activities hence leading to increased exposure due to cross border operations interconnected (Erkens, Hung and Matos [8]). These fundamental questions are still a challenge today, a decade after 2007/2008 global financial crisis (Osborne, Fuertes & Milne [9]).

Kithinji and Waweru [5] states that Kenya has experienced banking problems since the year 1986 culminating in major bank failures (37 failed banks as at year 1998) following the crises of year; 1986 - 1989, 1993/1994 and 1998. High non-performing loans, insider lending, liquidity challenges, poor corporate governance, poor lending standards, low profitability and political patronage were attributable as major internal factors that lend to these bank failures. Additionally external factors such as unstable macroeconomic conditions contributed to these bank failures. Similarly, during this period many countries in developed and developing economies experiencing several bank crises. This led to a major overhaul of their banking systems to safeguard against future banking crisis (Goldstein [10]). However, despite the overhaul of the banking system, more banking failures were registered during year 2008-2009 global financial crisis, in Kenya 6 more banks failed between years 2000-2006. Presently, year 2015 - 2016 three more banks failed. Internal factors such as thin capitalization, credit risks, liquidity risks, low profitability, weak corporate governance (high insider loans) and external factors such as high inflation, low economic growth rate and high competition has been attributed to recent bank failures in Kenya (Brownbridge, [11] CBK, [12], Kithinji & Waweru [5])

Therefore, this study sought to identify bank-specific determinants of commercial banks financial stability in Kenya. This was achieved by examining the effect of; regulatory capital, credit exposure, bank funding, bank size and corporate governance variables on banks financial stability.

2. Literature Review

The study is underpinned by financial stability theoretical frameworks such as information asymmetry as proposed by Akerlof [13] and financial fragility proposed by Lagunoff & Schreft, [14] and, Diamond & Rajan [15]. Financial instability results from information asymmetry, where consumers don't have sufficient information to differentiate between high quality product and low quality product, hence both products must still sell at the same price. This creates market price distortion due to inability to price the risks accurately leading to risk buildup which may lead to financial instability. Significant advance in recent years has recognized the role of asymmetric information in determining both the nature of financial intermediation and the vulnerability of financial intermediaries to a sudden loss of confidence (Stiglitz and Weiss, [16]). Asymmetric information gives rise to problems of adverse selection and moral hazard, both of which have long been known to the insurance industry. If the price of insurance against a particular contingency is fixed independently of the characteristics or the behavior of the insured, individuals at greatest risk will choose to insure (adverse selection). Moreover, after a contract comes into effect, insured agents have an incentive to change their behavior in ways that adversely affect the interests of the insurer (moral hazard). Borrowers have better information about the risk-return characteristics of the projects in which they wish to invest than most savers have.

Proponents of financial fragility theory, argue that in a Pareto-efficient symmetric equilibriums where economic agents holds diversified portfolios, shocks to fundamentals initially led to loses necessitating resource reallocations response to mitigate further loses (Lagunoff & Schreft, [14] and, Diamond & Rajan [15]). However, this responses may led to financial crisis in two ways: one, gradual as loss as spread hence more economic agents affected and two, losses occurs instantaneously when forward-looking agents preemptively shift to safer portfolios to avoid future losses from contagion leading to crisis. This arguments support Crockett [17] findings that, financial instability is associated with the fragility of institutions, where unjustified or excessive volatility of financial asset prices, is a matter of concern. This is based on the fact that, asset-price volatility for the institutions that are active in the markets of financial assets has direct effects on private-sector spending. These effects occur because of changes in the private sector's stock of wealth as a result of changes in the rate of return on incentives to save and invest, and, sometimes, because of the implications of changes for business and consumer confidence. This creates an "instability bias" that has the same root cause as the vulnerability of the banking system to runs. In one case, the bias manifests itself in the observable prices of (marketable) assets; in the other, it shows up in the quantities of (nonmarketable) assets (loans or deposits). The biases can in practice work to reinforce each other, as happened on a number of occasions in the 1980s and early 1990s banking crisis.

Berger [18] study tested relationship between capital and earning in banking by focusing on thirty cross-sections of 1980s US banking data using a simple one period standard model. Berger [18] used capital adequacy indicator measured by bank equity to total assets, to measure the

amount of own funds available to support a bank business and acts as a safety net in the case of adverse selection. Additionally, capital adequacy measures the bank's ability to withstand losses. Berger [18] found that banks with substantial capital adequacy ratio may be over cautious, passing up profitable investments opportunities. These banks may adopt 'lazy' banking model hence failing its financial intermediation function, which in long run lead to inefficiency. On the other hand, a declining capital adequacy ratio may signal elements of financial instability. Similar findings were reported by Berger, Klapper and Turk-Ariss [19] in their study using data for 8,235 banks in 23 developed nations, and Berger and Bouwman [20] study using data on virtually all U.S. banks from 1993 to 2003. Both studies found that, capital adequacy is an important variable in determining bank financial stability, although in the presence of capital requirements, it may proxy risk and also regulatory costs. In imperfect capital markets, well-capitalized banks may need to borrow less in order to support a given level of assets, and tend to face lower cost of funding due to lower prospective bankruptcy costs.

Athanasoglou, Delis & Staikouras [21] study on determinants of banking profitability in the southern eastern European region examine the profitability behaviour of bank-specific, industry-related and macroeconomic determinants, using an unbalanced panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. They measured credit exposure as the growth of total bank credit to the private sector as a ratio of GDP reflects how extended and exposed the banking sector is. Athanasoglou et.al [21] found that, banks constitute the spinal cord of financial systems in the region. Also findings indicated that changes in credit risk reflected changes in the health of a bank's loan portfolio which affected the financial performance of the institution hence higher probability of financial instability. They concluded that, variations in bank financial stability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. Prolonged period of low profitability would automatically lead to higher chances of financial instability in future. The more financial institutions are exposed to high-risk loans, the higher the accumulation of unpaid loans and the higher probability of financial instability.

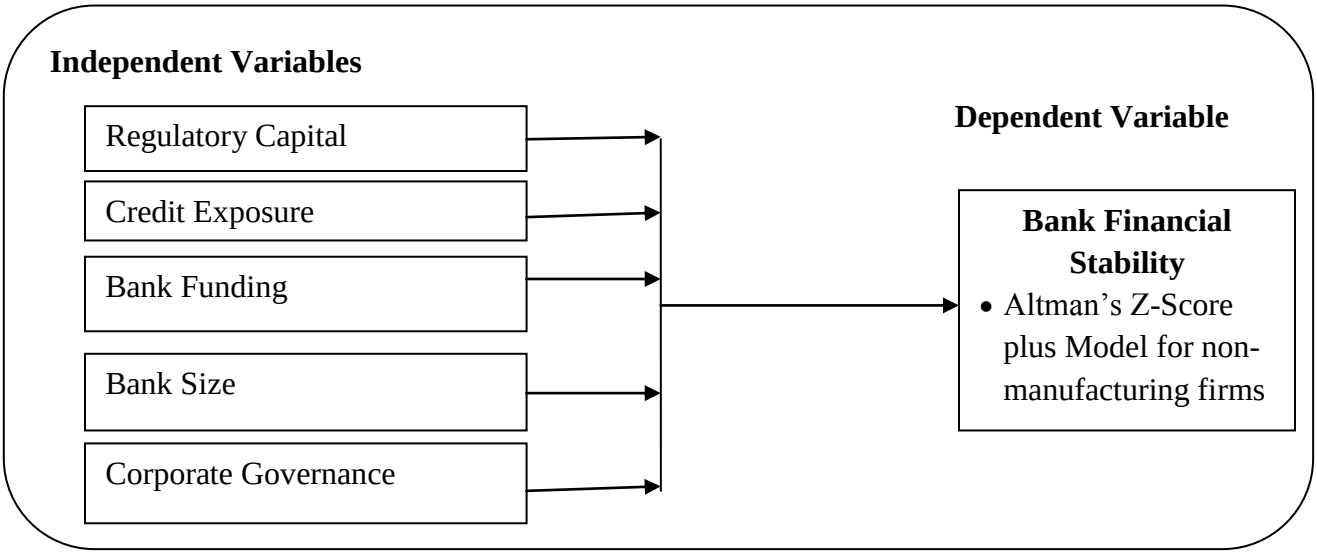
Jahn and Kick [7] study "Determinants of Banks financial stability: A Macro-Prudential Analysis" based on Germany financial institutions found that liquidity risks may precede commercial banks financial stability as they imply increased funding risks in the financial system. These funding risks have the potential to result in financial turmoil if the economy is hit by a negative, adverse shock. With respect to financial market indicators, they took into account the role of the interbank market, which become especially important during the financial crisis of 2008/2009, by testing the 3-month Treasury bill rate as a possible leading indicator for future banks financial crisis. They found, when financial market confidence is low, banks are wary of lending in the interbank market, leading to rise in 3-month Treasury bill rate. The rise in Treasury bill rate mostly precedes episodes of banks financial crisis starting with less strong

banks. With regard to monetary expansion, they looked at money supply (M3) as a ratio of GDP where higher rate indicated excessive liquidity in the financial market which possibly precedes a lending boom. However, Jahn and Kick [7] the population was drawn from Germany where strong commercial bank exists, and the economy is deeply integrated with the financial systems, these results may not be replicated in developing country like Kenya**.**

Laeven, Ratnovski and Tong [22] study 'bank size, capital requirements, and systemic risk: some international evidence' find strong evidence that financial stability increases with bank size. Their results indicate that a one standard deviation increase in total assets increases the bank's financial stability by about one-third which is a significant effect. These effects might moreover underestimate the true level of financial stability in large banks, because market values of bank equity during the crisis may be boosted by expectations of government support, and additionally because they do not account for the social costs associated with large bank failures (e.g., output losses and unemployment). They also find some evidence that financial instability is lower in more-capitalized banks, with the effects particularly more pronounced for large banks. However this result contradicts Muigai, Muhanji. and Nasieku [23] that firm size had no significant effect on financial stability.

Thanassoulis and Tanaka [24] study 'bankers pay and excessive risks' based on England banks explored the corporate governance risks between bank management and shareholders and its effects on the banks financial health. The findings indicated link a between banking executive bonuses to banks profitability due the fact that, bank management are very likely to select risky but profitable projects since due diligence is more expensive to incentives. These corporate governance risks lead to severe banks' exposure to financial stability risks. This concurs with Ivashina and Scharfstein [25], Chari, Christiano and Kehoe [26] findings on the effect of corporate governance on banks financial stability.

Conceptual Framework



Hypothesis

i. Regulatory capital has no significant effect on banks financial stability in Kenya.
ii. Credit exposure has no significant effect on banks financial stability in Kenya.
iii. Bank funding has no significant effect on banks financial stability in Kenya.
iv. Bank size has no significant effect on banks financial stability in Kenya.
v. Corporate governance has no significant effect on banks financial stability in Kenya.

3. Methodology

3.1. Research Design

This study used descriptive quantitative research design. This research design is preferred since the study used quantitative data as proxies for independent and dependent variables. Additionally, the study employed panel research strategy to capture both cross sectional and longitudinal dimensions (Kothari [27], Mugenda & Mugenda, [28])

3.2. Target Population

Study population refers to all units of analysis (Mugenda & Mugenda, [28]). This may constitute events, individuals or objects with common specific characteristics. This study population constituted all commercial banks licensed by Central Bank of Kenya from 2000 to December 2015. Following Mugenda & Mugenda [28], census is preferred where the population is small and manageable. Census method further, enhances validity of the collected data by eliminating errors associated with sampling. Therefore, study adopted a census since only thirty nine (39) CBK licensed commercial banks in Kenya from 2000 to December 2015

3.3. Data Collection Procedure

The study collected secondary panel data containing both time series and cross sectional dimensions. The time series dimension covered year 2000 to 2015 while cross sectional dimension covered all 39 commercial banks under study. The data were extracted from the Central Bank of Kenya reports and from individual published reports from the commercial banks.

3.4. Data Analysis Method

The collected data was converted into excel format for easier arrangements into panels. Panels analysis achieve better regression results since the researcher is able to control against unobserved heterogeneity while also giving a cross sectional and time-series dimension reducing the bias of the estimators (Kothari [27]). Descriptive statistics like measures of central tendencies, measures of dispersion and correlations statistics were calculated to summarize the dependent and independent variables. Statistical software's Eviews version 8 was used to estimate the relationship between the study variables. Significance of individual explanatory variable on the dependent variable was carried out using t-test at 5% significance level. Joint significance of the regression model was performed by means of F-test.

Measurement of Study Variables

The study dependent variable was banks financial stability. Independent variables constituted bank specific variables namely; regulatory capital, credit exposure, bank funding, bank size and corporate governance as summarized in **Table 1**.

3.6. Empirical Model

We estimated the panel regression models to determine the primary effects. Equation 1 was used to estimate the primary effects of selected bank specific variables on banks stability

$$Y_{it} = \alpha_t + \ell_i Y_{it-1} + \sum_{i=1}^{n} \beta_i \chi_{it} + \varepsilon_{it} . \quad (1)$$

Y - banks financial stability, ℓ -is the coefficient of the lagged dependent variable, β– coefficient matrix of explanatory variables, Xit – vector of explanatory variables, ε_{it} - error term (the time-varying disturbance term serially uncorrelated with mean zero and constant variance), Subscript i - denote the cross-section ranging from bank 1 to bank 39 and, Subscript t -denote the time-series dimension ranging from year 2000 to year 2015.

Table 1: Operationalization and Measurement of Study Variables

Variable	Operationalization	Measurement	Notation
Independent Variables			
Regulatory Capital	Banks capitalization levels maintained by the bank for its operation and maintained as financial shock absorbers in case of systemic and non-systemic financial crisis	Total Capital / TRWA	CAR
Credit Exposure	The quality of commercial bank loan book assets	Gross NPL's/ Gloss loans	NPL
Bank Funding (Liquidity and Solvency)	Liquidity refers to how the banks finance their loan book value in short-term (period less than on year).	Net liquid assets / Total assets	LIQ
	Solvency refers to how the banks finance their loan book value in long-term (period more than one year).	Gross loans/Total deposits	LD
Bank size	The bigger or smaller the bank is in terms banks total assets	Natural logarithm of total assets	BZ
Corporate governance	Refers to bank senior management power structures and process employed for operational efficiency and mitigation against financial instability	Natural Logarithm of management costs	OC
Dependent Variable			
Bank financial stability	Refers to a situation where the bank is able to meet or meet with without difficulties its financial obligation as and when the fall due, of otherwise the bank is experiencing financial instability	Altman's Z-Score plus Model for non-manufacturing firms	FD

Altman's Z-Score plus Model for non-manufacturing firms: $Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$ Where: X1 = (Current Assets − Current Liabilities) / Total Assets; X2 = Retained Earnings / Total Assets; X3 = Earnings before Interest and Taxes / Total Assets; X4 = Book Value of Equity / Total Liabilities. Zones of Discrimination: $Z > 2.6$ -"Safe" Zone, indicating the bank is financially sound and there is least probability that the bank will face financial instability; $1.1 < Z < 2.6$ -"Grey" Zone, if a bank falls in the grey area that means there is less probability that the bank will face financial instability in the near future. $Z < 1.1$ -"financial instability" Zone, there is a high probability that the bank will face financial instability in near future.

4. Results and Discussions

4.1 Descriptive Statistics

Table 2: Panel Variables Summary Statistics

Variables		Mean	Maximum	Minimum	Std. Dev.	Skewedness	Kurtosis
Financial Stability		1.24	6.33	-6.69	0.84	0.55	23.26
Capital Adequacy		0.24	1.38	-0.50	0.14	1.89	13.09
Credit Exposure		0.16	0.94	0.00	0.18	1.78	5.65
Bank Funding	Liquidity	0.43	2.55	-0.38	0.23	2.46	23.38
	Solvency	0.86	11.19	0.24	0.61	9.26	140.56
Corporate Governance		1073	13335	1.60	2041	3.25	14.28
Bank Size		35,816	475,335	575.44	60907	3.02	14.07

Unbalanced panel of 39 commercial banks for 16 years period, corporate governance and bank size variables expressed in Ksh. Millions. Financial stability variable is computed as an Altman's Z-score for emerging markets. All other variables are expressed as ratios.

Table 2 provide summary statistics of the collected study variables data covering 39 commercial banks for the period covering year 2000 to year 2015. The results indicate during the study period, commercial banks in Kenya had a mean Z-score index of 1.24. Based on the Altman's zones of discrimination (Z > 2.6 -"Safe" Zone, 1.1< Z < 2.6 -"Grey" Zone, Z < 1.1 -"financial instability" Zone. On the overall commercial banks in Kenya are in 'grey zone', as indicated by mean Z-score of 1.24 indicating there is less probability that the bank will face financial instability in the near future. The corresponding standard deviation of 0.84 indicates less variability of financial stability levels of the commercial banks under study. The corresponding 0.55 coefficient of skewedness value shows that majority of the banks observations lay around the mean indicating the studied banks are in the 'grey zone'. Additionally the maximum financial stability Z-score observed was 6.33 indicating some banks are strong financially sound and minimum financial z-score of -6.69 indicating some banks are in severe financial instability. The table further shows the mean capital adequacy ratio was 24 percent. This indicates majority of the commercial banks' capital ratios were above the minimum CBK prudential requirement of 14.5 which means the banks under study are well capitalized to withstand any negative economic shocks due to these large capital buffers. The corresponding standard deviation of 1.89 indicates slightly large variability across the banks, with maximum capital adequacy ratio of 138 percent

and minimum of -0.5 percent. Additionally the table indicates the mean value of banks credit exposure was 16 percent. This means the asset quality of the banks measured by the ratio of non-performing loans to total loans average at 16 percent. This indicates commercial banks operated on tough economic conditions where 16 percent of loans advanced were having problems in recovery or completely unrecoverable. The corresponding standard deviation value of 0.18 indicates minimal variations across the banks during this period. The maximum credit exposure value of 94 percent indicates some extreme banks observations of highly exposed banks. The table further reveals the overall mean bank size during this period was Ksh, 35 billion, with the largest bank observed having total assets worth Ksh. 475 billion and smallest bank observed having assets worth Ksh. 575 millions. The extremely large standard deviation value of 609070 depicts extremely large variations across the 39 commercial banks under the study. However, the 3.02 coefficient of skewedness depicts majority of the observed commercial banks size fall on the right hand side of the mean. Additionally the table indicates the corporate governance variable measured by total management cost, averaged at Ksh. 1 billion, with maximum cost observed at Ksh. 13 billion and minimum cost at Ksh 1 million. The corresponding large standard deviation value of 2041 depict large variations across the 39 observed commercial banks

4.2. *Panel data Diagnostic Tests*

Prior to undertaking any statistical analysis, prior panel data specification tests were conducted to determining suitability of the data. The tests were to verify if the panel data meet the basic classical linear regression requirements. The tests undertaken were; panel unit root test, normality test, multicollinearity test, panel-level heteroscedasticity test and serial correlation test. If the any violation of these basic requirements was detected, necessary correction measures were applied.

4.2.1 Panel Data Normality Test

Normality is one of the OLS cardinal requirements which assumes the error terms have an asymmetric distribution centered at zero. Violation of this requirement may lead to inaccurate hypothesis testing due exaggerated test statistics. Jarque-Bera residual normality test examines the third and fourth moments of the residuals in comparison to the residuals from normal

distribution under the null hypothesis of normal distribution. If the residual are found to be normally distributed, its histogram should be bell-shaped while Jargue-Bera test statistics should not be statistically significant (Jarque & Bera [29]). **Table 3** presents normality test results for the study variables.

Table 3 Panel Variables Normality Test Results

Variable		Observations	Jarque-Bera Statistics	P-Value
Financial Stability		624	10708.14	0.0000
Regulatory Capital		624	3473.29	0.0000
Credit Exposure		624	509.96	0.0000
Bank Funding	Liquidity	624	11426.15	0.0000
	Solvency	624	500899.00	0.0000
Corporate Governance		624	13.62	0.0011
Bank Size		624	28.65	0.0000

Null Hypothesis: Normal Distribution at 5 percent significance level

Table 3 presents the Jarque-Bera test statistics and their corresponding P-values for the study variables with normal distribution null hypothesis. The results indicate all the study Jarque-Bera test statistics had corresponding p-values equal to 0.0000. The null hypotheses were rejected since the p-values associated with respected test statistics were less than 5 percent. Rejection of null hypotheses meant financial stability, capital adequacy, credit exposure, bank funding, corporate governance and bank size variables were not normally distributed. The extremely large Jarque-Bera test statistics for bank funding, capital adequacy and financial stability variables indicates the data sets used contained outlier's.

To eliminate non- normality problems on the above observed study variables, outliers variable elimination technique was employed to obtain relatively normal distribution data sets. This involved elimination of the firm-year observed value outside the following ranges; 0<financial stability > 2; 0< capital adequacy>0.5; 0<credit exposure> 0.25; 0< bank funding (liquidity)>0.8; 0<bank funding (Solvency)>1.5; and; 0<corporate governance>4. The **Table 4** shows the summary statistics after elimination of the outliers.

Table 4 Summary Statistics for the Study Variables Post Outliers Elimination

Variables		Mean	Maximum	Minimum	Std. Dev.	Skewedness	Kurtosis
Financial Stability		1.10	2.00	0.00	0.39	0.02	2.85
Regulatory Capital		0.23	0.50	0.01	0.09	0.81	3.08
Bank Funding	Solvency	0.77	1.50	0.24	0.25	0.45	3.27
	Liquidity	0.41	0.80	0.00	0.17	0.11	3.29
Credit Exposure		0.08	0.25	0.00	0.06	0.88	3.10
Corporate Governance		928.61	9977.00	1.00	1671.01	3.09	13.22
Bank Size		35816.81	475335.20	575.44	60907.55	3.02	14.07

Unbalanced panel of 39 commercial banks for 16 years period, corporate governance and bank size variables expressed in Ksh. Millions. Financial stability variable is computed as an Altman's Z-score for emerging markets. All other variables are expressed as ratios.

Table 4 indicates the coefficients of skewedness and kurtosis values are near to normal distribution levels of between zero and three for all the study variables apart from bank size and corporate governance coefficient of kurtosis. This is after elimination of outliers in the panel data. Taking inconsideration's corporate governance and bank size variables were now closer to normal distribution the data was considered good for further analysis

4.2.2. Panel Unit Root Test

To determine the stationarity of the panel data, panel unit root test was applied on the study variables. Testing of panel unit root involves solving 'ρi' in an autoregressive AR (1) process for estimated as equation 3.

$$y_{it} = \rho_i \gamma_{it-1} + X_{it} \delta_i + \varepsilon_{it} \quad \text{..... ....} \quad .3$$

Where i= 1, 2…39 commercial banks, that are observed over periods t= 2000, 2001… 2015. The Xit represent all the explanatory variables used in the model, ρi is the autoregressive coefficients and εit are error term. If /ρi/ =1, it means the dependent variable Yi was dependent on its own lag hence Yi contains a unit root (non-stationary) hence may lead to spurious results in hypothesis testing of explanatory variables statistical significance (Gujarati [30]). **Table 5** provides a summary of the panel unit root test.

Table 5: Panel Unit Root Test Results

Variables		Test	Statistic- Individual Intercept	*p*-Value
Financial Stability		Levin-Lin-Chu	-7.53198	0.0000*
		Im, Pesaran and Shin W-stat	-9.48319	0.0000
		Fisher-Chi Square-ADF	234.271	0.0000
		Fisher-Chi Square-PP	489.512	0.0000
Capital Adequacy		Levin-Lin-Chu	-4.56156	0.0000
		Im, Pesaran and Shin W-stat	-3.91637	0.0000
		Fisher-Chi Square-ADF	130.563	0.0002
		Fisher-Chi Square-PP	159.678	0.0000
Credit Exposure		Levin-Lin-Chu	-19.3823	0.0000
		Im, Pesaran and Shin W-stat	-7.66643	0.0000
		Fisher-Chi Square-ADF	141.845	0.0000
		Fisher-Chi Square-PP	135.549	0.0000
Bank Funding	**Liquidity**	Levin-Lin-Chu	-4.04787	0.0000
		Im, Pesaran and Shin W-stat	-3.85623	0.0001
		Fisher-Chi Square-ADF	147.164	0.0000
		Fisher-Chi Square-PP	199.318	0.0000
	Solvency	Levin-Lin-Chu	-8.81113	0.0000*
		Im, Pesaran and Shin W-stat	-10.0504	0.0000
		Fisher-Chi Square-ADF	245.443	0.0000
		Fisher-Chi Square-PP	513.786	0.0000
Corporate Governance		Levin-Lin-Chu	-6.27682	0.0000
		Im, Pesaran and Shin W-stat	-5.95046	0.0000
		Fisher-Chi Square-ADF	169.755	0.0000
		Fisher-Chi Square-PP	321.535	0.0000
Bank Size		Levin-Lin-Chu	-5.99377	0.0000*
		Im, Pesaran and Shin W-stat	-6.03357	0.0000
		Fisher-Chi Square-ADF	165.382	0.0000
		Fisher-Chi Square-PP	285.532	0.0000

**stationary at first difference, ** stationary at second difference, Null hypothesis: Series contains unit root. The p-value for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.*

Table 5 results are based on Levin-Lin-Chu (LLC), Im-Pesaran & Shin W-stat (IPS), Fisher-Chi Square-ADF (Fisher ADF), and the Phillips-Perron Fisher-Chi Square-PP (Fisher PP). All these

tests are based on null hypothesis the panel data is non-stationary, with alternative hypothesis that the data is stationary, meaning /ρi/ =1 and /ρi/ ≠1 respectively. LLC assume across cross-sections persistence parameters are common i.e. ρi= ρ for all i. This assumption caters for non-homogeneous cross-sectional effects in the generalized specified model, on other hand IPS, Fisher-ADF and Fisher-PP all ρi to vary across cross-sections. This informs the applications of all these tests for comparison. Additionally, since Fisher-ADF test is parametric necessities application of non-parametric Fisher-PP to improve model robustness in case of serial correlation of the error term without addition of lagged difference term. IPS test complemented and confirmed LLC, ADF and PP tests findings.

Table further indicate based on IPS, Fisher-ADF, Fisher-PP and LLC panel unit root test for all study variables used in the study. The null hypothesis of 'series have unit root' for all the four tests was evaluated against their associated p-values at the conventional 5 percent statistical level of significance. For credit exposure, capital adequacy, liquidity and corporate governance variables, the null hypotheses was rejected since the p-values associated with respected test statistics were less than 5 percent. Rejection of the null hypotheses means these variables we used in levels instead of their first difference. The variables financial stability, Solvency and bank size were found to be non-stationary at levels. To correct for this violation of OLS cardinal requirement, first difference of the data was undertaken. Under the first difference the data was found to be stationary.

4.2.3 Panel Multicollinearity Test

Panel multicollinearity test was conducted to eliminate possibility of having collinear explanatory variables used in the study. Pair-wise correlation coefficient matrix for the entire study variables was estimated. The estimated correlation coefficient value of 1 indicate perfect correlation among the variables while, correlation coefficient value of -1 indicates perfect negative correlation between the variables. Consequently correlation coefficient value closer to 1 or -1 indicates strong positive or negative correlation among the variables respectively. Correlation coefficient closer to zero indicates weaker positive/negative correlation. The panel multicollinerity test results are presented in the **Table 6.**

Table 6 provide summary of the pairwise coefficient of correlation for all the explanatory variables, the moderating variable and dependent variable. The results found strong positive correlation between financial stability and capital adequacy indicated by correlation coefficient of 0.55. This implies commercial banks with higher capital adequacy are less likely to be financially distressed in comparison with commercial banks with lower capital ratios. The negative correlation between financial stability and corporate governance may implies commercial banks that have significantly high management costs are highly likely to experience financial instability in near future. Additionally, as commercial banks increases it liquidity ratio, the less likely that bank will experience financial instability as indicated by positive correlation coefficient between financial stability and liquidity.

Table 6 Pairwise Correlation Matrix of the Dependent and Explanatory Variables

	FD	BZ	CAR	GDP	LD	LIQ	NPL	OC
FD	1.00							
BZ	-0.01	1.00						
CAR	0.55	-0.29	1.00					
GDP	0.08	0.16	-0.04	1.00				
LD	0.07	0.09	-0.08	0.08	1.00			
LIQ	0.09	0.12	0.22	0.01	-0.49	1.00		
NPL	-0.31	-0.30	0.02	-0.20	0.00	0.14	1.00	
OC	-0.09	0.74	-0.31	0.14	0.12	0.01	-0.22	1.00

The negative correlation between credit risk and financial stability as indicated by correlation coefficient of -0.31 indicate, as credit risks increase meaning the quality of banks asset deteriorate the highly like bank will experience financial instability in future. Table further reveals high positive correlation between corporate governance and bank size with correlation coefficient at 0.74. As expected large commercial banks due to nature of its operation will always incur huge management cost. Gujarati [30] recommendation, if correlation coefficient is below 0.8 the study variables fit for further statistical analysis since they do not signify severe multicollinearity problem, for this case all other variables had correlation coefficient of less than 0.8 hence adopted for the study.

4.2.4 Serial Correlation Test

For an estimated model to be robust, its error terms should not be correlated with each other. This means the error term of an individual observation should not be influenced by the error term relating to another observation. If the opposite of this situation occurs, it's referred to as serial correlation problem. Presence of serial correlation in the study data leads to generation of smaller standard errors hence inaccurate hypothesis testing. Testing for autocorrelation involved applications of Lagrange multiplier (LM) tests. The LM tests are used to test for higher order Autoregressive Moving Average (ARMA) errors especially if lagged dependent variables are used or not unlike the Durbin-Watson statistics which is used for low order such AR(1) processes (Torres-Reyna [31], Breusch, & Pagan [32]). LM tests apply null hypothesis of no serial correlation up to pre-specified lag order p, where p is an integer (Wooldridge [33]).

The study employed Arellano-Bond Serial Correlation Test as proposed by Arellano & Bond [34], Doornik, Bond & Arellano [35] for models estimated using GMM. This test involves computation of the first and second i.e. (AR(1) and AR(2) order correlation statistics and present the two statistics separately. If the variables are i.i.d. the AR(1) statistic should be significant with a negative auto-correlation coefficient while the AR(2) statistic should be insignificant. **Table 7** the Bond Serial Correlation Test results.

Table 7: Bond Serial Correlation Test results

Arellano-Bond Serial Correlation Test				
Test order	m-Statistic	rho	SE(rho)	Prob.
AR(1)	-7.386475	-4.661082	0.631029	0.0000
AR(2)	0.384086	0.288375	0.750809	0.7009

Table 7 present Bond Serial Correlation Test estimated for the GMM models. The results indicates a negative and significant correlation coefficient of -7.386475 at 1 percent significant level for AR (1) statistics. Additionally the table indicate the AR (2) statistic was insignificant. This indicates the estimated model errors terms for the study variables were uncorrelated in levels. To address the suspected heteroskedasticity and autocorrelation anomalies found in the study panel data, the study followed Newey and West [36] recommendation of applying special

GMM models which allows estimation of dynamic panel data specifications where data is suspected of having both heteroskedasticity and autocorrelation.

4.2.5 The Hausman Test for Fixed / Random Effects Model Estimation

To decide which the most appropriate model between the fixed effect model (FEM) and random effect model (REM) for this study, Hausman test was used. This involved estimating both models in particular order, starting with FEM against the alternative hypothesis REM is appropriate at 5 percent confidence level. Based on Huasman test chi-square and corresponding p-value, null hypothesis is accepted or rejected. The Hausman test was proposed by Hausman [37] as a test statistics for endogeneity by directly comparing fixed and random effects estimates of coefficients values. Results of the Correlated Random Effects test (Hausman Test) indicated by Table 8 shows the Chi-Square test statistics and, their corresponding degree of freedom and p-value for the panel model equation (1)

Table 8: Hausman Test for Model Effects Estimation

Model Specification	Chi-Square Statistic	Degree Freedom.	P-Value
Panel Model 1	84.620507	8	0.0000

Null Hypothesis: Random Effects Model is Appropriate: Significance level 5 Percent

The **table 8** indicates the Chi-Square for panel model equation (1) was 84.62. The corresponding 0.0000 P-values indicate statistically significant at 5 percent significance level. The means the study rejected the null hypothesis that REM was most appropriate statistical analysis model for panel model equations (1) at 5 percent significant level. This means the FEM was found to be most appropriated model for the equation 1.

4.3. Panel Model Regression Results

After conducting the panel data specification tests outlined in section 4.2, and taking necessarily remedial actions to correct any violation of the cardinal OLS requirement identified, the study undertook panel regression analysis as discussed in this section. The study overall objective was to establish the bank-specific determinants of commercial banks financial stability in Kenya. To achieve this objective, we estimate panel regression aimed at testing the study hypothesis by first; regressing the dependent variable (financial stability) variable against explanatory (bank-

specific) variables as specified in the panel equation (1). The random effects panel regression equation was estimated as supported by the Hausman test. In order to eliminate panel-level heteroscedasticity and serial correlation detected in the panel data, a dynamic panel data estimation technique was employed instead of Ordinary Least Squares (OLS) due to its provision of consistent estimators. To eliminate problem of collinearity among the explanatory variables step-wise model re-estimation of equation (1) was undertaken where highly collinear variables were dropped following Gujarati [30] recommendations. **Table 9** summarizes the panel regression results of the panel equation (1) estimated.

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Table 9: Step-Wise Dynamic Panel Fixed –Effects Regression Results

Dependent Variable: **Financial Stability** Method: Panel Generalized Method of Moments 2SLS instrument weighting matrix			
Variable	Equation 1a Coefficient (P-value)	Equation 1b Coefficient (P-value)	Equation 1 c Coefficient (P-value)
Constant			0.172130*** -0.0009
Lagged Financial Stability	0.613031*** (0.0000)	0.603176*** (0.0000)	0.742036*** (0.0000)
Bank Funding (Solvency)	0.207280*** (0.0000)	0.117507*** (0.0039)	
Bank Funding (Liquidity)			0.150290** (0.0214)
Credit Exposure	-0.565458*** (0.0004)	-0.647504*** (0.0006)	-0.487680** (0.0206)
Lagged Corporate Governance		0.035653* (0.0618)	
Bank Size	0.622023*** (0.0000)	0.535184*** (0.0000)	0.249788*** (0.0096)
Regulatory Capital	1.346836*** (0.0000)	1.517959*** (0.0000)	
Statistics			
Adjusted R-squared	0.71027	0.70607	0.65013
Durbin-Watson stat	1.774063	1.766802	1.908711
J-statistic	421	357	372
Prob(J-statistic)	0.0000	0.0000	0.0000
Total Panel (unbalanced)	428	367	378

The asterisk ***, **, * represent significance at 1%, 5% and 10% levels respectively.

Table 9 indicated the step-wise panel regression results; the coefficients of all explanatory variables including lagged dependent variable except bank funding proxied by liquidity ratio variable are statistically significant at 1 percent, as their p-values were less than 0.01. The table further indicates bank funding proxied by liquidity ratio is statistically significant at 10 percent since its p-value is less than 0.1. This signifies at 90 percent confident level, all explanatory variables including lagged financial stability variable were statistically significant in explaining variation in Altman's Z-score of bank financial stability. These explanatory variables explained 71.02 percent, 70.61 percent and 65.01 percent variation in banks financial stability as per equation 1a, 1b and 1c adjusted R-squared respectively. For the three equations the Wald-statistics value corresponding p-value of 0.0000 indicates the coefficients of the explanatory variables are jointly statistically different from zero at 99%, 95% and 90% confidence levels.

The study first hypothesis, sought to examine the effect of regulatory capital (capital adequacy) on the commercial banks financial stability in Kenya. The panel regression results presented on the **Table 9** indicates the coefficient of regulatory capital is equivalent to 1.346836 and 1.517959 under equation 1a and 1b respectively, which are positive and statistically significant at 1 percent significance level as indicated by the corresponding p-values of 0.0000. This finding indicates during the study period, increasing levels of regulatory capital boasted the banks Altmans Z-scores index measure of banks financial stability, meaning the banks were less likely to experience financial instability as regulatory capital increases. The results could be attributed to fact that, increased regulatory capital leads to increased capital buffers hence less likely for banks to experience financial instability. For commercial banks' capital usually forms the first line buffers in case of any banks balance sheet shock (Berger [18]). These results mirrors results obtained by Berger et.al [19] study of 23 banks in developed nations and, Berger and Bouwman [20] study of US banks. Both studies found positive and statistically significant link between capital adequacy and commercial banks financial stability. Additionally, both study found capital adequacy as a good proxy of risk and regulatory costs hence determining banks financial stability. The study findings are also in agreement with Borio and Drehmann [38] who attributed the positive link between capital adequacy and banks financial stability to the nature of banking operations. They argued that, Banks due to its credit intermediation core functions relies on

regulatory capital reserves which provide a base for future growth, protecting the banks against the risks of unforeseen losses as well supporting banks daily operations. Similarly the study findings supports Jahn and Kick [7] study on German banks, Lee et.al [4] study on Korean banks and Larry 2014 study on US banks, where the all the three studies found regulatory capital reserves has a positive and significant link to banks financial stability. They also found that capital adequacy was a good predictor of financial stability which as attributed to role of capital in absorbing banks' balance sheet shocks. They argued rapid regulatory capital accumulations signifies build-up of capital buffers hence less likely the banks will experience financial instability in future, however rapid depletion of capital buffers signifies growing financial stability risks highly likely to affect the banks. However, these study findings were at variance with Osborne et.al [9] study on US banks spanning several economic cycles. They found negative and statistically significant link between capital reserves proxied by regulatory capital and financial stability for US banks. They attributed this negative link to banks adopting 'Lazy model' when holding excess capital reserves, hence need to reduce needs to reduce excess capital to optimal levels as a strategy to counter financial stability risks.

The study second hypothesis, sought to examine the effect credit exposure on commercial banks financial stability in Kenya. The study adopted banks assets quality measure proxied by the ratio of non-performing loans to total loans. The regression results presented on shows that credit exposure has coefficient of -0.565458, -0.647504 and -0.487680 under equations 1a, 1b and 1c respectively. These coefficients were negative and statistically significant at 1 percent for equation 1^a and 1^b with corresponding p-values of 0.0004 and 0.0006 respectively, and at 5 percent for equation 1c with corresponding p-value of 0.0206. The study results indicates that during the study period, deterioration of banks asset quality as indicated by increasing credit exposure reduced the banks Altmans Z-Score index measure of banks financial stability implying increasing chances of the bank experiencing financial instability. These study findings reinforces Hardy and Pazarbasiouglu [39] study on banks in IMF affiliated countries which revealed banks credit variables such as non-performing loans levels and banks financial stability had a negative and statistically significant link. This was attributed to fact as banks assets quality deteriorates indicated by measures such as increasing NPLs, may lead to loss of confidence in the banking sectors. Loss of confidence in the banking sector may trigger deposits run hence increasing the

likelihood of the banks experiencing financial instability. Additionally, the study findings support Athanasoglou et.al [21] study on the banks in south eastern European region and Lorenzoni [40] study on US banks. Both of these studies attribute the negative link between credit exposure and bank financial stability to the fact that, increased credit risk exposure is normally associated with increased loans loss provisioning and decreased profitability. Prolonged period of high loans loss provisioning and depressed profitability, leads to higher the probability of the banks experiencing financial instability. Berger et.al [19] study of 23 banks in developed region found similar findings of negative and statistically significant link between credit exposure and financial stability. They attributed the negative link on the argument that, high credit exposures reflects the declining demands of bank assets and the reduced ability of these banks assets to generate revenue to compensate for the risks exposure. This ultimately leads to high probability of the bank experiencing financial instability.

The study third hypothesis involved examining the effect of bank funding on the banks financial stability in Kenya, the study employed two measures of the bank funding risks exposed to the commercial banks namely solvency and liquidity risk. This is based on the unique nature of bank funding processes in the credit intermediation process and maturity transformation processes. Banks get market funding in form of deposits (demand and time deposits) which are short-term in nature and lend credit long-term. This means banks are exposed to liquidity risks (inability to honor short-term obligation) and solvency risk (inability to honor long-term obligation). **Table 9** indicates a positive and statistically significant relationship between long-term-funding risks measuring by solvency ratio calculated as a ratio of loans to deposit and the Altman's Z-score measure of banks financial stability at 1 percent. This is evident by coefficient of 0.207280 and 0.117507 with corresponding p-value of 0.0000 and 0.0039 for equation 1a and 1b respectively. This means during the period of the study, increasing the solvency ratio also boast the Altman's Z-Score index for commercial banks in Kenya, indicating less likely to experience financial instability. This may be attributed to banks credit creation power, where from a single deposit banks create multiple loans hence more income generation. Increased income leads to higher profitability hence less likely the banks experiencing financial instability. These findings mirror Fungacova, Turk & Weill [41] study of Russian's banks. They found positive and statistically significant link between long-term funding and banks financial stability. They attributed this

positive link to credit creation power of banks by transforming single liability (deposits) into multiple income generating assets (loans) hence reducing probability of experiencing financial instability. However, in short-term credit creation power of banks is limited by liquidity needs, as indicated by bank funding risks measured by liquidity ratio which is only statistically significant at 10 percent. The study adopted ratio of net liquid assets to current liabilities as proxy for short-term bank funding risks (Liquidity risk). **Table 9** indicates short-term bank funding risks (liquidity risk) have a positive and statistically significant relationship with banks financial stability. This is shown by the beta coefficient equivalent to 0.150290, with a corresponding p-value of 0.0214 under equation 1c. This implies with 95 percent confidence level, increasing liquidity levels of the bank leads to lower probability of that bank experiencing financial stability, since high liquidity levels boast Altman's Z-scores measure of bank financial stability. These findings corresponds findings of Dermerguc-Kunt & Huizinga [42] cross country analysis study of bank and, Illing and Liu [43] study of Canadian banks. Both study found a positive and statistically significant link between short-term bank funding measured by liquidity ratio and banks financial stability. They attributed this to the fact high liquidity ratios may be an indication of healthy banks, due to availability of liquid assets to meet maturing obligations. Similar results were found by Borio and Drehmann [38] study of US banks and Jahn and Kick [7] study of Germans bank. Both study attributed the positive link between short-term funding and financial stability to the high predictive power of liquidity ratio in indicating financial imbalances preceding financial stability episodes.

The fourth study hypothesis involved investigating the effect of bank size on the commercial banks financial stability in Kenya. **Table 9** results indicate a positive and statistically significant relationship between bank size and Altman's Z-score bank financial stability measures at 99 percent confidence levels. This is evident by beta coefficient equivalent to 0.622023, 0.535184 and 0.249788 with corresponding p-values of 0.0000, 0.0000 and 0.0096 for equation 1a, 1b and 1c respectively. The results indicate, during the study period, as bank size increases it boasted the Altman's Z-score, hence reducing the probability of these banks having financial instability. This may be attributed to the fact, high bank size levels may lead to rapid assets accumulation hence lowering banks financial instability risks. The findings support Muigai et.al [23] study on NSE listed non-financial firms in Kenya. The study found positive and statistically significant link

between bank size proxied by total assets, and financial stability measured by Altman's Z-score. The results are also consistent with Goddard, Molyneux & Wilson [44] study on US banks findings that, larger banks due to its nature of operation are perceived strong hence obtain large liquidity buffers in form of deposits, this boast their Altman's Z-score of financial stability. However small banks are perceived risky hence highly susceptible deposits bank run and 'flight to safety' deposits movement. This increases the commercial banks financial stability risks. However these results contradict Athanasoglou et.al [21] study of the banks in the south eastern European region, and Muigai [45] who found significant negative relationship between bank size and financial stability. Muigai [45] contradicting results may be attributed to the focus of the study population which was non-financial firms whose nature of operations is totally different from banks. Banks funding model and credit intermediation role significantly differ from non-financial firms which may explain the conflicting study findings. Athanasoglou et.al [21] contradicting results raises further research questions. Similarly, these findings contradict Mwangi, Muathe & Kosimbei [46] study on non-financial firms listed at NSE in Kenya. The found no statistically significant relationship between bank size and financial stability. The contradicting results may be attributed to application of different measures of financial stability. Whereas this study adopted Altman's Z-score as measure of financial stability, Mwangi [46] adopted long-term debt (leverage ratio) as measure of financial stability. Additionally the results contradict Berger, et.al [19] study on US banks where they found larger banks experienced diseconomies of scale hence experiencing high levels of financial instability. This was attributed to larger banks adopting 'lazy model' and moral hazard brought by complex organizational structures and weaker internal controls factors.

The fifth study hypothesis was to examine the effect of corporate governance risks on the banks financial stability in Kenya. The study adopted the natural logarithm of bank's total management cost. **Table 9** results indicate a positive and statistically significant link between lagged corporate governance and Altman's Z-score financial stability measure at 10 percent. This is evident by the beta coefficient of 0.035653, with a corresponding P-value of 0.0618 under equation 1b. This indicates during the period of study increasing corporate governance proxied by increasing total bank management cost characterizes high Altman's Z-scores signifying less likely banks experiencing financial instability. This positive link may be attributed to the assumption that

increased corporate governance cost leads to attraction of high quality bank management staff hence efficient banks operation leading high profitability and strong risk management practices. This will ultimately lead to lower probability of banks experiencing financial instability. The study result reinforces Brock and Suarez [47] findings on the study of banks in Latin American. The found that weak corporate governance lead to high prevalence of financial instability. However these results contradict empirical work of Brownbridge [11] on African banks, Bourke [48] and, Molyneux and Thornton [49] study on European banks. All this studies revealed a negative and statistically significant relationship between corporate governance and financial stability. They attributed this negative link to moral hazard on bank owners. These contradicting results may be explained by the measure of corporate governance adopted in these studies. Whereas this study adopted natural log of total management cost, Brownbridge [11], Bourke [48] and, Molyneux and Thornton [49] adopted insider loans as the measure of corporate governance. Similarly the study findings contradict Thanassoulis and Tanake [24] on England banks. Their study found negative and statistically significant link between corporate governance proxied by a similar measure as this study, total management cost and financial stability. They attributed the negative link to the fact management perks (e.g. bonuses) is based on bank's profitability. This means bank executive are very likely to select risky but profitable projects since due diligence is more expensive to incentives. Untimely these actions lead severe bank exposures to high probability of experiencing financial stability.

5. Summary, Conclusion and Recommendation

The study objective was to examine the effect of selected bank specific variables namely; regulatory capital, credit exposure, bank funding, bank size, corporate governance on banks financial stability in Kenya. The study results indicate during the period of analysis, regulatory capital, long-term & short term bank funding, bank size and corporate governance had a positive and statistically significant effect on banks financial stability in Kenya. On other hand, credit exposure had a negative and statistically significant effect on banks financial stability in Kenya.

The study concludes employment of high regulatory capital for commercial banks in Kenya reduces the probabilities of that bank experiencing financial instability. On other hand, commercial banks in Kenya who maintains low level of regulatory capital are comparatively highly financial unstable. Although commercial banks key function is credit intermediation role,

reducing the levels of credit exposure for commercial banks in Kenya, through prudent credit lending practices reduces the incidence of banks financial instability. However, deterioration of banks assets quality (increasing credit exposure) increases the probability of bank experiencing financial instability. The study further concludes that commercial banks in Kenya whose bank funding structure comprises of high solvency and liquidity level are comparatively less financially distress than banks who maintains lower liquidity and solvency levels. The study also concludes, increasing bank size in Kenya boast the Altman's Z-score index for banks financial stability signifying lower financial instability. Although corporate governance cost is extra expenditure to commercial banks in Kenya, employment these corporate governance costs in the operations and control of the commercial banks in Kenya reduces the incidences of the bank experiencing financial instability.

5.5 Suggestion for Further Research

The study objective was to examine the effect of selected bank specific variables namely; regulatory capital, credit exposure, bank funding, bank size, corporate governance on banks financial stability in Kenya. This was achieved by examining only commercial banks licensed by Central Banks of Kenya as at between 2000 and December 2015. This ultimately may lead to non-conclusive study findings due to exclusion of banks which ceased / started operations before / after the above study period respectively. Additionally other banking categories such as development and investment banks operating in Kenya are excluded in this study. Further research can be extended to cover non-commercial banks in Kenya, and also extended the study period to verify these study findings. Additionally, similar research may be extended to undertake cross country analysis. This is based on the fact this study focused on limited geographical location Kenya. This was based on budgetary constraint of the research. Cross country analysis will adequately bring out effect of unique characteristics such political, economic and regulatory environment. The cross country findings will verify these study findings and greatly inform policies especially with the anticipated economic federations such as East African Community (EAC), Common Market for Eastern and Southern Africa (COMESA)

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