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Protecting Subsidiaries from Exchange Rate Risk: The Role of Ownership Ratios in Invoice Currency Choices*

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Abstract

This study examines the determinants of invoice currency choice in Japanese export transactions to Thailand, utilizing granular data from Japan Customs. A key contribution of this study is its examination of how the ownership ratio (OSR) of Thai importers influences invoice currency choice in exports by Japanese complete car manufacturers and their subsidiaries. The empirical analysis reveals that a higher OSR of Thai importers is associated with a decreased likelihood of yen-denominated transactions. Furthermore, this study explores how invoice currency preferences diverge across different trade channels, including intra-firm trade. The findings reveal distinct patterns: parent companies predominantly prefer U.S. dollar-invoiced exports, whereas domestic subsidiaries—constrained by their limited capacity to manage exchange rate risks—exhibit a strong preference for yen-invoiced exports. These results underscore the significant differences in invoice currency strategies across trade channels. Notably, the analysis suggests that parent companies strategically select invoice currencies—whether yen or foreign currencies—as part of a broader effort to protect their foreign subsidiaries from exchange rate volatility, reflecting a deliberate approach to centralized risk management.

Keywords: Ownership ratio; Invoice currency; Intra-firm trade; Overseas subsidiaries; Japan Customs transaction data
JEL Classification: F14, F23, F31

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1. Introduction

The choice of invoice currency has been extensively analyzed in the international finance literature, as it significantly influences the international transmission mechanism of macroeconomic policy. Recent empirical studies have employed customs declaration data to investigate invoice currency choice and its effect on exchange rate pass-through (ERPT), including Gopinath et al. (2010, 2020), Chung (2016), Devereux et al. (2017), and Amiti et al. (2022). Notably, Goldberg and Tille (2016) provide critical insights into how ownership structures influence invoicing decisions, emphasizing that parent companies may centralize exchange rate risk management, thereby influencing the selection of local, producer, or vehicle currencies.

Invoice currency choice along supply chains has also been examined by considering the export firms' import content and their invoice currency.[1] However, relatively few studies have investigated how invoice currency choice differs between intra-firm and arm's-length trade. A notable exception is Yoshimi et al. (2024), which analyzed the determinants of invoice currency choice in Japanese exports to France, particularly within the automobile industry. Yet the role of ownership structure—especially the ownership ratio (OSR) of foreign importers—in shaping invoice currency strategies within intra-firm trade remains underexplored.[2]

Our study uses the microdata on Japanese export transactions and invoice currency choices obtained from Japan Customs export/import declaration data, which has recently been made available to researchers. The Japan Customs data provide information on the names and addresses of Japanese export firms and their corresponding foreign importers. However, the data do not specify whether a given transaction is an intra-firm trade or an arm's-length trade. Therefore, it is necessary to compile a list of names and addresses of Japanese subsidiaries operating in foreign countries and check whether each Japanese export transaction's counterpart (importer) matches the subsidiaries in the list. Yoshimi et al. (2024) employed this data matching method and examined the determinants of invoice currency choice and how it differs between intra-firm and arm's-length trade.

This study extends the limited research on OSR by examining how the OSR of Japanese companies influences invoice currency choice in exports from Japanese complete car manufacturers and their subsidiaries to Thailand. Unlike previous studies that primarily focus on intra-firm transactions or arm's-length trade, this study incorporates both, enabling a comprehensive analysis of the relationship between ownership structure and currency choice. This study centers on Japanese complete car manufacturer groups, selecting 11 finished car manufacturers (i.e., parent companies) and their 63 domestic subsidiaries. Information on the OSR for each of the companies exporting to Thai importers, including parent companies and their domestic subsidiaries, was collected. Using this information, we

[1] See Chung (2016) and Amiti et al. (2022).
[2] Yoshimi et al. (2024) used the data of the ownership rate in Japanese automobile exports to France.

identified whether the exports were intra-firm or arm's-length trade at a transaction level. For arm's-length trade where OSR is 0, we further identified whether the importing firm was a local Thai company, a Japanese overseas subsidiary, or a subsidiary of a company from another country, and added this information to our analysis. This approach allowed us to examine how the OSR of Japanese subsidiaries operating in Thailand affects invoice currency choice.

The results reveal that the ownership structure of trading partners significantly affects invoice currency choice. On the one hand, the share of yen-invoiced exports is 85.2% for Japanese arm's-length exports to Thailand. Even in intra-firm exports to Thailand, yen-invoiced transactions remain substantial, accounting for 67.0% when the OSR ranges between 25% and 50%. On the other hand, the U.S. dollar-invoiced share when the OSR exceeds 50%. These findings indicate that a higher OSR of Japanese subsidiaries in Thailand is associated with a larger share of U.S. dollar invoicing and, to a lesser extent, local currency invoicing, in Japanese exports to Thailand.

A closer examination of trade channels indicates that parent companies and domestic subsidiaries pursue distinct invoice currency strategies, even within intra-firm trade. Parent companies, equipped with greater resources and centralized risk management capabilities, tend to choose foreign currency invoicing—particularly in U.S. dollars—to protect their overseas subsidiaries from exchange rate risks. This reflects their strategic role in absorbing financial shocks on behalf of foreign subsidiaries.

In contrast, domestic subsidiaries, which often lack the ability to manage foreign exchange risks as effectively, rely more heavily on yen-denominated transactions. This pattern reflects a deliberate allowance by parent companies, enabling domestic subsidiaries to adopt risk-averse strategies and prioritize their financial stability. The findings underscore the critical role of ownership structures—particularly the OSR of trading partners—in shaping invoice currency choices. Higher OSR levels are associated with a reduced likelihood of yen-denominated transactions, as Japanese exporters increasingly favor foreign currency invoicing when engaging with high-OSR trade partners. By granting domestic subsidiaries the flexibility to adopt localized strategies while centralizing risk management for overseas subsidiaries, parent companies effectively protect their subsidiaries from exchange rate risks and enhance the overall resilience of intra-firm trade.

The remainder of this paper is organized as follows. Section 2 describes the data and presents a descriptive analysis. Section 3 elaborates on the empirical strategy, and Section 4 presents and discusses the empirical results. Finally, Section 5 concludes.

2. Data and Descriptive Analysis

2.1 Data Description

This section presents the data used in our empirical analysis. First, we utilize transaction-level data on invoice currency choice and the relevant information collected by Japan Customs. The sample

period spans from January 1, 2014, to December 31, 2019.[3] The Japan Customs data, derived from customs declarations, contain detailed information for each declaration,[4] including company names and addresses of trading partners.

A novel contribution of this study is the construction of a database on ownership or capital relationship between exporters and importers, focusing on Japanese automobile exports to Thailand, which enables a precise measurement of the degree of capital relationship between them. Yoshimi et al. (2024) used the Japan Customs data to distinguish between intra-firm and arm's-length trades, focusing on the capital relationship between exporters and importers. However, their study did not examine whether the degree of the OSR affects the invoice currency choice within intra-firm trade. In contrast, our study rigorously matches and analyzes the OSR of the counterparts (importing companies). Moreover, we identify importing companies without capital ties and determine whether these firms are Japanese subsidiaries owned by other groups of companies or by foreign/local companies.

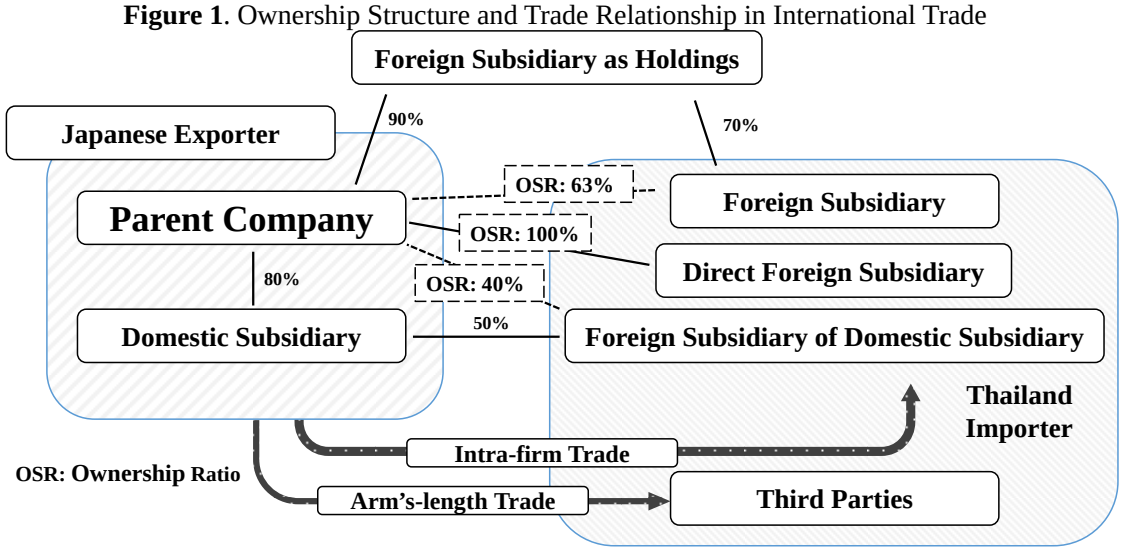
As the Japan Customs data do not provide direct information on capital relationships, we reviewed the names and addresses of the importers in Thailand, as reported by Japanese exporters in their customs declarations. However, inconsistencies in recording—such as typographical errors—limited the accuracy of machine matching. To improve data reliability, we manually verified the importer and exporter, enhancing accuracy through cross-checking. During this process,[5] we supplemented the dataset with additional information on the trading partners, including OSRs from exporters or other companies, which were not originally included in the customs declarations.

This study focuses on exports to Thailand by Japanese complete car manufacturer groups, comprising 11 finished car manufacturers and their 63 domestic subsidiaries.[6] As shown in Figure 1, there are two types of exporters in Japan's intra-firm exports to Thailand: parent companies and domestic subsidiaries. These exporters have three types of counterparts in Thailand: (i) local subsidiaries owned by parent companies, (ii) local subsidiaries owned by domestic subsidiaries, and (iii) third-party companies' exports, which are considered arm's-length exports. As parent companies exercise control over local subsidiaries owned by domestic subsidiaries, we calculate the parent company's *indirect* OSR in such cases by multiplying the OSRs along ownership chains, as illustrated in Figure 1.[7] For exports to third-party companies, we further distinguish between local companies

[3] Although we can access the data up to 2020, we decided to exclude it for 2020 to avoid the likely effects of the COVID-19 pandemic.
[4] See Ito et al. (2025) and Yoshimi et al. (2024).
[5] In order to carry out this matching process, this study tried to extract the ownership ratios as of 2019 from the three datasets of Orbis (the original source is the Moody's, we got it from the Teikoku Data Bank), Toyo Keizai, and Marklines, as well as from the websites of the target companies.
[6] From the database "Japanese Corporate Groups" (Toyo Keizai), there were 63 companies that exported to Thailand out of all domestic subsidiaries that were more than 50% owned by complete car manufacturers.
[7] For example, if a Japanese parent company owns 80% of a domestic subsidiary and 50% of the voting rights of a foreign subsidiary, the ownership ratio is 0.8 multiplied by 0.5, which is 40%. Similarly, if an overseas holding base in foreign country, such as Singapore, directly owns a subsidiary in Thailand, the ownership ratio is 63%, which is

owned by other Japanese firms and those without any capital ties to other Japanese companies.

Figure 1. Ownership Structure and Trade Relationship in International Trade



2.2 Descriptive Analysis

Table 1 presents the main descriptive analysis. Yen-invoiced exports account for 41.6% of Japan's total exports (Shimizu et al. 2024). In contrast, when focusing on exports by 74 Japanese complete car manufacturing companies, the share of yen-invoiced transactions declines to 27.1%, whereas the share of U.S. dollar-invoiced transactions increases to 57.3%.[8] These figures align with Ito et al. (2018) and reconfirm that U.S. dollar-invoiced exports are prevalent in Japan's transportation equipment industry.[9]

calculated by multiplying the holding base's 90% ownership ratio by the 70% ownership ratio of the Thai subsidiary.

[8] In Apaitan et al. (2024), the analysis of invoice currencies is conducted using import declaration data from the Thai border. Japan emerges as the leading country in terms of import value, accounting for 20% of all Thai imports, with a notably high share of producer currency pricing (PCP), represented by Japanese yen invoicing, at approximately 40%. Local currency pricing (LCP), represented by THB invoicing, is also significant. Industry-level analysis further highlights the pronounced use of both PCP and LCP in the transportation equipment sector.

[9] While trade amount-based analysis holds significant importance, the influence of individual firms can become pronounced, particularly in industry-specific analyses such as those focusing on finished car manufacturers. In this study, unless explicitly stated otherwise, all analyses and interpretations are conducted based on transactions. This approach is appropriate for investigating the invoice strategies of individual companies, as it reduces the impact of any particular company and enables a more balanced and robust analysis. Tables 1 and 2 also show the descriptive statistics for the amount-based analysis. In particular, the discrepancy between transaction-based and amount-based ratios in arm's-length trade is highly intriguing. However, as this study primarily focuses on transaction-based analysis, we refrain from discussing the details.

Table 1. Japanese Exports to Thailand and Invoice Currency

	Transaction			Amount		
	JPY	USD	THB	JPY	USD	THB
Exports by 74 firms	**27.1%**	**57.3%**	**15.6%**	**26.2%**	**54.4%**	**19.4%**
Intra-firm Export	**26.2%**	**58.1%**	**15.7%**	**25.6%**	**54.7%**	**19.7%**
OSR: 0-25%	**-**	**-**	**-**	**-**	**-**	**-**
OSR: 25-50%	**67.0%**	**0.5%**	**32.5%**	**53.3%**	**0.1%**	**46.6%**
OSR: 50-75%	**18.8%**	**78.8%**	**2.4%**	**34.6%**	**63.7%**	**1.7%**
OSR: 75-100%	**20.1%**	**65.0%**	**14.9%**	**20.2%**	**62.7%**	**17.1%**
Arm's-length Export	**85.2%**	**6.0%**	**8.6%**	**49.0%**	**43.3%**	**7.3%**
JPN Affl.	**90.8%**	**5.6%**	**3.6%**	**44.8%**	**48.2%**	**7.0%**
THA Affl.	**94.0%**	**4.9%**	**0.9%**	**84.6%**	**2.3%**	**13.0%**

Note: There are no Thailand importers in our sample with an ownership ratio larger than 0 and less than or equal to 25%. "OSR n-n'%" indicates that the ownership ratio is greater than n% and less than or equal to n'%. "JPN Affl." refers to the local subsidiaries of Japanese companies, including 74 automobile exporters. "THA Affl." denotes Thailand local firms.
Source: Authors' calculations.

Table 1 provides several notable observations.[10] First, invoice currency choice appears to be influenced by the ownership structure of trading partners. When the OSR is 0—indicating arm's-length exports—85.2% of transactions are invoiced in yen. Even when the OSR ranges between 25% and 50%, yen-invoiced transactions still constitute 67% of exports. These results indicate a strong preference for yen-invoiced transactions with Thai importers that have no or limited capital ties, likely reflecting exporters' efforts to mitigate exchange rate risk. In contrast, as shown in Table 1, the share of U.S. dollar-invoiced exports rises markedly when the OSR exceeds 50%. Consistent with the arguments of Ito et al. (2018) and Yoshimi et al. (2024), this pattern suggests that Japanese exporters tend to protect their local subsidiaries from foreign exchange risk by invoicing their exports in U.S. dollars or local currencies.

Second, most arm's-length exports to Thailand are invoiced in yen: over 90% of Japanese exports to subsidiaries owned by Japanese companies and locally owned subsidiaries are invoiced in yen. This pattern suggests that Japanese exporters tend to avoid exchange rate risks, particularly in markets characterized by stable bilateral trade relationships, where exporters possess greater bargaining power.

[10] Our data show that intra-firm trade accounts for 98.45% of Japanese automobile exports to Thailand from 2014 to 2019 (Appendix Table A1), indicating the dominance of corporate networks in this industry.

Table 2. Trade Channel and Invoice Currency

	Transaction			Amount		
	JPY	USD	THB	JPY	USD	THB
parent-intra	**24.2%**	**59.1%**	**16.7%**	**24.8%**	**54.1%**	**21.1%**
parent-arms	**95.9%**	**1.3%**	**2.5%**	**81.5%**	**3.0%**	**14.6%**
subsid-intra	**49.8%**	**46.2%**	**4.0%**	**36.1%**	**62.0%**	**1.9%**
subsid-arms	**68.8%**	**13.2%**	**17.9%**	**28.9%**	**68.3%**	**2.9%**

Note: The number of declarations and the share of invoice currency are presented for four combinations of trade channel: from parent companies to overseas subsidiaries (OSR is not 0), from domestic subsidiaries to overseas subsidiaries, from parent companies to third-party firms (OSR is 0), and from domestic subsidiaries to third-party firms.
Source: Authors' calculations.

This study analyzes the invoice currency choices of 11 Japanese parent companies (complete car manufacturers) and their 63 domestic subsidiaries. Table 2 presents the invoice currency choice in Japanese exports to Thailand by trade channel. First, among the parent companies' exports, 59.1% of intra-firm exports are invoiced in U.S. dollars, whereas 95.9% of arm's-length exports are invoiced in yen. Second, among domestic subsidiaries' exports, 49.8% of intra-firm exports are invoiced in yen, whereas the yen-invoiced share rises to 68.8% in arm's-length exports—substantially higher than in intra-firm exports. This is a notable finding, as it reveals that invoice currency choice differs by trade channel, even in *intra-firm* trade.

Taken together, the findings from Tables 1 and 2 suggest that OSR significantly affects invoice currency choice in intra-firm trade. This hypothesized relationship is empirically examined in the following section.

3. Empirical Strategy

To investigate the relationship between the OSR of trade partners and the invoice currency choice, we estimate the following empirical equation for Japanese firm *i*'s export transaction *k* with partner *p* in Thailand:

$$y_{i,p,k} = a + bOSR_{i,p} + e_i + e_p + e_s + e_t + \varepsilon_{i,p,k} \quad (1)$$

$y_{i,p,k}$ is a dummy variable that takes the value of one for transactions invoiced in Japanese yen or U.S. dollars, and zero otherwise.[11] Transaction *k* is defined at the 10-digit HS and time-stamp level, where

[11] As they account for only 15.6% of all transactions, Thai baht-invoicing transactions are not the main focus of this paper. However, there are some very interesting points to consider regarding these transactions by Japanese exporters in Thailand. As highlighted in Apaitan et al. (2024), the scale of Thai baht-denominated trade by Japanese companies in imports from Japan is particularly noteworthy. The results related to Thai baht-denominated transactions are

the time information is recorded down to the second. $OSR_{i,p}$ represents the ownership ratio, which is time-invariant for each exporting firm and its trading partner.[12] e_i, e_p, e_s and e_t denote firm, partner firm, product (HS six-digit), and year fixed effects, respectively. b is expected to be negative when $y_{i,p,k}$ is a yen invoice dummy and positive when $y_{i,p,k}$ is a U.S. dollar invoice dummy. Robust standard errors are used in all estimations presented in the main analysis.

We posit that a higher ownership ratio ($OSR_{i,p}$) is associated with a lower likelihood of Japanese yen invoicing and a higher likelihood of U.S. dollar invoicing, implying negative and positive relationships with $OSR_{i,p}$, respectively. Specifically, we hypothesize that in intra-firm transactions, exporters protect their overseas subsidiaries from foreign exchange risk by invoicing in the subsidiary's local currency. This practice enables the centralization of foreign exchange risk management at the head office level—where intellectual and human resources are concentrated—allowing firms to achieve economies of scale in risk mitigation across the corporate group. Conversely, in arm's-length transactions, exporters are more likely to invoice in the producer currency to pass through foreign exchange risk.

To support this analysis, we construct nine explanatory variables. First, we define the share of invoice currency in imports, represented by the variable $IIS_{i,t}$, as the natural logarithm of (one plus) the share of import value invoiced in U.S. dollars relative to the firm's total annual import value. Using customs data, we analyze the potential influence of the import invoice currency share on exporters' currency choices for invoicing. Firms often align the currency used for both exports and imports of intermediate inputs to mitigate exchange rate risk stemming from trade transactions. Accordingly, we expect a negative (positive) coefficient for Japanese yen (U.S. dollar) invoicing.

Second, we calculate the natural logarithm of each company's market share within each product category at the HS6-digit level. The numerator of this market share variable represents the value of HS6-digit product exports from Japan to Thailand, sourced from Japanese customs data. The denominator corresponds to the total value of all exports of the same product category from Japan to Thailand. Several hypotheses are proposed for this market share variable. If the market share serves as a proxy for an exporter's competitiveness in product s, the coefficient is expected to be negative, reflecting the company's bargaining power to effectively pass on exchange rate risks. However, when trading volumes are substantial, firms may find sufficient justification to engage in foreign currency transactions and incur the associated exchange fees in international financial dealings. In such cases, they tend to maintain their market share, in which case the coefficient is expected to be positive.

Third and fourth, we include the value and number of imports from trading partner firms. A key contribution of this study lies in the use of detailed and precise data on trading partner companies. The

summarized in Appendix Table A2.

[12] More precisely, the same value is assigned to domestic subsidiaries belonging to the same parent company, or more broadly, the same corporate group.

results suggest that differences in firm size between exporters and importers may influence invoice currency choice. If these variables are positive and significant when the dependent variable represents Japanese yen invoicing, it indicates that the importer's capacity to tolerate exchange rate risk has increased. Specifically, if Japanese companies are larger, the size gap between exporter and importer narrows, implying that the importer is more willing to accept yen-denominated transactions.

Fifth, we construct a variable representing the unit price[13] for each transaction. A positive and significant coefficient for Japanese yen invoicing would suggest that higher unit prices increase the likelihood of choosing yen-denominated transactions to mitigate foreign exchange risk. Sixth, we create a variable termed the "*Core Product Ratio*," which measures the importance of product *s* in firm *i*'s exports to Thailand. It is calculated as the ratio of the firm *i*'s exports of product *s* (numerator) to its total exports (denominator).

Seventh and eighth, we introduce variables that capture exchange rate dynamics, given the well-documented and significant relationship between exchange rates and invoice currency choices. Specifically, we calculate the annual average nominal exchange rate levels for JPY/USD and JPY/THB to represent exchange rate levels. Additionally, exchange rate volatility is measured as the standard deviation of daily exchange rates on an annual basis, providing a quantitative indicator of the uncertainty associated with exchange rate fluctuations.[14]

We summarize the relationship between invoice currency choice and OSR, analyzed based on these variables, in the following section.

[13] The weight used to calculate unit value in this analysis is the gross weight, including packaging materials. As finished vehicles are often declared at customs based on number of units rather than weight, we use gross weight as a proxy variable.
[14] Appendix Table A5 presents the basic statistics for each variable.

4. Empirical Results

4-1. Impact of Ownership Ratio on Invoice Currency Choice

Table 3. Baseline Analysis: Impact of Ownership Ratio and Other Variables on Invoice Currency Choice

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dep.	JPY	JPY	JPY	JPY	JPY	JPY	JPY	JPY	USD	USD	USD	USD	USD	USD	USD	USD
Ownership	-0.552**	-0.287*	-0.283*	-0.264*	-0.735*	-0.285*	-0.247#	-0.238#	1.029**	1.040**	1.041**	1.036**	0.777*	1.040**	1.039**	1.038**
	(0.090)	(0.123)	(0.123)	(0.122)	(0.294)	(0.122)	(0.130)	(0.132)	(0.076)	(0.110)	(0.110)	(0.110)	(0.334)	(0.110)	(0.110)	(0.110)
Import Invoice Share		-0.195**	-0.191**	-0.190**	-0.218**	-0.208**	-0.008	0.077**		0.004	0.006	0.003	0.016**	0.005	0.004	-0.003
		(0.009)	(0.008)	(0.008)	(0.010)	(0.009)	(0.007)	(0.007)		(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
Market Share		-0.004**	-0.004**	-0.004**	0.002**	-0.044**	-0.002**	-0.002**		0.002**	0.002**	0.002**	-0.003**	0.003**	0.002**	0.002**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Partner Import Amount			0.005**								0.002**					
			(0.001)								(0.000)					
Partner Import Transaction				0.034**								-0.006**				
				(0.001)								(0.000)				
Unit Value					0.011**								-0.008**			
					(0.000)								(0.000)			
Core Product Ratio						0.041**								-0.002*		
						(0.001)								(0.001)		
Volatility							0.029**								0.000	
							(0.000)								(0.000)	
JPY/USD								-0.086**								0.026**
								(0.006)								(0.003)
Observations	966,948	925,134	925,134	925,134	852,400	925,134	925,134	925,134	966,948	925,134	925,134	925,134	852,400	925,134	925,134	925,134
R-squared	0.675	0.680	0.680	0.680	0.684	0.680	0.668	0.667	0.942	0.955	0.955	0.955	0.971	0.955	0.955	0.955
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: The results are based on regression analysis conducted using Equation (1). The dependent variable is an invoice currency dummy of the yen or the U.S. dollar (USD). Results of OLS estimation with robust standard errors are presented in parentheses. *Import Invoice Share* (IIS) and *Volatility* are measured against the U.S. Dollar. Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.
Source: Authors' estimation.

First, in this section, we summarize the results of the analysis using yen-denominated transactions as the dependent variable (Columns 1–8). Regarding the results of $OSR_{i,p}$, we obtained negative and significant coefficients, as hypothesized. This indicates that a higher OSR reduces the likelihood of yen-denominated transactions. Additionally, the results revealed a preference for foreign currency transactions in dealings with subsidiaries that have a high $OSR_{i,p}$, suggesting that parent companies prioritize protecting their subsidiaries from foreign exchange risk by adopting appropriate currency strategies.

In Column 2, Import Invoice Share ($IIS_{i,t}$) and Market Share (*MS*) are introduced in addition to $OSR_{i,p}$. $IIS_{i,t}$ has a negative and significant coefficient. This result indicates that Japanese exporters that tend to import in U.S. dollars are less likely to use the Japanese yen as their invoice currency. One plausible explanation is that such companies already employ risk-mitigation techniques, such as currency hedging and netting, which lower the relative cost of exporting in dollars. The coefficient for *MS* is also negative and significant, suggesting that Japanese exporters with a high market share tend to choose foreign currency-denominated transactions—likely as a strategy to maintain their market share for product *s*.

From Columns 3 to 8, we sequentially add one variable at a time to the three core variables—$OSR_{i,p}$, $IIS_{i,t}$, and *MS*—and examine their effects. Both the trade amount and the number of transactions with trade partners are positive and significant (Columns 3 and 4). As $OSR_{i,p}$ remains negative and significant, we conclude that while yen-denominated transactions are generally avoided in intra-firm trade with trade partners having high capital ratios, there is also a tendency to choose yen-denominated transactions when the size of the partner company is relatively large. The coefficient for unit value is positive and significant (Column 5), consistent with the expectation that yen-denominated transactions are preferred when unit prices are high, reflecting greater exchange rate risk. The *Core Product Ratio* differs from the number of transactions by indicating whether the transaction amount for product *s* is high within each firm's export. A higher *Core Product Ratio* increases the likelihood of the company opting for yen-denominated transactions, suggesting that the company tailors its foreign exchange strategy in proportion to the scale of its foreign exchange risk (Column 6). In Columns 7 and 8, the results show that greater exchange rate volatility—representing heightened exchange rate risk—increases the likelihood of choosing yen-denominated transactions. When the Japanese yen nominal exchange rate against the U.S. dollar is weak, exporters tend to choose foreign currency-denominated transactions, resulting in a tendency to benefit from exchange rate gains.

The coefficients for dollar-denominated transactions can be interpreted in roughly the opposite direction. That is, the higher $OSR_{i,p}$ increases the probability of avoiding yen-denominated transactions and choose dollar-denominated transactions. While the results for $OSR_{i,p}$ are consistent with our expectations, some other control variables show patterns that differ from the expected signs. It is noteworthy that $IIS_{i,t}$ is not statistically significant in dollar-denominated transactions—

contrasting with the findings of Yoshimi et al. (2024) and Chung (2016). Notably, while the *IIS* of the U.S. dollar is negative and significant in yen-denominated transactions, there is no conclusive evidence that firms engage in dollar-denominated exports to Thailand, despite their involvement in foreign currency-denominated transactions. Alternatively, *MS* is observed to contribute to an increase in dollar-denominated exports, implying a tendency to favor dollar-denominated trade as a means to maintain local prices and preserve market share.

In summary, this analysis demonstrates that ownership structure, import invoicing behavior, market share, and partner characteristics significantly influence invoice currency choice in Japanese complete car manufacturers' export transactions to Thailand. A higher $OSR_{i,p}$ among Thai trade partners corresponds to a lower likelihood of yen-denominated transactions, with exporters opting for foreign currency to protect subsidiaries from exchange rate risk. Conversely, larger trade partners are more likely to accept yen-denominated transactions due to their greater capacity to bear exchange rate risks. Additionally, higher unit values indicate relatively greater exposure to exchange rate risk, prompting exporters to opt for yen-denominated transactions as a form of risk mitigation. Although $IIS_{i,t}$ exhibited varying effects, with no significant impact on dollar-denominated transactions, *MS* was found to positively correlate with the use of foreign currencies, likely reflecting companies' efforts to stabilize local prices and retain market competitiveness. These findings underscore the nuanced strategies that exporters employ to balance exchange rate risks with market considerations, aligning with prior research while offering new insights into intra-firm trade and currency management practices.[15]

[15] Appendix Tables A3-1 through A3-3 present empirical analyses incorporating interaction terms between each variable and the OSR.

4-2. Impact of Ownership Ratio on Invoice Currency Choice

Table 4. Ownership Ratio and Invoice Currency Choice: Parent vs. Subsidiaries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	JPY	JPY	JPY	JPY	USD	USD	USD	USD
Ownership	-0.279#	-0.308#	0.854*	1.257**	1.289**	1.353**	-0.462	-1.319**
	(0.161)	(0.185)	(0.427)	(0.051)	(0.113)	(0.118)	(0.410)	(0.046)
Import Invoice Share		-0.568**		0.027**		0.033**		-0.026**
		(0.015)		(0.009)		(0.003)		(0.007)
Market Share		0.003**		-0.013**		-0.005**		0.009**
		(0.000)		(0.001)		(0.000)		(0.001)
Observations	886,699	854,386	80,062	70,582	886,699	854,386	80,062	70,582
R-squared	0.644	0.649	0.901	0.940	0.946	0.957	0.924	0.955
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES	YES
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES
Sub Sample	Parent	Parent	Subsid.	Subsid.	Parent	Parent	Subsid.	Subsid.

Note: The results are based on regression analysis conducted using Equation (1). The dependent variable is an invoice currency dummy of the Japanese yen (JPY) or the U.S. dollar (USD). Results of OLS estimation with robust standard errors are presented in parentheses. This analysis is based on a subsample limited to exports by the parent company only or by domestic subsidiaries only. *Import Invoice Share* (IIS) and *Volatility* are measured against the U.S. Dollar. Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.
Source: Authors' estimation.

As shown in Table 2, a clear discrepancy emerges between the export behaviors of parent companies and their domestic subsidiaries. Parent companies tend to prefer dollar-denominated transactions in intra-firm trade, whereas yen-denominated transactions dominate in arm's-length trade, accounting for 95.9% of such exports. This stark contrast underscores the disparity in bargaining power between parent companies and their trading partners. Conversely, domestic subsidiaries often choose yen-denominated transactions even in intra-firm trade. This pattern suggests that, unlike parent companies, domestic subsidiaries have limited capacity to effectively hedge against foreign exchange risk, compelling them to adopt risk-averse invoicing strategies. These descriptive findings form the basis for further analysis of how parent companies, subsidiaries, and $OSR_{i,p}$ influence invoice currency choice. We conduct an empirical analysis inspired by these findings.

In Table 4,[16] we narrow our focus to a subset of data, analyzing exports from parent companies and domestic subsidiaries separately. The dependent variable is a dummy indicating yen-denominated

[16] The results of the analysis of parent and subsidiary companies using the variables constructed are summarized in Appendix Tables A4-1 and A4-2.

transactions. For parent companies, $OSR_{i,p}$ yields several significantly negative coefficients, although the level of significance is lower than that observed in the baseline results presented in Table 3. In contrast, for domestic subsidiaries, $OSR_{i,p}$ is consistently positive and statistically significant, differing from the baseline results.

This result aligns with the descriptive statistics, revealing that domestic subsidiaries tend to avoid foreign exchange risk by opting for yen-denominated transactions, even when $OSR_{i,p}$ is high. Meanwhile, parent companies exhibit independent behaviors, demonstrating a greater capacity to tolerate exchange rate risk and a preference for foreign currency-denominated transactions. This divergence highlights the strategic differences between parent companies and subsidiaries in managing exchange rate risk.

Regarding other variables, *IIS* and *MS* present noteworthy patterns. For parent companies, *IIS* is significantly negative, consistent with the expectation that companies favoring dollar-denominated imports also prefer foreign currency-denominated exports. Conversely, *IIS* is positive for domestic subsidiaries, indicating that companies with limited risk tolerance tend to select yen-denominated transactions to mitigate exchange rate risks in exports to Asia. For *MS*, parent companies appear to leverage their market share as bargaining power to avoid exchange rate risks by opting for yen-denominated transactions, whereas domestic subsidiaries engage in foreign currency-denominated transactions to stabilize local prices and maintain market share.

Overall, these results provide nuanced insights into the distinct strategies employed by parent companies and their subsidiaries in invoice currency choice. However, given the complexity of the observed relationships, further analysis incorporating additional variables and broader contextual aspects is essential to deepen our understanding of the factors influencing invoice currency choice.

5. Conclusion

Since 2022, approved research projects have gained access to Japan Customs' export/import declaration data. This development provides an unprecedented opportunity to investigate major macroeconomic issues, such as the invoice currency choice. The present study leverages the distinctive features of this dataset—particularly its detailed information on trading partner companies—to conduct a comprehensive analysis that offers new insights into the determinants of invoice currency choice.

The findings confirm that OSR plays a pivotal role in shaping invoice currency strategies. Higher OSR levels are associated with a decreased likelihood of yen-denominated transactions, as exporters increasingly prefer foreign currency invoicing—most notably in U.S. dollars—when engaging with trade partners that have significant ownership ties. This result underscores the strategic importance of aligning invoice currency choices with the financial structures of trading partners to effectively

manage exchange rate risks. The results demonstrate that ownership structure significantly influences invoice currency choice, revealing how exporters tailor their strategies to mitigate financial risks across different transaction types.

This study further highlights the distinct roles of parent companies and their domestic subsidiaries in invoice currency decision-making. Parent companies, with greater resources and centralized risk management capabilities, tend to employ foreign currency invoicing to protect their overseas subsidiaries from the adverse effects of exchange rate volatility. This strategic approach reflects the parent companies' function as central risk managers, absorbing external financial shocks on behalf of their foreign subsidiaries and sustaining operational stability in international markets. By opting for foreign currency invoicing, parent companies effectively protect their overseas subsidiaries from the disruptions arising from exchange rate fluctuations.

In contrast, domestic subsidiaries—constrained by their limited capacity to tolerate exchange rate risks—exhibit a strong preference for invoicing in their local currency, the Japanese yen. This approach reflects a deliberate risk-averse strategy, which parent companies strategically employ to preserve the financial stability of their subsidiaries. Granting domestic subsidiaries the flexibility to choose their invoicing currency enables them to mitigate exchange rate risks while maintaining operational stability.

The alignment of these distinct strategies reflects a sophisticated and complementary mechanism within multinational corporations. Parent companies protect their overseas subsidiaries through foreign currency invoicing while allowing domestic subsidiaries the flexibility to use yen invoicing. This dual-layered approach effectively mitigates foreign exchange risks and fosters stability in both global and domestic operations.

These findings provide a clearer understanding of how multinational corporations manage exchange rate risks through differentiated invoicing strategies across subsidiaries. The evidence shows that multinational corporations mitigate exchange rate risks by protecting their overseas operations from currency volatility through foreign currency invoicing, while promoting risk-averse practices among domestic subsidiaries. By aligning invoicing strategies with each subsidiary’s financial capacity and operational context, these corporations reduce their overall exposure to exchange rate fluctuations and strengthen their competitive resilience in global markets. Together, these behaviors illustrate how ownership structures shape corporate responses to external financial shocks. This perspective helps policymakers better recognize the channels through which such shocks are transmitted to the corporate sector and informs broader discussions on policies that support corporate resilience and sustainable stability in internationally integrated economies.

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Appendix Tables

Appendix Table A1. Japanese Exports to Thailand: Intra-firm Trade vs. Arm's-length Trade

	Transaction	Amount
Exports by 74 firms	**100%**	**100%**
Intra-firm Export	**98.45%**	**97.74%**
Arm's-length Export	**1.55%**	**2.26%**

Source: Authors' calculations.

Appendix Table A2. Regression Results: Determinants of THB Invoice Currency Choice

VARIABLES	(1) THB	(2) THB	(3) THB	(4) THB	(5) THB	(6) THB	(7) THB	(8) THB
Ownership	-0.477**	-0.836**	-0.855**	-0.879**	0.034	-0.836**	-0.863**	-0.858**
	(0.083)	(0.124)	(0.127)	(0.125)	(0.288)	(0.124)	(0.130)	(0.128)
Import Invoice Share (THB)		3.998**	4.015**	4.055**	4.650**	3.992**	4.251**	4.164**
		(0.031)	(0.031)	(0.031)	(0.039)	(0.031)	(0.032)	(0.032)
Market Share		-0.000	-0.000	0.000	-0.001**	0.020**	-0.001**	-0.001**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Partner Import Amount			-0.029**					
			(0.001)					
Partner Import Transaction				-0.066**				
				(0.001)				
Unit Value					-0.002**			
					(0.000)			
Core Product Ratio						-0.020**		
						(0.001)		
Volatility							-0.203**	
							(0.014)	
JPY/THB								0.341**
								(0.005)
Observations	966,948	925,134	925,134	925,134	852,400	925,134	925,134	925,134
R-squared	0.613	0.670	0.671	0.672	0.675	0.670	0.663	0.665
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES

Note: The dependent variable is an invoice currency dummy of the Thai Baht. Results of OLS estimation with robust standard errors are presented in parentheses. *Import Invoice Share* (IIS) and *Volatility* are measured against the U.S. Dollar. Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.

Source: Authors' estimation.

Appendix Table A3. Determinants of Invoice Currency: Influence of Strategic Complementarity and Cross Terms

Appendix Table A3-1a. Dependent variable: Invoice Currency Dummy of Japanese Yen

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
VARIABLES	JPY	JPY	JPY	JPY	JPY	JPY	JPY	JPY	JPY	JPY	JPY
Ownership	-0.552**	-0.287*	-0.283*	0.517**		-0.264*	3.458**		-0.735*	-0.829**	
	(0.090)	(0.123)	(0.123)	(0.164)		(0.122)	(0.141)		(0.294)	(0.295)	
Import Invoice Share		-0.195**	-0.191**	-0.191**	-0.191**	-0.190**	-0.177**	-0.182**	-0.218**	-0.218**	-0.218**
		(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.010)	(0.010)
Market Share		-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	0.002**	0.002**	0.002**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partner Import Amount			0.005**	0.022**	0.014**						
			(0.001)	(0.002)	(0.002)						
*Partner Import Amount*OSR*				-0.031**	-0.017**						
				(0.004)	(0.004)						
Partner Import Transaction						0.034**	0.224**	0.162**			
						(0.001)	(0.004)	(0.006)			
*Partner Import Transaction*OSR*							-0.365**	-0.247**			
							(0.007)	(0.010)			
Unit Value									0.011**	0.003*	0.004*
									(0.000)	(0.001)	(0.001)
*Unit Value*OSR*										0.012**	0.012**
										(0.002)	(0.002)
Observations	966,948	925,134	925,134	925,134	925,134	925,134	925,134	925,134	852,400	852,400	852,400
R-squared	0.675	0.680	0.680	0.680	0.680	0.680	0.681	0.681	0.684	0.684	0.684
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Source: Authors' estimation.

Appendix Table A3-1b. Dependent variable: Invoice Currency Dummy of Japanese Yen

VARIABLES	(12) JPY	(13) JPY	(14) JPY	(15) JPY	(16) JPY	(17) JPY	(18) JPY	(19) JPY	(20) JPY	(21) JPY
Ownership	-0.285*	-0.228#		-0.307*	-0.247#	-0.247#	-0.437**	-0.238#	-17.420**	
	(0.122)	(0.122)		(0.121)	(0.130)	(0.130)	(0.143)	(0.132)	(0.334)	
Import Invoice Share	-0.208**	-0.208**	-0.208**	-0.047**	-0.008	-0.008	-0.053**	0.077**	0.043**	0.074**
	(0.009)	(0.009)	(0.009)	(0.011)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Market Share	-0.044**	-0.043**	-0.043**	-0.011**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Core Product Ratio	0.041**	0.033**	0.033**							
	(0.001)	(0.002)	(0.002)							
*Core Product Ratio*OSR*		0.013**	0.013**							
		(0.001)	(0.001)							
Strategic Complementarity (USD)				-0.303**						
				(0.012)						
*Strategic Complementarity*OSR*				0.026*						
				(0.012)						
Volatility					0.029**	0.029**	-0.116**			
					(0.000)	(0.000)	(0.003)			
*Volatility*OSR*							0.243**			
							(0.005)			
JPY/USD								-0.086**	-2.293**	-0.266**
								(0.006)	(0.041)	(0.031)
*JPY/USD*OSR*									3.650**	0.297**
									(0.065)	(0.049)
Observations	925,134	925,134	925,134	671,404	925,134	925,134	925,134	925,134	925,134	925,134
R-squared	0.680	0.680	0.680	0.703	0.668	0.668	0.669	0.667	0.668	0.667
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: The dependent variable is an invoice currency dummy of the yen. Results of OLS estimation with robust standard errors are presented in parentheses. Strategic complementarity (USD) is measured as the leave-one-out share of other firms' exports invoiced in USD at the HS4 industry–year level, aggregated to the firm–year level using the firm's HS4 export shares as weights, following Yoshida et al. (2024). Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.

Source: Authors' estimation.

Appendix Table A3-2a. Dependent variable: Invoice Currency Dummy of U.S. Dollar

VARIABLES	(1) USD	(2) USD	(3) USD	(4) USD	(5) USD	(6) USD	(7) USD	(8) USD	(9) USD	(10) USD	(11) USD
Ownership	1.029**	1.040**	1.041**	1.087**		1.036**	1.231**		0.777*	0.748*	
	(0.076)	(0.110)	(0.110)	(0.134)		(0.110)	(0.117)		(0.334)	(0.334)	
Import Invoice Share		0.004	0.006	0.006	0.005	0.003	0.004	0.002	0.016**	0.016**	0.016**
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Market Share		0.002**	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**	-0.003**	-0.003**	-0.003**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partner Import Amount			0.002**	0.003#	-0.013**						
			(0.000)	(0.001)	(0.002)						
*Partner Import Amount*OSR*				-0.002	0.028**						
				(0.003)	(0.003)						
Partner Import Transaction						-0.006**	0.004**	-0.018**			
						(0.000)	(0.002)	(0.002)			
*Partner Import Transaction*OSR*							-0.019**	0.023**			
							(0.003)	(0.004)			
Unit Value									-0.008**	-0.010**	-0.010**
									(0.000)	(0.000)	(0.000)
*Unit Value*OSR*										0.004**	0.004**
										(0.000)	(0.001)
Observations	966,948	925,134	925,134	925,134	925,134	925,134	925,134	925,134	852,400	852,400	852,400
R-squared	0.942	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.971	0.971	0.971
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Source: Authors' estimation.

Appendix Table A3-2b. Dependent variable: Invoice Currency Dummy of U.S. Dollar

VARIABLES	(12) USD	(13) USD	(14) USD	(15) USD	(16) USD	(17) USD	(18) USD	(19) USD	(20) USD	(21) USD
Ownership	1.040**	1.088**		-0.096	1.039**	1.039**	1.032**	1.038**	0.566**	
	(0.110)	(0.109)		(9,118)	(0.110)	(0.110)	(0.110)	(0.110)	(0.145)	
Import Invoice Share	0.005	0.005	0.005	0.021*	0.004	0.004	0.002	-0.003	-0.003	-0.004
	(0.004)	(0.004)	(0.004)	(0.009)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Market Share	0.003**	0.003**	0.003**	-0.015**	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Core Product Ratio	-0.002*	-0.008**	-0.008**							
	(0.001)	(0.001)	(0.001)							
*Core Product Ratio*OSR*		0.011**	0.010**							
		(0.001)	(0.001)							
Strategic Complementarity (USD)				-0.140**						
				(0.009)						
*Strategic Complementarity*OSR*				0.142**						
				(0.011)						
Volatility					0.000	0.000	-0.005**			
					(0.000)	(0.000)	(0.001)			
*Volatility*OSR*							0.008**			
							(0.001)			
JPY/USD								0.026**	-0.034**	-0.100**
								(0.003)	(0.012)	(0.013)
*JPY/USD*OSR*									0.100**	0.209**
									(0.020)	(0.021)
Observations	925,134	925,134	925,134	583,076	925,134	925,134	925,134	925,134	925,134	925,134
R-squared	0.955	0.955	0.955	0.816	0.955	0.955	0.955	0.955	0.955	0.955
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: The dependent variable is an invoice currency dummy of the U.S. dollar (USD). Results of OLS estimation with robust standard errors are presented in parentheses. Strategic complementarity (USD) is measured as the leave-one-out share of other firms' exports invoiced in USD at the HS4 industry–year level, aggregated to the firm–year level using the firm's HS4 export shares as weights, following Yoshida et al. (2024). Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.

Source: Authors' estimation.

Appendix Table A3-3a. Dependent variable: Invoice Currency Dummy of Thailand Baht

VARIABLES	(1) THB	(2) THB	(3) THB	(4) THB	(5) THB	(6) THB	(7) THB	(8) THB	(9) THB	(10) THB	(11) THB
Ownership	-0.477**	-0.836**	-0.855**	-3.402**		-0.879**	-4.337**		0.034	0.198	
	(0.083)	(0.124)	(0.127)	(0.185)		(0.125)	(0.154)		(0.288)	(0.288)	
Import Invoice Share (THB)		3.998**	4.015**	4.025**	4.016**	4.055**	4.039**	4.045**	4.650**	4.651**	4.651**
		(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.039)	(0.039)	(0.039)
Market Share		-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	-0.001**	-0.001**	-0.001**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Partner Import Amount			-0.029**	-0.080**	-0.032**						
			(0.001)	(0.003)	(0.002)						
*Partner Import Amount*OSR*				0.100**	0.007#						
				(0.005)	(0.004)						
Partner Import Transaction						-0.066**	-0.242**	-0.164**			
						(0.001)	(0.005)	(0.006)			
*Partner Import Transaction*OSR*							0.339**	0.191**			
							(0.008)	(0.011)			
Unit Value									-0.002**	0.011**	0.011**
									(0.000)	(0.002)	(0.002)
*Unit Value*OSR*										-0.021**	-0.021**
										(0.002)	(0.002)
Observations	966,948	925,134	925,134	925,134	925,134	925,134	925,134	925,134	852,400	852,400	852,400
R-squared	0.613	0.670	0.671	0.671	0.671	0.672	0.673	0.673	0.675	0.675	0.675
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Source: Authors' estimation.

Appendix Table A3-3b. Dependent variable: Invoice Currency Dummy of Thailand Baht

VARIABLES	(12) THB	(13) THB	(14) THB	(15) THB	(16) THB	(17) THB	(18) THB	(19) THB	(20) THB	(21) THB
Ownership	-0.836**	-0.945**		0.956	-0.863**	-0.863**	-0.747**	-0.858**	-3.110**	
	(0.124)	(0.121)		(0.603)	(0.130)	(0.130)	(0.137)	(0.128)	(0.152)	
Import Invoice Share (THB)	3.992**	3.992**	3.992**	3.029**	4.251**	4.251**	4.230**	4.164**	4.162**	4.162**
	(0.031)	(0.031)	(0.031)	(0.043)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Market Share	0.020**	0.019**	0.019**	-0.003*	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Core Product Ratio	-0.020**	-0.005**	-0.006**							
	(0.001)	(0.002)	(0.002)							
*Core Product Ratio*OSR*		-0.025**	-0.024**							
		(0.001)	(0.001)							
Strategic Complementarity (THB)				-0.480**						
				(0.019)						
*Strategic Complementarity*OSR*				-0.039*						
				(0.020)						
Volatility					-0.203**	-0.203**	3.171**			
					(0.014)	(0.014)	(0.115)			
*Volatility*OSR*							-5.643**			
							(0.182)			
JPY/THB								0.341**	-0.766**	-0.263**
								(0.005)	(0.036)	(0.047)
*JPY/THB*OSR*									1.847**	1.008**
									(0.058)	(0.077)
Observations	925,134	925,134	925,134	233,264	925,134	925,134	925,134	925,134	925,134	925,134
R-squared	0.670	0.671	0.671	0.525	0.663	0.663	0.664	0.665	0.666	0.666
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: The dependent variable is an invoice currency dummy of the Thai Baht. Results of OLS estimation with robust standard errors are presented in parentheses. Strategic complementarity (THB) is measured as the leave-one-out share of other firms' exports invoiced in THB at the HS4 industry–year level, aggregated to the firm–year level using the firm's HS4 export shares as weights, following Yoshida et al. (2024). Double asterisks (**), a single asterisk (*), and a sharp (#) denote 1%, 5%, and 10% significance levels, respectively.

Source: Authors' estimation.

Appendix Table A4-1. Impact of Ownership Ratio and Other Variables on Invoice Currency Choice in Direct Exports: Parent vs. Subsidiaries

VARIABLES	(1) JPY	(2) JPY	(3) JPY	(4) JPY	(5) JPY	(6) JPY	(7) JPY	(8) JPY	(9) JPY	(10) JPY	(11) JPY	(12) JPY
Ownership	-0.279#	-0.308#	-0.303	-0.289	-0.286	-0.280	0.854*	1.257**	1.221**	1.253**	1.253**	1.253**
	(0.161)	(0.185)	(0.185)	(0.185)	(0.195)	(0.199)	(0.427)	(0.051)	(0.049)	(0.052)	(0.052)	(0.052)
Import Invoice Share		-0.568**	-0.557**	-0.553**	-0.046**	0.125**		0.027**	0.036**	0.031**	0.031**	0.030**
		(0.015)	(0.015)	(0.014)	(0.010)	(0.011)		(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Market Share		0.003**	0.003**	0.002**	0.005**	0.005**		-0.013**	-0.012**	-0.013**	-0.013**	-0.013**
		(0.000)	(0.000)	(0.000)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partner Import Amount			0.006**						-0.024**			
			(0.001)						(0.003)			
Partner Import Transaction				0.039**						-0.015**		
				(0.001)						(0.004)		
Volatility					0.032**						-0.000	
					(0.001)						(0.001)	
JPY/USD						-0.097**						0.018
						(0.007)						(0.012)
Observations	886,699	854,386	854,386	854,386	854,386	854,386	80,062	70,582	70,582	70,582	70,582	70,582
R-squared	0.644	0.649	0.649	0.649	0.634	0.632	0.901	0.940	0.940	0.940	0.940	0.940
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Target	Parent	Parent	Parent	Parent	Parent	Parent	Subsid.	Subsid.	Subsid.	Subsid.	Subsid.	Subsid.

Source: Authors' estimation.

Appendix Table A4-2. Impact of Ownership Ratio and Other Variables on Invoice Currency Choice in Exports: Parent vs. Subsidiaries

VARIABLES	(1) USD	(2) USD	(3) USD	(4) USD	(5) USD	(6) USD	(7) USD	(8) USD	(9) USD	(10) USD	(11) USD	(12) USD
Ownership	1.289**	1.353**	1.352**	1.350**	1.351**	1.352**	-0.462	-1.319**	-1.282**	-1.314**	-1.315**	-1.315**
	(0.113)	(0.118)	(0.118)	(0.118)	(0.118)	(0.118)	(0.410)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Import Invoice Share		0.033**	0.031**	0.031**	0.021**	0.010**		-0.026**	-0.036**	-0.030**	-0.030**	-0.030**
		(0.003)	(0.004)	(0.003)	(0.003)	(0.003)		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Market Share		-0.005**	-0.005**	-0.005**	-0.005**	-0.005**		0.009**	0.009**	0.009**	0.009**	0.009**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Partner Import Amount			-0.001**						0.024**			
			(0.000)						(0.002)			
Partner Import Transaction				-0.006**						0.016**		
				(0.000)						(0.003)		
Volatility					-0.000						0.001	
					(0.000)						(0.001)	
JPY/USD						0.026**						-0.022*
						(0.003)						(0.010)
Observations	886,699	854,386	854,386	854,386	854,386	854,386	80,062	70,582	70,582	70,582	70,582	70,582
R-squared	0.946	0.957	0.957	0.957	0.957	0.957	0.924	0.955	0.956	0.956	0.955	0.955
HS6FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YearFE	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	NO	NO
FirmFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PartnerFE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Target	Parent	Parent	Parent	Parent	Parent	Parent	Subsid.	Subsid.	Subsid.	Subsid.	Subsid.	Subsid.

Source: Authors' estimation.

Appendix Table A5. Basic Statistics for Variables Utilized

	All			Parent Firms			Subsidiary Firms			Arm's-length trade			0 <OSR <=50			50 <OSR <=100		
	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	S.D.
JPY invoice	1,092,193	0.267	0.443	1,001,976	0.246	0.430	90,217	0.511	0.500	16,711	0.857	0.351	145,066	0.677	0.468	930,416	0.193	0.395
USD invoice	1,092,193	0.569	0.495	1,001,976	0.581	0.493	90,217	0.437	0.496	16,711	0.057	0.232	145,066	0.005	0.071	930,416	0.666	0.472
THB invoice	1,092,193	0.163	0.370	1,001,976	0.173	0.379	90,217	0.052	0.222	16,711	0.087	0.281	145,066	0.318	0.466	930,416	0.141	0.348
Ownership	1,092,193	0.595	0.126	1,001,976	0.601	0.117	90,217	0.528	0.187	16,711	0.000	0.000	145,066	0.378	0.046	930,416	0.640	0.050
Import Invoice Share (USD)	1,092,193	-0.741	0.419	1,001,976	-0.728	0.327	90,217	-0.891	0.959	16,711	-0.935	1.075	145,066	-0.749	0.220	930,416	-0.737	0.421
Import Invoice Share (THB)	1,092,193	-6.656	3.147	1,001,976	-6.853	3.134	90,217	-4.470	2.368	16,711	-3.313	2.805	145,066	-3.689	2.755	930,416	-7.179	2.907
Market Share	1,092,193	-1.918	1.417	1,001,976	-1.847	1.224	90,217	-2.697	2.647	16,711	-2.667	2.661	145,066	-2.360	1.546	930,416	-1.835	1.345
Partner Import Amount	1,092,193	23.716	1.657	1,001,976	23.943	1.418	90,217	21.202	2.012	16,711	18.102	2.424	145,066	23.139	1.584	930,416	23.907	1.440
Partner Import Transaction	1,092,193	8.962	1.326	1,001,976	9.177	1.073	90,217	6.568	1.496	16,711	4.257	1.678	145,066	8.480	1.123	930,416	9.121	1.165
Unit Value	1,092,193	3.439	2.103	1,001,976	3.465	2.031	90,217	3.146	2.764	16,711	2.416	3.179	145,066	3.296	2.255	930,416	3.479	2.048
Core Product Ratio	1,092,193	-5.503	2.196	1,001,976	-5.617	2.117	90,217	-4.226	2.618	16,711	-3.888	3.164	145,066	-5.654	2.303	930,416	-5.508	2.146
Volatility (USD)	1,092,193	0.915	0.575	1,001,976	0.915	0.575	90,217	0.925	0.577	16,711	0.921	0.577	145,066	0.922	0.598	930,416	0.914	0.572
Volatility (THB)	1,092,193	0.028	0.014	1,001,976	0.028	0.014	90,217	0.028	0.015	16,711	0.028	0.015	145,066	0.028	0.015	930,416	0.028	0.014
JPY/USD	1,092,193	4.706	0.041	1,001,976	4.706	0.041	90,217	4.706	0.042	16,711	4.709	0.045	145,066	4.704	0.037	930,416	4.706	0.042
JPY/THB	1,092,193	1.211	0.045	1,001,976	1.211	0.045	90,217	1.211	0.045	16,711	1.213	0.045	145,066	1.212	0.045	930,416	1.211	0.045

Source: Authors' calculation