



DETERMINANTS OF CORPORATE HEDGING PRACTICES USED BY COMPANIES LISTED IN NAIROBI SECURITY EXCHANGE

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Abstract: Hedging can reduce underinvestment costs since it reduces the probability of financial distress by shielding future stream of cash flows from the changes in the exchange rates. Variability in cash flows will result in variability in the amount of investment. A decrease in planned investment means that the firm is foregoing positive net present value projects and since it has insufficient internal funds the firm is forced to raise costly external finance. Shareholders in Kenyan firms are losing billions of shillings each year due to directors' failure to shop for appropriate hedging instruments. The widespread use of derivatives for hedging is well documented in the corporate hedging literature. Thus, why firms hedge and whether hedging creates value are important questions. However, none of these studies was conducted in Kenya on the determinants of corporate hedging practices, research gap. This study aimed at investigating on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange. The specific objectives of this study were to establish the effects of long-term debt ratio, growth option, liquidity ratio and cash flow volatility on the hedging practices used by companies listed in Nairobi Security Exchange. This study used a descriptive design. The target population of this study was therefore 300. This study used purposive sampling to select on the financial managers. The sample size of this study was therefore 60 respondents which is 20% of the target population. The study collected both primary and secondary data. Primary data was collected using questionnaires. On the other hand secondary data was collected from newspapers, published books, journals and magazines as well as other sources such as the companies' prospectus. Primary data was collected using questionnaires that were distributed to the respective respondents. Quantitative data collected was analyzed using descriptive statistics by the help of SPSS (V. 17.0) and presented through frequencies, percentages, means and standard deviations. Data was then presented in tables, figures and charts. In addition, multiple regression was used to establish the relationship between the dependent and the independent variables. This study established that there is a positive relationship between hedging practices used by companies listed in Nairobi Security Exchange and liquidity ratio, growth option and cash volatility. The study also found that long-term debt negatively influences hedging practices used by companies listed in Nairobi Security Exchange. This study established that most of the companies in Nairobi Security Exchange had experienced liquidity problems in the last 5 years. In addition, the study found that most of the companies in this study had not used hedging practices in the past. This study therefore recommends that companies listed in NSE should make use of hedging practices whenever they are facing liquidity problems.

Key words: Liquidity Ratio, Growth Option, Long-Term debt ratio, Cash flow volatility, Company, Hedging Practices

Introduction

In the presence of a convex corporate tax function the firm's expected tax liability can be reduced by hedging. The more convex the tax schedule the greater the incentive to hedge. The factors that cause convexity in the effective tax function are progressivity in the statutory tax code and tax preference items such as tax loss carry-forwards, investment tax credits and foreign tax credits (Stulz, 2007). Financial distress is another factor identified by Smith and Stulz (2007) that can justify corporate hedging. They argue that hedging can reduce the expected transaction costs of financial distress by reducing the probability of actually incurring these costs. Most studies use the leverage ratio as an indicator of the likelihood of financial distress to measure expected costs of distress. The leverage ratio, however, fails to allow for the level of cash, or negative debt, held by a firm. This is important because, *ceteris paribus*, a firm with high levels of cash holdings is less financially constrained than a firm with low levels (Trueman & Titman, 2004). Thus, besides the raw leverage ratio, we also use debt net of cash and short-term investments as a proxy for financial distress. To account for the fact that a high level of debt (gross or net) does not necessarily imply a higher probability of financial distress, we use two alternative proxy measures - the interest coverage ratio and a dummy variable indicating whether a firm has net interest payable. As mentioned in the previous footnote the tax loss dummy might be associated with financial distress rather than the corporate tax function. Higher leverage, lower interest cover, net interest payments and tax losses should reflect a higher probability of financial distress (Solomon et al., 2000).

Many Asian currency and interest rate derivatives markets are still in the very early stages of development, while others boast a relatively broad range of derivative products. We find that there exists a strong inverse relationship between market sophistication and regulatory restrictions (Bartram, 2008). The two top financial centres in the region, Hong Kong SAR and Singapore, undoubtedly have the most advanced derivatives markets with the least regulation, while at the other end of the spectrum are China and Indonesia who lag behind most of their Asian neighbors. The development of the underlying bond market is surely one of the key factors in the growth of the derivatives market. Since the financial crisis, Asian local bond markets have grown rapidly and the size of nine East Asian local bond markets was estimated to be USD 1.2trn at the end of 2002 (Glaum, 2008). In comparison with the more developed economies, however, bond markets remain small. The total East Asian bond market, in fact, amounts to only about 20% of the Japanese market. The average size of the bond market in those countries was 46% of GDP, compared to 169% in Japan and 156% in the United States, suggesting continued high growth potential in the years to come.

Shareholders in Kenyan firms are losing billions of shillings each year due to directors' failure to shop for appropriate hedging instruments. Hedging against foreign currency exposure is increasingly becoming important because of volatile exchange rates that in one swing turn profit into loss and vice versa as companies settle financing and purchase obligations incurred in various hard currencies (Mutuku, 2009). The AccessKenya Group is the latest firm to report a Sh50 million knock on its profit, which left only Sh40 million at the disposal of shareholders. Without the knock, shareholders would have earned a higher dividend and, critically, lowered the price-to earnings ratio that is used as a price guide in the share market (Mutuku, 2009).

Statement of the problem

When capital markets are perfect, hedging at the corporate level does not add to firm value and, thus, cannot be justified. The positive theory of corporate hedging developed by Smith and Stulz (2007) shows, however, that when capital markets are less than perfect, circumstances do arise where corporate hedging can add value and, thus, can be justified. The decision of whether and how to hedge then depends on firm-level attributes that determine the benefits derived from hedging that accrue to either shareholders or managers (Fok, Carroll and Chiou, 2006). Hedging against foreign currency exposure is increasingly becoming important because of volatile exchange rates that in one swing turn profit into loss and vice versa as companies settle financing and purchase obligations incurred in various hard currencies (Chalmers, 2001).

According to Bessembinder, (2006) shareholders in Kenyan firms are losing billions of shillings each year due to directors' failure to shop for appropriate hedging instruments. For instance, throughout the 1990's, Uchumi Supermarkets spearheaded the hypermarket concept in Kenya. Initial restructuring of Uchumi did not forestall the deteriorating performance of the Company and as a result, the Company ceased its operations in the year 2006. Simultaneously, the Capital Markets Authority (CMA) suspended the Company's listing on the Nairobi Stock Exchange (NSE) due to bankruptcy (NSE, 2006). Further, Uchumi Supermarket was put under receivership due to leverage (Ministry of Finance, 2012). According to Otieno (2010), Kenya Airways in the year 2009 reported an annual loss of KES5.6 billion as its fuel-hedging loss ballooned to KES 8.9 billion for the fiscal year ending March 31. This was KQ's first losing fiscal-year after thirteen years of profitability. Kenya Airways lost KES 8.9 billion equivalent to KES 8.8 per share, in the 2009 fiscal year, compared with a profit of KES 6.5 billion, or KES 9.9 per share, a year earlier.

The widespread use of derivatives for hedging is well documented in the corporate hedging literature. Thus, why firms hedge and whether hedging creates value are important questions. Several research studies have been conducted on determinants of corporate hedging practices. Allayannis and Ofek (2001) conducted a study on exchange rate exposure, hedging and the use of foreign currency derivatives; Allayannis and Weston (2001) did a study on the use of foreign currency derivatives and fair market value, Glaum, (2008) conducted a study on the determinants of selective hedging: Evidence from German non-financial corporations and Kiarie (2010) did a study on turnaround strategies adopted by Uchumi supermarket limited under receivership. However, none of these studies was conducted in Kenya on the determinants of corporate hedging practices, research gap. This study aimed at filling this research gap by investigating on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange.

The specific objectives of this study were;

- i. To establish the effects of long-term debt ratio on the hedging practices used by companies listed in Nairobi Security Exchange
- ii. To investigate the effects of growth option on the hedging practices used by companies listed in Nairobi Security Exchange
- iii. To find out the effects of liquidity ratio on the hedging practices used by companies listed in Nairobi Security Exchange
- iv. To determine the influence of cash flow volatility on the hedging practices used by companies listed in Nairobi Security Exchange

Theoretical Framework

Free cash flow theory of cash flow volatility

It was argued that firms with a positive cash flow are able to raise their capital and borrow from the capital market, while firms with a negative or insufficient cash inflow are unable to borrow and therefore facing the risk of default. According to this argument, a firm is assumed to go bankrupt (default) whenever the current year profit or cash flow is negative or less than the debt obligations or whenever the sum of its current year profit and the expected value of equity (without current income) is negative (less than zero). Following this, Wilcox (2004) used the gambler's ruin to develop his framework to predict default risk. The model assumed that the firm's financial state could be defined as its adjusted cash position or net liquidation at any time. According to the gambler's ruin model the time of bankruptcy is based on the inflows and outflows of liquid resources. Scott (2002) argued that if the current cash flows are able to predict the corporate financial position, then past and present cash flows should be able to determine and predict corporate default.

Firm future cash flows affect its ability to enter the equity market to raise capital, as these cash flows are not directly paid out in a form of dividend they are retained and could be reinvested in profitable projects (Shin & Stulz, 2000). While, shareholders allow managers to retain cash, the managers may misuse the retained cash, i.e., invest in unprofitable or negative projects. Therefore, the potential agency problems exist as a result of a conflict interest between shareholders (principals) and managers (agents). Jensen (2005) argued that increased leverage or increased dividends can help to lower the cost of asymmetric information between managers and shareholders, so the free cash flow should be distributed to shareholders as dividends in order to maximize firm value. However, increases the use of debt, moves ownership from equity to debt holders and increasing the firm's probability of default (Nguyen & Faff, 2003). A high proportion of Jordanian companies' capital structure is short-term debt, which could be affected by the banks credits facilities. Regarding the dividends, it has been documented in many studies that Jordanian companies have low dividend ratios. Nevertheless, the retained earnings or cash flows provide the internal source of finance which can be less costly compared with external sources of finance (Othman & Ameer, 2009). The tradeoff between the benefits of free cash flow's as internal finance and the cost of the free cash flow is the main focus of the free cash flow theory. Furthermore, the main Projects with a negative net present value (NPV).

Monetary theory of liquidity ratio

Monetary theory is a set of ideas about how monetary policy should be conducted within an economy. Monetary theory suggests that different monetary policies can benefit nations depending on their unique set of resources and limitations (Minton, Schrand & Walther, 2002). It is based on core ideas about how factors like the size of the money supply, price levels and benchmark interest rates affect the economy. Economists and central banking authorities are typically those most involved with creating and executing monetary policy. Cash flow ratios determine the amount of cash generated over a period of time and compare that to short-term obligations. This gives a clearer picture if the firm has a liquidity problem in connection with its short-term debt paying ability (Linsley & Shrivs, 2006). Operating cash flow is computed by dividing cash flow from operations by current liabilities. This shows the company's ability to generate the resources needed to meet current liabilities. Firms with less current assets will

having problem in continuing operations while if the current assets is too much, it shows the return on investment for the company is not in perfect condition.

This concept has a relation with monetary theory because transaction and provision is a main reason in managing cash. In addition, this reason also has an assumption which all the concept of treasury management is in the good judgment of their terms. Cash conversion cycle shows the relation between liquidity and profitability (Lien & Yang, 2008). It is more important to measure profitability compared to if the company is using current ratio. The higher the ratio the higher the comfort level. All of the cash flow ratios are not uniform but vary by industry characteristics. The analyst would then adjust his assumptions accordingly to assess the liquidity of a firm.

Morris and Shin (2010) conceptually defines the liquidity ratio as “realizable cash on the balance sheet to short term liabilities.” In turn, “realizable cash” is defined as liquid assets plus other assets to which a haircut has been applied. Ratio analysis is one of the conventional way that use financial statements to evaluate the company and create standards that have simply interpreted financial sense (Kuhn, 2007). A sudden stop in an organization is generally defined as a sudden slowdown in emerging market capital (cash) inflows, with an associated shift from large current account deficits into smaller deficits or small surpluses. Sudden stops are “dangerous and they may result in bankruptcies, destruction of human capital and local credit channels.

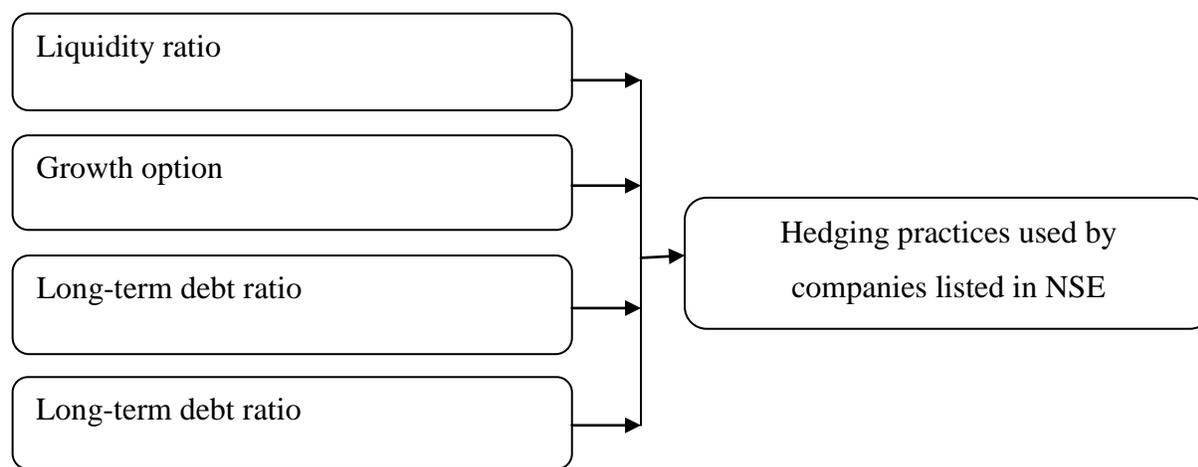
Modigliani-Miller of debt ratio

Modigliani-Miller theory claims that in a perfect market the capital structure does not affect the value of a firm. The financial leverage theory demonstrates that the problem is dichotomous because earnings as well as risk increase with increasing debt ratio. While earnings are something positive risk is regarded as a negative consequence. Or we want to maximize profit and minimize risk. M & M's propositions depend on perfect capital markets, but borrowing is costly and inconvenient for many individuals. The most serious capital market imperfections are often those created by the government like taxes (Trueman & Titman, 2004).

US tax system clearly favors debt over equity financing. But if the debt ratio grows too high the financial distress costs also increase. Therefore another theory, the trade off theory of capital structure, states that after a certain point the costs of capital increase more than can be earned by the borrowing. That is why an optimal debt ratio can be demonstrated in principle (Stulz, 2009). But the theory is not capable of calculating the magnitude of the optimal debt ratio, because financial distress covers several intangible items. Moreover the trade off theory recognizes that target debt ratios may vary from firm to firm. The pecking order theory, which is widely used, and the most cited theory today is based on asymmetric information (Bessembinder, 2006). The theory claims that because of asymmetric information issuing equity capital will undermine the existing value of the company. The theory cannot be used directly on firms because it deals with stock companies. But one important issue from the theory can be used however.

Conceptual Framework

This study sought to investigate on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange. The independent variable in this study were liquidity ratio, growth option, long term debt ratio and cash flow volatility while the dependent variable was hedging practices used by companies listed in Nairobi Security Exchange



Independent variable

Dependent Variable

Figure 1: Conceptual Framework

Empirical Review

Derivatives are an integral part of firms' risk management policy. Market risk is defined as the risk of loss arising from the adverse changes in the market rates and prices such as the interest rates, currency exchange rates, commodity prices, or equity prices (Smith and Stulz, 2007) propose that for value maximizing firms hedging is part of overall corporate financing policy. They suggest that hedging can affect firm value, through changes in tax liabilities, changes in stakeholder contracting costs, or interdependencies between the choice of financial policy and future real investment decisions (Smith and Stulz, 2007). This implies that hedging can increase a firm's value by simultaneously reducing external claims such as taxes paid to government; bankruptcy costs (both direct and indirect); and/or agency costs to align managerial interests with the interests of capital suppliers. Hedging can reduce underinvestment costs since it reduces the probability of financial distress by shielding future stream of cash flows from the changes in the exchange rates.

According to Froot, Scharfstein, and Stein (2008) hedging ensure that a firm has sufficient internal funds which would enable it to avoid unnecessary fluctuations in either investment spending or external financing and so increases firm value. Froot et al. (2008) argue that variability in cash flows will result in variability in the amount of investment. A decrease in planned investment means that the firm is foregoing positive net present value projects and since it has insufficient internal funds the firm is forced to raise costly external finance. In both Bessembinder (2006) and Froot et al. (2008) analysis the costs of underinvestment will be greater for those firms with more growth options.

Alternatively, firm could lower the likelihood of financial distress by possessing more liquid assets ensuring that funds will be available to pay debt claims. Also firms with higher levels of liquidity will have less need to access costly external financing to fund their investment programme. Nance, Smith, & Smithson (2008), however, posit that corporations can mitigate expected costs of financial distress and agency costs by maintaining a larger short-term liquidity position in terms of having a lower dividend payout ratio or a higher quick ratio. In order to test financial distress cost (underinvestment) and growth option (Nance, Smith, & Smithson, 2008)

Cash flow models of foreign exchange exposure suggest that the foreign exposure should be related to net foreign currency revenues (total revenues minus costs) – higher foreign sales would lead to higher use of currency derivatives. Firms with greater variation in cash flows or accounting earnings resulting from exposure to exchange rate risk have greater potential benefits of foreign currency hedging. The degree to which a firm's cash flows are affected by exchange rate changes should depend on the nature of its activities, such as the level of export and import activity, its involvement in foreign operations, its competitors currencies, and the competitiveness of its input and output markets. Thus, given the exchange rate uncertainty associated with the value of cash flows at a future date that is denominated in the foreign currency can be hedged perfectly in the forward market if the foreign currency value of the cash flow is known with certainty (Nance, Smith, & Smithson, 2008).

It has been argued that if a firm faces a convex tax function, then hedging reduces the volatility of taxable income and the firm's expected tax liability. For a firm facing some form of tax progressivity, when taxable income is low, its effective marginal tax rate will be low; but when income is high, its tax rate will be high. If such a firm hedges, the tax increase in circumstances where income would have been low is smaller than the tax reduction in circumstances where income would have been high, thus lowering expected taxes (Nance, Smith, & Smithson, 2008). Several research studies have been conducted on determinants of corporate hedging practices. Allayannis and Ofek (2001) conducted a study on exchange rate exposure, hedging and the use of foreign currency derivatives; Allayannis and Weston (2001) did a study on the use of foreign currency derivatives and fair market value; Glaum, (2008) conducted a study on the determinants of selective hedging: Evidence from German non-financial corporations and Kuhn, (2007) did a study on corporate Risk Management and Hedging Practice by Medium-Sized Companies in Denmark An empirical investigation of the determinants of companies' foreign exchange risk management. However, none of these studies was conducted in Kenya, research gap. This study aims at filling this research gap by investigating on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange.

Research Methodology

This study used a descriptive design. Descriptive design allows the collection of large amount of data from a sizable population in a highly economical way. The target population for this study was financial managers, development managers, human Resource managers, production/operations managers and ICT managers working in companies listed in Nairobi Security Exchange. There were 60 companies listed in Nairobi Stock Exchange. The target population of this study was therefore 300. This study used purposive sampling to select on the financial managers. The researcher believed that financial managers have got the required information on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange. Mugenda and Mugenda (2003) argue that if well chosen, samples of about 10-30% of a population can often give good reliability. The sample size of this study was therefore 60 respondents which was 20% of the target population.

The study collected both primary and secondary data. Primary data was collected using questionnaires. On the other hand secondary data was collected from newspapers, published books, journals and magazines as well as other sources such as the companies' prospectus. Primary data was collected using questionnaires that were distributed to the respective

respondents. Kothari (2004) observed that questionnaire is a cost effective method to acquiring information especially from a large group of respondents. It also allows for anonymity. Questionnaires were used in this research because of the element of anonymity as some of the information required is sensitive. Quantitative data collected was analyzed using descriptive statistics by the help of SPSS (V. 17.0) and presented through frequencies, percentages, means and standard deviations. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of SPSS. Data was then be presented in tables, figures and charts. In addition, multiple regression was used to establish the relationship between the dependent and the independent variables.

The multivariate regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: Y = hedging practices used by companies listed in Nairobi Security Exchange;

β_0 = Constant Term;

$\beta_1, \beta_2, \beta_3$ and β_4 = Beta coefficients;

X_1 = liquidity ratio;

X_2 = growth option;

X_3 = long term debt ratio;

X_4 = cash flow volatility;

ε = Error term

Results and Discussion

The sample size of this study comprised of 60 financial managers from all the 60 companies listed in Nairobi Security Exchange. The researcher distributed 60 questionnaires out of which 56 were correctly filled and returned. This represents a 93.33% response rate. According to Cooper and Schindler (2003), 50% is adequate for analysis and reporting and response rate of 70% and over is excellent.

Determinants of hedging practices

The respondents were further asked to indicate the extent to which the stated factors determine hedging practices in corporation in Kenya. According to the findings the respondents indicated with a mean of 4.11 and a standard deviation of 0.872 that foreign Ratio was influencing hedging practices in corporation in Kenya to a great extent. This was followed by liquidity with a mean of 4.09 and a standard deviation of 0.976, growth options with a mean of 4.05 and a standard deviation of 0.982 and tax losses with a mean of 4.02 and a standard deviation of 0.827. The respondents also indicated with a mean of 3.98 and a standard deviation of 0.782 that Cash flow was also influencing hedging practices in corporation in Kenya to a great extent. In addition, the respondents indicated with a mean of 3.79 and a standard deviation of 1.092 that institutional ownership was influencing hedging practices in corporation in Kenya to a great extent. Further, the respondents indicated with a mean of 3.78 and a standard deviation of 1.022 that long-term debt ratio was influencing hedging practices in corporation in Kenya to a great extent. However, the respondents indicated with a mean of 2.03 and a standard deviation of 1.101 that managerial ownership was influencing hedging practices in corporation in Kenya to a low extent. From these findings we can deduce that foreign Ratio influences hedging practices in corporation in Kenya

most followed by liquidity, growth options, tax losses, cash flow, institutional ownership and long-term debt ratio while managerial ownership was found to influence hedging practices in corporation in Kenya least. According to Bartram (2008), many Asian currency and interest rate derivatives markets are still in the very early stages of development, while others boast a relatively broad range of derivative products.

Table 1: Factors Determining Hedging Practices

	Mean	Std Deviation
Liquidity	4.09	0.976
Cash flow	3.98	0.782
Tax losses	4.02	0.827
Foreign Ratio	4.11	0.872
Institutional ownership	3.79	1.092
Managerial ownership	2.03	1.101
Growth options	4.05	0.982
Long-term debt ratio	3.78	1.022

Liquidity Ratio

This study sought to establish how liquidity ratio influences the hedging practices of companies listed in NSE. The respondents were asked to indicate whether their organizations had experienced liquidity problems in the last 5 years. As indicated in figure 4.6 above, 76.79% of the respondents indicated that their companies had experienced liquidity problems in their companies in the last 5 years. The rest of the respondents (23.21%) indicated that their companies had not experienced liquidity problems in their companies in the last 5 years. From these findings we can infer that most of the companies in Nairobi Security Exchange had experienced liquidity problems in the last 5 years. According to Allayannis and Ofek (2001) the payment obligations include dues to suppliers, operating and financial expenses that must be paid shortly and maturing installments under long-term debt.

The respondents were also asked to indicate the extent to which they agreed with the stated statements in relation to liquidity ratio and firms hedging practices. According to the findings, the respondents agreed with a mean of 4.12 and a standard deviation of 0.982 that liquidity ratio affect the company's business operations and profitability. This is in accordance with Géczy et al (2006) argument that liquidity ratio affect the company's business operations and profitability. The respondents also agreed with a mean of 4.09 and a standard deviation of 1.021 that firms with fewer current assets will have problem in continuing their operations. Carcano and Foresi (2006) had earlier indicated that firms with fewer current assets will having problem in continuing their operations while if the current assets are too much, it shows the return on investment is not in perfect condition In addition, the respondents agreed with a mean of 4.01 and a standard deviation of 1.093 that firms with higher levels of liquidity will have less need to access costly external financing to fund their investment programme. This is in line with Nance, Smith, & Smithson (2008) argument that firms with higher levels of liquidity will have less need to access costly external financing to fund their investment programme. Lastly, the respondents agreed with a mean of 3.98 and a standard deviation of 1.005 that corporations can mitigate expected costs of financial distress by maintaining a larger short-term liquidity position in terms of having a lower dividend payout ratio or a higher quick ratio. Nance, Smith, & Smithson

(2008), posit that corporations can mitigate expected costs of financial distress and agency costs by maintaining a larger short-term liquidity position in terms of having a lower dividend payout ratio or a higher quick ratio. In order to test financial distress cost (underinvestment) and growth option

Table 2: Liquidity ratio and firms hedging practices

	Mean	Std Deviation
Liquidity ratio affect the company's business operations and profitability	4.12	0.982
Firms with fewer current assets will have problem in continuing their operations	4.09	1.021
Firms with higher levels of liquidity will have less need to access costly external financing to fund their investment programme.	4.01	1.093
corporations can mitigate expected costs of financial distress by maintaining a larger short-term liquidity position in terms of having a lower dividend payout ratio or a higher quick ratio	3.98	1.005

Growth option

This study also sought to establish how growth options relate with hedging practices of companies listed in Nairobi Security Exchange. The respondents were asked to indicate the extent to which growth option affect the hedging practices of companies listed in Nairobi Security Exchange. According to the findings, 58.93% of the respondents indicated that growth option affect the hedging practices of companies listed in Nairobi Security Exchange to a great extent, 21.54% indicated to a moderate extent, 16.07% indicated to a very great extent and 3.57% indicated to a low extent. These findings clearly show that growth option affect the hedging practices of companies listed in Nairobi Security Exchange. Bessembinder (2006) had earlier argued that hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk.

The respondents were asked to indicate the extent to which they agreed agree with the stated statements in relation to growth options and hedging practices. According to the findings, as indicated in table 4.4 above, the respondents agreed with a mean of 4.09 and a standard deviation of 1.021 that hedging allows equity holders to capture a larger portion of the benefits from new investments. Further, the respondents agreed with a mean of 4.04 and a standard deviation of 0.911 that hedging ensures sufficient internal funds for undertaking attractive investment opportunities. The respondents agreed with a mean of 4.01 and a standard deviation of 0.918 that hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk. Lastly, the respondents agreed with a mean of 3.97 and a standard deviation of 0.892 that the relationship between hedging and growth opportunities is positive. The findings are also in line with Graham & Rogers (2002) argument that hedging allows equity holders to capture a larger portion of the benefits from new investments. Since underinvestment costs are most severe for firms with attractive investment opportunities and hedging can mitigate the underinvestment problem, the relationship between hedging and growth opportunities should be positive.

Table 3: Growth options and hedging practices

	Mean	Std Deviation
hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk	4.01	0.918
Hedging allows equity holders to capture a larger portion of the benefits from new investments	4.09	1.021
The relationship between hedging and growth opportunities is be positive	3.97	0.892
hedging ensures sufficient internal funds for undertaking attractive investment opportunities	4.04	0.911

Cash flow volatility

The study further ought to determine the influence of cash flow volatility on the hedging practices used by companies listed in Nairobi Security Exchange. The respondents were requested to indicate whether cash volatility affects the hedging practices in companies listed in Nairobi Security Exchange. From the findings, 66.07% of the respondents indicate that cash volatility affects the hedging practices in companies listed in Nairobi Security Exchange. The rest of the respondents (33.93%) indicated that cash volatility does not affect the hedging practices in companies listed in Nairobi Security Exchange. These findings clearly show that cash flow volatility affects the hedging practices in companies listed in Nairobi Security Exchange. According to Linsley and Shrives (2006) in order for risk management to matter, smooth financials must be valued at a premium to more volatile ones.

The respondents were requested to indicate the extent to which they agreed with the statements in relation to cash flow and hedging practices. According to the findings, the respondents agreed with a mean of 4.41 and a standard deviation of 0.824 that higher foreign sales would lead to higher use of currency derivative. The respondents also agreed with a mean of 3.89 and a standard deviation of 0.897 that cash flow models of foreign exchange exposure suggest that the foreign exposure should be related to net foreign currency revenues. Lastly, the respondents agreed with a mean of 3.87 and a standard deviation of 1.021 that firms with greater variation in cash flows or accounting earnings resulting from exposure to exchange rate risk have greater potential benefits of foreign currency hedging. The findings are in line with Nance, Smith, & Smithson (2008) argument that cash flow models of foreign exchange exposure suggest that the foreign exposure should be related to net foreign currency revenues (total revenues minus costs) – higher foreign sales would lead to higher use of currency derivatives. Firms with greater variation in cash flows or accounting earnings resulting from exposure to exchange rate risk have greater potential benefits of foreign currency hedging.

Table 4: Statements on Cash flow volatility and hedging practices

	Mean	Std Deviation
Cash flow models of foreign exchange exposure suggest that the foreign exposure should be related to net foreign currency revenues	3.89	0.897
higher foreign sales would lead to higher use of currency derivative	4.41	0.824
Firms with greater variation in cash flows or accounting earnings resulting from exposure to exchange rate risk have greater potential benefits of foreign currency hedging.	3.87	1.021

The respondents were asked to indicate the extent to which the stated factors influencing cash flow affected hedging practices in companies listed in Nairobi Security Exchange. According to the findings, the respondents indicated with a mean of 4.12 and a standard deviation of 0.981 that involvement in foreign operations influences hedging practices in companies listed in Nairobi Security Exchange to a great extent. The respondents also indicated with a mean of 4.02 and a standard deviation of 1.082 that competitors currencies influences hedging practices in companies listed in Nairobi Security Exchange to a great extent. In addition, the respondents indicated with a mean of 3.95 and a standard deviation of 0.782 that the level of export and import activity influences hedging practices in companies listed in Nairobi Security Exchange to a great extent. Lastly, the respondents indicated with a mean of 3.89 and a standard deviation of 0.892 that the competitiveness of its input and output markets influences hedging practices in companies listed in Nairobi Security Exchange to a great extent. Nance, Smith, & Smithson (2008) had earlier indicated that the degree to which a firm's cash flows are affected by exchange rate changes should depend on the nature of its activities, such as the level of export and import activity, its involvement in foreign operations, its competitors currencies, and the competitiveness of its input and output markets. Thus, given the exchange rate uncertainty associated with the value of cash flows at a future data that is denominated in the foreign currency can be hedged perfectly in the forward market if the foreign currency value of the cash flow is known with certainty

Table 2: Factors influencing cash flow

	Mean	Std Deviation
the level of export and import activity	3.95	0.782
competitors currencies	4.02	1.082
the competitiveness of its input and output markets	3.89	0.892
involvement in foreign operations	4.12	0.981

Long-term debt ratio

The study also sought to establish the effects of long-term debt ratio on the hedging practices used by companies listed in Nairobi Security Exchange. The respondents were hence requested to indicate the extent to which long-term debt ratio affect the hedging practices of companies listed in Nairobi Security Exchange. From the findings, 57.14% of the respondents indicated that long-term debt ratio affects the hedging practices of companies listed in Nairobi Security Exchange to a great extent, 19.64% indicated to a moderate extent, 14.29% indicated to a very great extent and 8.93% indicated to a low extent. From these findings we can deduce that long-

term debt ratio affects the hedging practices of companies listed in Nairobi Security Exchange to a great extent. Lien and Yang, (2008) argues that although the issue of the maturity structure of debt is important for both developed and developing countries, there are some aspects of the problem that have been more often (although not exclusively) raised with respect to the latter.

The respondents were also requested to indicate the extent to which they agreed with stated statements in relation to long term debt. From the findings, the respondents agreed with a mean of 4.02 and a standard deviation of 0.987 that asymmetric information and contract enforcement problems may lead to a shortage of long-term finance. The respondents also agreed with a mean of 3.67 and a standard deviation of 0.892 that shortage of long-term finance has a cost in terms of productivity growth and capital accumulation. According to Graham and Rogers (2000).there has been a widespread perception both by domestic and international policymakers that asymmetric information and contract enforcement problems may lead to a shortage of long-term finance. This shortage is thought to have a cost in terms of productivity growth and capital accumulation and it may justify some form of government intervention.

Table 3: Statements related to long term debt ratio

	Mean	Std Deviation
Asymmetric information and contract enforcement problems may lead to a shortage of long-term finance	4.02	0.987
Shortage of long-term finance has a cost in terms of productivity growth and capital accumulation	3.67	0.892

Regression Analysis

The researcher conducted a multiple linear regression analysis so as to establish the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange. The independent variables included long-term debt ratio, growth option, liquidity ratio and cash flow volatility while the dependent variable was hedging practices used by companies listed in Nairobi Security Exchange. The multivariate regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: Y = hedging practices used by companies listed in Nairobi Security Exchange;

β_0 = Constant Term;

$\beta_1, \beta_2, \beta_3$ and β_4 = Beta coefficients;

X_1 = liquidity ratio;

X_2 = growth option;

X_3 = long term debt ratio;

X_4 = cash flow volatility;

ε = Error term

The four independent variables that were studied, explain 75.7% of hedging practices used by companies listed in Nairobi Security Exchange as represented by the R^2 . This therefore means that other factors not studied in this research contribute 24.3% of the hedging practices used by companies listed in Nairobi Security Exchange. These findings clearly show that there are other factors that influence the use of hedging practices that were not studied in this study. This is because the four variables (liquidity ratio, growth option, long term debt ratio and cash flow volatility cater for 75.7% of all the variables that influence the use of hedging practices.

Table 4: Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	0.863	0.757	0.774		0.4238

The regression equation will be;

$$Y=2.332+ X_10.752 + X_20.698 - X_30.699 + X_40.542$$

The regression equation above has established that taking all factors into account (liquidity ratio, growth option, long term debt ratio and cash flow volatility) constant at zero, hedging practices used by companies listed in Nairobi Security Exchange 2.332. The findings presented also shows that taking all other independent variables at zero, a unit increase in liquidity ratio will lead to a 0.752 increase in the scores of hedging practices used by companies listed in Nairobi Security Exchange; a unit increase in growth option will lead to a 0.698 increase in the scores of hedging practices used by companies listed in Nairobi Security Exchange; a unit increase in long-term debt ratio will lead to a 0.699 decrease in the scores of hedging practices used by companies listed in Nairobi Security Exchange, a unit increase in cash flow volatility will lead to a 0.542 increase in the scores of hedging practices used by companies listed in Nairobi Security Exchange.

Table 5: Coefficient of determination

	β values	Sig.
(Constant)	2.332	0.022
liquidity ratio	0.752	0.023
growth option	0.698	0.024
long term debt ratio	-0.699	0.021
cash flow volatility	0.542	0.023

Conclusion

This study concludes that there is a positive relationship between liquidity ratio and hedging practices used by companies listed in Nairobi Security Exchange. The study found that a unit increase in liquidity ratio will lead to a 0.752 increase in the scores of hedging practices used by companies listed in Nairobi Security Exchange. Bartram (2008) argument that liquidity ratios are used for liquidity management in every organization in the form of current ratio, quick ratio and Acid test ratio that greatly affect on profitability of organization. The study also found that liquidity ratio affects the company's business operations and profitability, firms with fewer current assets will have problem in continuing their operations, firms with higher levels of liquidity will have less need to access costly external financing to fund their investment programme and corporations can mitigate expected costs of financial distress by maintaining a larger short-term liquidity position in terms of having a lower dividend payout ratio or a higher quick ratio. This is in accordance with Géczy et al (2006) argument that liquidity ratio affect the company's business operations and profitability

The study also concludes that there is a positive relationship between growth option and hedging practices used by companies listed in Nairobi Security Exchange. The study found that a unit increase in growth option will lead to a 0.698 increase in the scores of hedging practices used by

companies listed in Nairobi Security Exchange. Bessembinder (2006) had earlier argued that hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk. The study also found that hedging allows equity holders to capture a larger portion of the benefits from new investments, hedging ensures sufficient internal funds for undertaking attractive investment opportunities, hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk and the relationship between hedging and growth opportunities is positive. These findings correlate with Bessembinder (2006) argument that hedging can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk.

The study also concludes that there is a negative relationship between long-term debt and hedging practices used by companies listed in Nairobi Security Exchange. The study established that a unit increase in long-term debt ratio will lead to a 0.699 decrease in the scores of hedging practices used by companies listed in Nairobi Security Exchange. Lien and Yang, (2008) argues that although the issue of the maturity structure of debt is important for both developed and developing countries, there are some aspects of the problem that have been more often (although not exclusively) raised with respect to the latter. Asymmetric information and contract enforcement problems may lead to a shortage of long-term finance. In addition, shortage of long-term finance has a cost in terms of productivity growth and capital accumulation. According to Graham and Rogers (2000), there has been a widespread perception both by domestic and international policymakers that asymmetric information and contract enforcement problems may lead to a shortage of long-term finance.

The study further concludes that there is a positive relationship between cash flow volatility and hedging practices used by companies listed in Nairobi Security Exchange. The study also found that a unit increase in cash flow volatility will lead to a 0.542 increase in the scores of hedging practices used by companies listed in Nairobi Security Exchange. According to Linsley and Shrivies (2006) in order for risk management to matter, smooth financials must be valued at a premium to more volatile ones. The study also found that Cash flow models of foreign exchange exposure suggest that the foreign exposure should be related to net foreign currency revenues. Firms with greater variation in cash flows or accounting earnings resulting from exposure to exchange rate risk have greater potential benefits of foreign currency hedging. The study also revealed that involvement in foreign operations, competitors' currencies, the level of export and import activity and the competitiveness of its input and output markets influences hedging practices in companies listed in Nairobi Security Exchange to a great extent. Froot, Scharfstein, and Stein (2008) argue that smooth cash flows can add value by reducing a firm's reliance on costly external finance. Empirically, Minton and Schrand (2004) show that cash flow volatility is costly as it affects a firm's investment policy by increasing both the likelihood and the costs of raising external capital.

Recommendations

This study established that most of the companies in Nairobi Security Exchange had experienced liquidity problems in the last 5 years. In addition, the study found that most of the companies in this study had not used hedging practices in the past. This study therefore recommends that

companies listed in NSE should make use of hedging practices whenever they are facing liquidity problems

The study also established that hedging ensures sufficient internal funds for undertaking attractive investment opportunities and can mitigate the underinvestment problem because hedging reduces the probability of default, thus creditors' sensitivity to investment risk. This study therefore recommends that in order to reduce underinvestment problems and to undertake attractive investment opportunities companies listed in NSE should make use of hedging practices.

The study also found that long-term debt ratio negatively influences hedging practices. This study therefore recommends that if a company is to use hedging practices it should avoid long-term debt ratio.

Further, the study established that involvement in foreign operations influences hedging practices. This study therefore recommends that when a company is having imports and exports it should make use of hedging practices

Areas for further studies

This study sought to investigate on the determinants of corporate hedging practices used by companies listed in Nairobi Security Exchange. However, these findings cannot be generalized to private firms. This study therefore recommends further studies on determinants of corporate hedging practices used in private firms. The study also recommends further studies on the relationship between growth options and corporate hedging.

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