

Effect of Trading Activity on Financial Leverage and Financial Distress Likelihood of Listed Firms in Kenya

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Abstract: Over the years, numerous cases of financial distress have been witnessed among listed firms in Nairobi Securities Exchange. Trading activity affects corporate financial decisions by reducing cost of capital and facilitating access to more funds on the capital markets. Consequently, trading activity enhances firm performance due to the feedback effect. In view of the aforementioned, the primary aim of this study is to determine the role of trading activity on the relationship between financial leverage and the likelihood of financial distress among listed firms in Kenya. The analysis is based on a sample of 40 listed firms on the Nairobi Securities Exchange-Kenya for the period 2006- 2015. The study found a positive and significant effect of financial leverage ($\beta=0.824$; $p<0.05$) on the likelihood of financial distress. Subsequently, when trading activity was introduced, the findings indicated that trading activity moderated the relationship between financial leverage and financial distress ($\beta=-1.498$; $p;< 0.05$), hence presence of moderating effects of trading activity on the relationship between financial leverage and financial distress. The findings that trading activity accounted for a significant variance on relationship between financial leverage and the likelihood of financial distress presents major contributions of this study as they extend feedback theories. This is by centering the influence of trading activity on the empirical testing of feedback theory. This study recommends that firms should have reversion of excess debt to an optimum and initiate trading activity enhancing policies so as to reduce the likelihood of financial distress. Further research should focus on using different samples like private non-listed firms which may provide additional insights and add to the existing understanding of the issues explored in this study.

Keywords: Financial Distress, Trading Activity, Financial Leverage, Feedback.

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I. Introduction

Research on financial distress of firms has received an increasing attention in the recent past (Liao & Mehdian, 2016, Mselmi *et al.*, 2017). This upsurge in research attention could be attributed to the increase in the number of companies that suffer from financial distress over the years and the need of firms to understanding financial dimensions that are revealed in moments of crisis (Al-khatib & Al-Horani, 2012; Tinoco & Wilson, 2013; Shahwan, 2015). In Kenya, listed firms continue to experience financial distress witnessed by the increase in delisting of companies and the placement of some firms under statutory management. Several firms have been delisted from the stock market which include; Mumias Sugar Company, Eveready, Lonrho East Africa, Pearl Dry Cleaners, East African Packaging, Uchumi Supermarkets, Kenya Corporative Creameries and CMC Kenya Ltd., among others (Gathecha, 2016).

A number of reasons have been advanced by different studies on why research on the likelihood financial distress is important. Several studies find that analysis of financial distress likelihood will provide timely information on the default risk of corporates to lenders and other stakeholders in the corporate sector along with regulators (Pindado *et al.*, 2008; Tinoco & Wilson, 2013). Figini *et al.*, (2018) further indicates that timely and accurate assessment of default risk can help avoid the potential direct as well as indirect costs of financial distress, therefore the significance of this study. These studies have argued that the analysis of financial distress likelihood requires an evaluation of the company's capacity to satisfy its financial obligations as and well they fall due (Grice and Ingram, 2001).

Several studies examine the relationship between financial leverage and financial distress likelihood (Such as, Fitzpatrick & Ogden, 2011; Kim & Partington, 2014) and conformity to financial leverage and financial distress (Koske & Yegon, 2017). Relatively little effort has been made to empirically investigate the role of trading activity on the relationship between financial leverage and financial distress. This study extends this literature by examining if the relationship between financial leverage and financial distress likelihood is moderated by trading activity. According to Ali *et al.* (2018), trading activity should have an effect on the financial distress likelihood of a firm by reducing the dependence of a firm on debt financing. Consistent with feedback theory, shares are the currency which commands both cash flow and control rights of firms and the

tradability of this currency plays a central role in the governance, valuation, and performance of firms (Fang *et al.*, 2009). According to Amihud and Mendelson (2012) the liquidity of the company's own securities is another important factor affecting a company's value. The liquidity of a company's stocks and bonds can reduce its cost of capital and increase its market value (Cheung *et al.*, 2015; Loukil, 2015). These are noted as a reflection for further research and points to the need for investigation on the possibility that trading activity can be a moderating variable on the relationship between financial leverage and financial distress.

This study will also contribute to the financial distress likelihood literature in terms of methodology. Extant literature is limited to the period prior to the global financial crisis, therefore, the findings might not be directly applicable to the post global financial crisis conditions. Therefore, this study will extend the default risk research to the post global financial crisis period, as well as, extend methodology to both cross-sectional and time-series dimensions in the Kenyan context.

II. Kenyan Context

This study will focus on examining the moderating effect of trading activity on the relationship between financial leverage and financial distress likelihood among listed firms in Nairobi Securities Exchange, Kenya. The Nairobi Securities Exchange(NSE) was formed in 1954 as a voluntary organization under the Societies Act in the name Nairobi Stock Exchange and was charged with the responsibility of developing the securities market and regulating trading activities. The NSE is regulated by the Capital Markets Authority whose function is overseeing the affairs of listed companies (NSE, 2015).

Firms listed in Nairobi Securities Exchange are expected to be financially stable in order to build investors' confidence and contribute to economic growth (Gatheca, 2016). The Nairobi Securities Exchange has the mandate to develop policies and guidelines so as to ensure efficient market operations. The companies listed are expected to be financially sound although this has not been the case as some of them default their financial obligation leading to their subsequent delisting (Kipruto, 2013). Kenyan listed firms have been affected by defaulted financial obligations leading to delisting and or closure (Maina, 2012). A series of defaults by listed firms in Nairobi Securities Exchange and inconclusive findings in literature make Kenya an interesting case in which to investigate the role of trading activity on the relationship between financial leverage and the likelihood of financial distress.

III. Theoretical Framework

This study explores the moderating role of trading activity on the relationship between financial leverage and financial distress by drawing on feedback theory. The feedback theory was first formulated by Subrahmanyam and Titman (2001) in their seminal paper examining the feedback from stock prices to cash flows. The feedback theory hypothesizes that, a firm's stock price affects how the firm is perceived by its stakeholders. In turn, these perceptions ultimately affect the firm's cash flow as they influence the stakeholder's investment decisions (Subrahmanyam & Titman, 2001).

Khanna and Sonti (2004) and Fang *et al.*, (2009) assert that liquid market stimulates trading of informed investors, which makes prices more informative and facilitates decision making within the firm, thereby improving firm performance. Cheung *et al* (2015) extended this argument by arguing that trading activity can enhance the informativeness of stock prices and consequently, managers learn from informative stock prices and make value-enhancing corporate decisions. Hirshleifer *et al.*, (2006) argue that feedback from stock prices to future cash flows can arise for a variety of reasons. For example, a higher stock price may provide a cheap source of finance for making investments and may help firms attract customers and employees. This is because trading activity affects market prices and consequently provides feedback from security prices to cash flows. In discussing the role of feedback in a model with irrational traders, Hirshleifer *et al.*, (2006) show that such traders may survive in financial markets when their trades affect firm value. Loukil (2015) explores how feedback prices influence firms' investment on asset liquidity through trading activity. The empirical results show that high trading activity encourages firms to invest more thus demonstrate the link between stock markets and the current business activity of the firm.

Therefore, trading activity strengthens feedback prices effects on managerial decisions and investment choices. Consequently, managers learn from informative stock prices and make value-enhancing corporate decisions. Moreover, a higher stock price may help firms attract customers and thus may provide funds for financing investment activities. Thus, it is important to review the moderating role of trading activity on the relationship between financial leverage and financial distress.

2.5 The Relationship between Financial Leverage and Financial Distress

A firm is identified as financially distressed if it defaults its debt payments obligations. This indicates that debt contracts strain financial resources and thus lead to financial distress in firms (Koh *et al.*, 2015). Scholars such as Chancharat *et al.*, (2010) find that differences exist in the factors which determine whether companies enter different states of financial distress. Specifically, distressed companies have a higher leverage

compared to active companies. Of the significant variables, a higher level of financial leverage increases financial distress (Kim and Partington, 2014).

Early studies interrogating the impact of debt financing on firm financial health found varied results. In a study aimed at investigating the role of debt financing on financial distress of firms listed in Palestine stocks exchange, Abu-Rub (2012) used a sample of 28 firms over a five-year period. The results showed that debt financing had a positive and significant effect on return on equity. The research result was in line with that by Perinpanathan (2014) whose study concluded that debt financing had a negative but insignificant impact on the firm's profitability. These findings were however at variance with those by Chancharat *et al.*, (2007) who found that financially distressed companies have higher leverage compared to active companies. Caskey *et al.*, (2012) generally found that leverage positively predicts the probability of distress as firms with high leverage are more exposed to a systematic distress factor.

In Kenya, Muigai (2016) found that financial leverage had a negative and significant effect on financial distress of listed non-financial corporations. This finding is in line with the findings by Mwangi *et al.* (2014) who found a statistically significant negative relationship between financial leverage and profitability. This finding is in agreement with those by Zeitun and Tian (2014) and Maina and Ishmail (2014) who showed a negative and significant relationship between debt and profitability. The findings however differ with that by Kodongo *et al.* (2014) found that financial leverage had no effect on the Tobin's Q. This finding differed with that by Zeitun and Tian (2014) whose similar study showed a significant negative relationship between financial leverage and Tobin's. Baimwera and Muriuki (2014) found liquidity and leverage to have no significant influence in determining corporate financial distress. This result was however inconsistent with similar empirical studies carried out by Ghosh *et al.*, (2000) which postulated a positive relationship between financial leverage and financial distress likelihood of the firm.

Di Patti *et al.*, (2015) found that, *ceteris paribus*, a 10 % point increase in leverage is associated with almost a 1 % point higher probability of default. Tsuruta (2016) found that leverage has a negative effect on average firm performance which shows that highly leveraged firms have a greater probability of financial distress. Therefore, an evaluation of a firm's financial leverage is important in the establishment of the likelihood of financial distress.

The Moderating Role of Trading Activity

Past empirical studies have overlooked the potential role of trading activity as a moderator on the relationship between financial leverage and the likelihood of financial distress. Trading activity is an important variable in organizational outcomes. Because stock shares represent investors' commands for a firm's cash flow and control rights, the tradability of stock shares plays an important role in the governance effectiveness, operating performance, and valuation of the firms (Wu & Liu, 2011). Loukil (2015) argues that trading activity affects corporate financial decisions by reducing cost of capital and facilitating access to more funds on the capital markets. Hence, firms with more tradeable stocks have less financial constraints and may pursue investments even if their projects are risky. An increase in trading activity may help managers to attract new funding for investment projects and support value-enhancing activities such as corporate governance and market monitoring (Cheung *et al.*, 2015).

Bharath *et al.*, (2013) study the role of trading activity in block holder's threat of exit and conclude that trading activity magnifies the effect of block ownership on firm value. Subrahmanyam and Titman (2001) argue that how the firm is perceived by its stakeholders can be influenced by a firm's stock price and trading volume. These perceptions will influence investment decisions of stakeholders, which ultimately affect the firm's cash flow (Amihud & Mendelson, 2012). Thus, trading activity can act as a catalyst to reduce financial distress. Brogaard *et al.* (2017) find two mechanisms through which trading activity reduces firm default risk; improving stock price informational efficiency and facilitating corporate governance by block holders. Fang *et al.*, (2009) find that trading activity has an effect on firm value, which is due to more informative stock prices and better managerial incentives.

Amihud and Mendelson (2012) find that increases in the trading of a company's stocks and bonds led to a reduction in the company's cost of capital and increase in its market value. Moreover, this feedback effect improves firm performance by increasing operating performance on the one hand, and relaxing financial constraints on the other. Therefore, trading activity leads to higher feedback on firms. Firms that have greater financial constraints should be more sensitive to liquidity, because trading activity enables external financing (Munoz, 2013). In light of the aforementioned studies, there is evidence of an interaction between trading activity and firms' financial resources in many ways such that trading activity could inhibit the likelihood of financial distress. Therefore, it is expected that trading activity serves as a boundary condition moderating the effect of financial leverage on financial distress.

IV. Material and Methods

The population of interest in this study includes public listed firms in Nairobi Securities Exchange, Kenya.

Selection Criteria: This study focused on individual listed firms in Nairobi Securities Exchange over the period 2006-2015. The total number of listed firms in Nairobi Securities Exchange at the end of 2015 is 62.

Inclusion Criteria: Listed firms to be included in the study were those that were trading on the Nairobi Securities Exchange during the period 2006-2015.

Exclusion Criteria: The study did not consider firms that were listed after 2006 and those that were suspended or delisted during the period 2006-2015.

Sample of Study: Therefore, 40 firms were studied as the other firms commenced operations during the period of study or were delisted at one point during the period of study. This translated to ten firm years and a total of 400 firm-year observations. Appendix 5 provides a list of the firms studied.

Time period: The study period is from 2006 to 2015. The literature puts forward the argument that studying financial distress requires long data series. In addition, the period must also be characterized by different macroeconomic conditions and industry shocks (Boubaker *et al.*, 2016). Consistent with this view, the study period contains long periods and industry shocks which is mainly characterized by the global financial crisis.

This study utilized secondary data which was extracted from a number of secondary sources which include the companies' year-end financial reports in Compustat-Capital IQ and annual reports lodged in the Capital Markets Authority (CMA) library. The main data source used to obtain firms' financial information is the Global Compustat database.

The data was panel in nature as it was collected for the firms repeatedly for ten years. Shumway (2001) advocates that single period models are inconsistent due to the fact that a firm's risk for distress changes over time and its health is a function of its latest financial data. Collection of data involved visiting the Global Compustat website of the global listed firms and the information for the specific study components for Kenyan listed firms was extracted.

Measurement of Variables

The study adopted financial distress likelihood as the dependent variable. Financial leverage constituted the independent variable for the study while trading activity was looked into as the moderating variable. In addition, the study controlled for firm size, firm age and industry. This section provides details of how each of the study variables were measured and operationalized.

Independent Variable

Financial leverage was measured by total liabilities divided by total assets for firm *i* in year *t*. Financial leverage has been associated to the extent of liabilities as compared to total assets in a firm (Das *et al.*, 2009; Munoz, 2013; Kim & Partington, 2014). Other studies have used a similar approach to measure financial leverage (Munoz, 2013; Kim & Partington, 2014).

Dependent Variable

To assess the impact of financial leverage on the likelihood of financial distress, the Altman Z-score is used as a proxy of the converse for the likelihood of financial distress. Financial distress likelihood was measured using the Z-score for emerging markets for firm *i* in year *t*, developed and validated by Altman (1968) and reviewed by Altman and Hotchkiss (2006). The original model has been enhanced to make it applicable for private companies, non-manufacturers and emerging markets (Altman & Hotchkiss, 2006). The Z-score is examined in order to make assessment about firms' likelihood of financial distress (Altman, 2004; Altman & Hotchkiss, 2006).

The study considers the financial distress predictor models to be relevant for the study. This is because the target population consists of entities that are still in operation and are therefore considered to be in one level of financial distress or another as encapsulated under the multi-staged hypothesis of firm failure. This choice is based on the finding that the model is able to provide superior accuracy in examining the likelihood of financial distress (Zouari & Abid, 2000). Further, it has been empirically found to be effective in predicting financial distress among listed firms in Kenya (Sitati & Odipo, 2011). The Z-score model is of the form:

$$Z = 6.56 (X1) + 3.26 (X2) + 6.72 (X3) + 1.05 (X4)$$

Moderating Variable

Trading activity was measured by number of shares traded in the whole year divided by number of shares outstanding at the end of the year (Amihud & Mendelson, 2012; Wu & Liu, 2011; Munoz, 2013) for firm *i* in year *t*.

Control Variables

Possible confounding factors that may have an effect on financial distress were controlled. **Firm size** represents how large or small the studied firm is (Babalola, 2013). Firm size was measured by taking the natural log of total value of firm assets (Agarwal & Taffler, 2008; Brad *et al.*, 2015; Doumpos *et al.*, 2015) for firm *i* in year *t*.

Industry differences refer to attributes common to an industry (Mauri & Michael, 1998; Lieu & Ching-Wen, 2006; Short *et al.*, 2007). Industry was measured as a dummy variable by assigning "1" to firms in the

manufacturing sector and “0” to the rest. This is consistent with the approach used by Barroso *et al.*, (2011) and Plambeck and Weber (2010).

Firm age is defined and measured as the natural log of the number of years since the firm was first listed (Shumway, 2001; Hovakimian *et al.*, 2011) for firm *i* in year *t*. Shumway (2001) argues that the most meaningful measure of firm age is the number of years since listing. Firm age is therefore the number of years elapsed since the year of the company’s listing plus one. Consistent with studies by Shumway (2001) and Hovakimian *et al.*, 2011 one year is added to avoid ages of zero for firm *i* in year *t*.

Table 1 Operationalization of the Research Variables

Variable Type	Variable	Measurement	References
Dependent Variable	Financial distress likelihood	Altman’s Z-score model; $Z = 6.56 (X1) + 3.26 (X2) + 6.72 (X3) + 1.05 (X4)$	Altman and Hotchkiss (2006).
Independent Variable	Financial leverage	Total liabilities divided by total assets for firm <i>i</i> in year <i>t</i> .	Munoz (2013), Kim and Partington (2014).
Moderating Variable	Trading activity	Number of shares traded in the whole year divided by number of shares outstanding at the end of the year for firm <i>i</i> in year <i>t</i> .	Amihud and Mendelson (2012), Wu and Liu, (2011), Munoz (2013).

Source; Researcher, 2016

Model Specification

The study employed panel regression models to analyze secondary data as the secondary data collected exhibited both time series and cross-sectional dimensions. Since the study sought to determine both the main effects of financial leverage on the likelihood of financial distress as well as the moderating effects of trading activity on this relationship, four panel regression equations were specified. The study used hierarchical regression models to test the direct effects of financial leverage on the likelihood of financial distress and the moderating effect of trading activity on this relationship. The investigated panel regression models are as follows:

$$FD_{it} = \beta_{0it} + \beta_{1it}Size_{it} + \beta_{2it}AGE_{it} + \beta_{3it}IND_{it} + \epsilon_{it} \dots \dots \dots Model 1$$

$$FD_{it} = \beta_{0it} + \beta_{1it}Size_{it} + \beta_{2it}AGE_{it} + \beta_{3it}IND_{it} + \beta_{4it}FL + \epsilon_{it} \dots \dots \dots Model 2$$

$$FD_{it} = \beta_{0it} + \beta_{1it}Size_{it} + \beta_{2it}AGE_{it} + \beta_{3it}IND_{it} + \beta_{4it}FL + \beta_{5it}TA_{it} + \epsilon_{it} \dots \dots \dots Model 3$$

$$FD_{it} = \beta_{0it} + \beta_{1it}Size_{it} + \beta_{2it}AGE_{it} + \beta_{3it}IND_{it} + \beta_{4it}FL_{it} + \beta_{5it}PE_{it} + \beta_{6it}TA_{it} + \beta_{7it}FL_{it} * TAL_{it} + \epsilon_{it} \dots \dots \dots Model 4$$

Where; FD_{it} ; Financial distress likelihood measured by Altman’s Z-score for firm *i* in year *t*, FL_{it} ; Financial leverage, measured by total liabilities divided by total assets for firm *i* in year *t*, TA_{it} ; Trading Activity, measured by the number of shares traded in the whole year divided by number of shares outstanding at the end of the year for firm *i* in year *t*, $Size_{it}$; Firm size measured by natural log of total value of firm assets for firm *i* in year *t*, AGE_{it} ; Age of the firm, measured by the natural log of the number of years since the firm first appeared in NSE for firm *i* in year *t*. IND_{it} ; Industry dummy, whereby each listed company for the study was classified into a specific industry as manufacturing or non-manufacturing. β_0 ; Constant, $\beta_1 - \beta_7$; Coefficients of Regression, ϵ_{it} ; Error terms, i ; Firm 1, ..., 40, and *t*; Time in years from 2006 to 2015.

Findings

The econometrics techniques require transforming the values of real variables into their logarithmic values (Harlow, 2005). Consequently, some of the real variables were transformed into logarithm form as transformation may reduce the problem of heteroscedasticity. This is because transformation compresses the scale in which the variables are measured, therefore reducing a tenfold difference between two values to a two-fold difference (Harlow, 2005). Thus, all real variables except the dummy variable for industry differences were transformed into logarithmic form for the purpose of this study. The mean, minimum, maximum and standard deviations of the variables of this study are presented in Table 4.1 below.

Table 2: Distribution of the Mean and Standard Deviation of the Variables

	N	Mean	Std. Deviation	Min	Max
Financial Distress Likelihood	400	3.158	1.534	-1.955	5.560
Trading Activity	400	0.097	0.064	0.002	0.371
Financial Leverage	400	5.103	0.848	4.713	6.052

Source: Research Data (2016)

Table 2 show the summary statistics for the secondary data observations of the original sample consisting of 40 firms over the period of analysis (2006-2015). The results indicate that during the analysis period, listed firms in Nairobi Securities Exchange had a mean of 5.103 and a standard deviation of 0.848 on financial leverage. This indicates that firms utilize borrowed money and this trend can be attributed to the fact that commercial bank loan is easier to arrange and acquire (Kodongo *et al.*, 2014). The corresponding high standard deviation of 0.848 supported by the wide range between minimum and maximum observations (4.713 – 6.052) of utilization of financial leverage show significant dispersion on leverage levels among listed firms. Similarly, during the analysis period, listed firms had a mean financial distress likelihood index of 3.158. This depicts a fairly non-distressed status for the firms; signifying that majority of the firms were financially sound in relation to the Altman’s distress zones ($Z < 1.10$, distress zone; $1.10 < Z < 2.60$, grey zone; $Z > 2.60$, safe zone). The corresponding standard deviation of 1.534 show a moderate variability of distress levels among the firms. This is further evidenced by the extreme observations of a minimum of -1.955 and maximum of 5.560. The result implies that while some firms may be in severe distress, others are quite financially safe.

The results output displayed in Table 4.1 denote that the average proportion of the firms’ trading activity is 0.097 with a standard deviation of 0.064. The observation signifies that during the period of analysis, listed firms engage trading activity. The results further show a low dispersion on trading activity levels as signified by the standard deviation (0.064).

Correlation Analysis

The Pearson correlations results on financial leverage was found to have a positive and significant correlation with financial distress likelihood ($p < 0.01$). This indicates that as financial leverage increases it raises the chances that the firm will face financial distress. The possible reasoning is that an increase in financial leverage is likely to inflict more constraints on the firm’s financial resources hence it will be financially distressed.

Trading activity was found to be negatively and significantly correlated with financial distress ($p < 0.01$). This implies that when trading activity is high it reduces the chances of the firm facing financial distress. The reason behind this is that shareholders’ perceptions are influenced by trading activity. These perceptions will hence influence investment decisions of stakeholders, which ultimately affect the firm's cash flow. Thus, firms with more liquid stocks are likely to have less financial constraints.

Firm size was found to be negatively and significantly correlated with financial distress ($P < 0.01$). This implies that as the size of the firm increases, financial distress is decreased. Therefore, small firms are likely to be in financial distress than large firms. The reason could be that small firms get it difficult to access funding from outside the firm since they have limited assets to form a collateral security compared to large firms. These results were in agreement with those by Babalola (2013) whose study of 80 Nigerian manufacturing listed firms in the Nigerian stocks exchange showed a positive and significant relationship between firm size and financial position. Large firms are less likely to face financial constraints because they have larger resources, have greater credibility thus can get loans and other resources to enable them survive.

Industry was found to have a negative and significant correlation with the likelihood of financial distress ($P < 0.05$). This indicates that financial distress of a firm decreases relative to the industry to which the firm belongs. The possible reason is that different industries have different policies, have different accounting conventions and face different levels of competition.

In addition, firm age was found to have a negative and significant correlation with financial distress ($P < 0.05$). This means that the age of the firm is negatively correlated with financial distress implying that as the age of the firm increases, financial distress is decreased. This indicates that older firms are less financially constrained since they have greater potential to get external financing due to accumulated collateral, have established stable links to clients and supporters thus have less financial constraints. Therefore, financial distress likelihood of firms is expected to decline with age (Farinas & Moreno, 2000).

Table 3: Pearson correlation Coefficient Results

	1	2	3	4	5	6
1.FINANCIAL DISTRESS LIKELIHOOD	1					
2.FIN LEVERAGE	.363**	1				
3.INDUSTRY	-.049	-.059	1			
4.FIRMAGE	-.096	.156**	.058	1		
5.FIRMSIZ	-.187**	-.446**	.250**	-.036	1	
6.TRADING ACTIVITY	-.467**	-.307**	-.133**	.084	-.204**	1

** Correlation is significant at 0.01 level * Correlation is significant at 0.05level; N=400

Source: Research Data, (2016)

Test Of Hypothesis

Regression analysis was conducted to test the dependence of financial distress on control variables, independent variables and the interaction terms.

Regression Results for Direct Effects

Hierarchical regression method was used which involved entering variables in blocks. In model 1 the control variables were entered which included the firm age, firm size and industry. In model 2 financial leverage was introduced. Random effects regression models were run for all the models and the results are presented in Table 4

Control Effects for the Study

Model 1 presents the results for control variables firm size, firm age and industry. The analysis results of the study revealed that 24% variation in financial distress likelihood was predicted by firm size, firm age and industry. This is based on the resultant coefficient of determination (R^2) value equivalent to 0.24. Their joint value was significant as shown by the F value of 0.048, $p < 0.05$. Furthermore, the results showed that firm size had a negative and significant effect on financial distress likelihood ($\beta = -0.064$, $p < 0.01$). The analysis results of the study showed that firm age had a negative and significant effect on financial distress likelihood ($\beta = -0.177$, $p < 0.01$). Industry was found to have a negative and significant effect on financial distress ($\beta = -0.016$, $p < 0.01$).

Direct Effects for the Study

Model 2 shows the analysis results after inclusion of the independent variables; financial leverage. Table 4.3 show that both the independent variables and control variables jointly explain up to 32 % of variations in assessing the likelihood of financial distress of listed firms in Nairobi Securities Exchange. This is based on the resultant coefficient of determination (R^2) value equivalent to 0.32. Their joint effect was significant as shown by F value of 0.045, $p < 0.01$. With an R^2 of 0.24 in model 1 and 0.32 in model 2, the analysis shows the change in R-Square statistic associated with the added variable (financial leverage) is 0.08. This increase in R^2 means that the information provided by the added independent variable increased the analysis of the likelihood of financial distress and reduced the error in financial distress likelihood by 0.003. This meant that including the independent variable improved the assessment of the likelihood financial distress.

Testing for Direct Effects for the Study

The analysis results showed that financial leverage has a positive and significant effect on financial distress of listed firms in NSE ($\beta = 0.824$; $p < 0.05$). This means that financial leverage has a significant effect on the likelihood of financial distress. This suggested that there was up to 0.824 unit increase in the likelihood of financial distress for each unit increase in financial leverage.

Regression Results for the Moderating Effects of Trading activity on the Relationship Between Financial leverage and Financial Distress

Moderation implies that causal relationship between two variables changes as a function of the moderator variable. Moderation is said to exist if the amount of variance accounted for with the interaction is significantly more than the variance without the interaction and the coefficient of the interaction term is different from zero (Hayes, 2012). As recommended by Fairchild and MacKinnon (2009), moderating effect is deemed significant if the coefficients of the moderated variables are statistically significant and the predictive power (R^2) of the moderated regression equation is higher than that of the initial model.

Trading activity which is the moderator was entered in model 3 and the results indicate that trading activity had a negative significant effect on financial distress ($\beta = -1.842$; $p < .05$). The introduction of trading activity explained an additional 9.2% above the financial leverage variables, indicating that the addition of a moderator variable did improve the assessment of financial distress. This finding revealed that there was up to a 1.842-unit decrease in the likelihood of financial distress for each unit increase in trading activity.

A comparison of panel regression results of the moderated equation against those of the model without moderation reveal that introduction of moderation resulted in improvement of the model's predictive power as evidenced by increase in the adjusted R^2 values. The moderated equation (Model 4) jointly explain up to 52.2 % of variations in predicting financial distress of listed firms in Nairobi Securities Exchange. This is based on the resultant coefficient of determination (R^2) value equivalent to 0.522. Their joint effect was significant as shown by F value of 0.024, $p < 0.01$. This increase in R^2 means that the information provided by the moderated variables improved the evaluation of financial distress likelihood. Further, the results show that the coefficients of interactive variables (product terms) in the moderated equation are all statistically significant at 5% levels. This statistical finding signify that the interaction between trading activity and financial leverage has significant moderation effect on the likelihood of financial distress of listed firms in Nairobi Securities Exchange.

Specifically, to test if trading activity moderates the relationship between financial leverage and financial distress likelihood of listed firms in Nairobi Securities Exchange the results of model 3 were noted which accounted for a variance in financial distress ($R^2 = 0.412$). The introduction of the interaction term for financial leverage resulted in significantly more variance (R^2 change = 0.011, $F = 3.879$) indicating there was significant moderation. The results of the interaction term between trading activity and financial leverage as depicted by model four showed a negative and significant relationship ($\beta = -1.498$; $p < 0.05$). This thus means that trading activity significantly moderates the relationship between financial leverage and financial distress. The results show a negative and significant effect of the interaction between trading activity and financial leverage on financial distress likelihood of listed firms. This is a significant antagonizing moderation effect

considering the main effect of financial leverage on financial distress likelihood of listed firms is positive and significant.

Probing the Nature of the Interactions

The examination of the graphical plots on the moderating effect of trading activity on the relationship between financial leverage and financial distress was antagonistic as at higher, medium and low levels of trading activity, the effect of financial leverage on financial distress was reversed as shown in Figure 4.1. It further indicates that at high levels of financial leverage, the high trading activity has a bigger moderating effect than at the low level. The slopes in the figure thus indicate that at high levels of trading activity, financial leverage was associated with less financial distress as compared to when it is with medium and low trading activity as shown in figure 4.1 below.

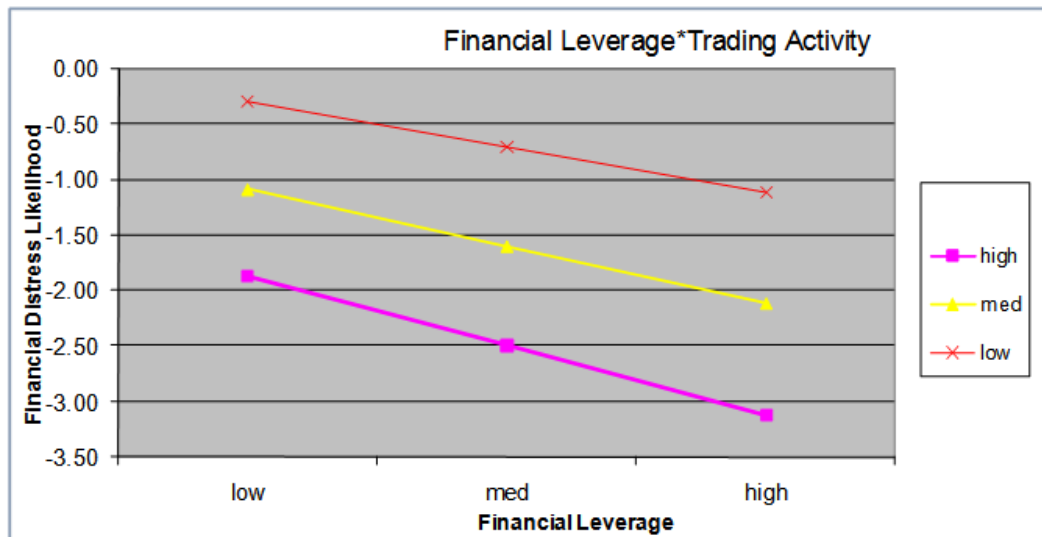


Figure 4.1: Moderation of Trading activity on the Relationship Between Financial Leverage and Financial Distress

Table 4: Regression Analysis Results

Variables	Model 1	Model 2	Model 3	Model 4
Controls				
Constant	0.422 (0.699) **	0.687 (0.810) **	. 0.431 (0.644) **	
Firm Size	-0.064 (-0.906) **	-0.066 (-0.084) **	-0.065 (-0.081) **	-
Firm Age	-0.177 (-0.175) **	-0.091(-0.067) **	-0.095 (-0.094) **	-0.100(-0.620) **
Industry	-0.016 (-0.074) **	-0.033 (-0.006) **	-0.059 (-.093) **	-0.053 (-0.032) *
Predictors				
Financial Leverage		0.824 (2.650) *	-0.181 (-0.251) *	- 0.283 (-0.376) *
Trading Activity			-1.842 (-1.741) *	-1.994 (-1.860) *
Interaction				
Financial Leverage * Trading Volume				-1.498(-1.462) *
Model summary statistics				
R Square	0.24	0.32	0.412	0.522
Adjusted R ²	0.005	0.322	0.415	0.434
R ² Change	0.24	0.08	0.092	0.11
F- Statistic	3.682	3.722	3.681	3. 879
Sig. F-Stat.	0.048	0.045	0.038	0.024

** Significant at 0.01 level * Significant at 0.05 level
Figures in parenthesis are t-statistics

Source: Research Data, (2016)

Discussion of the Research Findings

Effect of Financial Leverage on Financial Distress

The objective of the study was to establish the effect of financial leverage on financial distress among listed firms in Nairobi Securities Exchange. The results in Table 4.3 showed that financial leverage has a positive and significant effect on the likelihood of financial distress of listed firms in NSE ($\beta=0.824$; $p<0.05$). This finding indicates that increasing financial leverage in firms will lead to an increase in the likelihood of financial distress in firms.

The research findings could be attributed to the high cost of debt financing prevailing in Kenya in terms of high fixed charges (interest) applied on borrowed capital. This is further explained by the fact that majority of Kenyan firms utilize the expensive loans as their main source of capital; due to lack of alternative sources of debt capital (Kibet *et al.*, 2011). The finding is consistent with past research findings which showed positive relationship between financial leverage and financial distress. This finding is consistent with Caskey *et al.*, (2012) who found that leverage positively predicts the probability of distress as firms with high leverage are more exposed to a systematic distress factor. In addition, Graham *et al.*, (2011) finds that firms with more debt became financially distressed more frequently. The findings also support a study by Abu-Rub (2012) whose studies showed a positive relationship between financial leverage and financial distress as represented by return on equity among the Kenyan listed firms. Di Patti *et al.*, (2015) find that, ceteris paribus, a 10 % points increase in leverage is associated with almost a 1 % point higher probability of default.

The findings of this study are however contrary to the results by Muigai (2016) whose findings indicate a negative and significant effect of financial leverage on financial distress. Furthermore, the study also contradicts the results of Gupta *et al.* (2014) whose study ascribed a negative and significant association between use of debt capital and financial distress of Indian listed firms to high cost of debt capital in the Indian economy. The results also differ from those of Baimwera and Muriuki (2014) whose study concluded that there is no significant relationship between financial leverage and financial distress among the Kenyan listed firms.

Moderating Effect of Trading Activity on Financial Distress

The study investigated the interaction effect after determining the influence of the moderating variable as a direct effect. This formed the precursor to the establishment of the interaction terms in the model. This study looked at trading activity as the moderator on the relationship between financial leverage and the likelihood of financial distress of listed firms in Kenya. The results in this study showed a negative and significant effect of the effect of trading activity on financial distress ($\beta=-1.842$; $p<0.05$). The finding revealed that trading activity plays an important role in enabling firms to be financially stable and reduces the likelihood of financial distress. Cheung *et al.* (2015) stated that an increase in trading activity may help managers to attract new funding for investment projects and may support value-enhancing activities such as corporate governance and market monitoring.

The findings of the study established that the interaction term between financial leverage and trading activity was negative and significant ($\beta=-1.998$; $p<0.05$). This means that leveraged firms backed with tradeable shares will negatively impact on the likelihood of financial distress situations. It therefore implies that with trading activity, firms will continue accessing external sources of capital which will enhance the firms to make decisions which positively influence the financial outcome.

VI. Conclusions

The analysis results of the study indicated that financial leverage had a positive and significant effect on the likelihood of financial distress among listed firms in Nairobi Securities Exchange. This finding led to the conclusion that financial leverage can determine the likelihood of financial distress in listed firms in Nairobi Securities Exchange. This indicates that financial leverage invariably drives listed firms in Nairobi Securities Exchange into the likelihood of being financially distressed. Firms with higher leverage level will require a greater cash flow to pay interest and principal of their debt contracts, thereby imposing greater constraints on the firm's financial resources.

The study also concluded that trading activity significantly moderates the relationship between financial leverage and the likelihood of financial distress among listed firms in Nairobi Securities Exchange. With trading activity, firms will continue accessing external sources of capital which will enhance the firms to make decisions which positively influence the financial outcome. The finding of this study thus qualified trading activity to be treated as a moderator for testing the interaction between financial leverage and the likelihood of financial distress. This result showed that with liquid stocks there is less chances of financial distress among

firms. The study therefore concludes that the firms should aim to have liquid stock as it raises certainty among the investors, acts as a source of capital and public trading of a firm's stock can influence managerial incentives.

VII. Recommendations

The study found the relationship between financial leverage and the likelihood of financial distress to be positive and significant. This point to the fact that financially leveraged firms are more likely to be predicted as financially distressed compared to unleveraged firms. Therefore, the firms should take keen scrutiny of their financial structures. Hence, the study recommends that the managers should put structures that aid in evaluating the extent of leverage in its capital structure as financial leverage will positively influence the likelihood of financial distress.

In addition, the results indicate that trading activity significantly moderates the relationship between financial leverage and the likelihood of financial distress. This implies that the effects of financial leverage can be mitigated by firms having liquid stocks. Therefore, the study recommends that management should initiate policies that enhance trading activity in their firms. In addition, firms should hold significant amounts of tradeable securities since trading activity was found to have a negative and significant influence on the likelihood of financial distress. This recommendation is in line with feedback theory which postulates that stock liquidity sends positive signals to the potential inventors and other stakeholders who intend to have engagement with the firm. Furthermore, this study only incorporated listed firms in Nairobi Securities Exchange. Given the ostensible concerns of financial distress, the study recommends future research using different samples (such as private non-listed firms or Small Market Enterprises) which may provide additional insights and add to the existing understanding of the issues explored in this study.

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