Innovations

Exploring the Dual Effects of Foreign Currency-denominated Debts and Liquidity Risk on the Financial Stability of Firms

Fatai Abiodun Atanda & Nurudeen Olawale Abiodun
Department of Accounting, University of Ibadan, Nigeria

Corresponding Author: **Fatai Abiodun Atanda**

Abstract: *Foreign currency-denominated debts (FCD) can be used to manage liquidity risk; they can also create significant liquidity challenges. This is because high liquidity may indicate a lack of investment opportunities. This study explores the dual (explanatory and moderating) effects of FCD and liquidity risk on financial stability. The trade-off theory provides a strong theoretical framework for the study, which uses secondary data collected from 28 listed manufacturing firms in Nigeria from 2010 to 2023. The study employs analytical tools such as descriptive statistics, inferential analysis, and econometric methods, including the generalized method of moments, to estimate the models. Results show that reliance on FCD reduces and hampers the sustainable growth rates of firms. Similarly, increased liquidity (low liquidity risk) has a significant negative impact on sustainable growth, indicating that higher liquidity risk contributes to increased financial stability. The interaction term involving FCD and liquidity suggests that increased liquidity (i.e., low liquidity risk) has a statistically significant positive effect on FCD, and vice versa, on financial stability. Additionally, liquidity has a more substantial overall net effect (although negative) on financial stability than FCD. The study concludes that effective FCD and liquidity management can either promote or hinder the financial stability of manufacturing firms and recommends minimizing FCD, especially for slow-growing firms.*

Keywords: *Foreign currency-denominated debts, liquidity, risk management, sustainable growth rate, financial stability*

Acknowledgement
We are grateful to Providus Bank Nigeria Limited for sponsoring our attendance at the 14th African Accounting and Finance Conference organized by the African Accounting and Finance Association (AAFA) held at Speke Resort, Munyonyo, Uganda on 2-5th September, 2025, where a short version of this paper was presented. We appreciate the comments and suggestions received from conference participants to improve the quality of the paper.

Introduction

The challenges associated with financial leverage have intensified in recent times, owing largely to macroeconomic pressures such as high inflation, fluctuating interest rates, persistent currency depreciation, and declining investor confidence(IMF, 2023; OECD, 2023; World Bank, 2023).Previously pivotal in shaping firm performance and stability (Kenn et al., 2019), financial leverage has now become a significant challenge for many Nigerian firms, particularly those with foreign currency-denominated debts (FCD), as they struggle to manage the associated risks, which threaten their survival (Ahmed et al., 2018). These conditions have exacerbated the cost of debt servicing, particularly for firms with FCD (liabilities incurred in a currency different from their functional or local currency), putting their financial health at significant risk.

Statistically, ten major firms listed on the Nigerian Exchange Limited (NGX) suffered significant losses in 2023, primarily due to the devaluation of the Naira and rising finance costs on foreign-currency-denominated loans (Nairametrics, 2024). These losses totaled about N1.7 trillion in foreign exchange, mainly affecting two firms. The situation worsened in 2024, as the continued depreciation of the Naira caused even larger foreign exchange losses among major companies. In the first half of 2024 alone, a staggering combined loss of N2.02 trillion was reported, highlighting the severe impact of exchange rate volatility on the financial performance and resilience of large Nigerian corporations (Tokede, 2024).

Generally, the growing prevalence of FCD among manufacturing firms, especially in emerging markets, adds a layer of risk, as exchange rate fluctuations can significantly impact their financial health (IMF, 2022; 2023).This situation is further complicated by the lack of adequate risk management practices that could mitigate the adverse effects of these external vulnerabilities. These challenges underscore the need for robust financial risk management strategies and policy interventions to mitigate the adverse effects of foreign currency exposure in emerging markets.

The specific research problem is that managers and policymakers do not fully understand the dual nature of the extent to which FCD and liquidity risk affect the financial stability of listed manufacturing firms. This knowledge gap limits the ability of corporate managers to develop appropriate risk management strategies and hinders policymakers from designing effective financial regulations to safeguard the manufacturing sector, which remains a key driver of economic development in Nigeria. This study, therefore, explored the dual (explanatory and moderating) effects of FCD and liquidity risk on the financial stability of listed manufacturing firms in Nigeria.

In addition, exchange rate volatility adversely affects firm productivity and investment, particularly in countries with lower financial development and high dollar invoicing (IMF, 2023). This risk is particularly acute in countries like Nigeria, where exchange rate volatility is heightened by macroeconomic instability, limited foreign reserves, and fluctuations in global commodity prices, such as oil

(Mao et al., 2022). As a result, manufacturing firms with substantial FCD face a heightened risk of financial distress, especially when foreign exchange markets are disrupted.Thus, exploring how FCD and liquidity risk practices influence financial stability is vital for developing strategies that can enhance the resilience and sustainability of firms in Nigeria.

The significance of this study is multifaceted, offering valuable contributions to managerial practices, regulatory frameworks, and empirical research. From a managerial perspective, the study provides insights that can help managers of manufacturing listed firms in Nigeria to better understand the impact of FCD on their firms' financial stability. The study of the dynamics of the interrelationships among FCD and liquidity risk, both as explanatory and moderating factors influencing financial stability, provided valuable insights into how firms can better position themselves to withstand external shocks and sustain growth.The findings of this study have implications for policymakers and regulatory bodies by shedding light on the current state of risk management practices among listed manufacturing firms and the extent to which these practices influence financial stability and modulate the effect of FCD on financial stability. The empirical findings are instrumental toformulating policies and guidelines aimed at enhancing the resilience of firms to foreign exchange losses.

The results of this study are relevant in promoting robust risk management frameworks and ensuring that firms are better equipped to handle the challenges associated with FCD. In addition, the study added to the limited empirical research on the financial stability of listed manufacturing firms in Nigeria, particularly in relation to FCD and risk management practices. The use of advanced econometric techniques, like the generalized method of moments, has enabled the study to produce robust and reliable empirical evidence. The rest of the paper contains five sections. Section 2 covers the literature review, and Section3 is on methodology, while Section 4 presents results from data analysis. In Section 5, the results were discussed, and Section 6 concludes the paper with recommendations.

Literature Review

Many theories offered valuable insights into the understanding of the dynamics of financial stability in the extant literature. However, in this study, the trade-off theory developed by Modigliani and Miller (1963) provided a robust theoretical bedrock for linking FCD, liquidity risk, and financial stability. According to the theory, firms seek an optimal capital structure by balancing the tax benefits of debts against the potential costs of financial distress. In an environment where foreign exchange volatility is high, as is often the case for firms holding FCD, these distress costs can escalate due to currency mismatches. The interplay between costs and benefits highlights how the trade-off between benefits (e.g., tax shields and potentially lower interest rates on foreign debt) and costs (e.g., exchange rate risk) becomes more complex once currency fluctuations enter the equation. The theory thus underscores that careful risk

management can mitigate the incremental distress costs linked to foreign liabilities (Koptayevaet al., 2021).

Empirical studies on the relationship between FCD and financial stability converged on a key message that FCDholds the potential to enhance and undermine financial stability, depending on how they are structured and managed. Pradhan and Hiremath (2020) and Bae et al. (2020) explicitly confirmed the vulnerability introduced by foreign currency obligations when exchange rate fluctuations shift. Meanwhile, insights from Liem and Nguyen (2020), Nguyen and Nguyen (2020), and Li (2020) indicated that broader debt policy choices such as maturity composition and reliance on external markets can compound or alleviate these risks. In essence, the empirical evidence underscores that while FCD can offer cost benefits, it can equally pose significant threats to financial stability if exchange rate risks are not carefully anticipated and mitigated. The nuanced outcome from most of these studies indicates that while FCD can be advantageous for eligible firms under stable conditions, regulatory shifts and macroeconomic disruptions can quickly transform it into a source of financial fragility (Bae et al., 2020).

Studies examining the relationship between liquidity risk and financial stability have also produced diverse findings across different contexts and economies. Studies on emerging markets like Nugroho et al. (2021), Ozili (2022), Liem and Nguyen (2020), and Gabrijelčič et al. (2016) found that high liquidity risk negatively impacts financial stability. This means that firms with weaker liquidity positions were more likely to face solvency challenges, decreased profitability, and weaker growth potential. However, the positions of these authors contrasted the findings of Anton and Nucu (2020), Koptayeva et al. (2021), and Wahyuni et al. (2021),which listed firms with higher liquidity risks maintained financial stability because they employed proactive liquidity management frameworks, effective risk hedging strategies, and diversified income streams. So, firms in emerging economies that adopted integrated risk management frameworks were less susceptible to liquidity-induced instability.

In addition, Mao et al. (2022) argued that liquidity risks could present strategic opportunities for firms that can leverage short-term financial instruments for immediate profitability. While this approach may enhance profitability in the short term, it could also increase long-term financial vulnerability, thus challenging the sustainability of such strategies. These findings were further complicated by the observations of Ivanov and Atanasov (2023), who noted that firms that effectively manage liquidity risks tend to experience enhanced financial resilience, even in periods of economic distress. The authors emphasized the importance of dynamic liquidity management strategies that are responsive to changing market conditions, which was inconsistent with the findings of Tokede (2024), who established that the firms that are exposed to high liquidity risk are more susceptible to financial instability if they lack adaptive financial management frameworks. All these contrasting findings collectively emphasized

the importance of liquidity management strategies in enhancing financial stability, especially in volatile market conditions.

The intricate relationship between FCD, liquidity, and financial stability was further established using varying perspectives that emerged across different economies. Anton and Nucu (2020) provided evidence from emerging markets, highlighting that FCD significantly threatens financial stability when firms face liquidity constraints. Their findings indicated that firms with high exposure to foreign currency debts are more likely to suffer from cash flow mismatches, particularly during periods of currency depreciation. Similarly, Mefteh-Wali and Rigobert (2018) established that firms with diversified revenue streams and hedging mechanisms can mitigate the negative impacts of FCD, suggesting that liquidity management played a critical role in enhancing financial stability.

In the study carried out by Nguyen and Nguyen (2020), they found that firms that heavily relied on FCD for financing often experienced financial instability, especially when liquidity levels were low. Their study revealed that firms with robust liquidity positions could withstand foreign currency shocks better, emphasizing the importance of maintaining adequate liquidity reserves. On the contrary, Bae et al. (2020) observed that in some Korean firms, liquidity did not significantly moderate the impact of FCD on financial stability, suggesting that other factors, such as firm size and market diversification, could buffer the negative effects. These findings underscored the complex interplay between liquidity, debt structure, and financial stability.

Further insights by Wahyuni et al. (2021) indicated that poor liquidity management exacerbates the risks associated with FCD, leading to greater financial instability. The research highlighted that firms lacking dynamic liquidity management strategies were more vulnerable to financial shocks. However, Banker et al. (2020) argued that proactive liquidity risk management strategies, such as maintaining diversified funding sources and forecasting liquidity needs, can significantly cushion firms against financial shocks.

From the African perspective, Chuke-Nwudeet al. (2016) argued that FCD negatively impacts financial stability, especially when firms fail to maintain optimal liquidity levels. Their findings indicated that weak liquidity positions exacerbate the negative effects of foreign debts, undermining profitability and growth prospects. However, Ahmed et al. (2018) suggested that firms with strong liquidity management frameworks can mitigate these adverse effects, promoting financial stability even in the presence of substantial FCD. Similarly, Ozili (2022) emphasized that maintaining liquidity flexibility is crucial for Nigerian firms, especially amid currency volatility and economic uncertainty. However, Nugroho et al. (2021) cautioned that firms must balance liquidity management with prudent debt strategies, as excessive reliance on FCD without adequate liquidity controls can result in long-term financial vulnerability.

The study by Mao et al. (2022) further reinforced the importance of internal liquidity strategies, arguing that firms with comprehensive risk management frameworks experienced lower financial instability, even with significant foreign

currency-denominated debt exposure. The study emphasized the role of liquidity forecasting, proactive debt restructuring, and maintaining diversified income streams in mitigating financial risks. Similarly, Sunardi et al. (2020) established that firms employing integrated liquidity and debt management strategies were better positioned to maintain financial stability.

Empirical findings on the impact of foreign currency-denominated debt and risk management on corporate outcomes remain inconclusive. While some studies reported enhanced performance through access to cheaper FCD, others underscore the heightened distress stemming from liquidity risk. Additionally, many investigations focused on financial institutions rather than nonfinancial companies that face different regulatory and operational challenges. By concentrating on listed manufacturing firms in Nigeria, this present study offered fresh empirical evidence on how these entities manage FCD and liquidity risk and how their financial stability was impacted by it.

Methodology

This study employed an ex-post facto research design, which was used to analyze cause-and-effect relationships between independent and dependent variables based on existing data that cannot be manipulated by the researcher. The research design is appropriate because it allows the examination of historical data on FCD, liquidity risk, and their effects on the financial stability of manufacturing firms in Nigeria. The targeted population of this study comprises 59 manufacturing firms listed on the Nigerian Exchange Group (NGX) as of December 31, 2023, while the sample size is 28 firms purposively selected based on specific criteria, including the availability of at least 10 years of audited financial statements from 2010 to 2023 and at least 8 years of disclosures on FCD. However, the sampling approach ensures that the selected firms were representative of the broader population, thereby enhancing the generalizability of the study's findings.

To achieve the objective of this study, static panel models for financial stability proxied by sustainable growth rate (SUG) were specified to assess the impact of FCD on financial stability.

$$SUG_{it} = \beta_0 + \beta_1 FCD_{it} + \beta_2 FSZ_{it} + \beta_3 EPS_{it} + \mu_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where, SUG_{it} refers to the financial stability of firm i at time t; FCD_{it} is the foreign currency-denominated debts of firm i at time t; FSZ_{it} is the firm size for firm i at time t; EPS_{it} is the earnings per share of firm i at time t; and μ_{it} is the stochastic error term.

Due to the violation of some of the assumptions of using the ordinary least squares (OLS) estimation technique, the following dynamic regression model is specified:

$$SUG_{it} = \beta_0 + \beta_1 SUG_{i,t-1} + \beta_2 FCD_{it} + \beta_2 FSZ_{it} + \beta_4 EPS_{it} + \mu_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

In addition, to examine the relationship between liquidity risk and financial stability, the following model is specified:

$$SUG_{it} = \beta_0 + \beta_1 SUG_{i,t-1} + \beta_2 LIQ_{it} + \beta_3 FSZ_{it} + \beta_4 EPS_{it} + \mu_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

where, $LIQ_{it}$is the liquidity risk of firm i at time t.

To examine the moderating/interacting role of liquidity risk on the relationship between FCD and financial stability, on the one hand, and the moderating/interacting role of FCD on the relationship between liquidity risk and financial stability, on the other, the following equation model is specified:

$$SUG_{it} = \beta_0 + \beta_1 SUG_{i,t-1} + \beta_2 FCD_{it} + \beta_3 LIQ_{it} + \beta_4 (FCD_{it} \times LIQ_{it}) + \beta_5 FSZ_{it} + \beta_6 EPS_{it} + \mu_{it} \ldots \ldots \quad (4)$$

where, $FCD_{it} \times LIQ_{it}$is the moderating/interacting term of firm i at time t. It is a priori expected that higher FCD and lower liquidity risk (high liquidity) will,respectively,lead to increased financial stability of firms.By including the interaction term containing one independent variable at a time in the moderated model in (4), we were able to obtain information about the net effect of FCD on financial stability, given the values of liquidity risk, which was the moderating variable, especially for the interpretation of the interaction terms in the regression models. We were also able to obtain information about the net effect of liquidity risk on financial stability, given the values of FCD. This was based on the fact that the interpretations of the estimates from the model should be based on net (total) effects to mitigate potential challenges that could compromise the accuracy of estimates (Tchamyou & Asongu, 2017; Asongu, 2020a). However, both the conditional and unconditional coefficients of the independent variable must be statistically significant (Asongu, 2020b). We therefore followed the procedure inAsongu (2020b) and Nakpodiaet al. (2024) to compute the net effect of the independent variable, given the values of a moderating variable, using:

([coefficient of conditional effect * mean value of moderating variable] + coefficient of unconditional effect)(4)

The variables (dependent, independent, and moderating) used in this study are operationalized as in Table 1.

Table 3. 1: Measurement of Variables

Variable	Measurement	Literature
Dependent		
Sustainable growth rate (SUG)	Computed as the retention ratio multiplied by Return on Equity.	Christopher et al, 2024
Independent		
Foreign currency-denominated debts (FCD)	Measured as the ratio of foreign currency debts to total assets.	Demirkılıç (2021) & Nguyen et al (2023)
Moderating Variable		
Liquidity risk (LIQ)	Computed as current assets divided by current liabilities	Alarussiet al (2018)
Control Variables		
Firm Size (FSZ)	Natural logarithm of total assets.	Mefteh-Wali & Rigobert, 2018; Bruno & Shin, 2019
Earnings Per Share (EPS)	Ratio of profit after tax to outstanding shares.	Koptayevaet al., 2021 & Alarussiet al (2018)

Source: Prepared by the authors, 2025.

Data were collected from the annual reports of 28 selected firms over the years 2010-2023. These include key financial metrics and disclosures related to the variables of interest. Secondary data is appropriate for this study because itprovides reliable and comprehensive information needed for this study. Data analysis was carried out in stages. The first stage involves computing descriptive statistics to summarize the central tendencies and dispersion of the dataset (Hair et al., 2019). Standard deviation, maximum and minimum values, mean, and median provided initial insights into the nature of each variable. This is followed by preliminary diagnostics testing for data normality using the Shapiro-Wilk tool to determine whether the variables adhere to a normal distribution (Brooks, 2019), and correlation analysis using Pearson's correlation coefficient to detect potential multicollinearity problems among independent variables using the rule of thumb of a maximum value of 0.80 provided by Wooldridge (2020) as a guide. An autocorrelation test was also carried out using Cumbi-Huizinga (1992). The tool was used to test for possible autoregression (AR) or moving average (MA) in data series for the dependent variable (financial stability), and to determine whether the lagged dependent variable should be included as a regressor in the models. These conditions must be satisfied before the ordinary least squares (OLS) estimation technique can be used.The study employed panel regression techniques, specifically using the generalized method of moments (GMM) after carrying out some diagnostic tests that pointed to the unsuitability of the ordinary least squares in estimating the regression models specified to examine relationships among variables of interest. The methodologies ensured robust and accurate estimation of the relationships between FCD, liquidity risk, and financial stability.

Results

Descriptive Results

The descriptive statistics of each of the variables of interest were assessed according to their mean, standard deviation, maximum, and minimum values, as reflected in the summary statistics provided in Table 2. Sustainable growth rate (SUG) has a mean of 7.799, implying that firms, on average, recorded moderate growth during the period. The standard deviation of 20.096 indicates notable variation in growth rates from its mean value among the firms. The negative minimum value of -17.310 showed that some firms experienced a decline, while the maximum of 225.550 indicated an exceptionally high sustainable growth rate in others. This disparity suggested that while some firms expanded significantly, others struggled to maintain their growth trajectory, possibly due to differences in financial strategies, market conditions, or operational efficiency.

Foreign currency-denominated debt (FCD) exhibits a mean of 17.997, indicating that, on average, firms held about 18% of their debt in foreign currency. The standard deviation of 31.012 shows considerable variability in foreign currency debt exposure among firms. The minimum value of 0.000 suggests that some firms had no foreign currency debt, while the maximum value of 192.500

highlights that certain firms were highly exposed. This variation underscores the differing financial strategies adopted by firms regarding foreign debt and may reflect their risk tolerance or access to international financing. Liquidity risk (LIQ) has a mean value of 1.247, indicating that, on average, firms maintained a reasonable level of liquidity. However, the standard deviation of 1.285 showed notable variability. The minimum value of -0.750, though unusual, may suggest negative working capital positions in some firms, while the maximum of 15.510 indicates that some firms had substantial liquidity buffers. These results highlight that while some firms were adequately liquid, others faced liquidity constraints, which could impact their ability to manage short-term obligations, especially in the context of foreign currency debt.

Overall, the descriptive statistics indicate substantial variability across all variables, reflecting the diverse financial profiles and operational dynamics of listed manufacturing firms in Nigeria. The significant ranges observed in variables such as SUG and FCD suggested that firm-specific factors and external conditions may have influenced financial stability during the study period. These initial insights emphasize the need for a detailed regression analysis to further explore the relationships among these variables.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Sug	388	7.799	20.096	-17.310	225.550
Fcd	388	17.997	31.012	0.000	192.500
Liq	388	1.247	1.285	-0.750	15.510
Eps	388	0.649	3.953	-17.360	32.860
Fsz	388	7.305	1.094	0.680	9.080
Source: Authors (2025)					

Normality test results

One of the fundamental assumptions underlying the application of the ordinary least squares (OLS) regression approach is that the dataset must follow a normal distribution. This assumption implies that the observations should exhibit a bell-shaped, Gaussian distribution. The significance of this assumption lies in its role in ensuring more accurate and reliable inferences within the regression model, enhancing the robustness of estimation, confidence intervals, and hypothesis testing. However, substantial deviations from normality can compromise the validity of the regression outcomes, potentially leading to biased estimations, inaccurate confidence intervals, and unreliable hypothesis testing. In testing for normality, we employed the approach recommended by Mendes and Pala (2003), which identifies the Shapiro-Wilk test as the most powerful and reliable method for assessing data normality. This is because the test is sensitive to detecting deviations from normality, especially in smaller sample sizes, than other normality tests. From Table 3, the results showed that all the variables of interest were not normally distributed, given probability values that were less than 1% level.

Table 3: Test for Data Normality

Variable	Obs	W	V	Z	Prob>z
sug	388	0.475	140.576	11.752	0.000
fcd	388	0.633	98.425	10.905	0.000
liq	388	0.503	133.218	11.624	0.000
eps	388	0.640	96.349	10.854	0.000
fsz	388	0.852	39.732	8.749	0.000

Source: Authors (2025)

Multicollinearity test results

This study employed the Spearman rank correlation to examine the relationship between the variables, as it is a non-parametric test suitable for data that do not meet the assumption of normality. This correlation technique is more reliable in handling non-normal distributions, as it is based on ranking values, which helps to minimize the influence of outliers and extreme observations in a data series (Gauthier, 2001). Overall, the correlation results presented in Table 4 showed that correlation coefficients for each pair of variables were predominantly weak and moderate, less than 0.80, suggesting limited concerns about the multicollinearity problem among the variables.

Table 4: Spearman Rank Correlation Results

Variables	Sug	Fcd	Liq	Eps	Fsz
Sug	1.000				
Fcd	0.057	1.000			
Liq	0.158	-0.015	1.000		
Eps	0.463	-0.070	0.225	1.000	
Fsz	0.460	0.040	0.058	0.322	1.000

Source: Authors (2025).

Regression Results

The first panel in Table 5 was used to present results on the relationship between FCD and financial stability, the second panel was dedicated to the relationship between liquidity and financial stability while the third panel was used to present results on the interacting effects of liquidity on the relationship between FCD and financial stability, as well as the interacting effects of FCD on the relationship between liquidity and financial stability. The table, therefore, contained the conditional, unconditional, and net effects of both FCD and liquidity on financial stability.

The data reported were obtained using the GMM estimation technique due to the outcomes of the preliminary diagnostics tests carried out on the data series for the variables. We used fixed-smoothing asymptotics to compare the one-step and two-step GMM approaches. The one-step methodology employs the long-run variance (LRV) estimator to compute standard errors, resulting in heteroskedasticity and autocorrelation robust (HAR) standard errors, as outlined by Newey and West (1987) and Andrews (1991). The two-step technique uses the

LRV estimator for both standard error estimates and as the best weighting matrix in the second-step GMM criteria function. In the fixed-smoothing asymptotic, the weighting matrix approaches a random matrix, resulting in the second-step GMM estimator demonstrating asymptotic mixed normality instead of conventional asymptotic normality. This mixed normality addresses the uncertainty of the GMM weighting matrix and is anticipated to more accurately represent the finite sample distribution of the second-step estimator. Considering these criteria, the two-step GMM process provides a power advantage, rendering it the preferable method for hypothesis testing in this investigation.

The results obtained from the two-step GMM regression model presented in the first panel of Table 5 revealed that FCD had a significant negative effect [coef. = -0.031 (p=.017)] on the financial stability of listed manufacturing firms in Nigeria during the period under study. This indicated that an increase in FCD significantly reduced financial stability. The null hypothesis of no significant effect of FCD on financial stability was therefore rejected. Similarly, the results in the second panel of the table showed that liquidity had a significant negative effect [coef. = -0.023 (p=.000)] on the financial stability of the listed firms. However, the higher the liquidity position of a firm, the lower the liquidity risk. So,an increase in liquidity position (a decrease in liquidity risk) led to a decrease in the financial stability of the firms. This further indicates that the null hypothesis of no significant effect of liquidity risk on financial stability should also be rejected. The result of the interaction term containing FCD and liquidity showed a significant positive effect [coef. = 0.098 (p=.000)] on the financial stability of the firms. This is an indication that increasing liquidity (reducing liquidity risk), given an increase in FCD, will lead to increased financial stability, and that increasing FCD, given an increase in liquidity (low liquidity risk), will bring about increased financial stability.

Consistent with contemporary studies on interaction terms in regression models, such as Asongu (2020b) and Nakpodiaet al. (2024), the net effect of liquidity was computed to assess the incidence ofFCD in modulating the effect of liquidity on financial stability. In the third panel of Table 5, the net effect was computed as -2.218 = [(0.098*1.247) + (-2.340)]. In this computation, 1.247 was the average (mean) value of liquidity for all the sampled firms; 0.098 was the conditional effect from the interaction between FCD and liquidity, while -2.340 was the unconditional effect of liquidity on financial stability. A similar procedure was adopted to compute the net effect of FCD to assess the incidence of liquidity in modulating the effect of FCD on financial stability, which was computed as 1.725.

To test for the autocorrelation problem in equation model (1), whose estimates were presented in the first panel of Table 6, the panel autoregressive AR(1) and AR(2) tests were conducted. The results showed that the AR(1) statistic was significant (-3.321, P=.015), indicating the presence of first-order autocorrelation in the model. However, the AR(2) statistic was insignificant (-5.012, P=.198), suggesting the absence of second-order serial autocorrelation and

confirming the validity of the instruments used to estimate the GMM model, thereby supporting the reliability of the model for statistical inferences. The Sargan test result (2.843, P=.512) also indicated that the over-identifying restrictions were valid, confirming the appropriateness of the instruments used. Similar results on AR(1) and AR(2) tests, as well as the Sargan test, as shown in the second panel of Table 5. AR(1) statistic was significant (-4.401, P=.01) and AR(2) statistic was insignificant (-1.513, P=.236) while the Sargan test statistic was 5.220 (P =.335).

Table 5: Foreign Currency-denominated Debts, Liquidity and Financial Stability

Variables	Panel I	Panel II	Panel III
Sug(-1)	0.872***	0.785***	0.814***
	(.001)	(0.002)	(0.005)
Fcd	-0.031**		-0.039**
	(.017)		(.014)
Liq		-0.023***	-2.340***
		(.000)	(.000)
Liq x Fcd			0.098***
			(.000)
Eps	-0.101***	-0.097**	0.025**
	(.000)	(.043)	(.014)
Fsz	0.102***	0.104***	-0.995*
	(.000)	(.000)	(.072)
L.sug	0.160***	0.158***	0.155***
	(.000)	(.000)	(.000)
Intercept	-5.815**	-6.495***	-6.110**
	(.000)	(.000)	(.000)
Net effect (Liquidity risk)	NA	NA	-2.218
Net effect (Foreign currency debts)	NA	NA	1.725
Observations	360	360	360
AR(1)	-3.321	-4.401	-2.401
Sig.	(.015)	(.028)	(.011)
AR(2)	-5.012	-1.513	-3.513
Sig.	(.198)	(.236)	(.213)
Sargan Stat.	2.843	5.220	4.014
Sig.	(.502)	(.335)	(.381)
Instruments	22	25	26
No. of firms	28	28	28

Source: Authors (2025). ***, **, and * are 1, 5, and 10 percent levels of significance, respectively.

In addition, the estimates in the third panel of the table indicated a significant AR(1) statistic (-2.401, P=.011) but an insignificant AR(2) statistic (-

3.513, P=.213) and a Sargan test statistic of 4.014 (P=.381). A consistent and significant positive effect of lagged dependent variable, that is, financial stability, on the dependent variable was found across models. This demonstrated inertia among the firms in the effects of past values of the variable at less than a 1 percent level of significance, and that unobservable heterogeneity was properly controlled. Again, the Sargan test statistics indicated values with probabilities higher than 5 percent while the instrument counts for all the models were less than the number of cross sections, indicating that the instruments were valid and uncorrelated with error terms.

Discussion

The findings from the two-step GMM regression analysis revealed that FCD had a significant negative effect on the financial stability of the listed manufacturing firms in Nigeria. This suggests that firms with higher levels of FCD tend to experience weakened sustainable growth prospects and reduced financial stability. The finding was consistent with the argument ofCaraiman and Mates (2020) that FCD could threaten financial stability due to the potential for significant exchange rate losses. Similarly, the finding aligned with the position of Bae et al. (2016), which noted that excessive reliance on FCD can erode firm profitability, particularly when currency depreciation occurs. The findings also suggested that reliance on FCD could be detrimental to a firm's ability to pursue long-term growth strategies. This was consistent with the finding of Gabrijelčič et al. (2016), who argued that FCD could restrict firms' capacity to invest in growth opportunities due to the added burden of exchange rate risks. This means that FCD should be cautiously integrated into financing strategies by ensuring it does not undermine the firm's long-term sustainability objectives.

In addition, liquidity exhibited a significant negative effect on financial stability, indicating that heightened liquidity (low liquidity risk)undermined the long-term growth prospects of the firms. Using the current ratio to measure liquidity indicated a high current ratio, which led to a reduction in financial stability. This means that low liquidity risk reduced the financial stability of the firms, and hence, high liquidity risk increased financial stability. This finding suggested that most of the listed manufacturing firms engaged in high-risk financial strategies to boost their sustainable growth potential and financial stability during the period under consideration. This could also mean that the firms leveraged on short-term financing or maintained lower cash reserves, which enhanced immediate returns but exposed them to liquidity pressures and, hence, high liquidity risk. However, this contrasted the findings ofAwadzie (2020),who established that excessive liquidity risk can increase financial vulnerability, calling for the need to strike a balance between liquidity and financial stability.

While higher liquidity risk might indicate potentially higher returns in the short run, it could also signal increased financial vulnerability, which could threaten a firm's sustainability. As noted by Jones and Edwin (2019), profitability should not be achieved at the expense of long-term growth prospects. This is

because firms with high liquidity risks may appear profitable in the short run but could be undermining their capacity for sustainable growth (Gabrijelčič et al., 2016). The significant negative relationship between liquidity and sustainable growth rate did not support the findings of Nugroho et al. (2021), who emphasized that liquidity pressures (high liquidity risk or low liquidity ratio) can erode firms' capacity to invest in growth-oriented projects. This suggested that while firms might be able to leverage liquidity risks for short-term profitability, the approach could constrain their ability to invest in research, development, and expansion in the long run.

The significant moderating effect of liquidity in the relationship between FCD and financial stability suggested that appropriate liquidity risk practices could be used to address the detrimental effects of FCD on financial stability. The finding demonstrated that liquidity had a significant moderating positive effect on the relationship between FCD and the financial stability of the firms. It also pointed to the need for the firms to address broader risks associated with foreign currency exposure andfocus on strengthening their currency risk mitigation strategies, including hedging against exchange rate fluctuations, as highlighted by Kim and Chance (2018). The significant moderating effect of FCD in the relationship between liquidity and financial stability also indicated the viability of FCD in modulating the negative consequences of liquidity risk practices (low liquidity ratio) on financial stability.

The net effect of liquidity, which resulted from the change that occurred from the unconditional negative effect of FCD to a significant positive conditional effect of the variable on financial stability (when liquidity was interacted with FCD), was a demonstration of the modulating power of liquidity. It means that for FCD to have a significant positive influence on the financial stability, firms must have highliquidity risk (low liquidity), which involves keeping current assets components to the lowest possible level. This finding contrasted the position of Bae et al. (2020) that firms with higher liquidity levels (low level of liquidity risk) were better positioned to absorb foreign currency shocks, suggesting a potential moderating role. The findings of this study therefore demonstrated that the firms were unable to absorb the shocks from foreign currency fluctuations and hence financial instability.

The unconditional effect of liquidity on financial stability was found to be significantly negative, which implied detrimental effects of high liquidity (low liquidity risk)on a firm's financial stability. The result demonstrated the need to reassess how debt financing is factored into liquidity decisions. This is necessary considering the cushion effect of interacting FCD with liquidity, which led to a significant positive net effect of FCD on financial stability. This finding demonstrated the ability of FCDto moderate the adverse impact of high liquidity (low liquidity risk) on financial stability. It also demonstrated that firms experiencing liquidity crises can use FCD to address financial constraints. This supported the findings of Mohapatra and Nagar (2021) that Indian firms with higher financing constraints are more likely to borrow in foreign currencies,

particularly when domestic credit is scarce.Their study,however, warned that while foreign currency borrowing can temporarily ease liquidity issues, it could also expose firms to exchange rate volatility, potentially exacerbating financial instability.

Conclusions and Recommendations

In this study, we have investigated the dual roles of FCD and liquidity risk in explaining changes in the financial stability of firms by probing into the unconditional and conditional (moderating) effects of the two independent variables in financial stability models. Employing the tenets of the trade-off theory of capital structure using panel data obtained from 28 purposively selected listed manufacturing firms in Nigeria over the years 2010-2023 and system GMM step two to estimate models, we obtained empirical information that provided more insights into the predictive and moderating capacities of FCD and liquidity risk as far as financial stability modeling was concerned. FCD and liquidity risk significantly had a negative effect on financial stability, and increasing FCD was detrimental to financial stability, while a high liquidity position (low liquidity risk) caused the financial stability to decrease.

In addition, liquidity had a significant moderating effect on the relationship between FCD and financial stability, with a positive net effect, which demonstrated that for FCD to have a significant positive influence on financial stability, firms must be willing and ready to take higher liquidity risk. This showed the modulating power of liquidity risk in the relationship between FCD and financial stability. Again, FCD had a significant moderating effect on the relationship between liquidity risk and financial stability, which demonstrated the need to reassess how debt financing is factored into liquidity decisions. This is necessary considering the cushion effect of interacting FCD with liquidity risk. The finding demonstrated the ability of FCDto moderate the adverse impact of high liquidity risk on financial stability.

Considering these outcomes, we conclude that prudent management of FCD and effective liquidity strategies are a‘sine qua non’ for achieving sustainable growth rate, resilience, and financial stability of listed manufacturing firms in Nigeria. Again, the net effect of liquidity risk on the financial stability of firms was superior to that of FCD. These findings and conclusions portend some policy implications for managers, investors, and policymakers. First, corporate managers and directors should minimize excessive reliance on FCD to avoid exposure to exchange rate volatility. Instead, firms should diversify their financing sources by seeking local currency financing where possible. Given the dual effect of liquidity risk on financial stability, it is advised that managers should adopt more structured liquidity risk management frameworks. They also need to conduct regular liquidity risk assessments and maintain optimal liquidity buffers to enhance long-term sustainable growth and financial stability.

Secondly, firms should focus on managing foreign exchange risk and liquidity risk independently rather than relying on liquidity risk to moderate the

consequences of FCD exposure on financial stability, since a significant difference was recorded between the net effect and unconditional effect of liquidity on financial stability when FCDswere interacted with liquidity risk. Thirdly, existing and potential investors should critically assess the debts and liquidity risk profiles of firms when evaluating their financial stability to enhance informed, effective, and efficient investment decision-making. Finally, there is a need for regulators and policymakers to institute guidelines that encourage public firms to disclose their liquidity management strategies, thereby enhancing transparency and stability within the sector. Policies that promote responsible foreign borrowings and that provide support for firms to hedge foreign currency risks should be formulated to enhance profitability, protect firms from exchange rate-induced losses, and promote overall financial stability.

This study contributed to existing knowledge by offering insights into the need to develop strategies for mitigating liquidity and foreign currency risks in Nigeria's manufacturing sector. It extended our understanding of the intricate relationships among FCD, liquidity risk, and financial stability, particularly within the context of emerging economies like Nigeria. In addition, the study provided an insight that can help managers of manufacturing listed firms in Nigeria to better understand the impact of FCD on their firms' financial stability. The study of the dynamics of the relationships of FCD and liquidity risk, both as explanatory and moderating factors influencing financial stability, provided valuable insights into how firms can better position themselves to withstand external shocks and sustain their growth.

However, the study has some inherent limitations. It primarily relied on secondary data sourced from published financial statements of listed manufacturing firms, which were obtained from the websites of the firms. As such, qualitative factors such as managerial competence and corporate governance practices, which also influence financial stability, were not considered in this study. Again, the study covered a 14-year period, which might not have fully captured the long-term effects of FCD and liquidity risk on financial stability. In addition, the application of the results of this study is limited to certain sectors of the Nigerian economy since the study covered only the manufacturing firms listed on the NGX. Despite these limitations, the study offers valuable insights into the relationship between FCDs, liquidity risk, and financial stability. Hence, future studies should explore the impact of qualitative and macroeconomic factors, such as managerial competence of managers, corporate governance, inflation, and interest rates, in moderating the relationship between FCD and financial stability. The scope can be expanded to cover more years, for short and long-run analysis of the relationships, while covering more industrial sectors for possible sectoral analysis and comparisons.

References

1. *Ahmed, N., Ningi, B. U. andDalhat, B. U. (2018). Financial leverage and firm performance in Nigeria. Journal of Business and Economic Development, 3(3): 120-130.*
2. *Alarussi, A.S. and Alhaderi, S.M. (2018). Factors affecting profitability in Malaysia. Journal of Economic Studies, 45(3): 442-458.*
3. *Andrews, D. W. (1991). Heteroskedasticity and autocorrelation consistent covariance matrix estimation. Econometrica: Journal of the Econometric Society, 817-858.*
4. *Anton, S. G. andNucu, A. E. (2020). Exchange rate risk management practices in emerging markets. International Journal of Financial Studies, 8(1): 10-25.*
5. *Asongu, S. A., Nnanna, J.andAcha-Anyi, P. N. (2020a). Finance, inequality and inclusive education in Sub-Saharan Africa. Economic Analysis and Policy, 67: 162-177.*
6. *Asongu, S. A., Nnanna, J. and Acha-Anyi, P. N. (2020b). Inequality and gender economic inclusion: The moderating role of financial access in Sub-Saharan Africa. Economic Analysis and Policy, 65: 173-185.*
7. *Awadzie, E. N. (2020). Debt threshold levels and financial performance in Ghanaian firms. International Journal of Finance and Banking Studies, 9(3): 25-39.*
8. *Bae, K.-H., Kim, J. K., and Kwon, S. H. (2020). Determinants of foreign currency borrowing: Evidence from Korean firms. Asian Economic Policy Review, 15(2): 210-230.*
9. *Banker, R., Liang, D., and Ramasubbu, N. (2020). The effects of technical debt on firm performance. Journal of Information Technology Management, 31(1): 45-60.*
10. *Bruno, V. and Shin, H. S. (2019). Currency depreciation and corporate distress in emerging markets. Journal of Monetary Economics, 99: 1-16.*
11. *Caraiman, C. and Mates, D. (2020). The impact of foreign currency-denominated debt on financial stability. Journal of Accounting and Management Information Systems, 19(4): 534-552.*
12. *Christopher, A.D., Monday, A.U., Sunday, E.A., Samuel, T.K., and Umoh, M.M. (2024). Hedge accounting disclosures and sustainable growth of listed deposit money banks in Nigeria.African Journal of Accounting and Financial Research, 7(4): 92-108.*
13. *Chuke-Nwude, C. N., Itiri, I. O., Agbadua, B. O. andUdeh, S. N. (2016). Debt structure and financial performance of Nigerian quoted firms. Research Journal of Finance and Accounting, 7(2): 88-100.*
14. *Demirgüç-Kunt, A., Klapper, L.and Singer, D. (2017). Financial inclusion and inclusive growth: A review of recent empirical evidence. The World Bank.*
15. *Demirkılıç, S. (2021). Balance sheet effects of foreign currency debt and real exchange rate on corporate investment: evidence from Turkey. Emerging Markets Review, 47: 100796.*

16. *Gabrijelcic, M., Herman, U. andLenarcic, A. (2016). Firm performance and (foreign) debt financing before and during the crisis: Evidence from firm-level data. European Stability Mechanism Working Paper No. 15. Available at SSRN: ssrn.com.*
17. *IMF. (2023a). Global Financial Stability Report: Navigating the high-rate environment. www.imf.org.*
18. *IMF. (2023b). Dollar Exchange Rate Volatility and Productivity Growth in Emerging Markets: Evidence from Firm Level Data. IMF Working Paper No. 2023/111. Retrieved from: www.imf.org.*
19. *IMF. (2022). Assessing Systemic Financial Stability Risks Due to FX Mismatches. IMF Policy Papers. www.elibrary.imf.org.*
20. *Ivanov, I. andAtanasov, S. (2023). Currency risk management in emerging markets. Eastern European Economics, 61(1): 33-50.*
21. *Kim, S. F. and Chance, D. M. (2018). An empirical analysis of corporate currency risk management policies and practices. Pacific-Basin Finance Journal, 47: 109–128.*
22. *Koptayeva, A., Cherkasova, I. and Lebedev, A. (2021). Financial stability in emerging markets: A comparative analysis. Emerging Markets Finance and Trade, 57(8): 2211-2230.*
23. *Li, S. (2020). External and internal financing in the automobile sector. Automobile Economics Journal, 9(2): 98-115.*
24. *Liem, N. and Nguyen, H. T. (2020). Debt maturity structure and firm performance in Southeast Asia. Asian Economic Journal, 34(4): 377-395.*
25. *Mao, Y., Zhang, Z. and Li, X. (2022). Risk management practices in non-financial firms. Journal of Risk Finance, 23(5): 443-458.*
26. *Mefteh-Wali, S. and Rigobert, M. (2018). Foreign currency debt and firm performance in France. Finance and Economics Review, 26(4): 275-289.*
27. *Mendes, M. and Pala, A. (2003). Type I error rate and power of three normality tests. Pakistan Journal of information and technology, 2(2): 135-139.*
28. *Mohapatra, S. and Nagar, J. P. (2021). Foreign currency borrowing and firm financing constraints in emerging markets: evidence from India. Managerial Finance, 47(2): 121–144.*
29. *Modigliani, F. and Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. American Economic Review, 53(3): 433-443.*
30. *Nairametrics. (2024, April 25). Leading Nigerian companies incurred a staggering N1.7 trillion in FX losses in 2023. Nairametrics. nairametrics.com.*
31. *Nakpodia, F., Sakariyahu, R., Fagbemi, T., Adigun, R. andDosumu, O. (2024). Sustainable Development Goals, Accounting Practices and Public Financial Management: A Pre and Post COVID-19 Assessment. The British Accounting Review, 101466.*
32. *Newey, W. K. and West, K. D. (1987). Hypothesis testing with an efficient method of moments estimation. International Economic Review, 777-787.*

33. *Nguyen, D. and Nguyen, T. (2020). The effects of debt maturity on firm performance in Southeast Asia. Asian Journal of Business and Accounting, 13(1): 1-20.*
34. *Nguyen, L. M., Le, D., Vu, K. T. and Tran, T. K. (2023). The role of capital structure management in maintaining the financial stability of hotel firms during the pandemic, A global investigation. International Journal of Hospitality Management 109(2023): 103366.*
35. *Nugroho, A., Santoso, W. and Yuniarti, R. (2021). Financial stability and risk management in non-financial firms. Business and Economics Journal, 12(1): 25-38.*
36. *Omoregie, O. K., Olofin, S. A., and Ikpesu, F. (2019). Capital Structure and the Profitability-Liquidity Trade-off. International Journal of Economics and Financial Issues, 9(3): 105–115. www.econjournals.com.*
37. *Organisation for Economic Co-operation and Development. (2023). Economic Outlook,Volume 2023 Issue 2. www.oecd.org.*
38. *Ozili, P. K. (2022). Financial stability and its determinants: A case study of Nigeria. African Review of Economics and Finance, 14(1), 56-70.*
39. *Pradhan, R. P. and Hiremath, G. S. (2020). The balance sheet effects of exchange rate depreciation on firms' investments. International Review of Economics and Finance, 67: 23-34.*
40. *Sunardi, S., Husain, M., andKadim, A. (2020). Determinants of debt policy and firm performance in Indonesia. Journal of Financial Economics and Accounting, 15(2): 187-206.*
41. *Suprin, A., Tolstoy, S., and Zhelyazkova, I. (2019). Liquidity risk management in emerging markets. Journal of Risk Management, 12(4): 289-304.*
42. *Tchamyou,V. S. and Asongu, S. A. (2017). Information sharing and financial sector development in Africa. Journal of African Business, 18(1): 24-49.*
43. *Tokede, K. (2024, September 23). MTN, Nestlé, others recorded N2.02tn FX losses in H1 2024. This Day Live. www.thisdaylive.com.*
44. *Wahyuni, D., Ismail, M. and Sofyan, R. (2021). Risk management practices in emerging markets. Asian Journal of Risk and Insurance, 14(2): 55-73.*
45. *World Bank. (2023). Global Economic Prospects, June 2023. www.worldbank.org.*