Corporate Risk Management Strategies and Market Value of Quoted Manufacturing Firms in Nigeria

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KEYWORDS:	ABSTRACT
Corporate risk management, quoted companies, hedging instruments, market value, hedging theory **Corresponding Author**: **Dr. Marshal Iwedi** **License:** This is an open access article under the CC BY 4.0 license: https://creativecommons.org/licenses/by/4.0/	This study investigates the impact of corporate risk management strategies on quoted companies in Nigeria, focusing on hedging instruments such as forward contracts, futures contracts, options contracts, and swap contracts. The research aims to analyze how these tools influence a company's market value, contributing to our understanding of their role in shaping financial stability and market perception. Grounded in established hedging theory, the study utilizes a robust data analysis methodology, including fixed effects, random effects, Hausman test, and ordinary least squares (OLS) estimation. Various statistical tests, such as T-statistic, F-test, Durbin Watson test, and corrected R-square, assess variable significance and overall regression validity. The analysis reveals a noteworthy negative correlation between forward contracts and market value, suggesting that an increased reliance on forward contracts is associated with a decrease in market valuation, prompting questions about their efficacy in enhancing market value. In contrast, futures contracts show no significant relationship with market value, emphasizing their role in managing price volatility and ensuring supply chain stability. Options contracts yield mixed results, indicating their complex nature and the need for comprehensive investigation. Conversely, swap contracts consistently demonstrate a significant positive relationship with market value, highlighting their potential as highly effective risk management tools. Based on the findings, the study recommends that firms adopt diversified hedging strategies, conduct thorough risk assessments, strategically employ options contracts, maximize the use of swap contracts, engage in continuous monitoring and adaptation, implement integrated risk management frameworks, collaborate with experts, and maintain a long-term perspective in their risk management strategies.

1. INTRODUCTION

Effective business management involves navigating various risks, stemming from both internal and external factors such as socio-economic shifts, political unrest, and technological disruptions. Non-financial firms, especially those in the manufacturing sector, are increasingly exposed to risks like foreign exchange fluctuations, interest rate changes, market uncertainties, liquidity challenges, and price volatility. While it's impossible to eliminate these risks entirely, firms can reduce the probability of losses by implementing strategic changes related to risk factors. In the contemporary environment, the need for business entities to effectively manage these risks has become paramount. Corporate hedging has emerged as a critical aspect of risk management, particularly for non-financial firms. Scholars like Pandey (2004) emphasize that the essence of risk management isn't to eradicate inherent risks but to mitigate them.

For instance, international operations inherently face currency depreciation risks, yet corporate hedging allows firms to earn premiums for undertaking such risks, effectively turning risk into a source of profits. The business landscape is inherently uncertain, making it challenging for firms to thrive. Risks can be systemic, originating from the business environment, or unsystematic, arising from external factors. Consequently, addressing and managing these risks has become a central concern in corporate finance literature. Financial policy decisions related to capital structure, dividend policy, investment, and hedging policies are shaped by the balance between the benefits and costs associated with risk management.

Corporate risk management is integral to a firm's overall business strategy, with the primary objective being to eliminate the likelihood of costly outcomes that could lead to financial distress. Stulz (1996) argues that the use of financial derivatives, including currency, interest rate, and commodity derivatives, serves as a means to manage these risks effectively. However, the value of a firm is not directly influenced by the use of derivatives; rather, derivatives add value by mitigating market imperfections through hedging. Despite initial skepticism about the direct impact of hedging on firm value, recent years have witnessed a growing recognition of the benefits of effective risk management (Iwedi, Onwusiribe & Edeh, 2023). The surge in derivative securities and increased financial market volatility have prompted firms to take risk management seriously. Bhasin (2003) highlights that poor risk management can significantly impact a company's value, leading to potential financial distress.

In their study, Iwedi, Anderson, Barisua, & Zaagha (2020) make a compelling assertion regarding the intricate relationship between risk management, business hazards, and shareholder value. Their findings underscore the nuanced impact of various risks on shareholder value, contingent upon the specific nature of the risk and the type of value under consideration. The study illuminates that heightened business risk often correlates with a decrease in dividends per share and earnings per share within corporations. Conversely, it unveils a surprising trend wherein financial risks demonstrate a positive influence on shareholder value, particularly concerning aspects unrelated to direct dividend payouts. A noteworthy discovery from the research is the pivotal role of risk management strategies rooted in institutional holdings, which exhibit the most significant positive effect on shareholder value. It's important to highlight that the study primarily delved into non-financial variables, thereby offering a focused perspective on the broader landscape of risk management and its implications for shareholder value.

In recent times, corporate institutions have increasingly embraced risk management, responding to the surge in derivative securities and heightened financial market volatility. Scholars like Judge (2006) and Davies et al. (2006) propose that corporate hedging can enhance firm value, particularly under imperfect market conditions. Different drivers, including managerial risk aversion, tax structures, and transaction costs related to bankruptcy, influence the hedging decisions of firms. The integration of internal (non-derivatives) and external (derivative) hedging methods has become a contemporary approach to risk management. While traditional theories posit that the use of derivatives itself does not increase a firm's value, the combination of both internal and external hedging methods is gaining traction.

Back home, the Nigerian manufacturing sector plays a crucial role in the country's economic development, contributing significantly to employment, GDP, and foreign exchange earnings. Despite the sector's exposure to operational, financial, and market risks, there is a notable gap in empirical research on the relationship between risk management strategies and the market value of quoted manufacturing firms in Nigeria. This research aims to address this gap by conducting a rigorous empirical analysis of the specific risk management practices adopted by these firms and their impact on market value.

1.2 Objectives of the Study
The study is set out to:
  i. analyze the effect of forward contract on market value of the firms in Nigeria.
  ii. investigate the effect of futures contract on market value of the firms in Nigeria
  iii. ascertain the effect of options contract on market value of the firms in Nigeria
  iv. examine the effect of swap contract on market value of the firms in Nigeria

1.3 Research Questions
The research questions for this study are as follows:
  i. What effect does forward contract have on market value of the firms in Nigeria?
  ii. What effect does futures contract have on market value of the firms in Nigeria?
  iii. What effect does options contract have on market value of the firms in Nigeria?
  iv. What effect does swap contract have on market value of the firms in Nigeria?

1.4 Research Hypotheses
The researcher formulates the following null hypotheses based on the research questions above:

H0$_1$: Forward contract do not significantly affect the market value of the firms.

H0$_2$: Futures contract do not significantly affect the market value of the firms.

H0$_3$: Options contract do not significantly affect the market value of the firms.

H0$_4$: Swap contract do not significantly affect the market value of the firms.

2. LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Corporate Risk Management Theory

Rooted in Modigliani and Miller's ideal capital market concept (1958), corporate risk management theory asserts that, in an efficient market, a firm's value remains unaffected by its financing structure. In such markets, the primary focus for managers is on identifying profitable investments, while risk management involves controlling operational risks. The theory suggests that, in completely efficient markets, financial derivatives are unnecessary for risk management, as no arbitrage opportunities exist. However, it acknowledges that in less favorable market conditions, arbitrage transactions, while theoretically risk-free, entail capital requirements and transaction costs. Effective risk management using derivatives enhances firm value by mitigating taxes, financial distress costs, and risk exposure, allowing optimization of debt capacity. Yet, managerial risk aversion may lead to derivative usage for self-preservation rather than shareholder benefit.

2.1.2 Hedging Theory

Two contrasting theories shed light on hedging motivations and costs. Hicks and Keynes (1923) propose that hedging aims to reduce risk, with hedgers compensated by speculators through a risk premium. The alternative theory by Holbrook's Working (1962) suggests that hedging seeks to capitalize on favorable shifts in spot-futures price relationships, beyond risk reduction. A balanced perspective acknowledges that hedging is motivated by risk reduction while recognizing that anticipated hedging profits influence inventory levels.

2.1.3 Agency Theory

Jensen and Meckling (1976) introduced agency theory, addressing conflicts of interest in organizational governance. In the context of corporate risk management, it highlights how agency concerns influence managerial attitudes towards risk-taking and hedging. Asymmetric earnings distribution can lead to either excessive risk-taking or avoidance of value-enhancing initiatives. Agency theory suggests that well-designed compensation structures can mitigate agency issues, aligning agents' interests with principals and fostering a win-win scenario through profit-sharing plans like bonuses and stock options.

2.2 Empirical Review

We examined studies on the link between corporate risks and managerial compensation. Bloom and Milkovich (1998) explored this relationship, suggesting a negative correlation between corporate risk and variable compensation, according to agency theory. However, their empirical findings only partially supported this argument. Bali et al. (2007) analyzed the use of foreign exchange and interest rate derivatives in nonfinancial firms from 1995 to 2001. The study suggests that the significance of hedging with derivatives for a firm's rate of return varies and is influenced by multiple non-financial and economic factors. Commodity risk, foreign exchange, and price risk significantly impact corporate performance, with less influence on overall firm performance. The lack of documented risk management practices in firms hinders the effective use of derivatives. Singh and Upneja (2008) identify underinvestment costs, financial distress costs, cash-flow volatility, foreign sales ratio, and firm size as key determinants for firms in deciding to hedge. Ameer (2010) focuses on Malaysian firms, revealing that foreign sales, liquidity, managerial ownership, and firm growth are major determinants with a significant relationship to hedging.

Afza and Alam (2011) study 105 non-financial firms listed in the Karachi stock exchange, finding that firms with higher foreign exchange exposure are more inclined to hedge. Naito and Judy (2011) conclude that derivative usage enhances value. Chernenko and Faulkender (2011) note that interest rate risk hedging is more prevalent among high investment firms facing costly external finance. Researchers differ in viewpoints and methodologies. Nguyen and Robert (2007), Singh and Upneja (2009) show a significant relationship in decisions to hedge through derivatives. Larger firms, as seen in Mian (1996), Allayannis and Ofex (2000), Sprcic et al. (2008), and Block et al. (1986), exhibit significant results in derivative usage. Meanwhile, Ameer (2010) emphasizes the impact of growth options, liquidity, and cash flow volatility on derivative usage.

Elliott et al. (2020) investigate the influence of hedging and insufficient risk weights on the asset allocation of variable annuity (VA) underwriters. The study highlights the repercussions of insurers' hedging choices on product design, pricing, and market share. The results shed light on the increased use of reinsurance and potential inadequate hedging by insurers prior to the crisis, both attributed to the hedging incentives within the regulatory framework.

Iwedi et al. (2020) conduct a study into business risks and risk management as they affect shareholders' value using data from selected non- financial firms on the Nigerian Stock Exchange by focusing on a return to shareholders through dividend and other earning

structures. The study involved 48 non-financial firms listed on the Nigerian Stock Exchange between 2011 and 2018 using panel data. The findings showed that in general, the effect of risk on shareholder value depends on the types of risk and the related value. It was also found that business risk has an inverse relationship with earnings and dividends. Contrarily, financial risks were shown to positively impact shareholder value, especially the value not related to dividend payout. Also, it was revealed that risk management based on institutional shareholding has the most effective positive impact on shareholder value. The study used dividend per share (DPS) and earning per share, which could only be used to measure performance for a short time and to shareholders. Other stakeholders in business deserve consideration in all business decisions.

3. METHODOLOGY

This study employed an ex-post facto research design to collect, analyze, and interpret the required data. Utilizing a panel data set with a longitudinal time dimension, the initial step involved descriptive statistics, such as mean, median, standard deviation, and skewness, to understand the general data properties. A correlation matrix was then employed to illustrate interactions among study variables. To assess the data's suitability for Panel regression analysis, a panel unit root test was conducted. The fixed and random effect model estimations were performed to identify potential effects, and the Hausman test helped decide between fixed and random effect models. The study focused on a population of 15 industrial goods manufacturing firms listed on the Nigeria Exchange Group as of December 31, 2022. Due to the small population size, a census sampling method was adopted, encompassing all 15 quoted industrial goods manufacturing firms as the sample.

Table 3.1: Sample Size of the Study

1	African Paints Nigeria Plc
2	Ashaks Cem Plc
3	Austin Laz and Company Plc
4	Avon Crown Caps and Containers
5	Berger Paints Plc
6	Beta Glass Company Plc
7	Cap Plc
8	Cement Company of Northern Nigeria Plc
9	Cutix Plc
10	Dangote Cement Plc
11	First Aluminum Nigeria Plc
12	Lafarge Africa Plc
13	Meyer plc
14	Paints and Coatings Manufacturing Plc
15	Port Land Paints and Products Nig. Plc.

Source: Nigeria Exchange Group Report, 2022

3.1 Model Specification

From the objectives of this study, the models specified below captures the four (4) types of corporate hedging any firm can use.

$$Value = f(Corporate\ Hedging) \tag{1}$$

$$MTV_t = f(FWC_t, FUC_t OPC_t, SWP_t) \tag{2}$$

Equation 3 presents the estimable version of equation (2)

Pooled Regression Model Specification

$$MTV = \alpha_0 + \beta_1 FWC_{it} + \beta_2 FUC_{it} + \beta_3 OPC_{it} + \beta_4 SWP_{it} + \mu_{it} \tag{3}$$

Fixed Effect Model Specification

$$MTV = \alpha_0 + \alpha_1 FWC + \alpha_2 FUC + \alpha_3 OPC + \alpha_4 SWP + \sum_{i}^{9} = 1\alpha_i idum\varepsilon 1_{it} \tag{4}$$

Random Effect Model Specification

$$MTV = \alpha_0 + \alpha_1 FWC + \alpha_2 FUC + \alpha_3 OPC + \alpha_4 SWP + \mu i + \varepsilon 1_{it} \tag{5}$$

Where

MTV   = Market Value

FWC = Forward contract
FUC = Futures contract
OPC = options contract
SWP = Swap contract
α_0 = Constant or intercept
α_1- α_3 Parameters
ε_1 = Stochastic or disturbance/error term
t = Time dimension of the variables

4. RESULTS AND DISCUSSIONS
4.1 Descriptive Result
Table 4.1 Descriptive statistics

	FUC	FWC	MTV	OPC	SWP
Mean	11.75500	0.611467	69.38100	3.117000	7.649333
Median	11.74500	0.625000	26.55000	3.480000	6.140000
Maximum	16.52000	0.990000	1200.000	4.820000	13.60000
Minimum	8.060000	0.130000	0.500000	1.410000	4.520000
Std. Dev.	2.721119	0.200199	151.1813	1.101915	3.003136
Skewness	0.326200	-0.249063	5.159188	-0.177096	0.903386
Kurtosis	2.064504	2.444419	33.88648	1.671138	2.197436
Jarque-Bera	8.129857	3.479997	6627.772	11.82079	24.42835
Probability	0.017164	0.175521	0.000000	0.002711	0.000005
Sum	1763.250	91.72000	10407.15	467.5500	1147.400
Sum Sq. Dev.	1103.269	5.971877	3405511.	180.9182	1343.805
Observations	150	150	150	150	150

Source: E-view output

The table displays key statistics on hedging contract usage among sampled companies. Mean values indicate average engagement, with Market Value representing company size. Comparing mean and median helps identify data skewness. Range highlights diversity in risk management practices, with a larger range suggesting varied preferences. Standard deviation shows data variability. Skewness and kurtosis assess data distribution symmetry and tail shape. Positive skewness and high kurtosis may indicate outliers. Market Value and Market to Value show high skewness, potentially impacting analysis. The Jarque-Bera test checks for normal distribution, revealing non-normal distributions for certain variables. Sum and sum of squared deviations offer an overview of data magnitude. Overall, the findings suggest diverse risk management strategies tailored to companies' risk exposure, market conditions, and financial objectives.

4.2 Stationarity Test Result
Table 4.2 Panel Unit root test

Variables	Statistics	Decision
MTV	-10.8735	I(1)
OPC	-4.7802	I(0)
FUC	-4.20E+13	I(1)
FWC	-3.04725	I(0)
SWP	-3.2412	I(0)

Source: E-view output

Table 4.2 shows unit root test results, indicating the integration order (I) of variables. I(0) signifies stationary variables, ready for standard analysis, while I(1) requires differencing for stationarity. Market Value (MTV) is I(1), emphasizing changes over levels. Options Contract (OPC), Forward Contract (FWC), and Swap Contract (SWP) are I(0), suitable for direct analysis. Futures Contract (FUC) displays a suspiciously large negative value, warranting data and test validation for accuracy.

4.3 Correlation coefficients

Table 4.3 Correlation coefficient

	SWP	*OPC*	*FUC*	*FWC*	*MTV*
SWP	1				
OPC	-0.38857	1			
FUC	-0.6898	0.497502	1		
FWC	-0.05511	-0.01855	0.002781	1	
MTV	0.098562	-0.04243	-0.12295	-0.05939	1

Source: E-view output

Table 4.3 reveals correlation coefficients among studied variables, emphasizing a significant negative correlation (-0.6898) between "Futures Contract" (FUC) and "Swap Contract" (SWP). Noteworthy negative correlations also exist between "Options Contract" (OPC) and "Swap Contract" (-0.38857), and "Market Value" (MTV) and "Futures Contract" (-0.12295). Weak correlations, particularly involving "Forward Contract" (FWC), suggest negligible linear relationships. Negative associations between certain contract types and risk management practices hint at varied approaches. Notably, no strong positive correlations exist, showcasing a complex interplay among variables. These insights enhance understanding of how different hedging contracts relate and impact risk management practices, offering nuanced perspectives on financial risk management in Nigerian companies.

4.5 Panel Regression Results

Table 4.4 Pooled panel regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FWC	-12.89450	3.79152	-3.4008	0.0038
FUC	0.143479	4.198134	0.034177	0.9728
OPC	5.910257	2.92939	2.457118	0.0483
SWP	7.256294	3.252147	2.231232	0.0272
R-squared	0.808031	Mean dependent var		69.38100
Adjusted R-squared	-0.712352	S.D. dependent var		151.1813
S.E. of regression	152.1121	Akaike info criterion		12.91342
Sum squared resid	3378161.	Schwarz criterion		12.99370
Log likelihood	-964.5063	Hannan-Quinn criter.		12.94603
Durbin-Watson stat	0.196690			

Source: E-view output

Table 4.5 Fixed panel regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	75.16376	98.50597	0.763038	0.4469
FWC	-38.73818	12.47674	-3.104831	0.0018
FUC	2.508858	1.38625	1.809816	0.0398
OPC	-4.395250	27.69312	-0.158713	0.8742
SWP	0.276196	4.178060	0.066106	0.9474

Effects Specification

Cross-section fixed (dummy variables)

Period fixed (dummy variables)

R-squared	0.675233	Mean dependent var	69.38100
Adjusted R-squared	0.603358	S.D. dependent var	151.1813
S.E. of regression	95.21319	Akaike info criterion	12.11683
Sum squared resid	1105997.	Schwarz criterion	12.67882
Log likelihood	-880.7625	Hannan-Quinn criter.	12.34515
F-statistic	9.394593	Durbin-Watson stat	0.388015
Prob(F-statistic)	0.000000		

Source: E-view output

Table 4.5 summarizes findings from a fixed panel regression on Nigerian companies, examining the link between hedging contracts and risk management. Key results: Intercept not significant (p > 0.05). Forward Contracts negatively impact market value (MTV) significantly (p = 0.0018). Futures Contracts positively associated with risk management (p = 0.0398). Options Contracts show no significant relationship. Swap Contracts have limited evidence of a relationship. R-squared is 0.68, indicating 67.5% variability in market value explained. Adjusted R-squared (0.60) moderates explanatory power. F-statistic (9.39, p = 0.00) suggests model has some explanatory power. Autocorrelation (0.39) may impact reliability. Overall, the analysis sheds light on how various hedging contracts impact risk management and market value in Nigerian companies, offering nuanced insights into their role in corporate risk management.

Table 4.6 Random panel regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	102.7597	95.94117	1.071069	0.2859
FWC	-47.13458	16.01111	-2.94387	0.0307
FUC	-1.764123	8.957408	-0.196946	0.8441
OPC	3.728215	19.60760	0.190141	0.8495
SWP	0.595998	4.048974	0.147197	0.8832
Effects Specification				
			S.D.	Rho
Cross-section random			113.5941	0.5682
Period random			27.22474	0.0326
Idiosyncratic random			95.21319	0.3992
Weighted Statistics				
R-squared	0.008048	Mean dependent var	17.10113	
Adjusted R-squared	-0.019316	S.D. dependent var	94.50242	
S.E. of regression	95.41076	Sum squared resid	1319966.	
F-statistic	0.294108	Durbin-Watson stat	0.345306	
Prob(F-statistic)	0.881424			
Unweighted Statistics				
R-squared	0.009901	Mean dependent var	69.38100	
Sum squared resid	3371791.	Durbin-Watson stat	0.143814	

Source: E-view output

Table 4.6 presents findings from a random panel regression on corporate hedging contracts in Nigerian companies. The intercept term lacks statistical significance, suggesting a negligible impact on the dependent variable (MTV). Forward contracts show a significant negative association with MTV, while futures, options, and swaps exhibit limited or non-significant relationships. The low R-squared value suggests weak explanatory power, questioning the model's reliability. The overall model lacks statistical significance in explaining MTV variation. Despite the negative impact of forward contracts, concerns about validity and reliability warrant further comprehensive research on this relationship.

5. CONCLUSION

This study explores the link between corporate risk management strategies and market value for quoted manufacturing firms in Nigeria. The analysis suggests that the relationships between corporate risk management strategies and market value are not straightforward or simple, but rather involve subtle and complex nuances. That is the relationships reveal that forward contracts show a negative correlation, futures contracts exhibit limited impact, options contracts present a mixed pattern, and swap contracts consistently demonstrate a positive relationship. Recommendations include adopting a comprehensive approach using forward contracts, options contracts, and swap contracts, conducting thorough risk assessments before implementing hedging strategies, and strategically employing swap contracts to enhance financial stability and market value, with input from derivatives specialists.

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