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Export Experience and the Choice of Invoice Currency: Evidence from a questionnaire survey of Japanese SMEs[1]

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Abstract

This study examines the determinants of invoice currency with a focus on the effect of export experience, based on a questionnaire survey of Japanese small and medium enterprises (SMEs) in the manufacturing industry. We find that exporters with extensive export experience tend to switch the invoice currency from the Japanese yen to foreign currencies. The interpretation is that export experience mitigates the exchange rate uncertainty faced by firms and enables them to use foreign currency in their exports. This effect persists even if firms intermittently export from their first exports. We also find that the yen is more likely to be chosen as the first export when the age of the exporter is higher, the sales value of the exporter is smaller, the exporter has an initiative to determine the invoice currency, and the exporter started exporting before the global financial crisis in 2007.

Keywords: invoice currency, export dynamics, questionnaire survey, SMEs, Japan
JEL classification: F1, F3

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1. Introduction

The currency used for invoicing of international trade determines who takes the short-run foreign exchange risk. Invoice currency is generally classified into three types: producers' currency pricing (PCP), in which the exporter's currency is used in invoicing; local currency pricing (LCP), in which the importer's currency is used; and vehicle currency pricing (VCP), in which an internationalized third currency is used. The US dollar is mostly used in the case of VCP, and many researchers call this phenomenon the dominant currency paradigm (DCP) in international trade.[1] Several researchers have attempted to investigate how and what currencies are employed in international trade. Our study is related to at least two pieces of literature: research on invoice currency choice and export dynamics. In the former strand of research, as a seminal theoretical analysis, Engel (2006) investigated how the invoice currency is determined based on the profit-maximizing motivation of exporters. Gopinath et al. (2010) introduced a dynamic perspective into Engel's framework and conducted a detailed empirical analysis of the choice of invoice currency using firm-level data from the US. Additionally, Chung (2016) considered how exporters' dependence on imported inputs affects their choice of invoice currency using firm-level data for the United Kingdom. Devereux et al. (2017) investigated the role of firms' market share in the choice of invoice currency using Canadian data. Ito et al. (2018) revealed the comprehensive facts of Japanese firms' choice of invoice currency based on a series of questionnaire surveys.

Inspired by the latter strand of research, we focused on the effect of firms' export experience on their choice of invoice currency. The literature on export dynamics states that export starters begin with a small number or value of exports, and continue to export if they expect from the first export that their overseas business will produce sufficiently positive gains (Albornoz et al., 2016). An important insight of this argument is that uncertainty in the destination market can be mitigated through firms' initial export experiences, and these firms can expand their overseas business activities. Moreover, export experience may have a significant learning effect on firms' export behaviors. Given this insight, we explored the learning effect of the export experience on invoice currency choices. Particularly, we expect that firms switch from PCP to foreign currency pricing (FCP, which includes LCP and VCP) after sufficient export experience. Experienced exporters have knowledge of the economic situations of destination countries, and exchange rate risks. Therefore, it is expected that experienced exporters are more likely to use FCP. FCP brings exchange rate risk to the exporter, but can attract demand from risk-averse importers.[2] If exporters choose PCP and impose an exchange rate risk on importers, they may decrease their demand to avoid the

[1] See Gopinath et al. (2020) for instance.

[2] Hayakawa et al. (2019) presented evidence that export prices are lower under PCP in Thai exports. This evidence implies that there are no other choices for exporters but to put lower export prices to accept sufficient demand when they employ PCP. Moreover, PCP is the invoicing scheme that negatively affects the demand from risk-averse importers.

exchange rate risk. This behavior of risk-averse importers has not been treated sufficiently, although it has been naturally predicted by studies such as Wolak and Kolstad (1991) and Coppejans et al. (2007).[3] Export experience may lower the disadvantages of FCP for exporters by mitigating their exchange rate uncertainty that exporters face. Consequently, as our testable empirical proposition, we expect firms to switch from PCP to FCP after accumulating export experience.

The effect of learning on the choice of the invoice currency has rarely been examined. This aspect was only studied by Hayakawa et al. (2019), who theoretically and empirically investigated the relationship between the length (years) of Thai firms' export experience and changes in the invoice currency from the first to the current export. In this study, we conducted a questionnaire survey of Japanese small- and medium-sized enterprises (SMEs) to examine the effect of firms' export experiences on the choice of invoice currency. We focused on SMEs because the learning effects through export experience on firms' activities might be clearer in small companies. In large companies, other elements such as product value chains and financial ties with trade partners may be related, which makes it difficult to identify the learning effect. We sent a questionnaire to 2,100 SMEs and accepted responses from November 9, 2019, to January 31, 2020. The response rate was 14.1%. Using the unique dataset constructed from these responses, we examined how the length of firms' export experience affects the change in the invoice currency from the year when firms started exporting to the present (2019).

This study offers three advantages over that of Hayakawa et al. (2019). First, we directly asked respondent firms about the year of their first export. Hayakawa et al. (2019) regarded the first year of exports as the year in which each firm first appeared during the sample period of 2007 to 2011. Thus, there remains a possibility that firms first exported before 2007. We resolved this issue by directly asking about the first year of exports in the questionnaire.[4] In addition to the export experience, we defined other conventional determinants using the questionnaire results. For instance, we identified the type of importer (trading companies, group companies, or non-group companies) in the first and current exports, and investigated how changes in the type of importer affect changes in the invoice currency. A change in the invoice currency is likely to occur if the importer changes. This element can be controlled. Additionally, we defined the exporting SMEs' initiative for invoicing currency by directly asking the major determiner (exporter or importer) in the negotiation. Several researchers point out that bargaining power is undoubtedly a determinant of invoice currency, but it has rarely been examined because defining this

[3] See Wolak and Kolstad (1991) and Coppejans et al. (2007) theoretically demonstrate that risk-averse agents decrease demand for products whose prices are uncertain in advance.

[4] The clear advantage of Hayakawa et al. (2019) to our study is that they employ comprehensive Customs data of Thailand. As a result, the number of observations in their estimations reaches nearly 0.8 million. Contrastingly, our questionnaire is focused on Japanese SMEs in the manufacturing industry. Therefore, Hayakawa et al. (2019) and this study are complements.

variable is difficult.[5] Our initiative variable is as a modest proxy for exporters' bargaining power. Second, we deal with sample selection bias in the choice of invoice currency in the first export. Our main dependent variable is the dummy variable that takes one if the invoice currency was changed from one currency to another. Especially, we investigated the impact of years of export on the likelihood that the exporter will switch from yen pricing (PCP) to FCP, expecting a positive impact. Therefore, basic probit estimation leads to sample selection bias in the choice of invoice currency in the first export. We addressed this issue using a Heckman-Probit estimation and confirmed the robustness of our empirical results. Third, we used SMEs' financial information provided by the Teikoku Data Bank to determine how firms' financial status relates to their invoice currency choice. For example, we can identify "main banks" which have a primarily financial relationship with each SME. If a main bank has an international network, firms can access the foreign exchange market more easily. Therefore, we investigated this possibility. Additionally, we identified the sales and labor productivity of each SME, which may affect the choice of invoice currency.

Our empirical analysis provided the following findings. Exporters with extensive export experience switch the invoice currency from the Japanese yen to foreign currencies. We interpreted this result as indicating that firms' export experience mitigates uncertainty in the exchange rate, motivating firms to employ foreign currencies that are more welcomed by foreign customers compared with the Japanese yen. This tendency persists even if exporters do not continuously export from when they start exporting. It was also found that, in the selection of the invoice currency in the first export, PCP is more likely to be chosen when the invoice currency is mostly chosen by the exporter (that is, the exporter has the initiative in the choice of the invoice currency). The yen is more likely to be chosen as the first export when the age of the exporter is higher, the sales value of the exporter is smaller, the exporter has an initiative to determine the invoice currency, and the exporter started exporting before the global financial crisis in 2007.

The remainder of this study is organized as follows. Section 2 presents a brief overview of the questionnaire. Section 3 presents baseline results. In Section 4, we address sample selection bias using the Heckman probit model. Section 5 performs robustness checks, and Section 6 concludes the study.

2. Questionnaire Survey

We conducted a questionnaire survey of Japanese SMEs from November 9, 2019, to January 31, 2020.[6] The aim of the survey was to determine how the invoice currency is

[5] For example, Goldberg and Tille (2013) consider how bargaining between exporters and importers affects the choice of invoice currency and export prices. Devereux et al. (2017) partially tackle this issue using market shares of exporters and importers.

[6] Also refer to Goto et al. (2021) for the detail of the questionnaire survey. In Goto et al. (2021), we display some other tables and investigate determinants of invoice currency with a focus on firms' financial

determined from the exporter's perspective. Especially, we explored how their choice of invoice currency, exchange rate risk management scheme, and financial status changed after they continued exporting for years. We sent the questionnaire to 2,100 companies, with a response rate of 14.1%. Our questionnaire included many questions related to the choice of invoice currency in the first and current exports. Table 1 presents the results of the questionnaire.

=== Table 1 ===

The upper panel of Table 1 shows that for exports to Asian countries (China, Thailand, and other Asian countries), 387 out of 510 respondents (about 76%) answered that they use the Japanese yen the most. According to public data reported by the Japanese Ministry of Finance (MOF), the share of yen invoicing in Japan's exports to Asian countries is approximately 50%. The MOF data include SMEs and large listed companies. Therefore, our questionnaire results indicate that the share of yen invoicing is higher in exports by SMEs than in exports by large companies included in the MOF data.[7] The interpretation is that SMEs are less capable of the risk of exchange rate fluctuations than large companies and prefer PCP to FCP.

The lower panel shows how the invoice currency is usually determined. We used the answers to this question to define the degree of the exporter's initiative in determining the invoice currency. Surprisingly, 74.9% of the respondents answered that the currency they (respondents) preferred was usually chosen, although the respondent companies were small or medium in size. Contrastingly, only 3.9 share of SMEs answered that importers play a primary role in determining the invoice currency. This implies that Japanese SMEs have some bargaining power in deciding on an invoice currency against the importer.[8]

Additional information was obtained on the type of major trading partner, export product, and invoice currency in both the first and current exports of each destination country. We also determined the year of the first export for each destination. Therefore, we calculated the length (years) of each SME's export experience for each destination. Our main proxy for export experience is the difference between the firm's first year of exports to its first destination and the present year (that is, 2019). Figure 1 shows the distribution of $Experience1$. The mean for $Experience1$ was 20.8, indicating that the respondent firms had

constraints using the same dataset.

[7] It should be noted that the MOF data is based on the value of exports while we only asked the major invoice currency for exports to each destination country. Nevertheless, even in the analogous questionnaire surveys for Japanese listed companies (see Ito et al., 2018), the share of the yen is lower than the case of Japanese SMEs shown in this study.

[8] One possible reason for this result is that we focused on the manufacturing industry in which Japanese SMEs have international competitiveness. As a piece of evidence, using the same dataset, Goto et al. (2021) showed that SMEs with top share in the global market use the yen that respondence companies usually prefer. The competitiveness of the industry might significantly impact our questionnaire results.

approximately 20.8 years of export experience. We also found that $Experience1$ takes a value of less than 40 for most firms, and the number of firms with more than 40 years of export experience is relatively minor.

=== Figure 1 ===

3. Baseline Analysis

3.1. Empirical Framework

We defined our empirical variables based on a questionnaire survey. Our main dependent variable is the dummy variable $SWITCH1_{fd}$, which takes the value of 1 if exporter f switched from PCP in the first export to FCP in the current export for destination country d, and otherwise 0. Note that each observation has a firm-destination dimension and our dataset is cross-sectional. We first investigated the effect of export experience on $SWITCH_{fd}$ focusing on observations in which PCP is chosen in the first export. The baseline equation used in our empirical investigation was as follows:

$$SWITCH1_{fd} = a + b\ln(Experience1_f) + cv_{fd} + FEs + \epsilon_{fd}. \quad (1)$$

We estimate this equation using a probit model because our dependent variable is a dummy variable. We employed the natural log of $Experience1_f$ as the main explanatory variable. This variable is defined at the firm level, consistent with Hayakawa et al. (2019). We hypothesized that exporters switch from PCP to FCP after accumulating sufficient export experience. Thus, we expected a positive sign for the coefficient b. We focused on samples with positive experience years (that is, $Experience1_f > 0$), as the dependent variable $SWITCH1_{fd}$ cannot be defined for the cases in which a firm started exports in 2019. To see robustness, we also defined $Experience2_{fd}$ which is defined at the firm-destination level and represents the difference between the firm's first export year to each destination and the present year. We examined the effect of the natural log of $Experience2_{fd}$ on the probability of a currency switch. v_{fd} is the vector of the other control variables and c is its coefficient. For the fixed effects (FEs), we employed industry and region FEs in the baseline estimation.[9] We did not employ firm FE in the baseline estimation, because our main explanatory variable, $\ln(Experience1_f)$ is defined at the firm level. Nevertheless, we

[9] For industry, we followed the definition by TDB. The regions are Africa (Egypt and the Republic of South Africa), America (Brazil, Canada, Chile, Mexico, Panama, Peru, Puerto Rico and Uruguay), Asia (Indonesia, Korea, Sri Lanka, Malaysia, the Philippines, Singapore, Thailand, Taiwan, Vietnam), China, EU (Switzerland, Czech Republic, Denmark, Luxembourg, Poland, Sweden, Turkey and the UK), Euro Area (Belgium, Germany, Spain, Finland, France, Ireland, Italy, Netherland and Portugal), Pacific (Australia and New Zealand) and the US.

controlled for firm FE using $\ln(Experience2_{fd})$ which is defined at the firm-destination level. Additionally, we did not employ country FE in the baseline estimation because we faced a crucial decrease in the number of samples in the probit estimations if we used country FE. Using firm FE also led to a significant decrease in the number of samples. Therefore, we also estimated an ordinary least squares (OLS) model using firm and country FEs to examine the robustness of our results. ϵ_{fd} is the error term. We used robust standard errors in all the estimations. Table 2 provides the descriptive statistics of the variables.

=== Table 2 ===

3.2. Baseline Results

Table 3 shows estimation results for equation (1). Columns (I) to (VI) employ the probit model, and (VII) and (VIII) employ the OLS model. In all columns, we focused on observations where exporters started exporting under PCP. Column (I) includes $\ln(Experience1_f)$, $DifferentImp_{fd}$, and $DifferentProd_{fd}$ with industry and region FEs. $DifferentImp_{fd}$ is the dummy variable which takes 1 if the type of importer (e.g., own subsidiaries, related companies with capital relationship, local agency without capital relationship, via Japanese trading companies, direct export to local customer, or others) is changed from the first export to the current export and otherwise 0. It is reasonable to assume that the importer is changed when the type of the importer is changed. Thus, we can regard that the importer is changed when this dummy variable takes the value 1. $DifferentProd_{fd}$ is the dummy variable which takes 1 if the type of product (e.g., final goods, intermediate goods, or others) is changed from the first to the current export and otherwise 0. The coefficients for these dummies can take either sign. We checked these signs to find a fact for Japanese SMEs. Column (I) shows that $\ln(Experience1)_f$ has a significant positive impact on the probability that firms switch from PCP to FCP. Thus, exporters switch from PCP to FCP after long export experience as we hypothesized.[10] Also, $DifferentImp_{fd}$ has a positive coefficient implying that the currency switched from PC to FC when the type of the importer changes. This tendency is also observed in cases where the currency is switched from FC to PC. Therefore, the positive sign of the coefficient observed here only indicates that changes in the type of importer may lead to changes in the invoice currency. $DifferentProd_{fd}$ does not have any significant impact.

=== Table 3 ===

[10] As a piece of supportive evidence for this result, 37.5 percent of respondent firms answering that they changed their major invoice currency from Japanese yen to a foreign currency, chose the answer "foreign currencies became easier to handle through export experience" as the reason of switch of the invoice currency.

Columns (II) and (III) break down the importer type dummies. Particularly, column (II) includes the dummy variable which takes one type of importer changes from a trading company (called "Shosha" in Japanese) to other types ($ToNonShosha_{fd}$). It is well known that transactions with trading companies are usually invoiced in the domestic currency because these transactions are conducted domestically. Therefore, $ToNonShosha_{fd}$ has a positive coefficient. In column (III), we employed a dummy variable that takes the value of one type of importer changes from a non-group company that does not have capital ties with the exporter to a group company. However, this variable does not have a significant impact.

Columns (IV) and (V) controlled for the rates of change in sales and productivity, respectively. $dln(Sales)_f$ employed in column (IV) is the difference in the log of sales from the start year to 2019. Firms might improve their capacity to accept exchange rate risk and switch from PCP to FCP when sales grow. Thus, we predicted a positive coefficient for this variable. Nevertheless, the coefficient is not significant; hence, its sign is negative, as expected. We found that the coefficient for this additional variable is not significant, indicating that a change in sales does not allow exporters who started with PCP to reconsider the invoice currency. This result does not change, even if we drop $\ln(Experience1)_f$ from the estimation. Column (V) shows the difference in logged productivity. Here, productivity is defined as the ratio of sales to the number of employees. However, this variable does not have a significant effect.

Column (VI) replaces firm-level experience ($Experience1_f$) with firm-destination-level experience ($Experience2_{fd}$), and shows that firm-destination level experience does not have a significant impact. This result implies that the mitigation of exchange rate uncertainty might be most significant in the firm's first export to the first destination and become weaker in following (first) exports to the following destinations. Given this result, we used firm-level experience in the following robustness checks.

Columns (VII) and (VIII) employ OLS models to avoid decreasing the number of samples by including more detailed FEs. Column (VII) includes the region and firms' FEs. The major results do not differ from those in column (I): $Experience1_f$ has a positive impact, $DifferentImp_{fd}$ has a positive impact, and $DifferentProd_{fd}$ does not have a significant impact. Column (VIII) includes the destination country and firm FEs jointly with the firm destination-level experience $Experience2_{fd}$. The results do not change quantitatively from those in Column (VI). In summary, our main findings do not depend significantly on the choice of the FEs.[11]

[11] Among other possible elements, the level and volatility of the exchange rate may impact the switch probability of the invoice currency. We employed the level and volatility of the exchange rate of Japanese yen against the USD in the first year of export but those variables did not have any significant impacts.

4. Dealing with the Sample Selection Bias

4.1. Empirical Strategy

The estimation results in the previous section may suffer from sample selection bias because we focused on observations in which firms started exporting under PCP. To overcome this sample selection bias, we employed the Heckman probit model in which the selection of invoice currency in the first export is explicitly examined. Our selection equation describes firms' decisions on whether to start exporting with PCP (that is, PCP or FCP):

$$y_{PCP} = \pi_{PCP} - \pi_{FCP} = x\beta + u_{PCP}$$

$$\text{where } y_{PCP} = \begin{cases} 1 & if \quad y_{PCP} > 0 \\ 0 & if \quad y_{PCP} \leq 0 \end{cases}.$$

These equations indicate that firms choose to export under PCP if the expected gross profit from exporting under PCP (π_{PCP}) dominates that under FCP (π_{FCP}). Vector x includes various elements that affect the gap between the expected profits. Specifically, x contains $Experience1_f$, $DifferentImp_{fd}$, and $DifferentProd_{fd}$ which have significant effects on the baseline estimations in Table 3. Vector β indicates coefficients to be estimated. u_{PCP} is the error term.

Next, the outcome equation describes firms' decisions to switch from PCP to FCP, given that they started exporting under PCP:

$$y_{SWITCH} = \pi'_{FCP} - \pi'_{PCP} = z\gamma + u_{SWITCH}$$

$$\text{where } y_{SWITCH} = \begin{cases} 1 & if \quad y_{SWITCH} > 0 \quad and \quad y_{PCP} > 0 \\ 0 & if \quad y_{SWITCH} \leq 0 \quad and \quad y_{PCP} > 0 \end{cases}.$$

The equation indicates that firms switch to FCP if the expected gross profits from exporting under FCP (π'_{FCP}) are greater than those under PCP (π'_{PCP}). Vector z includes various elements that affect the gap between the expected profits. Vector γ indicates coefficients to be estimated. u_{SWITCH} is the error term. For the error terms, we assumed the following:

$$u_{PCP} \sim N(0,1), \qquad u_{SWITCH} \sim N(0,1).$$

y_{SWITCH} was defined if y_{PCP} is unity. Therefore, this model is a probit model with sample selection (Heckman-Probit) discussed in Van de Ven and Van Pragg (1981).

z contains six variables. First, we employed the log of the exporter's age at the start of exports ($\ln(Age)_f$). Second, we employed the log of sales when the firm started exporting, $\ln(Sales0)_f$, to examine size effects. Larger firms may be more capable of exchange rate risks; therefore, coefficient is expected to be negative. To check robustness, we also used the log of the number of employees and the log of labor productivity, which is defined as the

ratio of sales to the number of employees, although we did not report this because of the negligible change in results. Third, we employed the dummy variable $Initiative_f$ which takes 1 if the SME chooses "The currency your company prefers is chosen" to the question presented in the lower panel of Table 1 and 0 for other two options. If the exporter has significant initiative, it is more likely that the invoice currency is a PC, so that the exporter can avoid exchange rate risk. Thus, we expected this variable to have a positive impact. Fourth, we employed the dummy variable $Shosha_{fd}$ which takes the value of 1 if the importer is a trading company. As discussed above, the Japanese yen is used in exports through trading companies because the contracts between trading companies and Japanese exporters are signed domestically. Thus, we expected a positive impact. Fifth, we introduced the dummy variable $CityBank_f$ which takes 1 for firms whose main banks are city banks (Mizuho, Mitsubishi UFJ, Sumitomo Mitsui, Resona, or Saitama Resona) and otherwise 0.[12] These city banks are supposed to provide better options for their customers to avoid exchange rate risks (such as forward exchange contracts); thus, we expected a negative impact of this variable. Sixth, we introduced the dummy variable $AfterGFC_f$ which takes the value of 1 if the exporter started exporting in and after 2008. After the Global Financial Crisis in 2007, it is expected that the degree of risk aversion will increase and firms will prefer to use international currencies, such as the USD. Thus, we expected this variable to have a negative impact.

4.2. Results

Column (I) of Table 4 presents the results of the Heckman probit estimation without FEs. Similar to the baseline estimation, $\ln(Experience1)_f$ and $DifferentImp_{fd}$ have positive impacts in the outcome equation. $DifferentProd_{fd}$ did not show a significant impact. The Chi-squared statistics show that the likelihood of the Heckman–probit model is significantly larger than that of the basic probit model, indicating the presence of a sample selection bias in our baseline estimations. The signs of the coefficients for all explanatory variables in the selection equation are consistent with our expectations, although the impact of $CityBank_f$ is not significant. In Column (II), region FE is included in both the selection and outcome equations.[13] The major results do not differ from those in Column (I).

=== Table 4 ===

[12] Uchida et al. (2008) point out that large companies have borrowing relationship with city banks, indicating the multicollinearity between $CityBank_f$ and $\ln(Sales0)_f$. Nevertheless, major results do not change much if we exclude $\ln(Sales0)_f$ to avoid the multicollinearity.

[13] The convergence is not obtained if more detailed FEs are introduced into the Heckman-Probit model owing to a limited number of observations.

5. Robustness Checks

In this section, we present the various robustness checks. First, experienced firms may switch the invoice currency because there are many opportunities (many years) to reconsider the invoice currency. To address this caveat, we examined the opposite switch of the invoice currency, that is, from the FCP to the PCP. We defined the dummy variable $SWITCH2_{fd}$ which takes the value of 1 if the invoice currency is switched from FCP to PCP and 0 otherwise. We then estimated the Heckman probit model, where the selection equation investigates the determinants of the probability that the FCP is chosen in the first export. We employed the explanatory variables used in the previous section. Columns (III) and (IV) of Table 4 show the estimation results. We confirmed that the experience did not have a significant impact on either column. Therefore, firms' export experience enhances themselves to switch from PCP to FCP but not for opposite direction of switch. The impacts of most explanatory variables in the selection equation are opposite to those in columns (I) and (II).

Table 5 presents the results of other robustness checks. Industry and region FEs were used in all columns. In Column (I), we included the interaction term between $Experience_f$ and the dummy variable $After1998_f$ which takes the value of one for observations in which firms started exporting after the revision of the Foreign Exchange and Foreign Trade Act in 1998. In this revision, restrictions on foreign exchange transactions were removed and agents other than banks were allowed to deal with foreign exchange transactions. This revision (or the development of the Japanese financial market) must have provided exporters with more options for exchange rate risk management. Therefore, after this revision, it might have become easier for exporters to switch the invoice currency from one to another. This result was not necessarily consistent with our expectations. Specifically, the interaction term does not have any significant impact, indicating that the revision of this law does not affect the impact of export experience on the probability of currency switching.

=== Table 5 ===

In columns (II) and (III), outliers are excluded. Specifically, in column (II), we excluded observations with the upper and lower percentiles of the log of experience. As a result, the estimation samples are limited to those with four to 64 years of export experience. In column (III), we deleted samples in the top quartile of the length of export experience to avoid the estimation bias generated by exporters with long export experience. Thus, the samples were limited to those with less than 30 years of export experience. However, the major findings remained unchanged.

It can be expected that exact years of export experience do not affect the likelihood of switching from PCP to FCP, while exporters with relatively long export experience switch currencies compared with exporters with relatively short export experience. To examine this

possibility, we employed a rough measure of the export experience in column (IV). Particularly, we employed the dummy variable $ExperienceLong_f$ which takes one if $Experience1_f$ is larger than its mean (20.8 years). Moreover, the results did not change significantly.

In column (V), we excluded observations where the destination country is the U.S., as the USD has a distinguished position as a dominant currency in international trade, as stated by the literature on the DCP, and the USD is the local currency in the U.S. Thus, we supposed that we should differentiate the U.S. from other destination countries. In fact, the number of samples is not significantly reduced because Asian countries, such as China and Thailand, are the destination countries for the majority of observations. The results do not change significantly, although the coefficient on the log of export experience decreases slightly.

In column (VI), we introduced the interaction term between the dummy variable $Discontinue_f$ and export experience. $Discontinue_f$ takes 1 if the firm answers that it did not export in some years during its export experience. We expected the significance of the learning effect to be mitigated if firms do not export continuously. Moreover, the quality of export experience might depend on its continuity. Interestingly, the coefficient of this interaction term is not significant, indicating that the effect of export experience survives if firms intermittently export after their first export.

In the questionnaire survey, we asked each respondent's firm about their import-side information. We used this information in columns (VII) and (VIII). Specifically, (VII) includes the dummy variable which takes one if the firm exports and imports ($Importer_f$), and (VIII) includes the dummy variable which takes one if the firm is an importer and uses FCs in importing ($ImportFC_f$). As shown in the table, only $ImportFC_f$ has a significant positive impact, implying that this firm is more likely to switch from PCP to FCP if it uses FC in imports. We interpret this result to indicate that firms try to marry exchange rate risk on the export and import sides.

Column (IX) shows firms' first export observations. Specifically, we excluded observations in which the destination country is the second and subsequent destination for each firm. Additionally, in this case, the positive impact of export experience survives, although the coefficient is somewhat lower than those in the other columns.

As a possible caveat of our empirical analysis, we cannot identify the exact year in which the respondent firm changed its major invoice currency. Moreover, the respondent firm may switch its invoice currency in either the early or later years of its export experience. Contrastingly, the respondent firm may switch the invoice currency multiple times from its first to the present export. To address this issue, we focused on firms' first exports to each destination. The invoice currency used in the first export to each destination must be selected for the first export year. Thus, we can identify the exact year in which the currency was chosen for these observations. By focusing on these observations, we defined the dependent variable $SWITCH3_{fd}$ which takes one if firm f used PC in its first export, while

it used FC in its first export to destination country d.[14] We also defined the explanatory variable $\ln Experience3_{fd}$ which captures the natural log of the difference between the year of first export to destination country d and firm f's first export year. We then examined whether experienced firms switch from PCP to FCP between the firm's first exports to the first destination and the firm's first exports to the following destinations. Column (X) shows the results. $\ln Experience3_{fd}$ has a significantly positive impact on $SWITCH3_{fd}$, which is consistent with our hypothesis.

Finally, we divided FCP into VCP and LCP and examined the effect of export experience on the probability of switching from PCP to VCP and LCP separately. Table 6 presents the results of the study. The samples are restricted to cases in which PC is used in the first export, as in our baseline case. In columns (I) and (II), we employed dummy variables that take one if the invoice currency is switched to the LCP and VCP, respectively. As shown, $\ln Experience1_{fd}$ has a significant impact only in the case of the VCP. Thus, experienced exporters switch from the PC not to the LC but to the VC. In columns (III) and (IV), we focused on exports to Asia, excluding China, and find results consistent with those in columns (I) and (II) regarding the impact of export experience. Contrastingly, columns (V) and (VI) show that the effect of export experience becomes insignificant in exports to China. Therefore, our findings primarily rely on exports to Asia, excluding China. Moreover, Japanese SMEs switch from PCP to VCP (mostly dollar invoicing) in exports to Asian countries other than China after accumulating export experience.[15]

=== Table 6 ===

6. Concluding Remarks

This study examined the determinants of the probability that the invoice currency changes from the first export to the current export, using a unique dataset constructed from a questionnaire survey of Japanese SMEs. We found that exporters with a longer experience of exporting switch from PCP to FCP (especially VCP with USD), implying the importance of the learning effect on the choice of invoice currency. This tendency is mainly observed in exports to Asian countries other than China. It was also found that PCP is more likely to be chosen as the first export when the age of the exporter is higher, sales are smaller, the exporter has a significant initiative, exports are conducted through trading companies, and firms start exporting before the GFC.

[14] To exactly identify each firm's first currency in its first export, we drop firms that started exporting to multiple destination countries with multiple invoice currencies. Also note that we use neither destination FE nor region FE because the first destination country differs across firms and defining those FEs is difficult. Given that *EXPERIENCE3* is the firm-destination level variable, we employ firm FE.

[15] For the case of exports to the US, the number of observations is limited (43). For those cases, *Experience1* does not have significant impact on the probability of switch from PCP to LCP (i.e., the USD). There are no observations where firm switch from PCP to VCP (i.e., the third country's currency).

Our findings hint at the financial aspects of firms' adjustments to destination markets. Existing studies on export dynamics, such as Albornoz et al. (2012) and Chen et al. (2022) argue that export experience mitigates various uncertainties in the destination market. Our findings indicate that overseas experience may mitigate exchange rate uncertainty and lead to a switch in the invoice currency. Moreover, export experience widens the practical range of invoice currency choices. By switching from their home currency to a foreign currency, exporters might attract local importers because foreign currencies usually bring lower exchange rate risk to importers compared with exporters' home currencies. This study contributes to widening insights into the positive impact of export experience on firms' overseas activities. Therefore, as a policy implication of our findings, the government promotion of SMEs to start exporting may contribute to reducing exchange rate uncertainty and demand uncertainty in foreign markets. This may expand firms' options regarding the choice of invoice currency.

Several topics remain to be addressed in future research. First, export experience quality should be examined more carefully. We partly dealt with this issue using the interaction term for export discontinuity in the section on robustness analyses. However, the quality of experience may also depend on other elements, such as the frequency of exports and share of foreign currencies used in invoicing. Frequent exports may improve the quality of experience, leading to better learning effects. Additionally, we collected information only on the major invoice currency; therefore, we could not identify currencies that are rarely used in exports. Firms might learn more about exchange rate risk management if they use foreign currencies.

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Table 1. Some Questionnaire Results

What is the most frequently used currency in exporting?						
Country	Number of valid responses	Japanese yen	US dollar	Euro	Importer's currency	Other
China	175	126	35	0	13	1
Thailand	115	95	17	0	3	0
Other Asian countries	209	166	38	0	4	1
Oceania	11	8	2	0	1	0
Total	510	395	92	0	21	2

How does your company usually determines the invoice currency in exporting?	
	Number of valid responses
The currency your company prefers is chosen	212
The currency your counterpart (importer) prefers is chosen	56
Other	15
Total	283

Source: Authors' computation.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PCP0	676	0.703	0.457	0	1
LCP0	699	0.112	0.315	0	1
PCP1	699	0.655	0.476	0	1
LCP1	699	0.109	0.312	0	1
US	699	0.159	0.366	0	1
Switch1 (from PCP to FCP)	448	0.060	0.238	0	1
Switch2 (from FCP to PCP)	177	0.119	0.324	0	1
Switch3 (from PCP to FCP between first exports)	210	0.167	0.374	0	1
Switch4 (from PCP to LCP)	448	0.029	0.168	0	1
Switch5 (from PCP to VCP)	448	0.031	0.174	0	1
ln(Experience1)	699	2.826	0.673	0.693	4.159
ln(Experience2)	697	2.457	0.805	0	4.159
ln(Experience3)	292	2.101	0.920	0	4.007
DifferentImp	627	0.156	0.363	0	1
ToNonShosha	627	0.046	0.210	0	1
ToGroup	627	0.024	0.153	0	1
DifferentProd	629	0.052	0.223	0	1
d ln(Sales)	667	0.249	0.536	-1.224	2.228
d ln(Productivity)	667	0.130	0.462	-1.200	2.862
ln(Age)	688	3.473	0.705	0	4.673
ln(Sales0)	667	7.702	1.325	4.644	11.162
Initiative	696	0.741	0.438	0	1
Shosha	699	0.272	0.445	0	1
CityBank	699	0.452	0.498	0	1
AfterGFC	699	0.522	0.500	0	1
After1998	699	0.767	0.423	0	1
ExperienceLong	901	0.532	0.499	0	1
Discontinue	683	0.086	0.281	0	1
Importer	901	0.943	0.231	0	1
ImportFC	901	0.462	0.499	0	1

Source: Authors' computation.

Table 3. Determinants of the probability that the invoice currency has been changed from PC (in first exports) to FC (in current exports) (Dependent variable: *SWITCH1*)

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
	Probit	Probit	Probit	Probit	Probit	Probit	OLS	OLS
ln(Experience1)	0.025***	0.025*	0.046**	0.018**	0.019**		0.035*	
	(0.012)	(0.015)	(0.018)	(0.010)	(0.010)		(0.019)	
ln(Experience2)						0.011		-0.028
						(0.010)		(0.024)
DifferentImp	0.199***			0.235***	0.238***	0.217***	0.204***	0.199***
	(0.062)			(0.074)	(0.072)	(0.069)	(0.053)	(0.063)
ToNonShosha		0.238***						
		(0.107)						
ToGroup			0.109					
			(0.122)					
DifferentProd	-0.020	-0.012	-0.004	-0.015*	-0.015**	-0.025*	-0.089	-0.262**
	(0.011)	(0.033)	(0.042)	(0.010)	(0.010)	(0.011)	(0.056)	(0.104)
d ln(Sales)				-0.001				
				(0.007)				
d ln(Productivity)					-0.004			
					(0.010)			
Industry FE	YES	YES	YES	YES	YES	YES	YES	NO
Region FE	YES	YES	YES	YES	YES	YES	NO	NO
Country FE	NO	NO	NO	NO	NO	NO	YES	YES
Firm FE	NO	NO	NO	NO	NO	NO	NO	YES
No. Obs.	325	325	325	307	307	325	417	353
R-squared	0.365	0.275	0.218	0.389	0.390	0.343	0.240	0.695

Source: Authors' computation. Estimation results for equation (2).

Notes: Pseudo-R-squared and adjusted R-squared values are reported for probit and OLS, respectively. ***, **, and * indicate 1%, 5%, and 10% significance, respectively. Robust standard errors are indicated in the parentheses.

Table 4. Heckman-Probit estimation

	(I)		(II)		(III)		(IV)	
	Selection	Outcome	Selection	Outcome	Selection	Outcome	Selection	Outcome
Dependent variable	*PCP0*	*Switch1*	*PCP0*	*Switch1*	*FCP0*	*Switch2*	*FCP0*	*Switch2*
ln(Experience1)		0.017*		0.002**		-0.004		-0.019
		(0.009)		(0.001)		(0.028)		(0.027)
DifferentImp		0.069***		0.005***		0.095*		0.100*
		(0.016)		(0.001)		(0.053)		(0.056)
DifferentProd		-0.046		-0.004		-0.041		-0.030
		(0.030)		(0.002)		(0.067)		(0.064)
ln(Age)	0.065*		0.070**		-0.056**		-0.060**	
	(0.031)		(0.031)		(0.027)		(0.026)	
ln(Sales0)	-0.054***		-0.059***		0.032**		0.035**	
	(0.017)		(0.017)		(0.015)		(0.015)	
Initiative	0.420***		0.443***		-0.343***		-0.347***	
	(0.043)		(0.042)		(0.039)		(0.038)	
Shosha	0.197***		0.198***		-0.149***		-0.155***	
	(0.050)		(0.051)		(0.045)		(0.046)	
CityBank	-0.042		-0.061		0.068*		0.084**	
	(0.042)		(0.043)		(0.038)		(0.039)	
AfterGFC	-0.140***		-0.144***		0.136***		0.135***	
	(0.042)		(0.042)		(0.038)		(0.038)	
Region FE	NO	NO	YES	YES	NO	NO	YES	YES
Rho	0.999		1.000		0.324		0.339	
	(0.003)		(0.000)		(0.322)		(0.312)	
Chi-squared statistics	7.346***		976.026***		0.874		1.003	
No. Obs.	596		596		613		613	
Log pseudolikelihood	-376.020		-348.631		-345.381		-318.075	

Source: Authors' computation.

Table 5. Robustness check

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)
	After 1998	*Remove upper and lower one percentiles*	*Remove the top quartile*	*Long or short*	*Exclude the US*	*Export continuity*	*Importing exporters*	*FC in imports*	*Only first exports*	*First currency for each destination*
	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit	OLS
ln(Experience1)	0.026***	0.025***	0.003**		0.023***	0.025***	0.025***	0.018**	0.005**	
	(0.013)	(0.012)	(0.004)		(0.012)	(0.012)	(0.012)	(0.011)	(0.005)	
*ln(Experience)*After1998*	0.002									
	(0.005)									
ExperienceLong				0.030**						
				(0.015)						
ln(Experience3)										0.054*
										(0.032)
*ln(Experience)*Discontinue*						-0.008				
						(0.008)				
DifferentImp	0.203***	0.201***	0.037***	0.215***	0.253***	0.204***	0.201***	0.183***	0.012	
	(0.062)	(0.062)	(0.035)	(0.062)	(0.068)	(0.063)	(0.062)	(0.062)	(0.011)	
DifferentProd	-0.020	-0.021	-0.002*	-0.022	-0.017*	-0.019	-0.020	-0.017		
	(0.010)	(0.011)	(0.003)	(0.012)	(0.011)	(0.011)	(0.011)	(0.010)		
Importer							-0.009			
							(0.023)			
ImportFC								0.032**		
								(0.020)		
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
Firm FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
No. Obs.	325	323	204	325	280	321	325	325	125	177
R-squared	0.365	0.363	0.428	0.354	0.395	0.366	0.365	0.384	0.330	0.504

Source: Authors' computation.

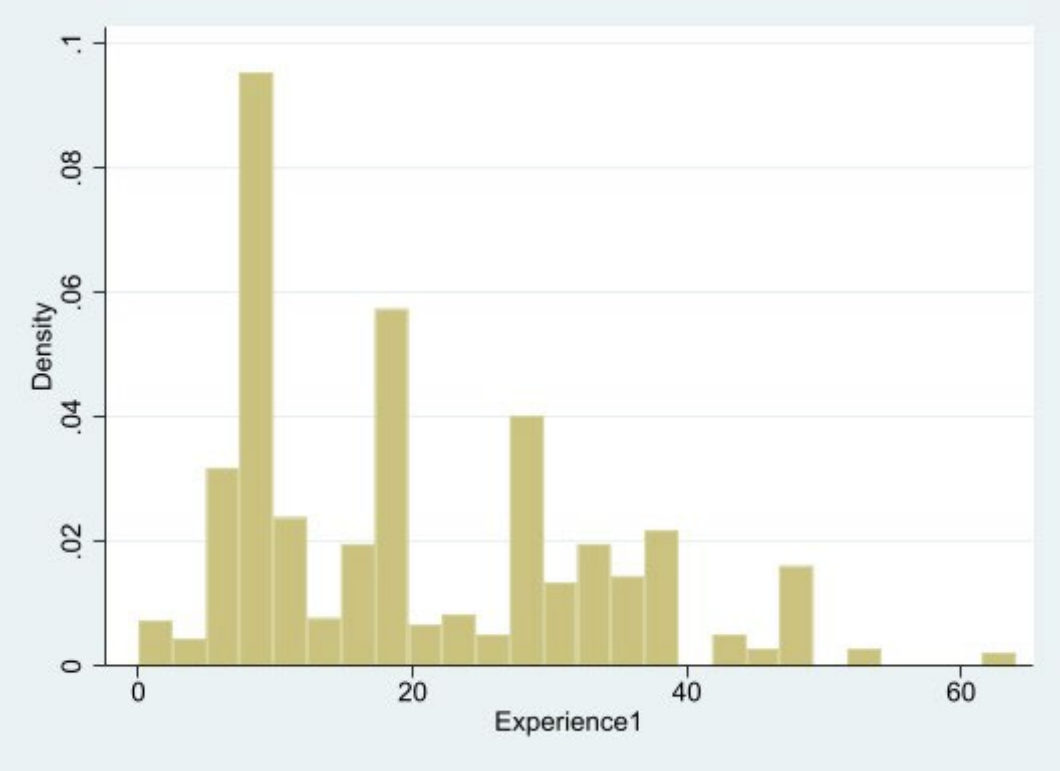
Notes: Pseudo R-squared values are reported. Industry and region FEs were used in all columns. ***, **, and * indicate 1%, 5%, and 10% significance, respectively. Robust standard errors are indicated in the parentheses. Each specification conducts the following robustness check: (I) includes the interaction term between the log of experience and the dummy variable which takes one for observations where firms started exporting after the revision of Foreign Exchange and Foreign Trade Act in 1998; (II) drops observations with the upper and lower one percentile of the log of experience; (III) drops observations with the top quartile of the log of experience; (IV) includes the dummy variable which takes one if the log of experience is larger than its mean; (V) drops exports to the U.S.; (VI) includes the interaction term between the log of experience and the dummy variable which takes one if the firm intermittently exported from its first export; (VII) includes the dummy variable which takes one if the firm is also an importer; (VIII) includes the dummy variable which takes one if the firm is an importer and it uses FCs in importing; (IX) focuses on observations of first exports; (X) focused on switch of the invoice currency from the firm's first export to the first destination to first exports to following destinations. The dependent variable are *SWITCH1* for (I)–(IX) and *SWITCH3* for (X).

Table 6. Divide FCP into LCP and VCP

	(I)	(II)	(III)	(IV)	(V)	(VI)
Type of FC	LC	VC	LC	VC	LC	VC
ln(Experience1)	-0.009	0.034**	0.004	0.031**	-0.018	0.032
	(0.013)	(0.015)	(0.025)	(0.015)	(0.017)	(0.043)
DifferentImp	0.084**	0.122**	0.088	0.033	0.052	0.136
	(0.036)	(0.050)	(0.061)	(0.064)	(0.041)	(0.089)
DifferentProd	-0.011	-0.077**	-0.055	-0.034	0.049	-0.106
	(0.046)	(0.038)	(0.042)	(0.048)	(0.094)	(0.076)
d ln(Sales)	0.015	-0.005	0.023	-0.002	0.005	-0.002
	(0.011)	(0.010)	(0.019)	(0.015)	(0.013)	(0.014)
Region	ALL	ALL	Asia excluding China	Asia excluding China	China	China
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	NO	NO
No. Obs.	397	397	170	170	100	100
R-squared	0.170	0.098	0.032	0.146	0.192	0.077

Source: Authors' computation.

Figure 1. Distribution of *Experience1*



Source: Calculated by the authors.

Notes: The figure shows the distribution of *Experience1*.