

Financial Risk Hedging Practices and Performance of Firms Listed in Nairobi Securities Exchange (NSE), Kenya.

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Abstract

With the ever changing and challenging business environment, businesses continue to be exposed to various risks more especially as a result of adverse fluctuations in the macroeconomic environment and increased competition. Firms operating in such volatile environment are mostly vulnerable to financial risk. In Kenya today a number of firms are making losses due to lack of proper hedging and applying costly practices to mitigate these risks. For instance, in 2015, two giant firms, Kenya Airways and Uchumi Supermarkets reported 25.7 billion shillings and 262.3 million shillings losses respectively which was associated to lack of proper hedging practices. This study therefore sought to investigate the influence of financial risk hedging practices on the performance of firms in NSE. The study had four specific objectives which were to assess the effect of foreign exchange hedging practices, examine the influence of commodity price hedging practices, to evaluate the effect of interest rate hedging practices and to examine the effect of equity risk hedging practices on the performance of listed firms at the NSE. The study applied both descriptive and inferential statistics to analyze collected quantitative data. In descriptive analysis the study used the mean and standard deviation to measure the average distribution and variation, respectively. The inferential statistics employed the use of multiple regression model. The regression model enabled the researcher to analyze the variation in performance caused by the use of futures, forwards, options or swaps to hedge on foreign exchange, interest rate and commodity price risks. Data on the return on invested capital (ROIC) and return on assets (ROA) was collected from the firm's financial statements for the last five years 2011-2015. The mean score of the study variables: foreign exchange hedging practices (mean=3.6311); commodity pricing risk hedging practices (mean=3.8693); interest rate risk hedging practices (mean=3.6406); equity hedging practices (mean=3.9369) and central bank controls (mean=3.9922) indicated influence to a slightly high extent. The study established a positive relationship between hedging practices, the moderator (central bank controls) and dependent variable performance of listed firms. The R^2 of the study increased from 0.391 without the moderator variable (central bank controls) to 0.617 when the model regressed includes the moderator variable.

Key Words: Financial Risk Hedging, foreign exchange, interest rates, commodity price risk, futures, swaps, forward contracts and Firm's Performance.

1. Background of the Study

Total financial risk is a term used to refer to both diversifiable and non-diversifiable risk. While diversifiable risk can be diversified and eliminated, non-diversifiable risk cannot be eliminated. Types of common financial risks include insurance, credit risk, compliance, liquidity risk, operational risk and market risk. The focus of this study was the market risk which is the risk as result of movement in market prices and is determined by four factors equity risk, interest rate risk, currency risk and commodity risk (Sharpe, Alexander & Bailey 2013). Equity risk basically refers to financial risk as a result of holding equity in a particular investment; interest rate risk refers to risk that arises to bond traders as a result of volatility in interest rate; commodity risk refers to risk that arises as a result in volatility in commodity pricing, whereas currency risk/foreign exchange risk is risk arising from volatility in currency rates (Horne & Wachowicz 2012). To mitigate the effects of these risks on the business growth, many businesses are adapting and institutionalizing financial risk management strategies. Financial risk management has therefore become one of the most important business strategies of firms. Firms that do not adapt financial risk management strategies are likely to witness poor growth patterns compared to those that adapt financial risk management strategies. There exist several financial risk management strategies that may be used to reduce the financial risks such as portfolio diversification for diversifiable risks and hedging practices for non-diversifiable risks. (Sharpe *et. al.* 2012)

Among risk mitigating strategy that is commonly used by firms is hedging. Hedging reduces the risk of future price movements which might affect a firm adversely if not well managed (Horne & Wachowicz, 2012). Hedging is done by a firm or individual to protect against a price change that would otherwise negatively affect profits (Brigham & Ehrhardt, 2014). It provides relatively inexpensive and highly liquid positions similar to those obtained with diversified stock portfolios (Sharpe, Alexander & Bailey 2013). To hedge a firm can use a wide range of financial instruments, including forward agreements, futures contracts, options or swaps, to achieve their hedging goals. Bartram *et al.* (2011) on a survey of non-financial firms from 47 countries found out that the use of these instruments reduced firm's total risk and is more experienced in firms with higher exposures to interest rate risks, exchange rate risks and commodity prices risks. In United States, 83% of hedging firms use forward agreements, futures contracts, options or swap to hedge foreign exchange risk, 76% use them to hedge interest rate risk and 56% use them to hedge commodity price risk (Bodnar *et al.*, 2008). It follows therefore that forward agreements, futures contracts, options and swaps are commonly used in hedging interest rate risks, foreign exchange risks, and commodity price risks.

In developing countries however, use of derivatives as instrument of risk mitigation is unpopular and countries such as India and South Africa use derivatives instruments only on short term contracts which include futures, forwards and swaps (Minnit, Goodwin, & Stacey, 2007); (Sivakumar & Sakar, 2011). A case of hedging in the mining industry in South Africa for instance where risk arise as a result of unsuccessful exploration, input price volatility and cost of production necessitate use of fixed forward exchange rates, interest rate swaps as mechanisms of hedging, which has contributed to stabilization of firms in the industry which would have otherwise experienced downturn (Minnit, Goodwin, & Stacey, 2007). In support of this, Blaaw (2009), attributed the resilience of third world economies like South Africa during global financial crisis (2008) to the strong structure of its capital markets, and also to the fact that derivatives were used to mitigate risk which was not present in the capital market of Nigeria. The Researcher further noted that poor risk management could lead

to massive losses and near collapse of institutions. In Kenya, though adequate structures have put in place to facilitate hedging of interest rate risk especially among commercial banks, there is no statistics to indicate the extent of hedging by Kenyan firms (Kothari, 2014).

In Kenya, the major source of financial risk is the issue of inflation. Kenya has in the recent past experienced one of the worst inflation instances since independence (CBK, 2010). This witnessed the stagnation of numerous projects and upward fluctuation of commodity prices such as oil. Further challenges could also be attributed to the global financial crisis during the period between 2007 and 2009, at the height of the crisis, economic cycles were particularly influenced by the macro-economic conditions. Business cycles often affect various economic units' cash flows and the credit portfolio performance (Yiping, 2008). To mitigate the effect of these risks Kenyan firms use a variety of hedging practices. Wanja(2005) for example found out that Kenyan firms use futures, swaps, options and forward contracts to hedge against interest rate risk. However, firms in Kenya are hampered by institution policies and market trading platform technology (Otsyula, 2014). The effect of hedging on firm's performance in Kenyan context is not clear.

To comprehensively understand the effect of hedging on the performance of Kenyan firms, it's prudent to cover non-financial and financial firms from all economic sectors in Kenya. This is because the effect of hedging on firm performance depends on the industry and firm size among other factors(Bodnaret *al.*, 2003). Firms listed in the Nairobi stock Exchange (NSE) provides an exhaustive presentation of firms from non-financial and financial firms. The firms are also from different sector of the economy. Firms listed in the Nairobi stock Exchange are 63. The firms are categorized into ten groups namely; Agricultural firms, Commercial and Services firms, Telecommunication and Technology firms, Automobiles and Accessories firms, Banking firms, Insurance firms, Investment firms, Manufacturing and Allied firms, Construction and Allied firms and Energy and Petroleum firms (Nairobi Stock Exchange, 2013).

The above literature evident that unlike developed countries which commonly use derivate markets as tool for risk mitigation, third world economies prefer minimal use of futures, forwards and swaps for risk mitigation and opt for insurance as to minimize risk (Murungi, *et al.*, 2014; Blaaw, 2008). South Africa being the only African country using derivatives in hedging gold production uses it only for short term contracts. Deutsche Borse Group (2014) noted that use of derivatives enabled elimination of uncertainty and reduction of market risk, therefore may explain the resilience portrayed by developed economies in terms of the structure of their capital markets.However, like other emerging economies, Kenya is characterized by shallow and undeveloped financial markets. Use of hedging instruments such as derivatives is not fully developed in Kenya and is hindered by political environment, participants' attitude, managerial skepticism, financial infrastructure and foreign competition (Murage, Murungi&Wanjau, 2014). Thus, firms in Kenya find it hard to use hedging instruments against the necessary market microstructure. Firms also find it difficult in pricing and valuing hedging instruments.

Since hedging has a cost, firms must carefully evaluate the costs of hedging in light of the costs of not hedging. This can only happen where accurate forecasting and risk assessment is possible. If the expected risk does not materialize, hedging will prove an ineffective way of doing business (Giddy, 2013). In Kenya today firms have recorded mixed results depending on the techniques they use to hedge against risk they face.

Centum Kenya has reported a profit of 7.9 billion shillings which they attribute to increase in value of property and proper investment from its subsidiaries. Kenya Airways is also at a threat of collapsing making a loss of 27.5 billion shillings which they attribute to the fluctuations in fuel prices. The Uchumi chain of supermarkets has reported a 262.3 million shillings loss down from a profit of 106.9 million shillings the same period previous year and this was due to high operational costs and poor management decisions. Studies done on hedging practices by firms in Kenya e.g. Njuguna *et al.*, (2013) found out that hedging (options and forwards) had positive effect on the growth of microfinance sector. Mugenda *et al.* (2014) established lack of financial derivatives in the risk hedging activities and cited that management felt other tools including insurance could address risk management in Kenyan firms. Based on this, the study was seeking to know what impact a financial risk hedging practice had on the performance of firms listed in the NSE. Given the ever dynamic and challenging business environment, businesses continue to be exposed to various risks more especially as a result of adverse fluctuations in the macroeconomic environment and increased competition. Firms operating in such volatile environment are mostly vulnerable to financial risk.

The study sought to investigate the influence of financial hedging practices and the performance of firms listed in the NSE and the specific objectives were.

1. To assess the effect of foreign exchange hedging practices on the performance of firms listed in the NSE
2. To examine the influence of commodity price hedging practices on the performance of firms listed in the NSE
3. To evaluate the effect interest rate hedging practices on the performance of firms listed in the NSE
4. To examine the effect of equity hedging practices on the performance of firms listed in the NSE

Reviewed literature on the concept of financial hedging and firm performance. It also discussed the past empirical studies on financial hedging and firm performance. Interest rate Parity Theory is based on the assumption that difference in interest rates between a country and other countries that are its trading partners account for the volatility in the nominal interest rate. Interest rate parity relates to the difference in interest rate between that foreign countries and domestically. Parity condition provides that interest rate differentials in two different currencies will be reflected in premium or discount for the forward exchange rate on the foreign currency whereby there is no financial activity of buying and selling of currency in the financial market (Bhole & Dash, 2002). Liquidity Preference theory asserts that economic units have a preference for liquidity over investing. Applying this theory explained the premium offered in forward rates in comparison to expected future spot rates. This premium is used as payment for the use of scarce liquid resources. The preference for liquidity can be accounted for by the fact that economic units need to hold certain levels of liquid assets for purchase of goods and services and the fact that these near term future expenditures can be difficult to predict.

Option Pricing Theory entails how options are valued in the market. The theory is composed of two models Black-Scholes model and Binomial model. Black-Scholes is the most common option pricing theory of European options given that it is designed to value options that can be exercised only at maturity an underlying assets that do not pay any dividends. Binomial model however is a common option pricing theory

of American options in the sense that it is designed to value options that can be exercised at any time regardless of the period let to maturity of an underlying asset. Fishers effect theory of interest rate established that nominal rate is the sum of the real interest rate and inflation rate. Fishers' theory of interest rate provides a rationale of monetary policy focusing on management of inflation so as to stabilize interest rate levels as well as protect the purchasing power of wealth (Tymoigne, 2006). In interest to the study, interest rates charged on investment is influenced by levels of inflation facing the economy of a country. Volatile conditions may lead to loses whereas stabilization may reduce on default risk as well as enable the realization of return on investment.

According to Judge (2002) hedging has several benefits to the hedging firm. The author explains that hedging reduces the expected corporate tax liability for a firm with a convex corporate tax schedule; it lowers the probability of the firm encountering financial distress which in turn lowers the expected costs of financial distress; reduces the risk imposed on the firm's managers, employees, suppliers, and customers; can control the conflict of interest between bondholders and shareholders, thus reducing the agency costs of debt; and hedging facilitates the financing of investment projects using internal funds and so decreases the reliance on costly external financing.

Several studies have analyzed the impact of the use of exchange rate hedging on firm value. Allayannis and Weston (2001) confirmed the existence of a positive and significant relation between the use of currency derivatives and firm value for a sample of American firms. The authors found a nearly 4.87% hedging premium. A study by Carter *et. al.*, (2006) on effect of commodity price hedging by American airline companies showed that hedging with relation to oil prices in the airlines industry is positively related to firm value and the hedging premium reaches over 5%. The authors showed evidence that the greatest benefit of hedging in this sector would be the reduction in underinvestment costs because the fuel price is highly correlated to the investment opportunities in the sector. The study also showed that firms can survive from following appropriate hedging strategies where the "intensity" of hedging is positively associated with the firm value. Otsyula (2014) investigated challenges facing the use of financial derivatives in hedging interest rate risk by commercial banks in Kenya. The study investigated five commercial banks two big banks, one medium and two small banks as per Central Bank of Kenya commercial banks classification. According to the results from the effort by commercial banks in Kenya to employ the use of derivatives for purposes of hedging against interest rate risk, are mainly hampered by the financial institution policy and market trading platform technology. Though the Central Bank of Kenya has adequate structures at hand to hedge interest rate risk using derivatives among commercial banks in Kenya, the banks' financial institution policies and trading platforms hampered the hedging interest rate risk using financial derivatives.

Brodsky (2010) noted that participants in the stock market utilized stock futures and options in respect to their portfolio strategies. The researcher however found out that futures stock market compared to that of other financial derivatives such as interest rate also , stock index futures and options led to positive growth and liquidity of underlying stock market. Though the study focused on two financial derivatives, it does show a relationship between equity hedging practises and firm performance. Pwc(2012).in their survey found out equity prices was one of the most areas that managers considered to be part of market risk. Gutierrez (2003) in his study identifies that the central bank plays an intervening role in the economy of a country due to its autonomy i.e. political and economic independence. The researcher points out that the political independence

of the central bank enables it to resist governmental pressures which would otherwise increase fiscal effects such as the “burden of debt” or even economic slowdown because of lower tax receipts. The economic independence of central bank enables it foresee reduction of deficits arising from supply and demand of money in a country by forcing the government to reduce the deficit without necessarily printing more money, which may have an endogenous effect on the country’s economy.

Goselin(2007)found no statistical evidence of relationship between central bank performance and the degree of financial market development. However, in line with Krause and Rioja (2006), found similarity in the sense that the strength of the private banking sector was positively correlated with meeting targets more consistently, since the soundness and financial strength of private banks are both negatively correlated with inflation deviations. Reviewed studies have also shown mixed association between hedging and firm performance. For instance, Allayannis and Weston (2001) and Carter *et al.*, (2006) shows that hedging have a positive effect on firm’s performance. On the other hand Fauver and Naranjo (2010); Dhanani *et al.*, (2007); Bodnar *et al.*, (2003) show that hedging does not necessarily have a positive association with performance but depends on a country, industry and corporate governance of the company.

2. Study Design and Methodology

Research design is the blue print for the collection, measurement and analysis of data (Kothari, Ramanna, & Skinner, 2010). The design connects the questions or objectives of the study to the data gathered. This study combined causal and descriptive survey research designs. According to Elahi and Dehdashti (2011), survey descriptive research is used when the research objective is to portray the characteristics of a social phenomenon and determining the frequency of occurrence. Thus the design was therefore ideal for the proposed study since it aimed at bringing out the hedging practices used by firms listed in the NSE and performance of the respective firms. The target population for the study was the 63 firms listed in the NSE. The chief financial managers at the head offices were the respondents of their respective firms. The study collected both primary and secondary data. A self-administered questionnaire with both closed and open ended questions was used to collect primary data from the financial managers. A questionnaire was appropriate when one intend to collect a huge amount of data in a relatively short time (Orodho, 2009). The questionnaire was subdivided into five sections where section one inquired on the demographic of the respondents, section two to section five will be on the financial risk hedging practices and firm performance. The secondary data focused on the firms’ performance. Data on the return on capital invested and return on assets was collected from the firm’s financial statements for the last five years 2011-2015. Choice of financial statements as a tool for secondary data collection was informed by the fact that listed firms are required to have formal financial statements showing their performance and the general state of their business.

Direct relationship model

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

Where Y presents performance offirms, the dependent variable

B₀ is a constant term

X₁ = Foreign exchange hedging practices

X₂ = Commodity price hedging practices

X₃ = Interest rate hedging practices

X₄ = Equity hedging practices

B₁, β₂, β₃ and β₄= regression coefficients to be estimated

ε_i= regression error term.

Moderated relationship model

$$Y = \beta_0 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \epsilon_i$$

Where Y presents performance offirms, the dependent variable,

B₀ is a constant term

β₅, β₆, β₇, β₈ and β₉= moderated regression coefficients to be estimated

X₅ = moderated Foreign exchange hedging practices

X₆ = moderated Commodity price hedging practices

X₇ = moderated Interest rate hedging practices

X₈ = moderated Equity hedging practices

X₉ = Moderating variable (central bank controls)

ε_i= regression error term.

The performance of the firms was quantitatively analyzed to show the performance trend over the last five years. Performance was measured through ROIC and ROA. ROIC will measured as earnings before finance costs and tax divided by the average of last year's and current year's total capital plus short term debt and current portion of long term debt. This measure took into account the book value of capital invested in existing assets, and we assumed that the book values of debt and equity measure effectively the invested capital. ROA was computed as earnings before finance costs and tax divided by the book value of total assets.

3. Findings and Discussions

In reference to the table 4.1 below, reliability of the study was measured using internal consistency technique of reliability testing. The Cronbach Alpha co-efficient computed was 90.3%, where 20 items measuring the independent and mediating variables were used in the study.

Table 4.1 Reliability Analysis

Variable	Items	α	Comment
Foreign exchange risk hedging practices	5	0.820	Reliable
Commodity pricing risk hedging practices	4	0.868	Reliable
Interest rate risk hedging practices	4	0.808	Reliable
Equity risk hedging practices	4	0.855	Reliable
Central bank controls	3	0.828	Reliable
Score	20	90.3	Reliable

Source: survey data (2016)

The response rate of the study stood at 70.31%. Out of the 64 questionnaires issued, a total of 45 questionnaires were successfully filled and used for analysis. In reference to foreign exchange practices, most of the respondents (26.7%) agreed that their firms used foreign exchange forward contracts as tool of risk hedging, whereas 2.2% of the respondents viewed their firm to be using options and swaps as tools of risk mitigation. In reference to interest rate risk hedging practices, majority of the respondents (26.7%) agreed that their firms used interest rate forwards as tool for risk mitigation whereas a minority (2.2%) opined their firms to be using a combination of futures, options and swaps. For responses on commodity pricing risk hedging practices, majority of the respondents (44.4%) viewed commodity forwards as tools used by their firms for risk hedging. However, a minority of 2.2% opined that their firms did not use any of the tools for risk mitigation. Majority of the respondents (40%) agreed that their firms used equity forwards as tools for risk mitigation. A minority of 2.2% of the respondents opined that their firm used none of the risk mitigating tools, 2.2% also viewed that their firm used all of the risk mitigating tools.

The table below represents the descriptive findings on foreign exchange practices. Likert scale ranging between 1 and 5 where, 1=not at all 2=slight extent 3=moderate extent 4=high extent 5=very high extent was used for the statements on foreign exchange practices.

Table 4.2 Foreign exchange hedging practices

	N	Min.	Max.	Mean	Std. Deviation
Currency fluctuations	45	1.00	5.00	3.8222	1.07215
Firm sensibility	45	1.00	5.00	3.5333	1.03573
Firm remuneration	45	1.00	5.00	3.6889	1.45886
Tax advantage	45	1.00	5.00	3.4222	1.03328
Financial market condition	45	1.00	5.00	3.6889	1.06221
Aggregate score	45			3.6311	1.13245

Source: survey data (2016)

From table 4.2 above, the responses to the statements by the respondents ranged between 1 and 5. Most of the respondents agreed that currency fluctuations (mean=3.8222), firm sensibility (mean=3.5333), firm remuneration (mean=3.6889) and financial market condition (mean= 3.6889) influenced foreign exchange hedging practices slightly to a high extent. Respondents opined that tax advantage (mean = 3.4222) influenced foreign exchange hedging practices to a moderate extent. The average mean score was 3.611 indicating that the respondents generally thought that the influence of the statements on foreign exchange rate hedging

practices were to a slightly high extent. The aggregate standard deviation was 1.13245, indicating a normal variation on the responses. The table below represents the descriptive findings on commodity pricing risk hedging practices. Likert scale ranging between 1 and 5 where, 1=not at all 2=slight extent 3=moderate extent 4=high extent 5=very high extent was used for the four statements on commodity pricing risk hedging practices.

Table 4.3 Commodity pricing risk hedging practices

	N	Min.	Max.	Mean	Std. Deviation
Cash flow risk	44	1.00	5.00	3.9545	1.32866
Underinvestment costs	44	1.00	5.00	3.7955	1.21195
Agency costs	44	1.00	5.00	4.1364	1.06947
Financial market condition	44	1.00	5.00	3.5909	.99576
Aggregate score	44			3.8693	1.15146

Source: survey data (2016)

From the table 4.3 above, the respondents’ responses ranged between 1 and 5. Most respondents agree that cash flow risk (mean=3.9545), underinvestment costs (mean=3.7955), agency costs (mean=4.1364) and financial market condition favorability (mean=3.5909) influenced commodity pricing risk hedging practices to a high extent. The aggregate mean score was 3.8693 indicating that the respondents generally thought that the statements influenced commodity pricing risk hedging practices to a slightly high extent. The aggregate mean score was 1.15146 indicating a normal deviation in the respondents’ responses. These findings are supported by studies e.g Carter et al (2006); Lookman (2004) that found out underinvestment and employment of agency as some of practices considered in minimization of commodity price risk hedging practices.

The table below represents the descriptive findings on interest rate risk hedging practices. Likert scale ranging between 1 and 5 where, 1=not at all 2=slight extent 3=moderate extent 4=high extent 5=very high extent was used for the four statements on interest rate risk hedging practices.

Table 4.4 Interest rate risk hedging practices

	N	Min.	Max.	Mean	Std. Deviation
Level of interest payment	44	1.00	5.00	3.4318	1.08687
Market trading platform	44	1.00	5.00	3.7727	1.05354
Credit arrangement	44	1.00	5.00	3.6136	1.22410
Financial market condition	43	1.00	5.00	3.7442	.87541
Aggregate score	43			3.6406	1.05998

Source: survey data (2016)

From the table 4.4 above, the respondents’ responses ranged between 1 and 5. Most of the respondents agreed that market trading platform (mean=3.7727), credit arrangement (mean=3.6136) and financial market condition favorability (mean=3.7442) influenced interest rate risk hedging practices to a slightly high extent. Respondents however thought that level of interest payment influenced interest rate risk hedging practices to a moderate extent. The aggregate mean score was 3.64056, indicating that the respondents generally thought

that the statements influenced interest rate risk hedging practices to a slightly high extent. The aggregate standard deviation was 1.05998, indicating a normal variation in the respondents' responses.

The table below represents the descriptive findings on equity riskhedging practices. Likert scale ranging between 1 and 5 where, 1=not at all 2=slight extent 3=moderate extent 4=high extent 5=very high extent was used for the four statements on equity risk hedging practices.

Table 4.5 Equity risk hedging practices

	N	Min.	Max.	Mean	Std. Deviation
Price volatility	44	1.00	5.00	3.7500	1.10232
Investment portfolio	45	1.00	5.00	4.1111	1.07073
Equity prices	44	2.00	5.00	4.1136	1.01651
Financial market condition	44	2.00	5.00	3.7727	.77350
Aggregate score	43			3.9369	0.990765

Source: survey data (2016)

From the table 4.5 above, the respondents' responses to questions on price volatility and investment portfolio ranged between 1 and 5, whereas those on equity prices and financial market condition ranged between 2 and 5. Most of the respondents agreed that price volatility (mean=3.7500) and financial market condition favorability (mean=3.7727) influenced equity hedging practices to a slightly high extent. Respondents also opened that investment portfolio (mean=4.1111) and equity prices (mean=4.1136) influenced equity risk hedging practices to a high extent. The aggregate mean score was 3.9369, indicating that generally the respondents thought that the statements influenced equity hedging practices to a slightly high extent. The aggregate standard deviation was 0.99077, indicating a normal variation on the respondents' responses. Milanova (2013); Brodsky (1995); Pwc (2012) in their study also found out investment portfolio and equity prices to have an impact on equity risk hedging practice. The table below represents the descriptive findings on central bank controls. Likert scale ranging between 1 and 5 where, 1=strongly disagree 2=disagree 3=not sure 4=agree 5=strongly agree was used for the three statements on central bank controls.

Table 4.6 Central bank controls

	N	Min.	Max.	Mean	Std. Deviation
Economic independence	43	1.00	5.00	3.9302	.96103
Central bank regulations	43	2.00	5.00	4.1163	.90526
Inflationary controls	43	1.00	5.00	3.9302	1.00937
Valid N (listwise)	43			3.9922	0.95855

Source: survey data (2016)

From the table 4.6above, the questions on economic independence and inflationary controls ranged between 1 and 5, whereas the question on central bank regulations ranged between 2 and 5. Most of the respondents agreed that economic independence (mean=3.9302), central bank regulations (mean=4.1163) and inflationary controls (mean=3.9302) influenced the central bank controls to a high extent. The aggregate mean score was

3.9922 indicating that generally the respondents thought that the statements influenced central bank controls to a high extent. The aggregate standard deviation was 0.95855 indicating a normal variation on the respondents responses. Studies by Gutierrez (2003); Goselin (2007); Krause and Rioja (2006) support the descriptive findings of this study whereby the researchers acknowledge economic independence, central bank regulations and inflationary controls as some of the measures of central bank controls.

From the descriptive findings the study concludes that risk hedging practices specifically, foreign exchange risk hedging practices, interest rate risk hedging practices, commodity pricing risk hedging practices and equity risk hedging practices influence firm performance. Also mediating factors such as central bank controls also have an impact on the relationship between risk hedging practices and financial performance of listed firms. The model summary table provides the strength of the relationship by computing the R squared; ANOVA table provides the significance of the model; the coefficients table provides the beta coefficients and the significance of each variable to the study.

Table 4.7 Inferential analysis of direct relationship
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.625 ^a	.391	.328	.62295	1.015

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.712	4	2.428	6.256	.001 ^b
Residual	15.135	39	.388		
Total	24.847	43			

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.956	.621		1.539	.052
foreign exchange	.533	.246	.455	2.170	.036
Commodity pricing	.116	.182	.135	.641	.125
Interest rate	.119	.188	.154	.635	.129
equity risk	.278	.217	.309	1.281	.048

Source: survey data (2016)

From the model summary in table 4.7 above, $R^2=0.391$ indicating that 39.1% of the variation in financial performance of firms listed in the NSE, is explainable by the hedging practices i.e. foreign exchange risk hedging practices, commodity pricing risk hedging practices, interest rate risk hedging practices and equity risk hedging practices. However, 60.9% of the variation is explainable by other factors not included in the study. According to the ANOVA table, the model used is significant at $F=6.256$; $P<0.05$ indicating appropriateness of the findings in making conclusion on the study.

In reference to the coefficients table, the established regression equation was:

$$Y = 0.956 + 0.455 X_1 + 0.135 X_2 + 0.154 X_3 + 0.309 X_4 + e$$

The regression equation shows a positive relationship between the independent and independent variables with a constant of 0.956, which induces that a unit increase in the hedging practices (foreign exchange risk, interest rate risk, commodity pricing risk and equity risk) leads to a 0.956 increase in financial performance of firms listed in NSE. This positive relationship between hedging practices and firm financial performance is supported by the findings of Judge (2002); Weston (2001).

Objective one assessed the effect of foreign exchange hedging practices on the performance of firms listed in the NSE. The study established a strong positive relationship between foreign exchange risk hedging practices and performance of firms listed in the NSE at $\beta = 0.455$; $p < 0.05$. Objective two examined the influence of commodity pricing risk hedging practices on the performance of firms listed in the NSE. The study established a weak negative relationship between commodity pricing risk hedging practices and performance of firms listed in the NSE at 0.135 ; $p > 0.05$. Objective three evaluated the effect of interest rate risk hedging practices on the performance of firms listed in the NSE. The study established a weak positive relationship between interest rate risk hedging practices and performance of firms listed in the NSE at $\beta = 0.154$; $p > 0.05$. Objective four examined the effect of equity risk hedging practices on the performance of firms listed in the NSE. The study established a strong positive relationship between equity risk hedging practices and performance of firms listed in the NSE at $\beta = 0.309$; $p < 0.05$.

Table 4.8 Inferential analysis on moderated relationship

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.786 ^a	.617	.567	.50028	1.767

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.336	5	3.067	12.255	.000 ^b
	Residual	9.510	38	.250		
	Total	24.847	43			

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.560	.506		1.107	.045		
Foreign exchange	.077	.235	.066	..327	.046	.249	4.019
Interest rate	.240	.164	.279	1.464	.051	.278	3.597
Commodity price	-.060	.156	-.077	-.384	.103	.250	4.002
Equity risk	.241	.174	.267	1.381	.075	.269	3.721
Central bank controls	.530	.112	.637	4.741	.000	.557	1.795

Source: survey data (2016)

From the model summary in table 4.8 above, $R^2=0.617$ indicating that 61.7% of the variation in financial performance of firms listed in the NSE, is explainable by the mediation of central bank controls on hedging practices i.e. foreign exchange risk hedging practices, commodity pricing risk hedging practices, interest rate risk hedging practices and equity risk hedging practices. However, 38.3% of the variation is explainable by other factors not included in the study. According to the ANOVA table, the model used is significant at $F=12.255$; $P<0.05$ indicating appropriateness of the findings in making conclusion on the study.

Objective five sought to investigate the effect of central bank controls on the relationship between risk hedging practices and performance of firms listed in the NSE. In reference to the coefficients table, the established regression equation when moderated was:

$$Y = 0.560 + 0.066 X_5 - 0.279 X_6 + 0.077 X_7 + 0.267 X_8 + 0.637 X_9 + e$$

The regression equation shows a positive relationship between the independent and dependent variables with a constant of 0.560, which induces that a unit increase in the hedging practices (foreign exchange risk, interest rate risk, commodity pricing risk and equity risk) leads to a 0.56 increase in financial performance of firms listed in NSE. This positive relationship between hedging practices and firm financial performance is supported by the findings of Judge (2002); Weston (2001). Findings by Gutiérrez (2003) identifies central bank controls as an intervening variable, which supports the findings of the study whereby, as a result of mediation of central bank controls the strength of the relationship of the study variables i.e. R^2 has increased from 39% to 61.7%, which implies that an intervention by a county's central bank controls positively impacts the effect of risk hedging practices on a firm's financial performance.

4. Conclusions and Recommendations

The general objective of the study was to investigate the influence of financial hedging practices on the performance of firms listed in the NSE. The study found out that financial risk hedging practices positively affected the financial performance of firms listed in the NSE. Objective one assessed the effect of foreign exchange hedging practices on the performance of firms listed in the NSE. The study established a strong positive relationship between foreign exchange risk hedging practices and performance of firms listed in the NSE at $\beta = 0.455$; $p < 0.05$. The average mean score was 3.611 indicating that the respondents generally thought that the influence of the statements on foreign exchange rate hedging practices were to a slightly high extent. The aggregate standard deviation was 1.13245, indicating a normal variation on the responses.

Objective two examined the influence of commodity pricing risk hedging practices on the performance of firms listed in the NSE. The study established a weak negative relationship between commodity pricing risk hedging practices and performance of firms listed in the NSE at 0.135 ; $p > 0.05$. The aggregate mean score was 3.8693 indicating that the respondents generally thought that the statements influenced commodity pricing risk hedging practices to a slightly high extent. The aggregate mean score was 1.15146 indicating a normal deviation in the respondents' responses. Objective three evaluated the effect of interest rate risk hedging practices on the performance of firms listed in the NSE. The study established a weak positive relationship between interest rate risk hedging practices and performance of firms listed in the NSE at $\beta = 0.154$; $p > 0.05$. The aggregate mean score was 3.64056, indicating that the respondents generally thought that the statements

influenced interest rate risk hedging practices to a slightly high extent. The aggregate standard deviation was 1.05998, indicating a normal variation in the respondents' responses.

Objective four examined the effect of equity risk hedging practices on the performance of firms listed in the NSE. The study established a strong positive relationship between equity risk hedging practices and performance of firms listed in the NSE at $\beta = 0.309$; $p < 0.05$. The aggregate mean score was 3.9369, indicating that generally the respondents thought that the statements influenced equity hedging practices to a slightly high extent. The aggregate standard deviation was 0.99077, indicating a normal variation on the respondents' responses. Objective five sought to investigate the effect of central bank controls on the relationship between risk hedging practices and performance of firms listed in the NSE. The study found out that central bank controls positively improved the influence/ strength of the relationship between risk hedging practices and firm financial performance i.e. the R^2 significantly increased from 39.% to 61.7%. The aggregate mean score was 3.9922 indicating that generally the respondents thought that the statements influenced central bank controls to a high extent. The aggregate standard deviation was 0.95855 indicating a normal variation on the respondents' responses.

It is evident from the findings that financial risk hedging practices have a positive impact on the financial performance of listed firms. With increased central bank controls, the strength the relationship increases therefore implying that the central bank of a country has a significant role in risk mitigation and economic stability of a country's securities exchange market. Notably, commodity price risk and equity risk remain weakly significant and therefore the study recommends that firms in the stock exchange could employ other risk mitigation instruments such as exchange-traded funds, insurance, collateralized debt obligations and credit default swaps. The study was limited to four risk mitigation instruments i.e. swaps, options, futures and forward contracts. However, future research should consider replication using a combination of other tools for the purposes of comparison.

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