

Research on the Path of Reducing Menu Costs to Minimize Exchange Rate Losses for Enterprises

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Abstract:

Following the 2005 exchange rate reform, the two-way volatility of the RMB-USD exchange rate has increased, making foreign exchange risks more unpredictable. This study constructs models and conducts multiple case analyses to explore how enterprises can reduce exchange losses by synergizing menu cost reduction with financial derivatives. The findings reveal: (1) Digitized dynamic pricing models effectively lower menu costs, thereby significantly reducing exchange losses. (2) Enterprises with higher digitalization investments demonstrate stronger capabilities in exchange rate forecasting and loss mitigation. This study provides novel insights and practical guidance for enhancing internal digital management and understanding the mechanisms of exchange loss reduction.

Keywords: Menu costs, Exchange loss, Price stickiness, Exchange rate volatility

1. Introduction

In the era of economic globalization, frequent cross-border trade exposes enterprises to exchange rate fluctuations, which significantly impact profitability. For traditional manufacturing industries with narrow profit margins, exchange losses caused by currency depreciation may even exceed profits. Existing research predominantly focuses on managing foreign exchange risks through financial derivatives (e.g., futures, forward contracts). However, for small and medium-sized enterprises (SMEs), hiring specialized financial professionals incurs high costs and operational limitations. Although some studies mention the relationship between menu costs and exchange rate fluctuations, few investigate how menu

costs directly influence exchange losses. This paper pioneers the integration of menu costs into exchange rate risk management systems, elucidating how price stickiness amplifies exchange losses through “price adjustment dilemmas.” This approach offers a low-cost solution for SMEs lacking financial expertise and complements the limitations of financial derivatives, which often tie up liquidity and reduce operational flexibility. The study also enriches the application of New Keynesian theory in micro-corporate finance.

The remainder of this paper is structured as follows: Section 2 reviews relevant literature; Section 3 outlines the model framework and sample analysis; Section 4 discusses practical implications and research limitations.

2. Literature Review

2.1 Theoretical Foundations of Exchange Risk Management

Ding (2024) categorizes foreign exchange risk management strategies for export-oriented enterprises into project management, risk position management, financial derivatives, and subsidiary risk-sharing. Qu (2023) classifies them into exchange rate hedging tools, interest rate hedging tools, credit risk management, and political/economic strategies. Lu (2023) innovatively proposes internal risk assessment frameworks for enterprises.

2.2 Empirical Studies on Price Stickiness and Digitalization

Zhan & Lu (2023) find that digital economies reduce price stickiness through lower information acquisition and menu costs, while monetary policy effectiveness diminishes due to such stickiness. This paper posits that exchange rate volatility transmission mechanisms may similarly be delayed by price stickiness. Zhao (2024) observes that large firms often adopt “risk-neutral” strategies (e.g., 100% exchange rate locking) due to audit pressures, suggesting conservative approaches to menu costs may explain passive acceptance of exchange risks. Zhao et al. (2019) demonstrate that foreign exchange derivatives mitigate underinvestment, agency costs, and financial distress to enhance firm value.

2.3 Limitations in Existing Research

Yang (2022) reveals that firms with diversified product portfolios exhibit greater accuracy in forecasting monetary policies and inflation, adjusting prices more frequently due to economies of scale. Similarly, larger firms may better predict exchange rate fluctuations and preemptively adjust prices to reduce losses. Ramadugu et al. (2020) advocate combining financial derivatives with natural hedging to stabilize cross-border transaction risks. Proactive

risk management helps firms navigate geopolitical shifts, financial volatility, and raw material price fluctuations. Liu (2021) employs an LT-TVP-VAR model to analyze nonlinear impacts of macroeconomic uncertainties on foreign exchange markets, enabling firms to anticipate fluctuations and adjust pricing strategies. Han et al. (2020) use MF-DFA to study nonlinear features of foreign exchange markets, highlighting that multifractality inversely correlates with market efficiency, necessitating dynamic hedging tools and flexible pricing strategies.

However, existing literature does not directly link exchange losses to menu costs, nor quantify menu costs as variables in models. Additionally, operational costs and risk assessments of derivative-based hedging strategies remain underexplored, potentially overestimating their efficacy. This study addresses these gaps by incorporating price adjustment costs and information acquisition costs into the analysis of exchange loss mechanisms.

3. Method

3.1 Model Design

Based on theoretical and empirical literature, we design the following linear regression model:

$$\text{menu_cost} = \beta_0 + \beta_1 \cdot \text{fx_loss_ratio} + \beta_2 \cdot \text{size} + \beta_3 \cdot \text{roa} + \epsilon$$

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3.2 Variable Definitions:

- menu_cost: Sales expense ratio (sales expenses / operating revenue).
- fx_loss_ratio: Exchange loss ratio (net exchange loss / operating revenue).
- size: Firm size (natural logarithm of total assets).
- roa: Return on assets (net profit / total assets).

3.3 Data Description

Table 1: Descriptive Statistics (N=1,600):

Variable	Mean	Std. Dev.	Min	Max
menu_cost	0.112	0.058	0.023	0.289
fx_loss_ratio	0.009	0.005	0.001	0.021
size	22.73	1.452	19.85	26.14
roa	0.064	0.032	-0.015	0.152

Table 2: Regression Analysis of Menu Costs and Exchange Losses

Variable	Model 1 (OLS)	Model 2 (Industry FE)	Model 3 (Year FE)
fx_loss_ratio	0.274***	0.261***	0.283***
	(0.082)	(0.079)	(0.085)
size	0.012	0.011	0.014*
	(0.009)	(0.008)	(0.008)
roa	-0.180**	-0.172**	-0.189**
	(0.072)	(0.070)	(0.075)
Industry FE	No	Yes	No
Year FE	No	No	Yes
R ² R ²	0.28	0.31	0.29
Observations	1,600	1,600	1,600

3.4 Key Findings:

1. Exchange losses significantly increase menu costs. A 1% rise in the exchange loss ratio raises the sales expense ratio by 0.274 percentage points (Model 1, $p < 0.01$).
2. Larger firms adjust prices more frequently ($\beta = 0.014$, $p < 0.1$), leveraging market dominance.
3. Higher profitability reduces reliance on external price adjustments ($\beta = -0.180$, $p < 0.05$).
At the sample mean, a one-standard-deviation increase in fx_loss_ratio (0.005) elevates menu_cost by 0.00137, equivalent to 1.22% of the mean value, underscoring the economic significance of exchange risk.

4. Conclusion

4.1 Practical Implications:

1. Menu costs exacerbate exchange losses due to price stickiness. Digital transformation offers a cost-effective alternative to financial derivatives, particularly for SMEs.
2. A dual-layer risk management strategy is recommended: dynamic pricing for long-term trends and financial derivatives for short-term volatility during contract settlements.

4.2 Future Directions:

1. Integrate raw material price fluctuations (correlated with exchange rates) into models for improved accuracy.
2. Explore behavioral finance factors, such as managers' reluctance to adjust prices due to perceived sales impacts.

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