

Effect of Bank Diversification on the Financial Distress of Commercial Banks Listed at the Nairobi Securities Exchange, Kenya

¹Innocent Masase Mochabo, ¹Dr. Kennedy B. Mwengei Ombaba, ¹Dr. Benedict Alala Ondiek

¹University of Eldoret Department of Business Management

Abstract

Due to the dynamic environment, banks are always striving to achieve a competitive advantage. In this sense, they have identified different strategies for diversification in order to survive. The purpose of this study was to determine the effect of bank diversification on financial distress of commercial banks listed in the Nairobi Securities Exchange. The specific objective of the study was to determine the effect of geographical and asset base diversification on the financial distress of the listed commercial banks in the NSE. The theories that guided this study included market power theory, resource dependency theory and resource based view theory. Exploratory research design was used. The research targeted ten listed commercial banks in the NSE. This study used panel data of a ten years period (2006-2015) from the audited and published financial statements of commercial banks. Descriptive and inferential statistics was employed for data analysis. This study established that geographical diversification was positively and significantly correlated with financial distress ($\beta=0.0065$; $p<0.05$). The finding also showed that assets base diversification was positively and significantly correlated with financial distress ($\beta=0.0079$; $p<0.05$). This study will contribute new dimensions and perspectives to generate policy solutions to the management and the banking industry stakeholders. The new empirical evidence will form the basis for further studies with the aim of addressing financial distress through diversification. The study recommends that banks should adopt a moderate geographical strategy of diversification to enhance financial health of the banks.

Key Words: Bank diversification, geographical diversification, asset base diversification, financial distress, Commercial banks

1.1 Introduction

Financial distress is a term in corporate finance used to indicate a condition when promises to creditors of a company are broken or honored with difficulty (Carlos & Lorenzo, 2009). The Banking sector all over the world acts as the life blood of modern trade and economic development and through being a major source of finance to the economy (Ongore & Kusa, 2013). Over the last decade, it is clear from banking literature that the financial distress of commercial banks is one research area that has been of main concern to management experts, investors, and economic analysts across the entire world and a lot of researchers have focused on the prediction of financial distress (Zhiyong Li, 2014). This concern is closely related to the significant impact of diversification of these commercial banks on the potential growth of the economy of the country. This has resulted in a lot of changes in the banking environment in terms of operations in order to improve their financial performance (Hussain & Bhatti, 2010).

Financial distress is one of the most significant threats for many firms globally despite their size and nature. According to Ombaba and Kosgei (2017) in their recent study in Kenyan listed firms established that board composition has a significant effect on financial distress in listed firms in the period of study. The study established that indeed listed firms in Kenya are facing financial distress. The study used a balanced paned data of 2004-2013 period a total of 390 firm observations.

The current study is hence establishing the financial health of the banking industry Kenya. The banking industry is having established different framework from other organizations. Financial sector forms an important prerequisite for economic stability and growth. As a consequence, the assessment of banks' diversification is a fundamental goal for many stakeholders. The cost of bank failure is colossal and hence ailing banks require quick action by supervisory authority to salvage them before they collapse (Cheserek, 2007).

This study is motivated by the need to understand how financial distress of commercial banks is influenced by the diversification of various sources of income from one bank to another, impact of geographical spread of bank branches, assets in realizing the competitive advantage. This will enable banks to take corrective measures in reviewing their revenue sources in due time if they find themselves in financially distressing symptoms to avoid the devastating results. It is very important to monitor the growth of the banking sector in Kenya to ensure that, it is not crippled by factors such as unreliable income sources which can be reviewed and diversified through appropriate management measures in ensuring that Kenya remains at the top in East and Central Africa banking sector and beyond.

1.2 Statement of the Problem

The global banking industry has experienced dynamic changes which have necessitated banks to diversify their activities and operations in order to gain a competitive advantage. However, financial distress has been a great problem all over the world and cannot be ignored as it leads to bankruptcy and eventually bank failure. Kenya is not an exception and many banks have collapsed due to financial distress.

Majority of the banks in Kenya still continue to face operational and liquidity challenges (Hellen, 2013) which eventually cause their collapse. Much of literature and scholars' research has concentrated on the prediction of financial distress and minimal attention is given to effect of bank diversification on financial distress in order to address such a challenge (Waweru et. al., 2008). This research project will address the effect of bank diversification on the financial distress of commercial banks listed in the Nairobi Securities Exchange and will form the basis for further academic studies.

2.1 Theory and Hypotheses Development

2.1.1 Market Power Theory

The argument for market power builds from Porter (1980) opinion of positioning the company in its environment using a set of strategies that distinguishes a firm's position among the competitors. Financial distress could arise as a result of stiff competition from the rival companies with the same market niche (Salman, 2007). One of the strategies to overcome competition and financial challenges of a company is diversification (Barney, 1991; 2002) which enables firms to build market power granting them access to conglomerate powers. By entering other markets through diversification, firms are able to gain competitive power in the market not because of their particular position in that market but because of their positions in other markets. In deed Gribbin (1976) argues that in order to attain conglomerate power, a firm must first have individual power in its individual market. This power then propels the firm to enter new markets through predatory strategies supported by its position, resources and strength in its current market. Montgomery (1994) identifies three means by which firms are able to yield market power through diversification: cross subsidization by using profits from one market to support predatory pricing in another; mutual forbearance of rigorous competition among competitors; and reciprocal buying among units of a multi-business firm which forecloses small competition. This was confirmed by Palich et al., (2000) who content that firms with market power can easily control market prices by offering discounts, cross subsidies and practicing reciprocal purchasing and selling as tools to prevent potential competitors entering the industry. This way firms are able to overcome competition thereby earning profits above the average market profits. Therefore market power theory prescribes diversification as a tool for enhancing the financial performance or profitability of a firm.

2.1.2 Resource Dependency Theory

Whilst, the stakeholder theory focuses on relationships with many groups for individual benefits, resource dependency theory concentrates on the role of the board of directors in providing access to resources needed by the firm. All bank diversification options and strategies requires the will, intent and goodwill of the management with an approval of the relevant stakeholders of the company. Hillman, Canella and Paetzold (2000) contend that resource dependency theory focuses on the role that the directors play in providing or securing essential resources to an organization through their linkages to the external environment. Indeed, Johnson et al, (1996) concurs that resource dependency theorists provide focus on the appointment of representatives of independent organizations as a means for gaining access in resources critical to firm success. For example, outside directors who are partners to a law firm provide legal advice, either in the board meetings or in private communication with the firm executives that may otherwise be more costly for the firm to secure.

It has been argued that the provision of resources enhances organizational functioning, firm's performance and its survival (Daily et al, 2003). According to Hillman, Canella and Paetzold (2000) the directors bring resources to the firm, such as information, skills, access to key constituents such as suppliers, buyers, public policy makers, social groups as well as legitimacy. Directors can be classified into four categories of insiders, business experts, support specialists and community influential. First, the insiders are current and former executives of the firm and they provide expertise in specific areas such as finance and law on the firm itself as well as general diversification strategy and direction.

Second, the business experts are current, former senior executives and directors of other large for-profit firms and they provide expertise on business strategy, decision making and problem solving. Third, the support specialists are the lawyers, bankers, insurance company representatives and public relations experts and these specialists provide support in their individual specialized field. Finally, the communities influential are the political leaders, university faculty, members of clergy, leaders of social or community organizations.

2.1.3 Resource Based View (RBV) Theory

The theoretical perspective that has come to be known as the resource-based view of the firm suggests that sustainable competitive advantage often originates inside the firm, and that strategy at the firm level is therefore driven by firm-specific resources and capabilities. The resource-based view of the firm suggests that diversification arises as firms attempt to leverage non-tradable firm-specific resources, among them human resources. Studies of diversification have long been a mainstay of economics as well as strategic management research (Hoskisson & Hitt, 1990). Resource-based view theory generally assumes that firms are organized with a single product focus and face a homogeneous factor market. Based on those assumptions, a market power view (Edwards, 1955) of diversification emphasizes the benefits a firm may reap at the expense of its competitors and customers. More skeptical views offered by agency theorists emphasize the benefits that diversification offers to firm managers themselves, often at the expense of its shareholders.

The effectiveness of firm strategies depends on the utilization and exploitation of existing resources. To the extent that firms have pools of underused resources, these create unique, firm-specific opportunities for exploitation (Montgomery, 1994). Diversification is one such strategy for exploiting existing firm-specific resources: firm diversification can be understood as a process through which managers first identify resources that are unique to their firm, and then decide in which markets those resources can earn the highest rents. Some firm resources are 'indivisible' and therefore 'sticky', and, particularly if they are intangible, difficult or impossible to trade in the market.

2.2 Hypothesis Development

2.2.1 Geographical Diversification on Financial Distress

As regards the profile of geographic diversification and distance, some prior research investigated: i) the effects that the distance between the bank headquarters and its customers, mainly SMEs, may produce on the loan evaluation process (Stein, 2002; Shiers, 2002; Carling and Lundberg, 2005; Hauswald and Marquez, 2006, Felici and Pagnini, 2008; Alessandrini et al., 2009; Jiménez et al., 2009); ii) to what extent the

distance between affiliates and parent organizations may affect bank efficiency (Berger and DeYoung, 2010, Illueca et al., 2009, Bernini and Brighi, 2012a, b); iii) whether geographic diversification affects directly or indirectly bank performance (Hirtle, 2007; Deng and Elyasiani, 2008, Cotugno and Stefanelli, 2012, Goetz et al. 2012). Focusing on this latter strand of literature, Hirtle (2007) shows how the increase in size of the branch network engenders a downturn in bank performance. Deng and Elyasiani (2008) on a sample of 505 large publicly traded US BHCs over the 1994–2005 period, find that geographic diversification is associated with BHC value enhancement and risk reduction. When controlling for the distance between the headquarters and branches they find that an increased distance between a BHC and its branches is associated with firm value reduction and risk increase.

The authors demonstrate that diversification attained in the same country is effective, since a diversified bank achieves on average a better performance than a bank concentrated in just a few geographic areas; as highlighted in literature, the benefits resulting from a geographical diversification are noticeable when significant economic differences are present in the areas where a bank is located. Goetz et al. (2012) examines the impact of the geographic diversification of bank holding company assets across the United States on their market valuations. Findings shows that increases in geographic diversity due to interstate bank deregulation reduced BHC valuations consistently with the view that an exogenous increase in complexity allows corporate insiders to extract larger private rents with adverse implications on firm value.

As for Italy, a few papers have recently investigated the impact of geographical diversification in the banking sector. For a sample of Italian banks over the period 2005-2010 Cotugno and Stefanelli (2012) find that a positive relation between geographical diversification and bank performance. Focusing on cost efficiency and on a homogenous group of banks - the mutual ones - Bernini and Brighi (2012a) find that a greater degree of diversification at the local level determines an increase in the cost inefficiency. This result is apparently contradictory but it is related to the special role played by this type of banks at the local level. Mutual banks typically operate at the municipal level. From the research literature, it's quite evident that a geographically diversified bank stands at a better position to increase its market share and enhance competitiveness which in turn reduces the risks of financial distress.

H₀₁ Geographical Diversification has no significant effect on financial distress of listed banks in Kenya

2.2.2 Effect of Assets Base Diversification on Financial Distress

Derek (2015) defines diversification as a way of managing portfolio whereby an investor diminishes instability and risks of her/his set of portfolio through holding a range of unlike investments are lowly correlated with one another. Cernas (2011) defines diversification as a strategy of managing portfolio through bringing together diverse assets to so as to lower the general risk associated with investment portfolio most of which includes an hostile corporate takeover and financial distress. On the other hand, asset diversification is a group strategy joining together more than one asset so as to lower the whole investment portfolio risk (Dimitriou, 2012). It is the practice of dividing a portfolio into key asset class of equities, cash equivalents, fixed income and alternatives. Asset diversification is the share of a portfolio spread through various classes of assets, regions and markets. Dimitriou (2012) acknowledges asset diversification as a fundamental principle of sound investing.

The aim of asset diversification is to realize revenues for allowed risk margin by combination of different classes of asset in a way that is well calculated. This allow for smoothening the variability in returns achieved in each asset class. According to Perez (2015), bank assets include loans, financial assets, cash, other assets and premises. Perez (2015) concludes that asset diversification within banks can be measured through examining loans, financial assets, other investments made and cash equivalents. Asset diversification has been adopted widely a strategy aimed at mitigating the turbulent markets and operational environments for investors. The major benefit associated with this move is lowering the portfolio volatility and losses and is generally very crucial especially when there is increased uncertainty (Dimitriou, 2012). The major advantage of any portfolio diversification is that it diversifies various investments along diverse categories of financial tools, whereby each has its own magnitude of risk-return. This diversification type is done with key objective being lowering the expected risk that may arise from having all resources put in one investment type only (Syriopoulos, 2005). Through a careful strategy of diversification, commercial banks may prosper, rather than falling victim to the consolidation trend in the industry. Shambe (2003) argues that bank managers responsible for funds accept diversification to a level that is worthwhile and sensible for the served client and customers given its risk preferences and come up with a list of intended holdings

consequently. Generally, firms desire investments that provide high returns at little risk. Unfortunately, in the real world, mixed returns and risks are bound. Assets base diversification is appreciated as a one of the powerful and most promising methodology of lowering financial distress of banks.

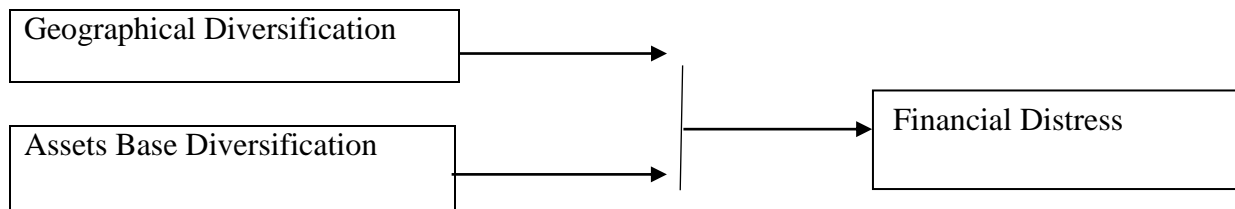
H₀₂ Asset base diversification has no significant effect on financial distress of listed banks in Kenya

Conceptual Framework

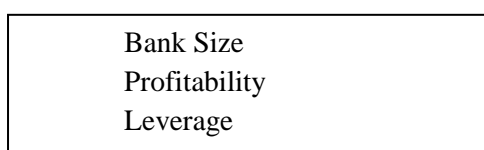
The diagrammatic representation of conceptual framework shows how the variables are related. Geographical diversification and assets diversification are independent variables while bank size, profitability and leverage are control variables. Financial distress is a dependent variable.

Independent Variables

Dependent variable



Control Variables



3. Methods and Data

3.1 Research Design

The study used longitudinal research design which was conducted on 10 years period using panel data. Panel data estimation technique was adopted because it takes care of heterogeneity associated with individual banks by allowing for individual specific variables. Also, by combining time series of cross sectional observations, panel data gives more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency. Besides, panel data minimized the bias that can result if individual banks are aggregated. It also enriches empirical analysis in such a way that may not be possible if either only time series data or cross sectional data is used (Ogboi & Unuafe, 2013).

3.2 Target Population

A population is the entire set of elements from which a sample is drawn. The population for this study included all the ten listed commercial banks in Nairobi Securities Exchange (Appendix 1). The total number of observations was 100. Central Bank of Kenya is the major licensing institution of commercial banks in Kenya and hence was used as an authoritative source for banking sector information.

3.3 Source of Data

Data was sought from the central bank of Kenya in which the audited and published financial reports for the listed commercial banks in NSE was reviewed.

3.4 Data Collection Procedure

Data collection was carried out in the month of August 2017. No research assistants were involved in this process so as to make sure that the researcher collects the valid and correct data. Panel data was employed because it helps to study the behavior of each bank over time and across space (Baltagi, 2005). Polit and Beck (2010) also indicate that secondary analysis of existing data is efficient and economical because data collection is typically the most time-consuming and expensive part of a research project.

3.5 Data Analysis and Processing

This section discusses the techniques that were used to analyze data and test the variables. Multiple regression analysis was used to infer the research hypotheses. The unbalanced panel data collected was analyzed quantitatively using regression equations, which was solved using statistical software Eviews version 10.0.

3.6 Regression Analysis Model

Multiple regression analysis was used to test the hypotheses on the effect of bank diversification on financial distress of commercial banks listed in the NSE. Coefficient of determination, R^2 was used to determine the degree of association between bank diversification and financial distress, the regression test was done at 5% significance level.

Multiple regression equations used as follows:

$$Z = \alpha + \beta_{0it} + \beta_1 C_{0it} + \varepsilon_{it} \dots\dots\dots(i)$$

$$Z = \alpha + \beta_{0it} + \beta_{1it} C_{0it} + \beta_2 X_{1it} + \beta_3 X_{2it} + \varepsilon_{it} \dots\dots\dots(ii)$$

Where:

α and β_0 are autonomous variables

C_0 is control variables (Bank size, Profitability and Leverage)

it is the time interval

ε is the error term

β is the Slope.

X_1 : Geographical diversification

X_2 : Assets Base diversification

Z : Financial Distress

3.6.2 Measurement of Variables

3.7 Measurement of Independent Variables

Traditionally in literature (Stiroh, 2004a,b; Lepetit et al., 2008) one way to capture the degree of diversification of bank activities is to consider the net interest income generated by traditional activities and non-interest income produced by non-traditional ones. To this end, several authors have used an adjusted Herfindahl–Hirshman index (HHI) to account for diversification between major activities (among the others Acharya et al., 2006; Stiroh and Rumble, 2006; Mercieca et al., 2007; Elsas et al., 2010). As the HHI rises, the bank becomes more concentrated and less diversified. To have a direct measure of diversification (DIV) the sum of squared revenue shares have been subtracted from unity so that DIV increases in the degree of revenue diversification. Natural log of the number of bank branches was used to measure geographical diversification, while asset-based indicator in percentage share of the market was used to measure Assets Base diversification.

3.8 Measurement of Control Variables

Bank size was measured by the natural logarithm of total bank assets, Profitability was measured by Return on Assets while Leverage was measured by the Debt to Equity ratio of the banks.

3.8.1 Measurement of Dependent Variable

Financial distress of commercial banks was analyzed and measured based on Altman's Z score model. Z was treated as covariate during modeling. A covariate is a secondary variable that can affect the relationship between the dependent variable and other independent variables of primary interest. Financial distress was calculated using Altman Z-score model (2006) as shown below. Mamo (2011) used the model to predict financial distress in commercial banks in Kenya and found the model to be 90% valid. Bwisa (2010) also evaluated Altman's model applicability in prediction of financial distress in Kenya and found the model to be 80% applicable.

$$Z = 6.56T1 + 3.26T2 + 6.72T3 + 1.05T4$$

Where

$T1 = (\text{Current assets} - \text{Current liabilities}) / \text{Total assets}$

$T2 = \text{Retained earnings} / \text{Total assets}$

$T3 = \text{Earnings before interest and tax} / \text{Total assets}$

$T4 = \text{Book value of Equity} / \text{Total liabilities}$

Zones of discrimination

$Z > 3.75$ - Safe zone

$1.75 \leq Z \leq 3.75$ - Grey zone

$Z < 1.75$ - Distress zone

4.0 Results

4.1 Descriptive Statistics

From econometrics techniques, transforming the values of real variables into their logarithmic values is necessary (Harlow, 2005). All real variables were transformed into logarithm form as transformation may reduce the problem of heteroscedasticity because it compresses the scale in which the variables are measured, therefore reducing a tenfold difference between two values to a two-fold difference (Harlow, 2005). The means and standard deviations of the variables in the study are presented in table 4.2.1 below.

Table 4.2.1 Descriptive Statistics

Variables	N	Mean	Std. Deviation	Min	Max
Z Score	100	1.59	0.412	.55	2.66
Bank Size	100	11.63	1.2	1.88	13.26
Profitability	100	29.45	8.93	-15.4	49.99
Leverage	100	6.44	0.36	4.31	7.18
Geographical Diversification	100	3.65	1.26	.7	5.26
Asset Base Diversification	100	6.86	3.48	2.74	16.6

Source: Research Data (2017)

From the table above it shows that the maximum value for financial distress is 2.66 implying that the banks are in the gray zone of financial distress. The minimum being 0.55 that implies that the firms are financial distressed. The mean of 1.59 shows that majority of the banks in Kenya in the period of study are in the distress zone. The results also show that firms are minimum profitability of -15.4, while the mean of 29.45 which implies that firms are profitable.

4.2 Tests for Regression Assumptions

Regression analysis requires certain assumptions be met before it can be used to analyse any data. These include normality of errors, linearity and independence of errors (William *et al.*, 2013). Additionally, panel data requires testing for multi-collinearity and stationarity before it can be subjected to regression analysis (Gujarati, 2004). Serious assumption violations can result in biased estimates of relationships, over or under-confident estimates of the precision of regression coefficients, and untrustworthy confidence intervals and significance tests (Chatterjee and Hadi, 2012; Cohen *et al.*, 2003). The following sections present the results of the various assumption tests.

4.2.1 Test for Normality of Errors

Jarque-Bera (JB) test for normality was used to test for normality of error terms. According to Bryset *al.*, (2004), the JB tests the hypothesis that the distribution of error terms is not significantly different from normal ($H_0: E(\epsilon) \sim N(\mu=0, \text{Var.} = \sigma^2)$). The results of the tests are presented in table 4.2. The results show that the significance levels for the Jarque-Bera statistics were greater than the critical p-value of 0.05 implying that the errors were not different from normal distribution (Tanweer, 2011). This can also be confirmed from the normal P-P plots in appendix 2 and histogram appendix 3.

Table 4.1: Test Statistics for Model Residual Normality

Model	JB (Prob). Z-Score _{it}	Conclusion
Model 1	9.704 (0.078)	Normal
Model 2	2.185 (0.89)	Normal

Source: Research Data (2017)

4.2.2 Tests for Linearity

A model relating the response variable to the predictors is normally assumed to be linear in the regression parameters (Chatterjee and Hadi, 2012). The parameter linearity assumption is often tested by plotting residuals against predicted values of the response variable (Osborne and Elaine, 2002), whereby the relationship should take a linear form for this condition to be met. As shown in appendix 6 the linearity in parameter assumption was met for all models of Z score.

4.2.3 Tests for Independence of Errors

According to Fox (1997), Weisberg (2005), and Chatterjee Hadi (2012) the errors in a regression model are assumed to be independent or not serially correlated across different observations. The Durbin-Watson test of serial correlations was used to test for independence of error terms. The Durbin-Watson statistic (D) is typically used to test first order autocorrelations (ρ) with the null hypothesis that there are no residual correlation ($H_0: \rho = 0$) against the alternate hypothesis that positive residual correlations ($H_a: \rho > 0$) exist (Lind *et al.*, 2015). The statistic D ranges in value from zero to four. When the error terms are independent D is expected to be close to 2.00 (Sosa-Escudero, 2009; Lind *et al.*, 2015). Values of D closer to zero indicate positive autocorrelation whereas large values of D point to negative autocorrelations, which seldom occurs in practice (Lind *et al.*, 2015). The results in Table 4.3 shows that the error terms were independent for all the regression models of Z-score

Table 4.2: Test Statistics for Independence of Errors

Durbin Watson Statistic (D)

Model	Z- Score	Conclusion
Model 1	1.452	Error terms are independent
Model 2	1.615	Error terms are independent

Source: Research Data (2017)

4.2.4 Testing for Multi-Collinearity

Variance inflation factor (VIF) and tolerance were used to assess for multi-collinearity in predictor variables. Multi-collinearity can also be tested by calculating the correlation coefficients for the predictor variables. A tolerance of below 0.10 or a VIF greater than 10 or a correlation coefficient above 0.8 is regarded as indicative of serious multi-collinearity problems (Field, 2009). This study followed the procedure set out in (Gujarati 2004) that included the use of Tolerance (TOL) and variance inflation factor (VIF) Tolerance is equal to the inverse of VIF. The variance inflation factor is one popular measure of multicollinearity, (Cohen *et al.*, 2003). According to (Gujarati 2004) the closer Tolerance is to zero, the greater the degree of collinearity of that variable with other regressors. On the other hand the closer TOL is to 1, the greater the evidence that the variable is not collinear with other regressors. As shown in the Table 4.4, the tolerance statistics were all above 0.10 and VIF values were all below 10 implying that there was no problem of multicollinearity among the predictor variables in all the two models.

Table 4.3: Collinearity Statistics for Predictor Variables

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Bank Size	.748	1.336
Profitability	.796	1.257
Asset Base Diversification	.572	1.747
Geographical Diversification	.544	1.839
Leverage	.842	1.188

Source: Research data (2017)

4.2.5 Testing for Unit Roots

Before empirical estimations are conducted, the data series are subjected to unit root tests to establish their stationarity conditions, that is, their orders of integration. Therefore, the series must be primarily tested for stationarity in all econometric studies (Granger and Newbold, 1974). Where a series is found to be non-stationary at levels, it is differenced until it became stationary (Gujarati, 2004; 2007 and Baltagi, 2001). Since panel data models were used in this study and the data set had a time dimension, unit root existence was investigated by panel unit root tests. Maddala and Wu (1999) suggest that using panel unit root tests yields statistically better results compared to the results of unit root tests like Philips-Perron, which are based on a single time series.

This study conducted unit root test for the variables using the Levin, Lin & Chut unit root test. As shown in Table 4.5 the p-values for the Levin, Lin & Chut Chi-square statistic were less than the critical values of 0.05 for Bank size, Leverage, Geographical diversification, and Asset Base diversification. This implies that these variables/ panels (had no unit roots) and therefore suitable for modelling and forecasting. To correct for non stationarity in profitability, the first difference of the variables [D (var)] was used in the regression model.

Table 4.4: Panel Unit Root Test Statistics

Series	(χ^2)	P-value	Conclusion
Bank Size	-8.37156	0.0000	Do not Reject H_0
Profitability	0.73284	0.7682	Reject H_0
Leverage	-3.18962	0.0007	Do not Reject H_0
Geographical Diversification	-2.35513	0.0093	Do not Reject H_0
Asset Base Diversification	-5.73140	0.0000	Do not Reject H_0
Financial Distress	-2.84152	0.0022	Do not Reject H_0

Null Hypothesis: Unit root (common unit root process)

Levin, Lin & Chut*

Source: Research data (2017)

4.3 Correlation Analysis

A bivariate correlation is a measure of strength or degree of linear association between variables. The correlation between the independent variables and dependent variable is a precursor for regression analysis. In order to assess the effect of bank diversification on financial distress, Pearson's correlation analysis was performed. Correlation coefficients are used to determine the magnitude and direction of associations. Their values range from -1 (perfect negative correlation) to +1 (perfect positive correlation). The nearer the values are to these two values, the stronger the relationship. The more the coefficients are close to 0, the less the relationship; at 0, there is no relationship (Danthine *et al.*, 2005). The correlation among the variables in this study was done and presented in table 4.6 below.

Profitability had a positive and significant correlation with financial distress ($p < 0.05$). This implies that the more profits a commercial bank reports the more the bank is likely to be in financial distress. The probable

reasoning behind this argument is that the firms are posting profits but in real sense are financially distressed.

Assets base diversification had a positive and significant relationship with financial distress ($p < 0.05$), implying that an increment of bank assets portfolio increase the chances of the bank being financially distressed. This argument is based on the reasoning that as the firm continue to diversify in assets it is likely to end up in financial distress.

Leverage had a negative and significant correlation with financial distress ($p < 0.05$). This implies that the more debt a commercial bank uses in its financing activities the less the bank is likely to be financially distressed. Profitability was also found to be positively and significantly correlated with firm size ($p < 0.05$). Implying that as the firm size increase the profitability situation of the firm also increases that is to say large banks make more profits compared to small banks. Bank size was found to be positively and significantly correlated with asset diversification ($p < 0.05$). This means that firms whose size is large are likely to diversify more compared to small banks. It was established that bank size is positively and significantly correlated with geographical diversification ($p < 0.05$). It therefore implies that large firms are opening more branches compared to smaller banks. Reasonably, because large banks have more financial muscle for establishing and maintaining branches in diverse geographical areas.

Table 4.5 Pearson Correlation Coefficients

	Financial Distress	Bank Size	Profitability	Asset Base	Geographical	Leverage
Financial Distress	1					
Bank Size	.002	1				
Profitability	.305**	.263**	1			
Asset Diversification	.299**	.278**	.211*	1		
Geographical Diversification	.080	.354**	.401**	.510**	1	
Leverage	-.438**	.192	-.003	-.250*	.030	1

4.5 Regression Results

Regression analysis was done to test the dependence of Banks' financial distress on control variables and independent variables. Hierarchical regression method was used which involved entering two blocks of variables and observing their results. Random effect regression models were run for the all the models as presented below.

4.5.1 Model Specification Tests

In this study the random effects model was used in constructing the panel regression models. The decision for using random effects models in this study was based on the Hausman test (Wooldridge, 2002; Greene, 2003). According to Gujarati (2004) Hausman test should be used to determine between random and fixed effects, hence it was used to decide whether fixed or random effects regression models were appropriate for the study. According to Baum (2001), the Hausman test tests the null hypothesis that the slope coefficients of the models being compared do not differ significantly with the fixed effects being used when there are differences in the slope coefficients. Accordingly, the null hypothesis is rejected when $Prob. > \chi^2$ is less than

the critical p-value and in such a case the fixed effects regression is appropriate. Hausman test results of these two models are presented along with panel regression results are shown in Table 4.7. All the models were run on random effect since the significance levels were greater than the critical value of 0.05.

Table 4.6: Model Specification Test Statistics for Z score

Model	χ^2 Statistic	χ^2 d.f.	Prob.	Appropriate model
Model 1	1.155694	3	0.7636	Random Effects
Model 2	3.776668	7	0.8767	Random Effects

Source: Research data (2017)

4.6 Hypothesis Testing

To test the various hypotheses the various predictor variables were regressed against the response variable. Random effects regression models were run for all the models and the results presented. The F-statistics was used to test the regression models (Blackwell III, 2005) or simply the goodness of fit (Hoe 2008). The test was used to test significance of then regression parameters at five percent significance level using the following criteria; $H_0: B_j=0$ and $H_a: B_j \neq 0$, i th H_0 being rejected if $B_j \neq 0$; p -value ≤ 0.05).

Hypothesis H_{01} stated that there is no significant relationship between geographical diversification and financial distress of commercial banks listed in the NSE. The results found a positive and significant relationship between geographical diversification and financial distress ($\beta=0.80$; $p>0.001$). The results rejected the hypothesis H_{01} suggesting that geographical diversification had significant relationship with financial distress. Possible explanation to this could be that banks which diversify in terms of geographical end up diversifying resources to the extent of becoming financially distressed.

Hypothesis H_{03} postulated that there is no significant relationship between product diversification and financial distress of commercial banks listed in the NSE. The results showed positive but insignificant relationship between product diversification and financial distress ($\beta =0.033$; $p>0.001$). The results therefore rejected H_{03} suggesting that, banks with diversified products do not end up in financial distress. The possible explanation could be that the various products end up bringing more income to the banks hence offsetting the costs. Thus the firms end up in financial health

Hypothesis H_{02} stated that there is no significant relationship between assets base diversification and financial distress of commercial banks listed in the NSE. The results showed a positive and significant relationship between assets base diversification and financial distress ($\beta=0.065$; $p<0.05$). The results rejected H_{04} suggesting that, there is a significant relationship between assets base diversification and financial distress. The possible explanation could be the an increment in the cost of acquisition of more bank assets rendering them financially distressed due to inflationary impact and harsh economic moments. This could also be explained that as the bank diversifies its assets it end up going into financial distress.

4.7 Discussions of the Regression Results

The findings showed a positive and significant relationship between geographical diversification and financial distress. This findings implies that when a bank establishes branches far from the headquarters it enhances financial distress. This could be explained by the reasoning that when banks have distance branches efficiency declines.

This finding is in agreement with Goetz et al. (2012) which examined the impact of the geographic diversification of bank holding company assets across the United States on their market valuations. The results are also in agreement with Hirtle (2007) shows how the increase in size of the branch network engenders a downturn in bank performance in the US.

However, this finding is in contrast with Deng and Elyasiani (2008) who established that geographic diversification is associated with BHC value enhancement and risk reduction publicly traded US BHCs over the 1994–2005 period. The reasoning behind this is that when controlling for the distance between the headquarters and branches an increased distance between a headquarters and its branches is associated with firm value reduction and risk increase.

The results of this research showed that there is a positive and significant relationship between assets base diversification and financial distress. This result implies that when the bank increases its asset base financial distress of the banks is enhanced. This finding is in contrast to Dimitriou (2012) who found a positive and significant relationship between asset diversification and performance of commercial banks.

It was established that the control variable profitability was positively and significantly related with financial distress. This implies that profitability affects financial distress of banks. The results showed that banks posting profits are likely to end up in financial distress. The results also showed that financial leverage was negatively related with financial distress. This means that firms with financial leverage in their capital structure are likely to be financially sound. Interestingly, this finding means that those firms with leverage are financially stable.

5.0 Conclusions And Recommendations

5.1 Summary of Key Findings

The study probed the effect of bank diversification on the financial distress of commercial banks listed in NSE. Hypotheses were examined by regressing financial distress against geographical diversification, and assets base diversification. Below are the key findings of the study based on the objectives.

The results found a positive and significant relationship between geographical diversification and financial distress. The results rejected the hypothesis H_{01} suggesting that geographical diversification had a significant relationship with financial distress. The results also showed a positive and significant relationship between assets base diversification and financial distress. The results rejected H_{04} suggesting that, there is a significant relationship between assets base diversification and financial distress.

5.2 Conclusions of the Study

The basic premise of this study was founded on the prescriptions of Market power, Resource dependency and Resource based view theories. Market power theory affirms that a firm immensely gains a competitive advantage in the market through dominance and efficient positioning through diversification strategies. Resource dependency theory is of the view that having a board of directors whom support diversification strategies of firms will enable the allocation of resources in order to meet the managerial objectives of diversification to enhance competitiveness of their organizations. While Resource based view theory suggests that sustainable competitive advantage often originates inside the firm and that strategy at the firm level is therefore driven by firm specific resources and capabilities to undertake diversification. The results supported Market power theory that a well-established bank that uses high leverage to increase its share in the market is not likely to be financially distressed. This finding is quite in line with the view that market dominance of a firm does not necessarily mean geographical dominance due to established levels of consumer sovereignty.

5.3 Recommendations of the Study

Based on the findings, this study provides valuable recommendations to both theory and practice. The researcher believes that these recommendations will create vital insights to both scholars and practitioners in finance and corporate governance.

5.3.1 Theoretical Recommendations

Foremost, the study found out that Products and Assets base diversification positively impact financial distress. Therefore, the study also did not uphold the prescriptions of Resource based view theory that the effectiveness of a firm depends on the utilization and exploitation of existing resources. Hence, this study recommends that banks should be categorical and more prudent in increasing the range of non-intermediation products and take thorough feasibility studies in increasing their assets base to avoid dire consequences of financial distress.

Secondly, the study found out that geographical and income diversification do not significantly affect the financial distress of commercial banks listed in the NSE. This is in line with the view of Market power theory that market dominance does not necessarily mean geographical dominance of a firm due to established loyal and brand clientele. High levels of income and more branches of banks do not address the

financial distress challenge faced by the commercial banks in Kenya. More theoretical evidence ought to be gathered to address as to what extent geographical and income levels of diversification could be able to address financial distress of listed commercial banks in Kenya.

5.3.2 Policy Recommendations

As the corporate governance reformations are vigorously advocated in Kenya, this study provides insights into the effect of bank diversification on financial healthiness of listed commercial banks in Kenya. As such the findings of this study provide valuable insights to authorities, managers and stakeholders on bank diversification. Specifically these findings can be beneficial to authorities that formulate the policies, mainly the Central bank of Kenya. They could encourage banks to pursue diversification strategies at moderate levels as they do not necessarily improve the financial healthiness of the banks. Since the findings of this study offer support to Market power theory, bank managers and boards of directors should pursue diversification strategies with caution in order to avoid putting their banks to financial distress exposures.

5.3.3 Recommendations for Further Research

The following suggestions were made for further research based on the findings of this study;

Given the apparent consequences of financial distress, this study would welcome further research addressing factors that may predispose a firm to financial distress, impede the implementation of effective counter strategies during the decline period, and permit the firm to survive.

Secondly the study do recommend more board composition variables to be included in future research like ownership, ethnicity, gender, age and level of education with financial distress. Thirdly, the study made use of Altman Z-score which majorly focus financial ratios to measure financial distress future studies should make use of other measures like ZETA scores to measure financial distress in the listed commercial banks in NSE.

Fourthly, the study only centered on the effects of geographical, income, product and assets base diversification on the financial distress of commercial banks listed in the NSE. Future research should also incorporate other forms of diversification like credit, international and deposits diversification.

Lastly, since this study focused on listed commercial banks in NSE, future studies may focus on unlisted banks and other financial lines of businesses in Kenya.

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