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U.S. Dollar Dominance and the Role of Local Currency Settlement Framework: Evidence from Thai Exports

by

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May 2026

Discussion Paper

No. 250

U.S. Dollar Dominance and the Role of Local Currency Settlement Framework: Evidence from Thai Exports*

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15 May 2026

Abstract

This paper examines factors behind the persistence of dominant currency pricing and the effectiveness of de-dollarization policies in the context of emerging market economies. Using a transaction-level customs dataset of Thailand spanning 2007–2024, we document the dominance of dollar invoicing in Thai export transactions, despite a gradual rise in baht invoicing. Such dollar dominance is largely explained by firm and industry characteristics, including imported input exposure, strategic complementarities and inertia in invoicing currency choice. Meanwhile, the introduction of the Local Currency Settlement Framework (LCSF) between Thailand and partner countries including Malaysia and Indonesia moderately reduces dollar reliance, with effects being heterogeneous across firms and industries. Notably, we find that dollar-denominated liabilities do not influence invoicing choice, suggesting some disconnection between operational and financial hedging.

Key Words: Invoicing currency choice, dollar dominance, dollar-denominated debt, local currency settlement framework, firm-level trade, Thai exports
JEL Code: F14, F3

*The paper is part of the SEACEN's research project on "U.S. Dollar Dominance in Trade Invoicing and Cross-Border Investments in SEACEN Economies". We thank the project manager, Hiro Ito, Nur Ain Shahrier and participant at the SEACEN interim workshop for their helpful comments. Views expressed in this paper are those of the authors and should not be attributed to the Bank of Thailand.

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1 Introduction

Global trade is dominated by a few invoice currencies, notably US$. This is especially the case for emerging market economies (EMEs), where the share of dollar invoicing among a country's exports stands at 80% in Asia and almost 100% in Latin America (Boz et al., 2022; Gopinath et al., 2020). The outsized role of the dollar has important implications on exchange rate passthrough to import and domestic prices as well as firm profitability, which becomes sensitive to dollar fluctuations at least in the short-run. While empirical work on endogenous currency choices has gained traction over the past two decades, most work is done in the context of advanced countries (Amiti et al., 2022; Chung, 2016; Shimizu et al., 2025). Trade invoicing currency decisions of firms in EMEs deserve more attention not least because dollar is used more extensively. Given such dollar dominance, central banks in EMEs often have policy initiatives to promote the use of their own domestic currency or regional currencies toward invoicing trade transactions. A great example is the Local Currency Settlement Framework among certain ASEAN countries, the effectiveness of which has yet to be explored.

In this paper, we aim to explore the invoice currency choices of trade in an EME, namely Thailand, by exploiting a detailed transaction-level Customs dataset spanning 2007–2024. Specifically, we aim to answer two following research questions. First, what are the key characteristics and drivers of invoicing currency choices of Thai exports? We will examine the role of traditional drivers as emphasized in Amiti et al. (2022) and Crowley et al. (2020), including a firm's exposure to imported inputs, its market share, strategic complementarities in invoicing currencies and prior experience in dollar invoicing. However, we also study an additional factor that can be relevant for EME firms such as the extent of a firm's foreign-currency debt, especially denominated in the dollar. Second, can the Local Currency Settlement Framework (LCSF) between Thailand and partner countries, including Malaysia and Indonesia, starting from 2016 successfully promote the use of local and regional currencies for invoicing trade, as a way to reduce exchange rate risks? Tackling these research questions should bring about a deeper understanding of invoice currency choices within the context of EMEs, where the literature is still scarce.

Our study makes three primary contributions to the literature on dominant currency pricing. First, we offer new evidence on the invoicing currency choice in EMEs. Thailand serves as an interesting case study due to its high trade dependency, its deep integration into global value chains as well as the availability of detailed Customs data. The EME context also allows us to examine a broader set of potentially-relevant factors, ranging from real, financial and institutional or policy factors. This leads us to the second contribution, as we evaluate the efficacy of de-dollarization policies, namely the LCSF, an initiative directly aimed at providing greater flexibility and efficiency for businesses to access and manage local and regional currencies for trade settlement. This sets us apart from earlier work such as Bahaj and Reis (2026) and Benguria and Novy (2025) which focus specifically on the role of the renminbi swap line, as well as Reiss (2015) who examines the Local Currency Payment Framework in Latin American countries. Last, this paper is among the first to empirically explore the link between trade and debt invoice currencies. Although Thailand's

external debt to GDP has materially declined since the 1997–98 Asian financial crisis, a certain number of non-financial firms resort to external debt, especially denominated in dollar, to finance their operations. To our knowledge, only a handful of papers, such as Gopinath and Stein (2021), attempt to study whether firms align their trade invoicing with their currency denomination of debt to hedge exchange rate risk.

Our findings show that, like other EMEs, dollar invoicing has dominated Thailand's trade transactions over the studied period 2007–2024, accounting for around 75–80% of Thai exports.[1] However, there is a gradual but notable rise in baht invoicing, which can be observed for exports to various destinations and is likely driven by the automotive sector. At the firm level, most export firms, especially smaller ones, still use US$ as their sole invoice currency of choice. To understand underlying drivers of such dollar dominance in trade invoicing, we examine various factors that may explain the dollar invoicing probability at the firm-product-destination level. Based on a logistic regression, we find that the motive for dollar invoicing can be explained by traditional firm- and industry-specific factors, including imported input exposure, competitors' invoicing behavior and, to a lesser extent, firm market shares. The invoicing currency choices also display some persistence. That is, previous dollar invoicing experience significantly influences the probability of dollar invoicing in the current period. Moreover, this paper also documents an important role for macroeconomic drivers, including transaction costs of importers' currency, exchange rate volatility, as well as inflation rates in the destination market. However, we do not find that the currency denomination of bank loans has any bearing on firms' trade invoicing currency choice, a finding that holds both in the whole and sectoral sample.

Last, we examine the impact of the LCSF on the dollar invoicing probability. Our findings suggest that the framework has a significant, though moderate, impact towards reducing dollar reliance. Specifically, we show that the probability of dollar invoicing of Thai exports to Indonesia declines by two percentage points after the LCSF implementation. The impact is especially visible among large exporters in certain industries. Meanwhile, the impact of the LCSF for Thai exports to Malaysia is significant only among a set of medium-sized firms, but no significant effect is found in the overall. Moreover, we observe that while the baht invoicing shares of Thai trade with these two countries clearly show a rising trend, the use of rupiah and ringgit remains very limited. And, despite the rise of baht invoicing in the overall, around 80% and 70% of firms that export their products to Indonesia and Malaysia still report no use of baht invoicing. All in all, these results suggest that the impact of the LCSF is small and by no means pervasive across sectors and firms.

Our paper closely relates to the literature on the invoice currency choices of trade, which mainly focuses on advanced countries. Among others, Amiti et al. (2022) find in the case of Belgium that firm size, exposure to imported inputs and the currency choices of competitors shape firm-level currency invoicing decisions. In the context of UK, Chung (2016) emphasizes the role of imported inputs, while Crowley et al. (2020) show that the use of a dominant currency is driven not only by strategic complementarities, but also a firm's prior dollar experience. Corsetti et al. (2022) Crowley

[1] In the context of Thailand, Apaitan et al. (2024) and Nookhwun et al. (2025) show how the dollar dominance in trade invoicing affects exchange rate passthrough to import prices and firm profitability.

et al. (2024) and Garofalo et al. (2024) further document how Brexit affects invoice currency choices of UK exporters, who appear to shift away from pound sterling to US$ invoicing. Using Canadian import transactions, Goldberg and Tille (2016) document a link between the transaction size and invoicing, while also stressing an important role of exchange rate volatility, regime and currency transaction volumes.

For advanced economies in Asia, Yoshida et al. (2024) show that, for Japan's trade, strategic complementarity is larger at the industry level than the destination level, while Shimizu et al. (2025) find that Japanese firms use yen to invoice differentiated goods and adopt the price-to-market strategy in highly competitive markets. Meanwhile, for Korean trade, Hwang et al. (2019) highlight the role of macroeconomic and financial conditions of partner countries. Son (2023) instead explores the influence of market- and firm-specific drivers, i.e., strategic complementarities and imported inputs, on dominant currency pricing.

Evidence of invoice currency choices in EME is rather limited. Hayakawa et al. (2024), for example, explore the invoicing currency choices of Thai exporters, focusing on inertia in invoicing currency and the role of export experience. Our paper reports a similar finding but also extends a range of potential factors to include other firm characteristics, macroeconomic factors and the central banks' policy in promoting local and regional currency invoicing. Meanwhile, Ito and Kawai (2021) show that in many aspects of international transactions, the use of local currencies in the ASEAN+3 countries remains underdeveloped. In addition, for Asia and Pacific economies, Mercado et al. (2022) note that the use of US$ in trade invoicing relates to global value chains and multinational corporations.

A few studies, including Sato (2019) and Sussangkarn (2020), provide discussions on the LCSF. In particular, Sussangkarn (2020) shows that the LCSF can reduce foreign exchange (FX) transaction costs by facilitating direct exchange between the Thai baht, Malaysian ringgit, and Indonesian rupiah, thus providing a greater incentive for local currency usage.[2] There are also studies that explore the effectiveness of other policy initiatives by the central banks. Reiss (2015) finds that the Local Currency Payments System between Brazil and Argentina increases the use of the Brazilian Real for invoicing trade. Bahaj and Reis (2026) show that the swap line of the People's Bank of China (PBoC) supports the renminbi's international status by lowering the volatility of borrowing costs and increasing the probability that a country will use the renminbi by 12%. Meanwhile, Benguria and Novy (2025) show that renminbi invoicing for Argentina's import from China shifted rapidly to nearly 50%, displacing US$ as a result of the PBoC's swap line. Our paper contributes to this strand of literature by directly quantifying the impact of the LCSF on the dollar invoicing probability on Thai exports.

This paper is organized as follows. Section 2 presents some background information on LCSF. Section 3 lays out the datasets used for the analysis and presents some stylized facts. Section 4

[2]The paper notes that the buy-sell gap for baht and ringgit has decreased by approximately 50 basis points to just over 2.5% from 2016 to 2019. While the baht-rupiah exchange gap in Thailand has also fallen since the third quarter of 2017, it remains high at about 8.5% in 2019. In contrast, the FX buy-sell gaps for these currencies are significantly wider in Malaysia and Indonesia, in the range of 10% or more.

discusses the regression methodology, while the results are shown in Section 5. Section 6 concludes and discusses policy implications.

2 Local Currency Settlement Framework (LCSF)

The LCSF is a bilateral arrangement to facilitate the use of local currencies for settlements of cross-border economic activities. It was first launched by the Bank of Thailand (BOT) and Bank Negara Malaysia (BNM) on 14 March 2016, in accordance with the MoU signed on 27 August 2015.[3] The aim is to provide greater flexibility and efficiency for businesses to access and manage baht in Malaysia and ringgit in Thailand for bilateral settlement of trade. Businesses can obtain a range of baht and ringgit-denominated financial services such as FX hedging, financing, deposit account and other policy flexibilities from appointed banks in both countries. As a result, the framework allows for greater efficiency in accessing the local currencies and managing exchange rate risks arising from trade transactions. The central banks have appointed commercial banks in each country to facilitate the framework. Initially, there were three appointed banks in Malaysia and another three in Thailand. These appointed banks offer direct quotation for baht-ringgit exchange rates at competitive rates.[4]

BOT and BNM together expanded the LCSF on 2 January 2018. The framework was expanded to include direct investment to enrich the existing trade transactions. The scope of participant was also expanded to include individuals, sole proprietorships and general partnerships. In addition, more qualified banks have been appointed. There was a further expansion effective 1 December 2021. This latest framework includes an expansion of eligible users to include Malaysians and Thais who reside in either country as well as additional foreign exchange policy flexibilities such as simplified documentation requirements. The central banks also appointed additional qualified commercial banks to support the framework.

Following the MoU signed between three central banks, including Bank Indonesia, on 23 December 2016, another LCSF between Thailand and Indonesia was launched in January 2018. The framework is similar to the first phase of the Thai-Malaysian LCSF and focuses first on promoting local-currency invoicing for trade transactions. There were five appointed banks in each country. At the end of 2020, the framework was extended to cover direct investment and remittances with the greater number of appointed banks (12 Indonesian banks and 11 Thai banks).

[3] See BOT (2016)

[4] Appointed banks must fulfill certain qualifications, including strong business links between both countries, presence of branches in both countries or high volumes of trade in ringgit and baht. These banks have been granted the necessary flexibilities to provide a greater range of financial services which include ringgit and baht deposits, trade financing and hedging products.

3 Data and Stylized Facts

3.1 Data

To uncover patterns and drivers of invoicing currency choices of Thai exports, our work leverages transactional export and import data from the Customs Department, the Ministry of Finance, from 2007 to 2024. This is a rich dataset that contains information on firm identifier, export destination or import source, product as classified by the harmonized system (HS) code at the 11-digit level, trade values and quantities, and importantly invoicing currency. While trade values are available in baht and US$, this study uses values in baht. We aggregate the transaction data into annual data at the level of firm, product, partner country and invoice currency combinations.

We clean our original dataset by (1) excluding gold, (2) excluding firms in public sectors, and (3) keeping only partner countries with an export (import) share greater than 0.5% of total exports (imports). This leaves us with 26 export destinations and 22 import source countries, which still account for a substantial share of Thailand's foreign trade. Our dataset contains a total of 5,964,262 observations that include 38,983 exporting firms, 20,421 products according to the HS 11-digit classification and 51 currencies used in invoicing exports.

We merge the Customs dataset, with two additional data sources. The first one is the Corporate Profile and Financial Statement (CPFS) database from the Ministry of Commerce, which contains registered firms' annual balance sheets and income statements. We specifically obtain data on firms' revenue and costs. The other is contract-level loan data from the Bank of Thailand's Loan Arrangement Database (LAR), which are reported monthly by all financial institutions under supervision and cover loans extended to corporates and individuals with a total credit line or loan outstanding above 20 million baht within a single bank. We specifically focus on the currency denomination of firm credit.[5] Other databases used to compute country-level variables include CEIC, Oxford Economics, the World Bank, the IMF's IFS and the BIS Triennial Central Bank Survey of foreign exchange and over-the-counter derivative market.

3.2 Stylized Facts

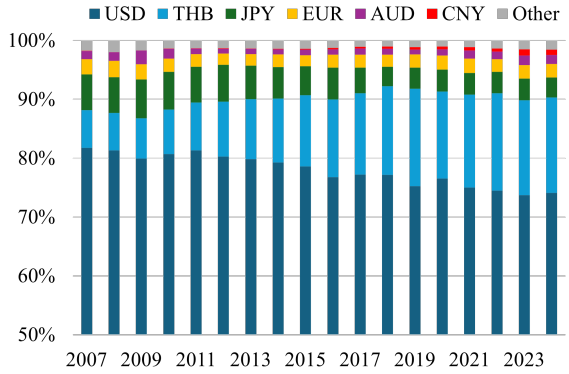
Given the cleaned dataset, we show some stylized facts to highlight key characteristics and evolving patterns of invoicing currency choices of Thai exports over the period 2007–2024.

First, the dominant role of US$ as trade invoicing currency is evident in Thai exports but has been diminishing somewhat over the past decade. Despite the trade share with the US hovering at just over 10% of Thailand's total exports, the share of dollar towards invoicing Thai exports is substantial at around 75–80% of total exports over the period studied (Figure 1a). This number is comparable to the dollar invoicing shares among Asian exports as shown in Boz et al. (2022). For Thai exports, Thai baht, i.e., the producer currency, is the second most popular invoice currency of choice, followed by the Japanese yen and euro, given Thailand's significant trade share with both Japan and European nations. Meanwhile, the use of Chinese yuan rises but remains surprisingly

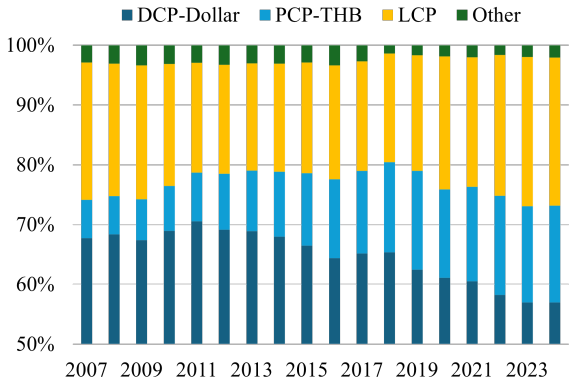
[5]Since 2014, the SMEs Data database (SMD) provides the same information for loans smaller than 20 million baht.

Figure 1: Invoicing Currency Choices of Thai Exports

(a) By Currency



(b) By Type



Note: Panel (a) reports the shares of Thai exports by invoice currencies over the period 2007–2024. Panel (b) classifies such shares into four invoice currency types, including the producer currency pricing (PCP), local currency pricing (LCP), dominant currency pricing in terms of US$ (DCP) and others. Exports to the US that are invoiced in US$ are classified as LCP.
Source: Customs Department, calculated by authors.

small, despite China's integration into global trade and production and the promotion of the international role of the yuan by the Chinese authorities.

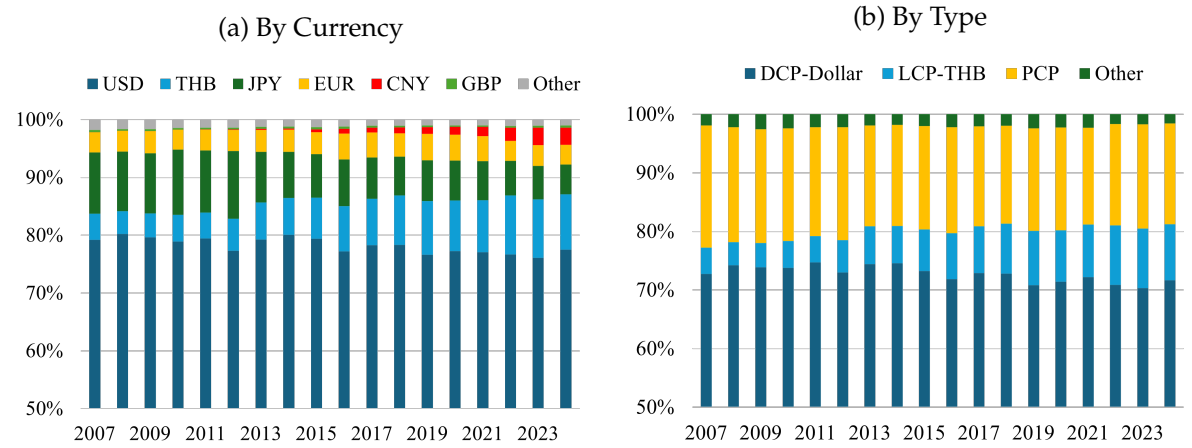
However, the dollar role gradually declines over this period, standing at around 75% in recent years. Dollar invoicing shares was over 80% of Thai exports in the earlier period. On the other hand, we observe a clear rising trend of baht invoicing, whose shares rise from just over 5% in 2007 to 17% in 2024. This is in line with the Bank of Thailand's initiatives to promote the use of Thai baht towards invoicing trade. We also see the decreasing trend of yen invoicing over time. In Figure 1b, we classify invoice currency patterns into four types: producer currency pricing (PCP), local currency pricing (LCP), dominant currency pricing in terms of US$ (DCP) and others. Since dollar-invoiced exports to the US are classified as LCP, the DCP share is for those dollar-invoiced exports to non-US destinations. We still observe a significant, but declining, share of export transactions under DCP.

From Figure 2, a similar trend can be observed for invoice currency choices of Thai imports, as the dollar invoicing shares always stay over 78% during the studied period. The share of yen invoicing is also significant but exhibits some downward trend. Meanwhile, we observe the greater use of baht invoicing, which rises from 5% in 2007 to 10% in 2024.

The dollar dominance holds across export destinations and sectors, though with some exceptions. As expected, the use of dollar is largest for exports to the US, at almost 95% (Figure 3). The share of dollar invoicing is also large, at more than 80%, for Thai exports destined for China and Hong Kong, as well as regional countries such as Singapore, Malaysia, Vietnam and Indonesia. However, baht is heavily used alongside dollar, for exports to CLM, i.e., Cambodia, Laos and Myanmar (around 48%), followed by exports to Australia (26%).[6] Meanwhile, local-currency pricing is evident for

[6]The dollar invoicing share still exceeds 60% of exports to Cambodia. In contrast, the majority of exports to Laos and

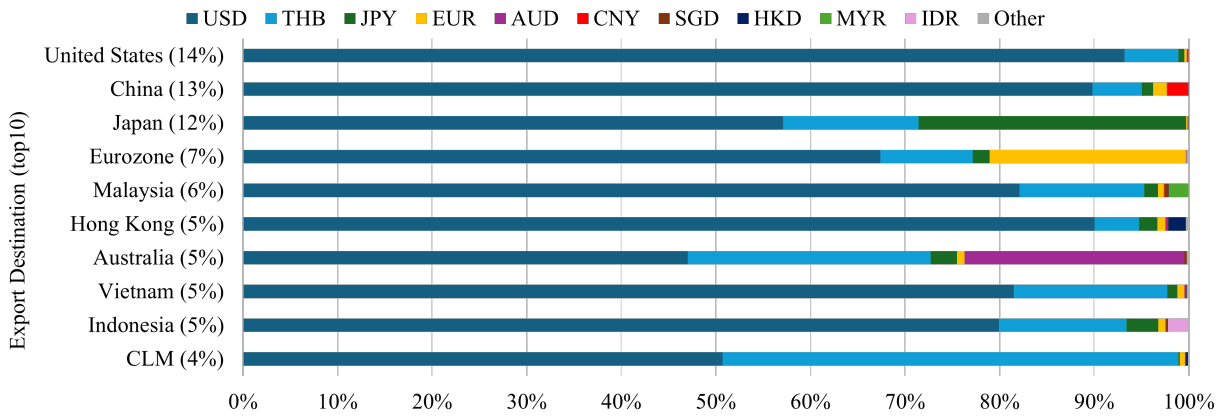
Figure 2: Invoicing Currency Choices of Thai Imports



Note: Panel (a) reports the shares of Thai imports by invoice currencies over the period 2007–2024. Panel (b) classifies such shares into four invoice currency types, including the producer currency pricing (PCP), local currency pricing (LCP), dominant currency pricing in terms of US$ (DCP) and others. Imports from the US that are invoiced in US$ are classified as PCP.
Source: Customs Department, calculated by authors.

exports to Japan, Australia and the Eurozone, accounting for more than 20% of exports to these economies.

Figure 3: Invoicing Currency Choices of Thai Exports by Destination Countries



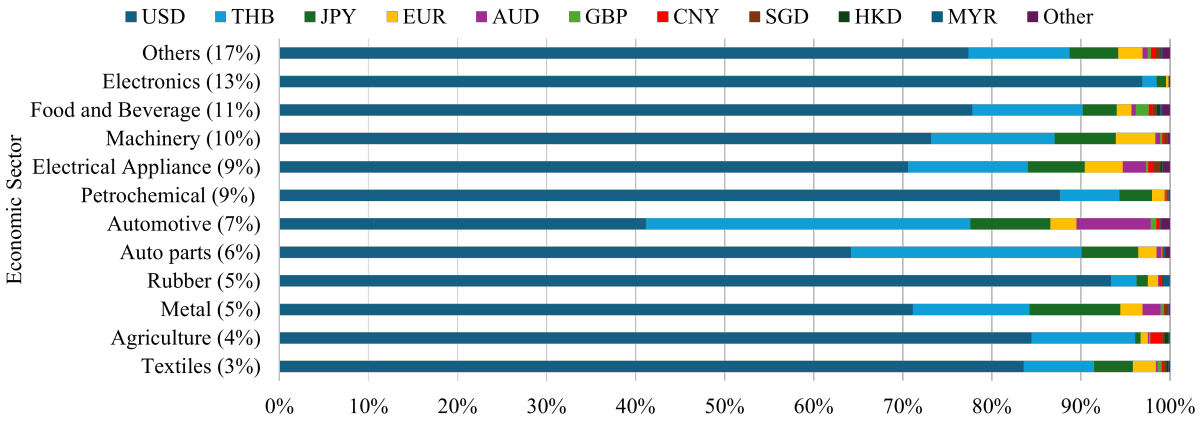
Note: This Figure reports the shares of Thai exports during the period 2007—2024 by invoice currencies across major export destinations. Numbers in parentheses show the share of Thai exports to each of these destinations during the same period. CLM includes Cambodia, Laos and Myanmar.
Source: Customs Department, calculated by authors

Across economic sectors, as shown in Figure 4, we observe the outsized role of the dollar in the electronics sector (96%), followed by rubber and petrochemical sectors. Baht invoicing is large among automotive exports (almost 40%), consistent with Australia being the main export

Myanmar are invoiced in baht.

destination for this sector. The auto parts sector is another sector that shows evident baht invoicing (26%) but dollar invoicing still constitutes a large portion at more than 60% of exports in this sector. Meanwhile, the use of yen and euro towards invoicing Thai exports spreads across economic sectors.

Figure 4: Invoicing Currency Choices of Thai Exports by Sectors



Note: This Figure reports the shares of Thai exports during the period 2007—2024 by invoice currencies across economic sectors as classified by the Bank of Thailand. Numbers in parentheses show the share of Thai exports to each of these sectors during the same period.
Source: Customs Department, calculated by authors.

Tracing the evolution of invoice currency choices over time, as shown in Figure 5, we see the increased use of baht invoicing in various export markets. The share of baht invoicing rises significantly for exports to Australia from 19% during 2010–2014 to 32% over the recent years. Similarly, for exports to Japan, the use of baht invoicing increases from 10% to 20% over the same period. Other export destinations that see the greater use of baht invoicing include Malaysia, Vietnam, China, Eurozone as well as Indonesia. For exports to Malaysia, the baht invoicing share reaches 19% in the recent years, a 10-percentage-point increase from ten years ago. Baht invoicing also rises in Indonesia, but to a lesser degree when compared against Malaysia. To what extent the Local Currency Settlement Framework between Thailand, Malaysia and Indonesia helps foster the increasing use of baht and regional currencies for invoicing trade is the main focus of this paper. For exports to the US, dollar invoicing remains heavily used throughout the studied period.

The rise in baht invoicing is likely driven by changes in invoice currency patterns of the automotive sector. From Table 1, the baht-invoicing share in this sector doubles from 24% during 2010–2014 to 51% in 2020–2024. This comes at the expense of dollar invoicing whose share drops by 16 percentage points to 31% over the same period. The greater use of baht invoicing can also be observed in other sectors, including auto parts, electrical appliances, machinery, food and beverages, and agriculture. For these sectors, the shares of baht-invoiced exports increase, on average, by 5 percentage points over this period. That said, in recent periods, the dollar-invoicing shares remain above 70% in most sectors, while the baht-invoicing shares are under 20%. This latter observation points to the dominant currency paradigm that still prevails up until now.

Figure 5: Invoicing Currency Choices of Thai Exports over Time (by Export Destinations)

Note: This Figure reports, for each of the major export destinations, the shares of Thai exports by invoice currencies over time. Invoice currencies are classified into four types, including the producer currency pricing (PCP), local currency pricing (LCP), dominant currency pricing in terms of US$ (DCP) and others. Exports to the US that are invoiced in US$ are classified as LCP.
Source: Customs Department, calculated by authors.

At the firm level, most export firms, especially smaller ones, use dollar as their sole invoice currency of choice. We classify firms into ten deciles according to their total values of exports and show that median firms within the two smallest categories use only US$ to invoice their exports (Figure 6b). Baht invoicing only becomes more evident for median firms of larger deciles, but its shares are rather small. However, for the two largest firm sizes, we observe negligible shares of baht invoicing for the median firm within these deciles, but the greater use of local-currency pricing. This latter observation is consistent with Amiti et al. (2022), who suggest that firms with high market share are likely to deviate from producer-currency pricing to adopt local-currency pricing. Since the average invoicing shares across firms within each decile as shown in Figure 6a look more aligned with the aggregate patterns (Figure 1), this indicates a rather skewed distribution of invoice currency choices across firms.

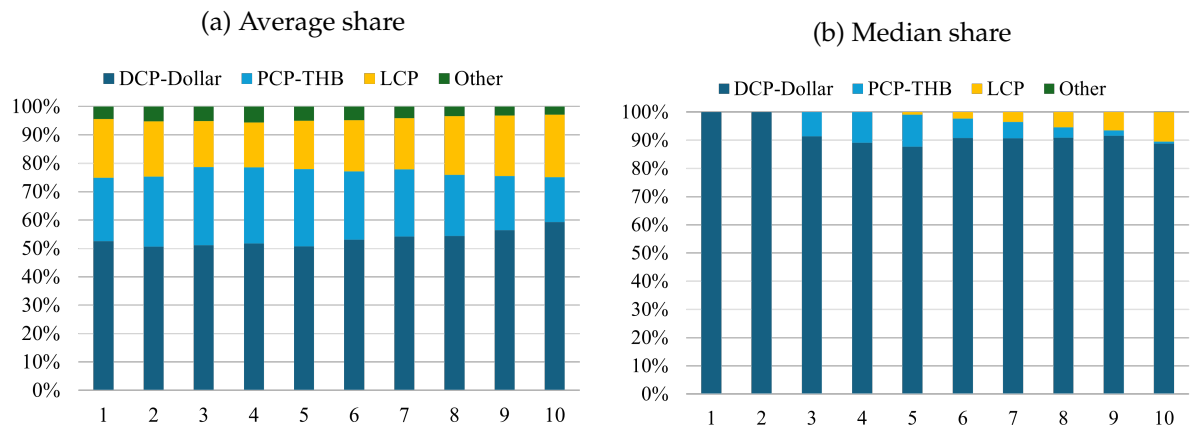
However, as shown in Figure 7, we interestingly observe that the invoicing currency choices of Thai exports depend greatly on firm cohorts, as new entrant firms in later years are more likely to

Table 1: Invoicing Currency Choices of Thai Exports over Time (by Sectors)

	Dollar invoicing			Baht invoicing		
Sectors	2010–2014	2015–2019	2020–2024	2010–2014	2015-2019	2020-2024
Electronics	97.9%	98.0%	93.6%	1.0%	1.2%	4.0%
Rubber	93.7%	93.8%	92.9%	2.7%	3.0%	3.3%
Petrochemical	90.5%	88.4%	84.1%	4.7%	6.5%	8.7%
Textiles	83.2%	82.6%	83.0%	7.7%	9.1%	9.0%
Agriculture	89.3%	83.1%	79.8%	7.3%	13.6%	15.2%
Food&Bev.	77.7%	78.0%	77.4%	10.0%	13.0%	14.9%
Others	79.6%	77.0%	75.3%	9.5%	12.8%	13.8%
Metal	67.4%	72.9%	74.4%	12.0%	14.9%	14.9%
Machinery	74.8%	72.9%	71.5%	10.7%	15.6%	16.3%
Electrical App.	74.7%	70.1%	68.0%	10.4%	15.8%	15.9%
Auto parts	63.1%	64.2%	66.3%	21.5%	28.1%	28.0%
Automotive	47.6%	40.6%	31.3%	24.1%	39.6%	51.0%

Note: This Table reports, for each of the economic sectors, the dollar-invoicing and baht-invoicing shares of Thai exports over time.
Source: Customs Department, calculated by authors.

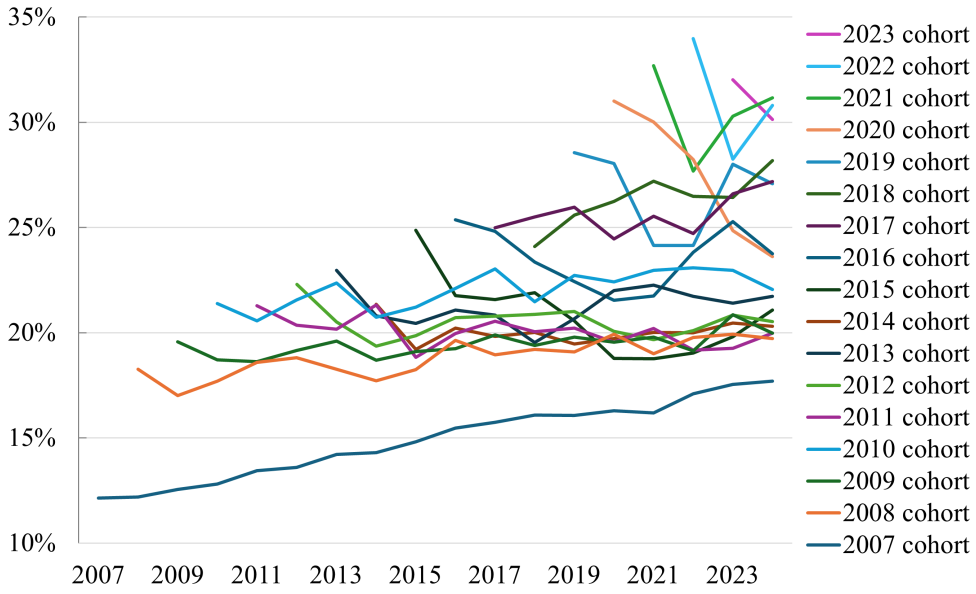
Figure 6: Invoicing Currency Choices of Thai Exports by Firm Size



Note: Panels (a) and (b) of this Figure report the average and median shares of Thai exports by invoice currencies during the period 2007–2024 across firms of different sizes. We rank and classify firms into 10 deciles based on their annual average export value. Invoice currencies are classified into four types, including the producer currency pricing (PCP), local currency pricing (LCP), dominant currency pricing in terms of US$ (DCP) and others. Exports to the US that are invoiced in US$ are classified as LCP.
Source: Customs Department, calculated by authors.

adopt baht invoicing. From the Figure, for firms that first traded in 2007 or earlier, their shares of baht invoicing started low at just 12%. Despite a clear upward trend, such shares in recent years are much lower than levels observed in other firm cohorts. In contrast, firms that enter export markets from 2017 generally have baht invoicing shares of over 25% of total exports. These observations point to rigidities in firms' trade invoicing decisions.

Figure 7: Baht Invoicing Shares by Firm Cohorts



Note: This Figure shows average baht invoicing shares over time across firms within each cohort. The cohort year refers to the year in which firms first appear in the Customs dataset. For each firm, the baht invoicing share is calculated as the proportion of exports invoiced in Thai baht.
Source: Customs Department, calculated by authors.

4 Methodology

4.1 Drivers of Invoicing Currency Choice

This section studies various factors that potentially influence invoice currency choices of Thai exports, particularly the dollar dominance in trade invoicing. These range from firm-specific factors, product characteristics to macroeconomic factors. We estimate the following panel specification:

$$P\{\iota_{fpdt}^{USD}\} = \beta_1 \varphi_{ft} + \beta_2 S_{fidt} + \beta_3 \theta_{(-f)idt} + \beta_4 H_p + \beta_5 \psi_{f,t-1} + \beta_6 \zeta_{f,t-1} + \beta_7 X_{d,t} + FEs + \epsilon_{fpdt}, \quad (1)$$

where the dependent variable is the dummy variable that equals to one if firm f uses US$ to invoice its product-p exports to destination d in year t. Product p is defined at the HS 11-digit level. However, it is to note that a firm's exports of product p to each destination country at a given time period may involve more than a single invoice currency. We, therefore, assume that ι_{fpdt}^{USD} takes the value of one whenever the share of dollar invoicing exceeds 50%. Figure A.1 in the Appendix shows the distribution of such dollar invoicing shares, the majority of which (over 60% of observations) imply the use of US$ as the sole invoice currency for invoicing export transactions. Around 35% of the observations take zero value, suggesting that a firm relies on invoice currencies other than dollar.

Turning to explanatory variables, we first describe firm-specific factors. φ_{ft} is a firm's imported input that is invoiced in US$. The variable is defined as the ratio of firm f's dollar-invoiced imports

to its total imports in year t. φ_{ft} is measured at the firm level and thus applies to every export transaction committed by firm f in year t. We assume that φ_{ft} takes the value of zero if a firm has no important transaction. S_{fidt} represents firm market share, i.e., the share of firm f's total exports in industry i (corresponding to product p) of export destination d to the overall exports by every Thai firm to the same market. We define industry i by the HS code at the six-digit level. $\theta_{(-f)idt}$ is the extent of dollar invoicing by firm f's competitors in the same market, as defined by HS 6-digit industry-destinations. This is computed as the ratio of dollar-invoiced exports by a firm's competitors in industry i of destination d to their total exports in that market.

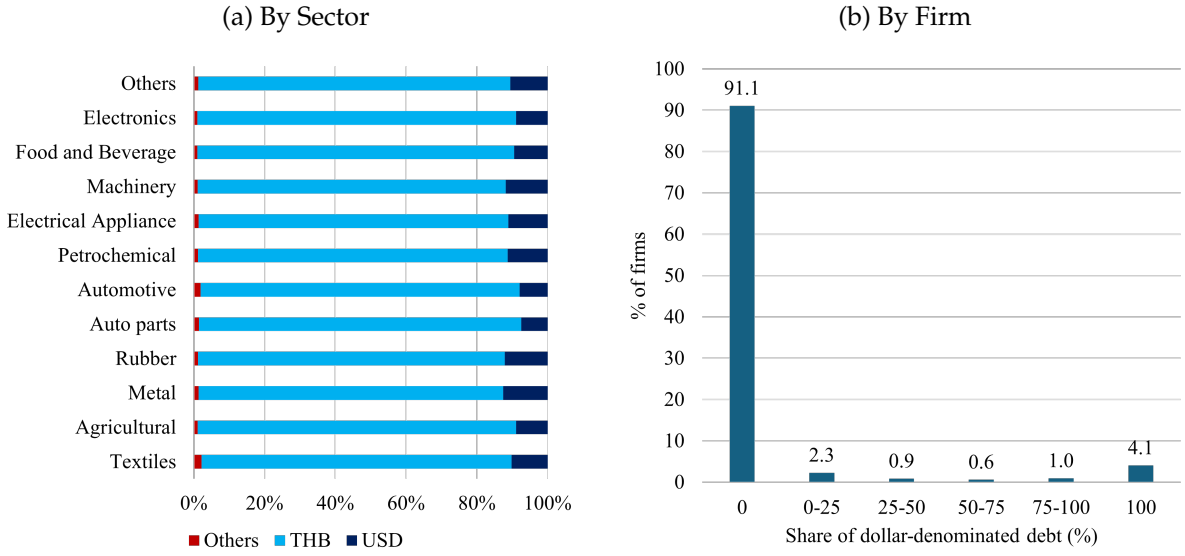
These first three explanatory variables follow closely the theoretical framework of Amiti et al. (2022). We expect the intensity of dollar-invoiced imports to increase a firm's incentives to invoice their exports in dollar as a way to operationally hedge against exchange rate risks. As shown in Figure 2, we observe the large shares of Thai imports being invoiced in dollar. For a robustness check, we instead use the ratio of dollar-invoiced imports to a firm's total costs. This is because firms may have different import intensity, while domestic costs such as labor compensation and domestic input costs are typically in the domestic currency. For firm market share, Amiti et al. (2022) argue that it proxies for strategic complementarities in pricing and expect larger firms to deviate from pricing in the domestic currency, in our case, Thai baht. In the context of Belgian firms, larger firms tend to adopt local-currency pricing to ensure that their prices are better aligned with their local competitors in the destination country, who use the local currency by default. For a robustness check, we replace market shares with a firm's total revenue (in log form). Meanwhile, the influence of the invoice currency choices of a firm's competitors also reflects strategic complementarities in currency choices.

Closely related to the strategic complementarities in pricing are the industry coalescing effects, as emphasized in Goldberg and Tille (2008). Exporters have a stronger incentive to stabilize prices relative to their competitors when product demand is highly elastic. Such effects are, therefore, highly relevant for trade in homogenous goods. To examine this, we apply Rauch (1999) measure to trade data, where each commodity is classified into one of three categories: (1) a good traded on an organized exchange, (2) a referenced-priced good that does not have an official market but has reference prices that are published in trade publications and (3) a differentiated good. We introduce the dummy variable (H_p) that equals to one for differentiated products, and zero otherwise. That is, an organized-exchanged good and a referenced-priced good are together labelled as homogenous items. As in Goldberg and Tille (2008), we expect that homogeneous goods are invoiced in the narrower set of currencies, usually those with low transaction costs.

We additionally examine another two firm-specific variables that may influence a firm's invoice currency choices of exports. Of relevant to firms in EMEs is the currency denomination of firm debt, as these firms may rely on external or foreign-currency debt as their source of financing. For each firm, we compute $\psi_{f,t}$, the ratio of dollar-denominated bank loan outstanding to its total loan outstanding, to signal the extent of dollar debt. We expect that a firm with dollar debt will likely invoice its exports in US$ to obtain income streams in the same currency as debt repayment. This

can help firms avoid exchange rate risks, especially if they do not actively hedge their future debt repayment through financial instruments. To avoid an endogeneity issue, we lag this variable by one year. However, a caveat is that instead of obtaining bank loans, some firms can issue foreign-currency bonds. As a result, $\psi_{f,t}$ may not fully capture the extent of dollar debt incurred by each firm. Figure 8 shows some stylized stylized facts pertaining to the currency composition of firms' loans. Unlike invoicing currency choices of trade, bank loans of Thai exporters are largely denominated in Thai baht (panel (a)). The shares of dollar loans also do not vary much across sectors, staying close to 10% of total loans outstanding. Furthermore, more than 90% of the export firms do not have loans denominated in US$ at all (panel (b)). However, it is still of our great interest to examine whether those firms that are incurred with dollar debt have more incentives to use US$ in invoicing their trade. The last firm-specific variable is a firm's previous experience in dollar invoicing ($\zeta_{f,t-1}$). Following Crowley et al. (2020), we use the share of dollar-invoiced exports by firm f in the previous year to proxy for its prior dollar experience. As a robustness check, the number of years a firm has used the dollar to invoice its exports is considered, where we truncate the maximum value of this variable at six years. The probability of dollar invoicing is expected to increase with a firm's prior experience in using dollar to invoice its exports. This may capture habit formation or increasing returns to scale deriving from the fixed costs of currency management.

Figure 8: Currency Denomination of Firm Debt



Note: Panel (a) of this Figure reports, across economic sectors, the shares of bank loans of Thai exporters by currency of denomination. Since each firm may export products from more than one sector, we assume that a firm belongs to a sector most of its exports come from. Panel (b) reports the percentage of firms according to their share of dollar-denominated loans. For both panels, we focus on loan outstandings at the end of the year. The sample period is from 2016–2024. Source: The Bank of Thailand's Loan Arrangement and SMEs Data databases, calculated by authors.

Aside from firm and product characteristics, macroeconomic factors have for long been regarded as important determinants of trade invoicing currency choices. The first factor relates to the transaction costs of exchange (Devereux and Shi, 2013). Firms may use the currency of the

destination market if it has low transaction costs in the FX market. As a proxy for transaction costs, we use the share of a country d's currency in the daily global foreign exchange market turnover as reported in the BIS Triennial Central Bank Survey of foreign exchange and over-the-counter derivative market. Since the data only covers major currencies, currencies not listed in the survey are assigned a zero share. Second, we examine the role of exchange rate volatility, as exporters may tilt their invoicing choice towards the currency of the country with more stable macroeconomic fundamentals (Devereux et al., 2004). Exchange rate volatility is computed as the coefficients of variation of the importer's currency value relative to US$ based on the three-year rolling window. Since exchange rate changes can have a contemporaneous impact on the invoicing currency share through the valuation effect, we lag this volatility measure by one year.[7]

Third, to capture the fact that trade between developing and industrialized economies is predominantly invoiced in the industrialized country's currency, we introduce log of PPP-adjusted per-capita GDP of destination country d. This may reflect both the relative bargaining power between the two economies undertaking trade transactions and the strategic complementarity consideration. Last, exporters may avoid pricing in the currency of a country with high and volatile inflation environment. We examine both the level and volatility of inflation at the destination market d, where inflation volatility is computed as standard deviations of monthly inflation rates (%year-on-year) over the three-year rolling window. Table A.1 in the Appendix reports descriptive statistics of all variables used in regression.

In the regression specification, we also include three set of fixed effects (FEs): destination, industry (HS 2-digit) and time fixed effects. We estimate this specification using logit regression, where we report average marginal effects for each explanatory variable and standard errors based on the Delta method.

4.2 Local currency settlement framework

To explore the effects of the LCSF on the probability of dollar invoicing, we introduce the dummy variable that is equal to one for Thai exports to Malaysia and Indonesia from 2016 and 2018, respectively. These are periods when the LCSF has been in operation in these countries. In addition, to examine differential effects of LCSF across the two countries, we introduce two separate dummy variables associated with its implementation in each country.

5 Results

5.1 Drivers of Invoicing currency choice

Table 2 shows results on drivers of invoicing currency choice of Thai exports. We limit our estimation sample to only exports to non-US countries. In Column 1, we explore the influence of traditional

[7]We obtain monthly exchange rates and consumer price index from the IMF's IFS and CEIC database. PPP-adjusted per-capita GDP in US$ is from Oxford Economics, except for Laos, Myanmar and Cambodia, for which data come from the World Bank.

drivers as in Amiti et al. (2022) but also include the role of product differentiation. All these factors, including imported input exposure, firm market share, competitors' invoicing behavior and the dummy variable for differentiated products, significantly affect invoicing currency choices in an expected way. First, the intensity of dollar-priced imports increases the likelihood that firms invoice their exports in US$. We find that a 10-percentage-point increase in the dollar import share raises the probability of dollar-invoiced exports by 3.4 percentage points. This reflects a firm's incentives to reduce currency mismatches and operationally hedge its exchange rate exposures. We also find that firms with high market share likely invoice their exports in US$. If a firm's market share increases by ten percentage points, this will lead to a rise in the dollar invoicing probability of its exports of 0.34 percentage point. While our results similarly show as in Amiti et al. (2022) that large firms appear to deviate from producer-currency pricing, large Belgian firms adopt local-currency pricing as opposed to dominant-currency pricing found for Thailand. Instead, our result may indicate that local competitors of Thai exporters price their product in US$ or that large exporters can hedge exchange rate risks using financial instruments more easily and at cheaper costs when trade is in dollar (Lyonnet et al., 2022). However, we note that the marginal-effect estimate in Column 1 is rather small.

Next, strategic complementarity in invoicing currency matters, as the invoice currency choice of firm competitors influences a firm's own currency choice. We find that if all competitors who export to the same market adopt dollar invoicing, this will raise the dollar invoicing probability of a firm's exports by 11.2 percentage points, as compared to the case when none of the firm's competitors use dollar invoicing. Last, the dollar invoicing is used less extensively for differentiated goods. In other words, exporting firms tend to invoice homogenous goods, whose demand is typically more price-elastic, in US$, a result consistent with the industry coalescing effects.

Firm experience in dollar invoicing greatly matters. As shown in Column 2, a firm's share of dollar invoicing in the previous year significantly influences its invoicing behavior in the current period. The average marginal effect at 0.48 is significant and large, implying that if a firm exports all their goods in US$, there is a 48% probability that it will retain using dollar invoicing over the following year. Thus, the invoicing currency choices of Thai exports display some persistence. However, the estimate is much larger than that found in Crowley et al. (2020) for U.K. exporters. It is to note that the latter paper focuses only on the impact of prior dollar experience on invoicing currencies of exports to *a new market*, while the estimated effects in our paper additionally capture intensive margins of export invoicing currency choices, which may be subject to simple inertia due, for example, to long-term contracts. After controlling for firm experience, the marginal-effect estimates for other factors substantially decrease, especially the dollar import share whose estimate falls from 0.34 to 0.09. Meanwhile, the estimate for firm market share is reduced to just 0.01. These estimates, however, remain statistically significant at a 1% level. For the external debt, we do not find that the currency denomination of a firm's debt significantly affects its trade invoicing behavior (Column 3). This may reflect a rather small role the dollar debt plays toward firm financing in Thailand's context. Whether a firm already hedges against exchange rate risks associated with

Table 2: Baseline Regression Results

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Dollar import share	0.340***	0.089***	0.088***	0.086***	0.089***	0.089***
	(0.011)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)
Market share	0.034***	0.014***	0.014***	0.061***	0.014***	0.017***
	(0.005)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
Competitors' dollar invoicing share	0.112***	0.062***	0.062***	0.137***	0.061***	0.065***
	(0.004)	(0.003)	(0.003)	(0.005)	(0.003)	(0.003)
Differentiated product	-0.032***	-0.012***	-0.012***	-0.010***	-0.012***	-0.010***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Dollar share in total export (t-1)		0.483***	0.483***	0.500***	0.483***	0.686***
		(0.006)	(0.006)	(0.005)	(0.006)	(0.010)
Share of dollar-denominated debt (t-1)			0.007			
			(0.012)			
Share of FX market turnover				-0.458***	-0.156**	-0.157**
				(0.022)	(0.061)	(0.069)
THBFC volatility (t-1)				-0.005***	0.000	0.000
				(0.001)	(0.001)	(0.001)
GDP per capita				0.000	-0.012	-0.010
				(0.003)	(0.015)	(0.014)
Inflation				0.002***	0.000	0.000
				(0.000)	(0.000)	(0.000)
Inflation volatility				-0.001***	-0.0003***	-0.0003***
				(0.000)	(0.000)	(0.000)
Observations	5,531,992	5,057,434	5,057,434	5,057,434	5,057,434	5,057,434
Pseudo R^2	0.208	0.408	0.408	0.377	0.408	0.464
HS2 FEs	X	X	X	X	X	X
Destination FEs	X	X	X		X	X
Year FEs	X	X	X	X	X	X

Note: This table reports average marginal effects from estimating the logit regression, except for Column 6 that shows OLS estimates. The dependent variable is the dollar invoicing probability at the firm-product (HS 11-digit)-destination level during the period 2007–2024. The variable takes the value of one if the share of dollar-invoiced exports exceeds 0.5 and zero otherwise. Standard errors shown in parentheses are based on the Delta method. For Column 6, we cluster standard errors at the firm level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

dollar debt requires further study.

Next, we examine the role of macroeconomic factors. To do so, since some of these factors do not vary much over time, we first omit the destination country fixed-effects from the specification, the results for which can be found in Column 4. Most of the variables are shown to have a significant effect on firm invoicing currency choices. First, the higher share of the importer's currency in the global FX market turnover leads to a reduction in dollar invoicing probability, as exporters may increasingly price their products using those local currencies with low transaction costs. On the flip side, exporters may prefer invoicing in US$ whenever the local currencies have high transaction costs, which may apply to most currencies except for major ones. This result may help explain why we observe the significant use of yen, euro and Australian dollar as shown in Figures 3 and 5. We also find that the greater exchange rate volatility of the destination country's currency against US$ is associated with less dollar invoicing. Whether exporting firms adopt more of baht invoicing or local-currency invoicing, the latter to avoid large swings in prices facing foreign customers, requires a further examination. Moreover, the level and volatility of inflation are both significant. Exporting firms tend to adopt dollar invoicing whenever importers come from a country experiencing high inflation. However, volatile inflation in the destination country unexpectedly results in the lower

probability of dollar invoicing. As a result, invoice currency choices of Thai exports are as well driven by macroeconomic and financial characteristics that prevail in the destination market. In Column 5, with country fixed-effects included in the specification, only the destination currency's FX market turnover and inflation volatility remain a significant driver of invoicing currency choices.[8]

The above findings are robust to using the OLS regression as shown in Column 6, where we find the coefficient estimates close to the marginal effects found earlier. The exception is the coefficient on firm dollar experience, whose estimate even rises to 0.69. In Table A.2 in the Appendix, we conduct several further robustness checks. In Column 1, we expand our estimation sample to include exports to the US, while further omitting exports to countries whose currency is pegged to US$ in Column 2. The estimates of average marginal effects barely change. The results are also robust to using the ratio of dollar-priced imports to a firm's total costs (Column 3). The marginal effects of the latter are even larger, as a 10-percentage-point increase in the ratio of dollar-invoiced imports raises the dollar-invoiced probability by 1.4 percentage points. However, we note that the extent of imported input is much smaller when expressed in terms of a firm's total costs. In particular, such a ratio at the 75th percentile is 22%, whereas the ratio of dollar-invoiced imports to total imports at the same percentile is 97%. In Column 4, when firm revenue replaces market shares as a measure of firm size, it does not have any significant effect on the dollar invoicing probability. Last, we consider alternative measures of a firm's dollar experience. When the number of years of experience with dollar invoicing is used instead as a proxy, the robust finding is that the likelihood of exports being invoiced in dollar increases with the number of years a firm has experienced with dollar invoicing (Column 5). In addition, we also follow Crowley et al. (2020) by introducing a set of dummy variables that indicate the number of years of experiencing with dollar invoicing. In Column 6, the probability of dollar invoicing monotonically increases with years of experience, thereby confirming our baseline results.

5.2 Local currency settlement framework

Table 3 shows results on the impact of the LCSF between Thailand and partner countries including Malaysia and Indonesia on the reliance of dollar invoicing. As shown in Column 2, we find the impact to be moderate. Controlling for other factors that affect invoicing currency choices of Thai exports, the LCSF reduces the probability of dollar invoicing for exports to Malaysia and Indonesia by just 1.4 percentage points, which is significant at the 5% level. The result indicates resistance to change among Thai exporters, in spite of policy support. In Column 3, we differentiate between the LCSF adoption with Malaysia and Indonesia, and find that both marginal-effect estimates remain negative. However, for exports to Malaysia, the estimated impact reduces to 0.01 and is not statistically significant, while that for exports to Indonesia is higher at 0.02 and is significant at the 1% level. The results imply that other factors may account for the reduction in the dollar invoicing shares observed for exports to Malaysia as documented in Figure 5.

[8] In the estimation that follows, we decide not to include macroeconomic variables, since the destination fixed-effects may already capture the impact from these variables.

Table 3: Effects of Local Currency Settlement Framework

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Full Sample			No Crisis	Asia	ASEAN
Dollar import share	0.089***	0.089***	0.089***	0.093***	0.096***	0.077***
	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)
Market share	0.014***	0.014***	0.014***	0.013***	0.018***	0.021***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)
Competitors' dollar invoicing share	0.062***	0.062***	0.062***	0.061***	0.065***	0.058***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Differentiated product	-0.012***	-0.012***	-0.012***	-0.012***	-0.013***	-0.015***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Dollar share in total export (t-1)	0.483***	0.483***	0.483***	0.483***	0.468***	0.481***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Local Currency Settlement		-0.014**				
		(0.006)				
Local Currency Settlement (MY)			-0.009	-0.006	-0.009	-0.014
			(0.008)	(0.007)	(0.008)	(0.009)
Local Currency Settlement (ID)			-0.022***	-0.014*	-0.021***	-0.024***
			(0.007)	(0.007)	(0.007)	(0.008)
Observations	5,057,434	5,057,434	5,057,434	3,654,509	3,486,135	2,092,292
Pseudo	0.408	0.408	0.408	0.405	0.419	0.414
HS2 FEs	X	X	X	X	X	X
Destination FEs	X	X	X	X	X	X
Year FEs	X	X	X	X	X	X

Note: This table reports average marginal effects from estimating the logit regression. The dependent variable is the dollar invoicing probability at the firm-product (HS 11-digit)-destination level during the period 2007–2024. The variable takes the value of one if the share of dollar-invoiced exports exceeds 0.5 and zero otherwise. '*Local Currency Settlement*' is the dummy variable that equals to one if products are exported to Malaysia and Indonesia after 2016 and 2018, respectively. Columns 1—3 show results for the full sample. Column 4 excludes crisis periods, while Columns 5 and 6 consider only exports to Asia and ASEAN, respectively. Standard errors shown in parentheses are based on the Delta method. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

We also perform robustness exercises by excluding crisis episodes, i.e., the global financial crisis and the COVID-19 pandemic, as well as using sub-sample of Asian and ASEAN countries (Columns 4–6). The latter allows for a better-matched control group to compare against trade with Malaysia and Indonesia. We show that while the average marginal effects of LCSF reduce somewhat when the crisis periods are excluded, the statistical significance of these estimates is in line with that under the full sample.

Next, we are interested in the heterogeneous effects of LCSF across firms and sectors. From Table 4, our baseline results, i.e., without the LCSF dummies, are mostly robust across firms of different sizes. Some observations are worth mentioning. First, the invoice currency choices of large firms are more sensitive to their dollar import share. This may reflect the fact that large firms also have high imports of intermediate inputs to begin with and so the extent of dollar-priced imports is likely to influence their export invoicing decisions. Second, the market-share variable does not have any significant effect among these firms. Third, prior dollar experience has less influence on the dollar invoicing probability of small firms.[9] Last, with respect to the LCSF impact, we interestingly

[9]We show based on a pooled logistic regression that the differences in the average marginal effects of a firm's imported input exposure, market share and its prior dollar experience across firm sizes as highlighted in this paragraph are statistically significant.

find that the significant impact of the LCSF in reducing the dollar invoicing probability is limited to medium-sized and large firms. For LCSF with Malaysia, the average marginal effects increase to 0.024 for medium-sized firms while becoming significant at the 1% level. Meanwhile, the LCSF with Indonesia significantly reduces dollar reliance by 3 percentage points for large exporters. These results imply that only subsets of firms respond to this bilateral policy initiative.

Table 4: Regression Results by Firm Size

	Small		Medium		Large	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Dollar import share	0.075***	0.075***	0.069***	0.069***	0.110***	0.110***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.016)	(0.016)
Market share	0.026***	0.026***	0.024***	0.024***	0.005	0.005
	(0.004)	(0.004)	(0.003)	(0.003)	(0.005)	(0.005)
Competitors' dollar invoicing share	0.051***	0.051***	0.065***	0.065***	0.059***	0.059***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.005)	(0.005)
Differentiated product	-0.009**	-0.009**	-0.007***	-0.007***	-0.016***	-0.016***
	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)
Dollar share in total export (t-1)	0.422***	0.422***	0.476***	0.476***	0.480***	0.480***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.013)	(0.013)
Local Currency Settlement (MY)		0.016		-0.024***		-0.003
		(0.011)		(0.008)		(0.012)
Local Currency Settlement (ID)		-0.015		-0.01		-0.030***
		(0.017)		(0.010)		(0.010)
Observations	305,815	305,815	1,836,554	1,836,554	2,915,064	2,915,064
Pseudo	0.419	0.419	0.457	0.457	0.366	0.366
HS2 FEs	X	X	X	X	X	X
Destination FEs	X	X	X	X	X	X
Year FEs	X	X	X	X	X	X

Note: This table reports average marginal effects from estimating the logit regression. Standard errors based on the Delta method are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Firms are ranked and classified into 10 deciles based on their annual average export value. Firms within 1^{st}–5^{th}, 6^{th}–9^{th} and 10^{th} are considered small, medium-sized and large firms, respectively. Columns 1–2 show results for small firms, Columns 3–4 for medium-sized firms, and Columns 5–6 for large firms. The sample period is 2007–2024.

Across sectors, we observe a significant impact of the LCSF with Indonesia in several sectors, including food and beverages, auto parts, electrical appliances, electronics, machinery and metal industries. The average marginal effects of the LCSF for these industries stand at around 3–4 percentage points. While the marginal effect is largest for the agricultural sector at 4.8 percentage points, it is not statistically significant. For the LCSF with Malaysia, we still find an insignificant effect in every sector. However, we note that the marginal effects are large in two sectors, including 'auto parts' and 'electronics' sectors, which are only significant at the 20% level. On other explanatory variables, the dollar import share, competitors' invoicing currency choices and firm dollar experience are significant in almost every sector with the correct sign. Firm market shares, however, only show influence in a few sectors. For this sectoral estimation, we also examine the effects from the currency denomination of firm debt. A significant effect on a firm's invoicing currency choices can now be observed in a few sectors, including agriculture, automotive and textile industries. The average marginal effect is largest in the automotive sector, where a 10-percentage-point increase in the dollar-denominated debt ratio raises the dollar-invoicing probability by around 0.9 percentage

Table 5: Regression Results by Industry

Variables	**Full**	**Agri**	**Food&Bev.**	**Auto parts**	**Automotive**	**Elec app.**
Dollar import share	0.088***	0.020**	0.051***	0.120***	0.068***	0.148***
	(0.008)	(0.008)	(0.008)	(0.029)	(0.023)	(0.015)
Market share	0.014***	0.023***	0.021***	-0.036	0.027	-0.003
	(0.003)	(0.006)	(0.006)	(0.026)	(0.017)	(0.011)
Competitors' dollar invoicing share	0.062***	0.063***	0.061***	0.000	0.053***	0.021***
	(0.003)	(0.006)	(0.005)	(0.012)	(0.013)	(0.006)
Differentiated product	-0.012***	-0.010	0.000	-0.017	0.029	-0.025
	(0.002)	(0.008)	(0.007)	(0.016)	(0.033)	(0.019)
Dollar share in total export (t-1)	0.483***	0.411***	0.478***	0.525***	0.505***	0.446***
	(0.006)	(0.007)	(0.006)	(0.017)	(0.010)	(0.011)
Share of dollar-denominated debt (t-1)	0.007	0.030**	0.015	-0.055	0.094***	0.002
	(0.012)	(0.015)	(0.012)	(0.036)	(0.031)	(0.019)
Local Currency Settlement (MY)	-0.009	-0.002	-0.013	-0.039	0.025	-0.005
	(0.008)	(0.018)	(0.011)	(0.025)	(0.030)	(0.014)
Local Currency Settlement (ID)	-0.022***	0.048*	-0.043***	-0.042***	-0.006	-0.039***
	(0.007)	(0.029)	(0.016)	(0.016)	(0.041)	(0.013)
Observations	5,057,434	169,832	559,455	256,648	31,216	369,085
Pseudo	0.408	0.511	0.453	0.380	0.465	0.397
	Electronics	**Machinery**	**Metal**	**Petrochem.**	**Rubber**	**Textiles**
Dollar import share	0.149***	0.160***	0.115***	0.087***	0.068***	0.080***
	(0.014)	(0.014)	(0.010)	(0.007)	(0.016)	(0.012)
Market share	0.013	-0.001	0.022***	0.024***	0.009	0.014**
	(0.020)	(0.008)	(0.006)	(0.006)	(0.012)	(0.007)
Competitors' dollar invoicing share	0.039***	0.032***	0.033***	0.047***	0.037***	0.048***
	(0.007)	(0.004)	(0.004)	(0.004)	(0.008)	(0.005)
Differentiated product	-0.042***	-0.011*	-0.003	-0.013	-0.141***	-0.039***
	(0.009)	(0.006)	(0.005)	(0.006)	(0.016)	(0.010)
Dollar share in total export (t-1)	0.340***	0.450***	0.472***	0.435***	0.466***	0.494***
	(0.014)	(0.010)	(0.008)	(0.007)	(0.012)	(0.013)
Share of dollar-denominated debt (t-1)	0.016	-0.037**	-0.013	0.012	-0.016	0.067***
	(0.015)	(0.018)	(0.011)	(0.011)	(0.018)	(0.022)
Local Currency Settlement (MY)	-0.022	-0.012	-0.011	-0.001	-0.003	0.002
	(0.016)	(0.013)	(0.009)	(0.010)	(0.015)	(0.019)
Local Currency Settlement (ID)	-0.036**	-0.027**	-0.038***	-0.009	-0.022	-0.025
	(0.017)	(0.011)	(0.011)	(0.011)	(0.015)	(0.020)
Observations	111,343	701,278	511,877	512,942	135,319	503,580
Pseudo R^2	0.419	0.379	0.405	0.42	0.421	0.429
HS2 FEs	X	X	X	X	X	X
Destination FEs	X	X	X	X	X	X
Year FEs	X	X	X	X	X	X

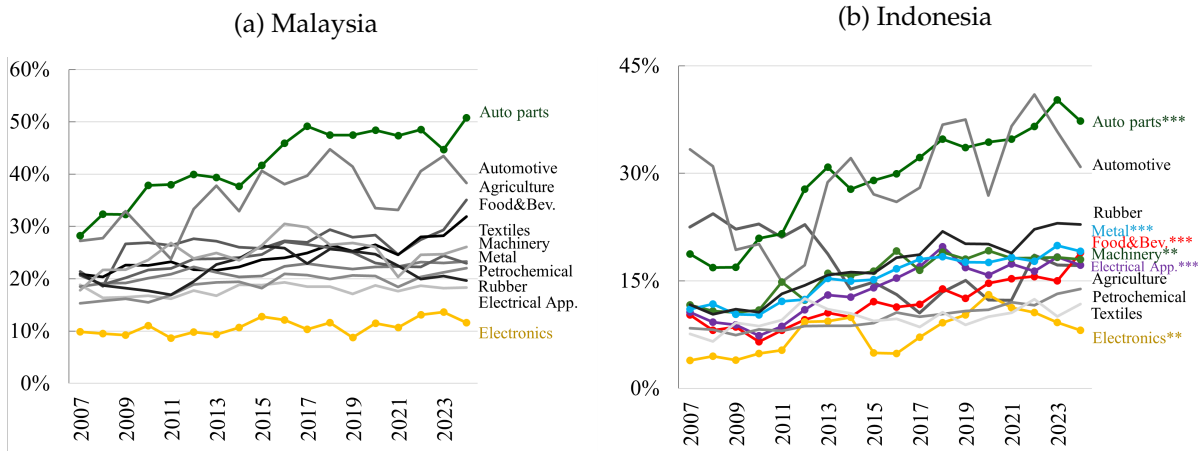
Note: This table reports average marginal effects from estimating the logit regression by economic sectors as classified by the Bank of Thailand. Standard errors shown in parentheses are based on the Delta method. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2007–2024.

point.

In Figure 9, we further display the evolution of baht invoicing for Thai exports to Malaysia and Indonesia across sectors. We first note that despite the significant effect of the LCSF on exports to Indonesia, baht invoicing shares are still generally smaller for exports to Indonesia than to Malaysia in almost every sector. Consistent with the aggregate findings in Figure 4 and Table 1, baht invoicing is the most popular choice in automotive and auto parts sectors, with only auto parts positively affected by the LCSF. The shares of baht invoicing in the auto parts sector recently reach 50% and 40% for Thai exports to Malaysia and Indonesia, respectively. Nonetheless, the baht-invoicing shares still lag behind for the electronics sector, consistent with the aggregate patterns.

To gain added insights into the adoption of baht and regional currencies at the firm level, we

Figure 9: Baht Invoicing Shares of Exports to Malaysia and Indonesia by Sectors



Note: Panel (a) and (b) report, for each sector, the average shares of baht invoicing of firm exports to Malaysia and Indonesia, respectively. For Indonesia, colored lines with markers are for sectors on which LCSF significantly reduces dollar invoicing shares. **, and *** denote significance at the 5%, and 1% levels for the LCSF marginal effects shown in Table 5, respectively. For Malaysia, colored lines with markers are for sectors that see a relatively larger effect from LCSF. Source: Customs Department, calculated by authors.

further examine the firm-level distribution of invoice currency choices of exports to Malaysia and Indonesia. We use export data in the recent period, i.e., 2022–2024, and differentiate firms into two categories by cohort years, whether they first export to Malaysia and Indonesia before or after the LCSF implementation. Results shown in Figures A.2 and A.3 point to the rather limited use of baht and regional currency invoicing by firms. For Thai exports to Malaysia, only around one-fifth of the firms invoice their exports in Thai baht more than 80% of total (Figure A.2a). We observe even a smaller number of firms (around 15%) for exports to Indonesia, in Figure A.3a. The majority of firms report no use of baht invoicing at all (around 70% and 80% for exports to Malaysia and Indonesia, respectively). Things get worse when we consider firms' use of regional currencies, i.e., ringgit and rupiah. On the right panel of both Figures, the extremely limited number of firms use these two currencies to invoice their exports. Last, we observe that firms that first export to Malaysia and Indonesia after the LCSF do not differ much from firms in earlier cohorts. This confirms the small estimated effect of the LCSF found in regression.

6 Conclusion and Policy Implications

This paper highlights dollar dominance in the context of Thai exports over the period 2007–2024, despite a gradual, upward trend in baht invoicing. Traditional firm-specific factors, particularly imported input exposure and competitors' invoicing behavior, drive such dollar invoicing motives. As firms begin to practice dollar invoicing, they will likely invoice their exports in US$ again over the next periods, thereby generating invoicing-currency rigidities. We, however, show that new firms in the market tend to practice more baht invoicing. Macroeconomic factors, particularly transaction costs of importers' currency, also influence invoice currency choices. Last, we show

that the LCSF between Thailand and regional partners, including Malaysia and Indonesia, only moderately reduce the dollar invoicing probability.

Our findings with respect to the limited impact of LCSF urge policymakers to better understand incentives and constraints facing trade firms in making their invoicing currency decisions. Whether the existing invoicing patterns already reflect firms' optimal invoicing currency choices, for example their motive for real hedging or their consideration of currency management costs, is also an important question to address. Policymakers may also need to gain added insights into the effectiveness and obstacles facing the policy in practice. To what extent has the policy raised the accessibility and manageability of regional currencies? Are firms well-informed about the framework? And, is the incentive sufficient to encourage firms to switch to these currencies? Should the reduction in foreign exchange conversion costs among regional currencies be too small, firms might find it optimal to stick to dollar invoicing. Last, a future analysis of firms' invoice currency choices should be viewed in conjunction with their access to financial hedging. Studies have shown that firms' access to FX hedging can increase the probability of dollar invoicing. If this turns out to be the case, the policy that enhances the availability and accessibility of FX hedging instruments can be crucial in the environment that the dollar dominance prevails.

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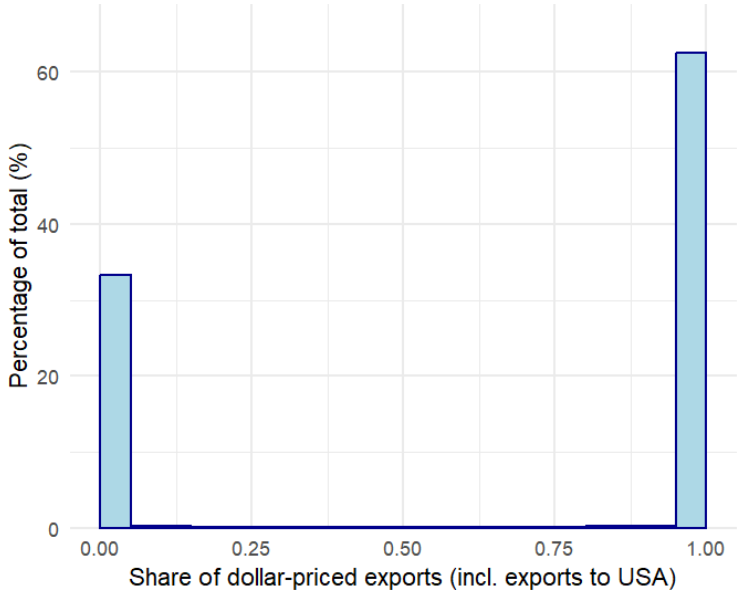
Appendix

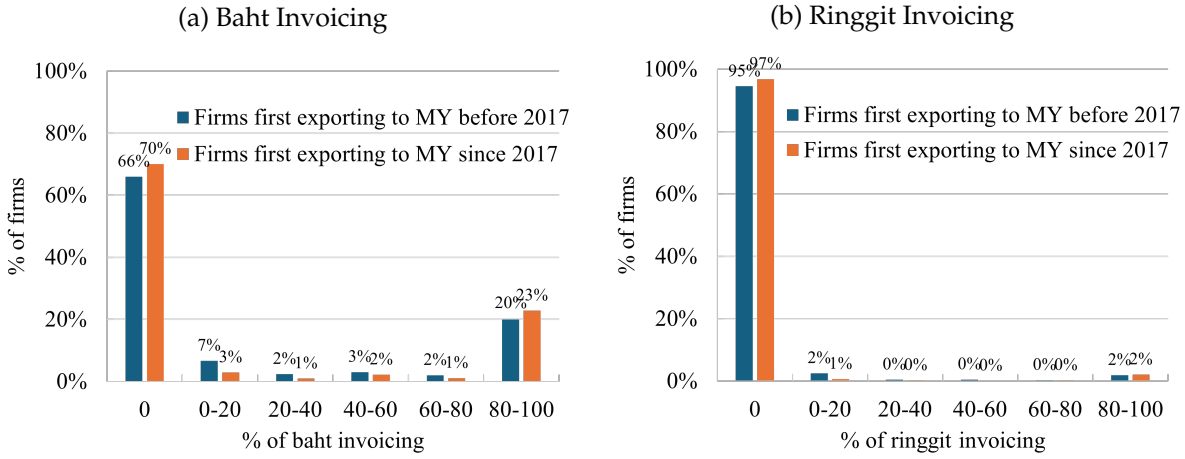
A More Tables and Figures

Figure A.1: Distribution of the Dollar Invoicing Share



Note: This Figure shows the distribution of the dollar invoicing shareof Thai exports at the firm-product (HS 11-digit)-destination level over the period 2007–2024.
Source: Customs Department, calculated by authors.

Figure A.2: Distribution of Baht and Rupiah Invoicing Shares of Thai Exports to Malaysia Across Firms



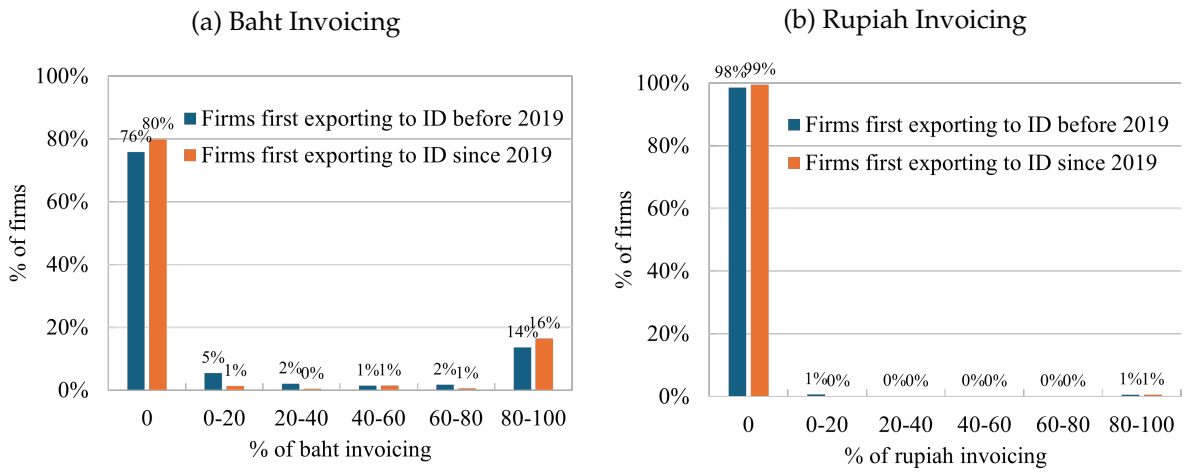
Note: This Figure reports the distribution of baht and ringgit invoicing shares of Thai Exports to Malaysia in 2022–2024 across firms.
Source: Customs Department, calculated by authors

Table A.1: Descriptive Statistics

Variables	N	Mean	S.D.	Min	P25	P50	P75	Max
Dollar export share	5,964,262	65%	47%	0%	0%	100%	100%	100%
Dollar import share	5,964,262	58%	40%	0%	10%	70%	97%	100%
Dollar cost share	5,102,001	15%	20%	0%	0%	5%	22%	100%
Market share	5,964,262	18%	32%	<0.001%	0%	1%	17%	100%
Log of revenue value	5,413,399	20.42	2.58	0	18.75	20.34	21.98	28.59
Competitors' dollar invoicing share	5,964,262	62%	38%	0%	24%	77%	98%	100%
Differentiated product	5,964,262	0.8	0.4	0	1	1	1	1
Dollar invoicing years	5,964,262	4	2	0	1	5	6	6
Dollar share in total export	5,964,262	64%	38%	0%	27%	79%	100%	100%
Share of dollar-denominated debt	5,964,262	4%	17%	0%	0%	0%	0%	100%
Share of FX market turnover	5,964,262	12%	23%	0%	0%	1%	13%	89%
THBFC volatility	5,964,262	0.73	1.45	0.2	0.39	0.53	0.75	23.1
Log of GDP per capita	5,964,262	10.07	0.98	7.81	9.13	10.47	10.8	11.92
Inflation	5,964,262	3.51	4.66	-2.09	1.38	2.49	4.21	71.98
Inflation volatility	5,964,262	20.70	23.39	3.04	9.33	14.09	23.22	314.44

Note: This Table reports summary statistics of the variables used in regression analyses. We use the cleaned dataset during the period 2007–2024. Dollar invoicing years being six indicates that firms have invoiced in dollars for at least six consecutive years.

Figure A.3: Distribution of Baht and Ringgit Invoicing Shares of Thai Exports to Indonesia Across Firms



Note: This Figure reports the distribution of baht and rupiah invoicing shares of Thai Exports to Indonesia in 2022–2024 across firms.
Source: Customs Department, calculated by authors

Table A.2: Robustness Checks

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Dollar import share	0.085***	0.090***		0.089***	0.210***	0.209***
	(0.007)	(0.007)		(0.008)	(0.015)	(0.015)
Market share	0.014***	0.015***	0.015***		0.022***	0.023***
	(0.003)	(0.003)	(0.004)		(0.005)	(0.005)
Competitors' dollar invoicing share	0.059***	0.063***	0.061***	0.058***	0.089***	0.089***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Differentiated product	-0.012***	-0.013***	-0.011***	-0.013***	-0.021***	-0.021***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Dollar share in total export (t-1)	0.472***	0.488***	0.497***	0.482***		
	(0.006)	(0.006)	(0.004)	(0.006)		
Dollar cost share			0.137***			
			(0.016)			
Log of revenue value				0.002		
				(0.002)		
Dollar invoicing years					0.065***	
					(0.002)	
Dollar invoicing years =1						0.157***
						(0.026)
Dollar invoicing years =2						0.238***
						(0.038)
Dollar invoicing years =3						0.354***
						(0.022)
Dollar invoicing years =4						0.386***
						(0.022)
Dollar invoicing years =5						0.424***
						(0.021)
Dollar invoicing years >5						0.528***
						(0.021)
Observations	5,417,902	4,608,038	4,323,555	4,593,389	3,723,826	3,723,826
Pseudo R^2	0.416	0.405	0.415	0.406	0.307	0.309
HS2 FEs	X	X	X	X	X	X
Destination FEs	X	X	X	X	X	X
Year FEs	X	X	X	X	X	X

Note: This table reports average marginal effects from estimating the logit regression. Standard errors based on the Delta method are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Column 1 shows results for the data that include exports to the US. Column 2 shows results for data that exclude exports to the US and dollar-pegged countries. The sample period is 2007–2024. When dollar invoicing years are included into regression, the estimation sample starts from 2013.