

# Cash Flow Volatility and Trade Credit: Empirical Evidence from Vietnam

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## **Abstract:**

*This study examines the relationship between cash flow volatility and trade credit among firms listed on the Vietnamese stock market. Employing Feasible Generalized Least Squares (FGLS) and System Generalized Method of Moments (System GMM) estimations on a panel dataset of 581 non-financial firms over the period 2015–2024, the results indicate that cash flow volatility is negatively associated with accounts receivable. This finding remains robust across a range of robustness checks, including the use of alternative proxies for both explanatory and dependent variables, controls for macroeconomic factors, and alternative model specifications. In addition, the results reveal that the cash conversion cycle attenuates the negative impact of cash flow volatility on accounts receivable, whereas cash holdings amplify this adverse relationship. These findings underscore the critical role of cash flow risk in shaping firms' trade credit policies.*

**Keywords:** *Cash flow volatility; trade credit, FGLS, SGMM; Vietnamese stock market.*

## **1. Introduction**

Trade credit constitutes a crucial component of corporate short-term financing, serving both as a sales facilitation mechanism and as an alternative financing channel when firms and their customers face constraints in accessing external sources of capital. Within corporate finance, trade credit is commonly viewed as a substitute for traditional financing sources, particularly for firms that encounter difficulties in obtaining bank credit (Petersen & Rajan, 1997). Moreover, the provision of trade credit enables firms to stimulate sales, maintain commercial relationships, and support trading partners that are more financially constrained (Ng et al., 1999). This role becomes even more pronounced in economies with underdeveloped financial intermediation systems, where firms tend to rely more heavily on trade relationships to sustain their operations (Fisman & Love, 2003). Trade credit offers strategic benefits but also increases accounts receivable and lengthens the cash conversion process, thereby exerting pressure on liquidity and exposing firms to potential cash flow imbalances. As a result, decisions to expand or restrict trade credit are closely tied to firms' liquidity capacity and the stability of their operating cash flows. Cash flow volatility, which captures uncertainty in

firms' ability to generate internal funds, thus plays a critical role in shaping short-term financial policies (Almeida et al., 2004). Empirical evidence indicates that higher volatility is associated with lower trade credit provision, as firms become more cautious in extending receivables due to elevated liquidity risk and limited financing capacity (Harris et al., 2019). While trade credit can act as an adjustment mechanism during financial constraints or economic shocks (Love et al., 2007), it may also heighten vulnerability to liquidity stress under operational uncertainty (Heo, 2024; Bureau et al., 2024). Nonetheless, direct empirical evidence on this relationship remains limited.

This study contributes to the literature in several important ways. First, it provides firm-level evidence from an emerging market context like Vietnam, thereby extending existing research on the relationship between cash flow volatility and trade credit policies beyond developed economies. Given the distinctive institutional environment, financial constraints, and bank-dependence of firms in Vietnam, this setting offers valuable insights into how firms adjust their trade credit decisions under heightened cash flow uncertainty. Second, the study advances the literature by examining the moderating role of firms' liquidity management mechanisms. In particular, it investigates how cash holdings and the cash conversion cycle (CCC) jointly shape the sensitivity of trade credit policies to cash flow volatility. While prior studies have largely focused on direct effects, this study highlights the importance of internal liquidity buffers and working capital efficiency in influencing firms' responses to cash flow risk. By incorporating both cash reserves and the operational liquidity cycle as moderating factors, the study provides a more nuanced understanding of how firms manage short-term financial decisions under uncertainty.

## **2. Literature review and hypothesis development**

Trade credit is also regarded as a strategic instrument in market competition. The provision of flexible payment terms enables firms to attract customers, expand market share, and maintain long-term commercial relationships (Ng et al., 1999). This role becomes even more significant in economies with underdeveloped financial systems, where firms tend to rely more heavily on trade relationships to finance their business operations (Fisman & Love, 2003). However, the expansion of trade credit simultaneously increases investment in accounts receivable and lengthens the cash collection period, thereby delaying cash inflows from sales and raising firms' working capital financing needs.

In this context, firms' cash flow conditions play a pivotal role in shaping trade credit policy. Cash flow from operating activities reflects a firm's internal cash-generating capacity and constitutes a key source of liquidity for meeting short-term financial obligations as well as financing working capital needs (Almeida et al., 2004; de Almeida & Eid, 2014; Aktas et al., 2015). When cash flows are stable,

firms are better positioned to internally finance accounts receivable arising from sales activities and to maintain relatively flexible trade credit policies. In contrast, heightened cash flow volatility exposes firms to short-term cash shortages and increases uncertainty in forecasting future cash flows, thereby rendering the extension of trade credit more risky.

Cash flow instability can exacerbate financial risk and default risk, ultimately affecting firms' financing and financial management decisions (Harris et al., 2019; Naser, 2024). In such circumstances, the provision of trade credit may increase working capital financing needs and further intensify firms' financial risk. Consequently, firms experiencing greater cash flow volatility are more likely to reduce the scale of accounts receivable or tighten trade credit terms in order to mitigate liquidity risk.

Harris et al. (2019) provide empirical evidence that cash flow stability is a key determinant of firms' trade credit policies. Using data from firms across 21 emerging Asian economies, the study finds that cash flow volatility is negatively associated with the provision of trade credit. Moreover, in the presence of economic shocks or financial crises, firms tend to adjust their trade credit policies in response to changing financial conditions. Love et al. (2007) show that during periods of financial distress, when access to bank credit becomes constrained, firms are more likely to modify their trade credit policies to manage liquidity risk and sustain business operations. These findings suggest that trade credit is not merely a sales instrument but also a financial decision that is strongly influenced by firms' cash flow conditions and the broader financial environment. Accordingly, this study proposes the following hypothesis:

***H1: Cash flow volatility has a negative impact on trade credit among firms listed on the Vietnamese stock market.***

### 3. Research methodology and data

#### 3.1. Empirical model specification

This study builds upon the empirical framework developed by Harris et al. (2019), with appropriate modifications to better reflect the context of firms operating in an emerging market such as Vietnam. The regression model is specified as follows:

$$\text{RECEIVE}_{i,t} = \beta_0 + \beta_1 \text{SDCF}_{i,t} + \beta_2 \text{PAY}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{DEBT}_{i,t} + \beta_5 \text{INVD}_{i,t} + \beta_6 \text{SG}_{i,t} + \mu_j + \pi_t + \varepsilon_{it} \quad (1)$$

Where:

**RECEIVE:** Trade credit supplied (accounts receivable);

**SDCF3:** Cash flow volatility;

**PAY:** Trade credit received from suppliers (accounts payable);

**SIZE:** Firm size;

**DEBT:** Financial leverage;

**INVD:** Inventory holding period;

**SG:** Sales growth rate;

**I, t:** firm *i* and year *t*;

**$\mu_i$ :** Industry-fixed effects.

**$\alpha_t$ :** Year-fixed effects.

**$\epsilon$ :** Error term.

**Table 2. Variable definitions**

<b>Notation</b>	<b>Measurement</b>	<b>Source</b>
<b>RECEIVE1</b>	Accounts receivable scaled by total assets	Harris et al. (2019); Luo (2021, 2022); Gurung and Shrestha (2023)
<b>SDCF3</b>	Standard deviation of the ratio of cash flow to total assets over a rolling three-year period	Harris et al. (2019); Bates et al. (2009)
<b>PAY</b>	(Accounts payable $\times$ 365) divided by cost of goods sold	Harris et al. (2019); Petersen and Rajan (1997)
<b>SIZE</b>	Natural logarithm of total assets	Harris et al. (2019); Luo (2021, 2022); Liu et al. (2023)
<b>DEBT</b>	(Short-term and long-term borrowings and finance lease liabilities) divided by total assets	Harris et al. (2019); Molina and Preve (2009)
<b>INVD</b>	Inventory $\times$ 365 divided by cost of goods sold	Harris et al. (2019); Luo (2021, 2022); Liu et al. (2023)
<b>SG</b>	(Revenue in year <i>t</i> - revenue in year <i>t</i> - 1) divided by revenue in year <i>t</i> - 1	Harris et al. (2019); Liu et al. (2023)

### 3.2. Estimation Method

Pooled Ordinary Least Squares, the Fixed Effects Model, and the Random Effects Model (REM) rely on assumptions of homoskedasticity and the absence of serial correlation in the error terms assumptions that are often violated in firm-level data. To address these issues, this study employs the Feasible Generalized Least Squares (FGLS) estimator, which allows for the correction of heteroskedasticity

and autocorrelation in panel data, thereby yielding more efficient and reliable estimates (Baltagi, 2021).

Cash flow volatility may be endogenous due to reverse causality and omitted variables. To address this issue, this study employs the System GMM estimator (Blundell & Bond, 1998) to address potential endogeneity issues and to capture the dynamic nature of accounts receivable through the inclusion of a lagged dependent variable.

### 3.3. Data

The research sample comprises firms listed on the Vietnamese stock market over the study period. Financial data are obtained from the FiinPro database. Consistent with standard practice in empirical corporate finance research, firms operating in the financial sectors such as banks, insurance companies, and other financial institutions are excluded due to differences in capital structure and regulatory frameworks (Luo, 2021, 2022; Liu et al., 2023; Li, 2024). In addition, observations with missing data required for the analysis are removed. After applying these screening criteria, the final sample consists of 5,350 firm-year observations from 581 non-financial listed firms. To mitigate the influence of outliers, all continuous variables are winsorized at the 1st and 99th percentiles.

## 4. Empirical Results

### 4.1. Descriptive Statistics and Correlation Matrix

The descriptive statistics, reported in Table 2, provide an overview of the key characteristics of the variables employed in the empirical model.

**Table 2. Descriptive Statistics**

<b>STATS</b>	<b>RECEIVE1</b>	<b>SDCF3</b>	<b>PAY</b>	<b>SIZE</b>	<b>DEBT</b>	<b>INVD</b>	<b>SG</b>
<b>N</b>	5350	5350	5350	5350	5350	5350	5350
<b>MEAN</b>	0.1834	0.0599	0.1088	27.446	0.2152	96.838	0.0358
<b>MEDIAN</b>	0.1445	0.0406	0.0791	27.347	0.1860	62.858	-0.0098
<b>SD</b>	0.1561	0.0610	0.1004	1.5891	0.1855	129.387	0.3927
<b>MIN</b>	0.0005	0.0008	0.0001	23.913	0	0	-0.7438
<b>MAX</b>	0.6928	0.3253	0.5036	31.802	0.6502	887.847	2.2019

**Source:** Author's calculations

The descriptive statistics indicate that RECEIVE1 has a mean value of 0.1834 and a median of 0.1445, with values ranging from 0.0005 to 0.6928. The fact that the mean exceeds the median suggests a right-skewed distribution of accounts receivable, implying that a subset of firms maintains relatively high levels of receivables compared to the rest of the sample. This reflects heterogeneity in the use of trade credit across firms. For SDCF3, the mean is 0.0599 and the median

is 0.0406, indicating that the degree of cash flow volatility is not uniformly distributed among firms.

The correlation matrix reported in Table 3 presents preliminary relationships among the variables. Notably, cash flow risk (SDCF3) is negatively correlated with the dependent variable RECEIVE1 at the 1% significance level ( $p < 0.01$ ). In contrast, accounts payable (PAY) exhibits a strong positive correlation with RECEIVE1 (0.510). The pairwise correlation coefficients among the independent variables are generally below 0.8, suggesting that severe multicollinearity is unlikely to be a concern in the model.

**Table 3. Correlation Matrix**

VARIABLES	RECEIVE1	SDCF3	PAY	SIZE	DEBT	INVD	SG
RECEIVE1	1						
SDCF3	-0.0608***	1					
PAY	0.470***	-0.0488***	1				
SIZE	-0.195***	-0.250***	-0.0178	1			
DEBT	-0.00855	-0.303***	-0.0175	0.416***	1		
INVD	-0.0770***	-0.104***	-0.0276*	0.0525**	0.0765**	1	
SG	0.0439**	-0.0117	0.0409*	-0.0248	-0.0202	-0.130***	1

**Source:** Author's calculations

*Note:* \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

#### 4.2. Empirical Results

Table 4 reports the estimation results on the impact of cash flow volatility on the trade credit policies of listed firms in Vietnam. This study tests Hypothesis H1. Accordingly, the coefficient on cash flow volatility is expected to be negative and statistically significant.

**Table 4. Regression results**

VARIABLES	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
	RECEIVE $1_{i,t}$	RECEIV $E2_{i,t}$	RECEIV $E1_{i,t}$	RECEIVE $1_{i,t+1}$	RECEIVE $1_{i,t}$	RECEIVE $1_{i,t}$
SDCF3 $_{i,t}$	-0.0800*** (0.0161)	- 0.0581*** (0.0209)		-0.0650*** (0.0181)	-0.0820*** (0.0161)	-0.6992** (0.3385)

<b>SDCF5<sub>i,t</sub></b>			- 0.1391*** (0.0217)			
<b>PAY<sub>i,t</sub></b>	0.4866*** (0.0140)	0.1183*** (0.0155)	0.4717*** (0.0142)	0.2864*** (0.0153)	0.4903*** (0.0140)	0.0735 (0.0911)
<b>SIZE<sub>i,t</sub></b>	-0.0200*** (0.0009)	- 0.0075*** (0.0015)	- 0.0214*** (0.0009)	-0.0203*** (0.0010)	-0.0198*** (0.0009)	0.0208* (0.0126)
<b>DEBT<sub>i,t</sub></b>	0.0754*** (0.0070)	0.0601*** (0.0097)	0.0858*** (0.0069)	0.0656*** (0.0073)	0.0756*** (0.0070)	0.1765** (0.0750)
<b>INVD<sub>i,t</sub></b>	-0.0001*** (0.0000)	0.0003*** (0.0000)	- 0.0001*** (0.0000)	0.0000 (0.0000)	-0.0001*** (0.0000)	-0.0000 (0.0000)
<b>SG<sub>i,t</sub></b>	0.0056*** (0.0016)	- 0.0459*** (0.0029)	0.0056*** (0.0016)	-0.0026 (0.0018)	0.0050*** (0.0015)	-0.0100 (0.0087)
<b>RECEIVE1<sub>i,t-1</sub></b>						0.4662** (0.1905)
<b>GDPG<sub>t</sub></b>					-0.0004* (0.0003)	0.252
<b>CPI<sub>t</sub></b>					0.0013** (0.0006)	
<b>CONTROL</b>	IY	IY	IY	IY	I	IY
<b>CONSTANT</b>	0.6390*** (0.0266)	0.2709*** (0.0421)	0.6838*** (0.0270)	0.6739*** (0.0282)	0.6374*** (0.0263)	-0.7480* (0.4374)
<b>OBSERVATIONS</b>	5,344	5,344	5,057	4,756	5,344	5,338
<b>Number of firmid</b>	581	581	573	578	581	578
<b>AR2P</b>						0.479
<b>HANSEN P</b>						0.315

**Source:** Author's calculations

**Note:** \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively; standard errors are reported in parentheses; I and Y represent industry and year fixed effects, respectively.

#### 4.2.1. Baseline estimation results

Model (1) in Table 4 reports the baseline regression results using the FGLS estimator, in which the coefficient on SDCF3 is negative and statistically significant at the conventional 1% level, indicating that as cash flow volatility increases, firms tend to reduce the scale of accounts receivable, reflecting a more cautious approach in extending trade receivables.

PAY and DEBT exhibit positive and statistically significant effects, whereas SIZE and INVD are negatively associated with accounts receivable. In addition, SG shows a positive and statistically significant effect in the model.

#### 4.2.2. *Robustness Checks*

To ensure the reliability and stability of the baseline regression results, a series of robustness checks are conducted to examine the consistency of the empirical findings.

##### 4.2.2.1. *Alternative measure of accounts receivable*

As an additional robustness check, this study replaces the baseline proxy for accounts receivable with an alternative measure, denoted as RECEIVE2, calculated as accounts receivable divided by net revenue (Molina & Preve, 2009; Harris et al., 2019; Watson, 2021; Gofman & Wu, 2022). The results from Model (2) in Table 4 show that the estimated coefficient of SDCF3 remains negative and statistically significant at the 1% level. This finding is consistent with the baseline results, indicating that the adverse impact of cash flow volatility on trade credit is not sensitive to the specific measurement of the dependent variable.

##### 4.2.2.2. *Alternative measure of cash flow volatility*

To examine the robustness of the main findings, this study employs an alternative proxy for cash flow volatility, denoted as SDCF5, measured as the standard deviation of the ratio of cash flow to total assets over a rolling five-year period. (Bates et al., 2009; Harris et al., 2019).

The estimation results from Model (3) in Table 4 indicate that the coefficient on SDCF5 remains negative and statistically significant at the 1% level. This finding is consistent with the baseline model, confirming that the adverse impact of cash flow volatility on trade credit is robust to alternative measures of cash flow volatility.

##### 4.2.2.3. *An alternative model*

To further assess the robustness of the findings, the study modifies the model specification. Specifically, following Harford et al. (2009), the analysis employs the dependent variable at time  $t + 1$ . This approach helps mitigate potential reverse causality between the dependent and independent variables.

The estimation results of the alternative specification, reported in Model (4) of Table 4, show that the coefficient on SDCF3 remains negative and statistically significant at the 1% level. The consistency in both the sign and statistical significance of SDCF3 indicates that the inverse relationship between cash flow volatility and trade credit is robust to changes in model specification.

##### 4.2.2.4. *Macroeconomic controls*

In the specification (1), year dummy variables are employed to control for macroeconomic conditions that may influence firms' trade credit decisions. However, to further assess the robustness of the findings, this study replaces year

fixed effects with explicit macroeconomic variables, namely GDP growth (GDPG) and inflation (CPI).

The estimation results from Model (5) in Table 4 indicate that the coefficient on the variable of interest, SDCF3, remains negative and statistically significant at the 1% level. The consistency of this result suggests that the cash flow volatility-trade credit relation is not sensitive to macroeconomic controls. This further reinforces the robustness of the study's findings.

#### 4.2.2.5. *Dynamic Model*

Empirical evidence on trade credit suggests that firms' credit policies are inherently dynamic, as current decisions may be influenced by policies implemented in previous periods (Luo, 2022). Accordingly, the dynamic model includes the lagged dependent variable to capture persistence in trade receivables. To estimate the dynamic model and address potential endogeneity issues arising from the inclusion of a lagged dependent variable, this study employs the System GMM estimator developed by Blundell and Bond (1998). The Arellano–Bond test for second-order serial correlation in first differences (AR(2)) indicates no evidence of serial correlation (AR2P = 0.479). In addition, the Hansen test of overidentifying restrictions fails to reject the null hypothesis of instrument validity (HansenP = 0.315). These results suggest that the System GMM model is appropriately specified and that the instrument set used in the estimation is valid.

The results reported in Model (6) of Table 4 indicate that the coefficient on SDCF3 remains negative and statistically significant at the 5% level, confirming that the inverse relationship between cash flow volatility and accounts receivable persists in a dynamic setting. Overall, this evidence further reinforces the robustness of the study's findings.

#### 4.2.3. *Moderating Effects*

The cash flow volatility-trade credit relation may not be homogeneous across firms, but instead depends on firm-specific liquidity conditions and working capital structures. In this regard, Table 5 presents the moderating roles of cash conversion cycle (CCC) and cash holdings through interaction terms.

**Table 5. Moderating Effects**

VARIABLES	MODEL	
	(1)	(2)
<b>SDCF3</b>	-0.0978***	-0.1396***
	-0.017	-0.0288
<b>SDCF3*CCC</b>	0.0004***	
	-0.0001	
<b>CCC</b>	0.0006***	
	0	

VARIABLES	MODEL	
	(1)	(2)
<b>SDCF3*CASH</b>		-0.0322***
		-0.0105
<b>CASH</b>		-0.0040***
		-0.001
<b>PAY</b>	0.7116***	0.4777***
	-0.0128	-0.0139
<b>SIZE</b>	-0.0135***	-0.0201***
	-0.0007	-0.0009
<b>DEBT</b>	0.0628***	0.0648***
	-0.0058	-0.007
<b>INVD</b>	-0.0007***	-0.0001***
	0	0
<b>SG</b>	0.0117***	0.0059***
	-0.0014	-0.0016
<b>CONTROL</b>	IY	IY
<b>CONSTANT</b>	0.4386***	0.6346***
	-0.0217	-0.0265
<b>OBSERVATIONS</b>	5,344	5,344
<b>NUMBER OF FIRMS</b>	581	581

**Source:** Author's calculations

**Note:** \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively; standard errors are reported in parentheses; I and Y represent industry and year fixed effects, respectively.

#### 4.2.3.1. Cash conversion cycle

The cash conversion cycle (CCC) reflects the efficiency of liquidity management within a firm's operating cycle (Chen, 2022; Mansilla-Fernández et al., 2022). A longer CCC may increase financial pressure and make firms more sensitive to liquidity shocks or financial constraints (Stavropoulos & Zounta, 2025; Silva et al., 2026). In this context, CCC may serve as a moderating factor in the relationship between cash flow volatility and trade credit. Specifically, when working capital is tied up for longer periods within the operating cycle, firms face greater constraints in adjusting their trade credit policies in response to fluctuations in cash flow. CCC is measured as the sum of inventory days and receivables days minus payables days (Stavropoulos & Zounta, 2025; Dewangan & Kannadhasan, 2025).

The results, reported in Model (1) of Table 5, show that the coefficient on the interaction term SDCF3 \* CCC is positive and statistically significant at the 1%

level, indicating that the cash conversion cycle attenuates the negative relationship between cash flow volatility and accounts receivable.

#### 4.2.3.2. *Cash holdings*

The value of cash increases when firms face greater uncertainty and higher cash flow risk, consistent with the precautionary motive in liquidity management (Chowdhury & Doukas, 2022; Ho et al., 2024). At the same time, cash is considered a critical instrument for managing liquidity risk, enabling firms to cope with financial shocks (Dahiya et al., 2025). Accordingly, cash holdings are likely to moderate the inverse relationship between cash flow volatility and accounts receivable. Cash holdings are measured as the ratio of cash and cash equivalents to total assets (Nnadi, 2022; Gounopoulos & Zhang, 2024), and then transformed using the natural logarithm (CASH).

The results, reported in Model (2) of Table 5, indicate that the coefficient on the interaction term  $SDCF3 * CASH$  is negative and statistically significant at the 1% level, suggesting that cash holdings amplify the negative impact of cash flow volatility on accounts receivable.

### 4.3. Discussion

The inverse relationship between cash flow volatility and accounts receivable supports H1 and indicates that firms adopt a more cautious approach to extending trade credit under cash flow uncertainty. As volatility increases, firms face heightened liquidity risk and reduced predictability of future cash inflows, making trade credit expansion more costly by lengthening the cash conversion process and increasing working capital needs (Aktas et al., 2015; Bureau et al., 2024). Consequently, firms are more likely to tighten credit policies and limit investment in receivables. This behavior aligns with the view that firms adjust short-term financial policies to preserve liquidity when confronted with financial uncertainty (Almeida et al., 2004; Bates et al., 2009).

The findings are consistent with prior empirical evidence indicating that cash flow volatility prompts firms to adopt more conservative trade credit policies to manage both liquidity and credit risks. Specifically, firms experiencing higher levels of cash flow volatility tend to scale back the provision of trade credit in order to limit financial exposure and mitigate customer-related risks (Harris et al., 2019). At the same time, in environments characterized by elevated economic uncertainty, firms may also employ trade credit as a risk management instrument to preserve liquidity and ensure operational continuity (Love et al., 2007; Bureau et al., 2024). Overall, these results further reinforce the argument that trade credit serves not only as a mechanism to stimulate sales but also as a financial decision that is highly sensitive to cash flow risk and firms' liquidity conditions.

The cash conversion cycle attenuates the negative impact of cash flow volatility on accounts receivable, implying that firms with longer cash conversion cycles tend to adjust their receivables more cautiously when confronted with cash flow risk.

Moreover, the cash conversion cycle reflects the extent to which capital is tied up in the working capital process. When the cycle is prolonged, accounts receivable is more closely embedded in the operating cycle and customer relationships, making it more difficult for firms to substantially curtail trade credit even in the presence of heightened cash flow uncertainty. Consequently, although liquidity risk increases with cash flow volatility, the degree of contraction in accounts receivable is mitigated among firms with longer cash conversion cycles. These results are consistent with the predictions of working capital management theory and recent empirical evidence emphasizing the role of operational characteristics in shaping trade credit policies (Chen et al., 2022; Harris et al., 2019; He et al., 2024).

In contrast, cash holdings play a moderating role by amplifying the negative impact of cash flow volatility on trade credit, suggesting that firms with higher levels of cash reserves tend to adopt more conservative trade credit policies when facing cash flow risk. A plausible explanation is that cash serves as a liquidity buffer, enabling firms to respond more proactively to financial uncertainty (Chowdhury & Doukas, 2022; Dahiya et al., 2025). Specifically, as cash flow risk intensifies, firms with substantial liquidity reserves may pursue a precautionary strategy of cash preservation by reducing the extent of credit extended to customers, thereby limiting financial exposure within the trade credit chain. Therefore, cash holdings not only reflect a firm's liquidity position but also amplify its responsiveness to cash flow risk in short-term financial decision-making.

## **5. Conclusion and implications**

This study examines the relationship between cash flow volatility and trade credit among firms listed on the Vietnamese stock market. Employing FGLS and System GMM estimations on a panel dataset of 581 non-financial firms over the period 2015 – 2024, the results indicate that cash flow volatility is negatively associated with accounts receivable. This finding remains robust across a range of sensitivity analyses, including the use of alternative proxies for both independent and dependent variables, controls for macroeconomic factors, and alternative model specifications. In addition, the results show that the cash conversion cycle attenuates the negative impact of cash flow volatility on accounts receivable, whereas cash holdings amplify this inverse relationship. Overall, these findings underscore the important role of cash flow risk in shaping firms' trade credit policies.

The findings suggest that firms should place greater emphasis on cash flow risk management when designing trade credit policies. In business environments characterized by high uncertainty, maintaining rigorous monitoring mechanisms for cash flow volatility, customer quality, and collection cycles can enable firms to adjust their credit policies in a timely manner, thereby mitigating liquidity risk. At the same time, firms need to carefully balance the objective of sales expansion

with the necessity of preserving liquidity, particularly during periods when cash flows become less stable.

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**Competing interest:** The author declares no competing interests

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