Export Experience and the Choice of Invoice Currency: Evidence from Questionnaire Survey for Japanese SMEs

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Invoice currency

Producer's currency (PC)

JPY

Vehicle currency (VC)

**Third country's currency
(ex. USD, EUR)**

Local currency (LC)

THB

◆Invoice currency determines the exposure of the trade price to exchange rate fluctuations

◆Trade-off of PCP for exporters: PCP frees exporters from the exchange rate risk but it may have negative effect on other contract terms such as unit export price

Support evidence of the "trade-off" from the Customs data of Thai firms' exports (Hayakawa, Matsuura, Laksanapanyakul and Yoshimi, 2019)

Unit export price is lower under PCP than FCP

Table A2. Export Prices: PCI versus Non-PCI

	(I)	(II)
1 for PCI (THB)	-0.230***	-0.473***
	[0.005]	[0.009]
Country-year FE	YES	YES
HS6-year FE	YES	YES
Firm-year FE	YES	NO
Number of observations	2,660,718	261,794
R-squared	0.6313	0.5419

Notes: The dependent variable is the log of the unit export price (export value divided by export quantity). The main independent variable is a dummy variable that takes the value of 1 if the invoicing currency is the PC and is 0 otherwise. ***, **, and * represent significance at the 1%, 5%, and 10% statistical levels, respectively. Parentheses contain the heteroscedasticity-consistent standard errors. We estimate by OLS. In column (I), we include all observations for the estimation, while the sample in column (II) is restricted only to observations on the first export to each firm.

What we do

◆**Research question**

☐How export experience affects exporters' choice of invoice currency?

☐Hayakawa et al. (2019): Same motivation, different approach

◆**Questionnaire survey for Japanese SMEs**

☐The effect of experience may be more clearly observed than large companies

◆**Main finding**

☐Hypothesis: After export experience is accumulated, exporters are more likely to switch from PCP to FCP

➢Export experience educates exporters in dealing with the exchange rate risk. Therefore, the disadvantage of FCP becomes smaller for experienced exporters

☐Our empirical results support the hypothesis.

Questionnaire survey for Japanese SMEs

◆From 9 December 2019 to 31 January 2020

◆For 2,100 SMEs which have export experience in these ten years
  - ➢Strictly, in 2010, 2014 or 2018
  - ➢The length and continuity of exporting differ across companies

◆Response rate = 14.3% (300 SMEs)

◆Main questions (that we use today):

➢Main invoice currency for each destination (China, Thailand, the US, Mexico, Euro area, the UK and "other countries"). Main type of product (finished, intermediate and other) and main type of importer (local subsidiary, affiliated company with capital relation, local distributer without capital relation, Japanese trading company, direct export to local customer and other) are answered for each destination.

➢The first year of exporting for each channel

Sample selection

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	No. of firms	No. of sending
Month	12				12				12	10		
Type 1	NO				NO				YES	YES	509	509
Type 2	NO				YES				YES	YES	541	541
Type 3	YES				NO				YES	YES	4,629	1,050

	No. of sending	No. of respondents	Response rate
Type 1	509	73	14.3
Type 2	541	63	11.6
Type 3	1,050	164	15.6
Total	2,100	300	14.3

Brief look at questionnaire results

Table 4-1. Main currency by trade partner in exports

A. Export to the US by trade partner

	Japanese Yen	US dollar	Euro	Local currency	Total	Percent to NOB
1. Own subsidiary	6	16	0	--	22	17.6
Percent to total	27.3	72.7	0.0	--	100.0	
2. Related firm (with capital tie)	5	7	0	--	12	9.6
Percent to total	41.7	58.3	0.0	--	100.0	
3. Local agency (wihout capital tie)	9	9	0	--	18	14.4
Percent to total	50.0	50.0	0.0	--	100.0	
4. via Japanese trading companies	29	5	0	--	34	27.2
Percent to total	85.3	14.7	0.0	--	100.0	
5. direct export to local customer	13	24	0	--	37	29.6
Percent to total	35.1	64.9	0.0	--	100.0	
6. others	2	0	0	--	2	1.6
Percent to total	100.0	0.0	0.0	--	100.0	
Number of observations (NOB)	64	61	0	--	125	100.0
Percent to total	51.2	48.8	0.0	--	100.0	

Note: These tables are reprinted from Goto, Mizuki, Kazunobu Hayakawa, Satoshi Koibuchi and Taiyo Yoshimi. 2021. Invoice currency choice under financial constraints and bargaining: Evidence from Japanese SMEs. RIETI Discussion Paper, 21-E-080 (October).

Brief look at questionnaire results

B. Export to advanced economies except the US by trade partner

Export to advanced economies except	Japanese Yen	US dollar	Euro	Local currency	Total	Percent to NOB
1. Own subsidiary	3	0	0	3	6	3.7
Percent to total	50.0	0.0	0.0	50.0	100.0	
2. Related firm (with capital tie)	2	3	0	2	7	4.3
Percent to total	28.6	42.9	0.0	28.6	100.0	
3. Local agency (wihout capital tie)	23	5	4	10	42	25.8
Percent to total	54.8	11.9	9.5	23.8	100.0	
4. via Japanese trading companies	36	7	0	1	44	27.0
Percent to total	81.8	15.9	0.0	2.3	100.0	
5. direct export to local customer	37	13	4	6	60	36.8
Percent to total	61.7	21.7	6.7	10.0	100.0	
6. others	4	0	0	0	4	2.5
Percent to total	100.0	0.0	0.0	0.0	100.0	
Number of observations (NOB)	105	28	8	22	163	100.0
Percent to total	64.4	17.2	4.9	13.5	100.0	

Note: These tables are reprinted from Goto, Mizuki, Kazunobu Hayakawa, Satoshi Koibuchi and Taiyo Yoshimi. 2021. Invoice currency choice under financial constraints and bargaining: Evidence from Japanese SMEs. RIETI Discussion Paper, 21-E-080 (October).
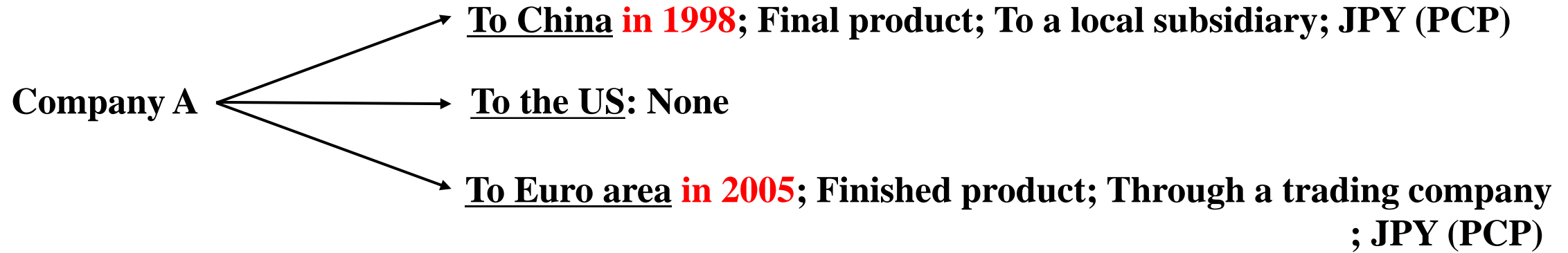
Brief look at questionnaire results
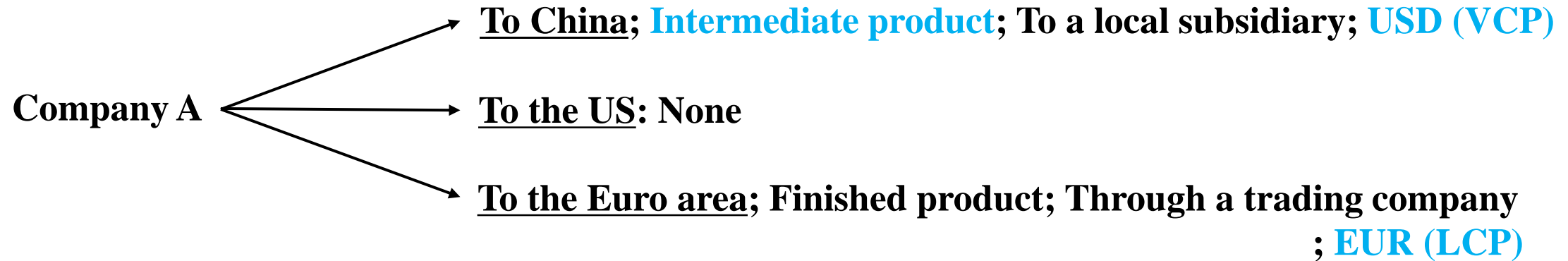
C. Export to Asian Countries by trade partner

	Japanese Yen	US dollar	Euro	Local currency	Total	Percent to NOB
1. Own subsidiary	58	17	0	16	91	16.4
Percent to total	63.7	18.7	0.0	17.6	100.0	
2. Related firm (with capital tie)	24	8	0	1	33	5.9
Percent to total	72.7	24.2	0.0	3.0	100.0	
3. Local agency (wihout capital tie)	98	19	0	1	118	21.3
Percent to total	83.1	16.1	0.0	0.8	100.0	
4. via Japanese trading companies	128	10	0	0	138	24.9
Percent to total	92.8	7.2	0.0	0.0	100.0	
5. direct export to local customer	112	41	0	4	157	28.3
Percent to total	71.3	26.1	0.0	2.5	100.0	
6. others	18	0	0	0	18	3.2
Percent to total	100.0	0.0	0.0	0.0	100.0	
Number of observations (NOB)	438	95	0	22	555	100.0
Percent to total	78.9	17.1	0.0	4.0	100.0	

Note: These tables are reprinted from Goto, Mizuki, Kazunobu Hayakawa, Satoshi Koibuchi and Taiyo Yoshimi. 2021. Invoice currency choice under financial constraints and bargaining: Evidence from Japanese SMEs. RIETI Discussion Paper, 21-E-080 (October).

[First export]

Company A

To China **in 1998**; Final product; To a local subsidiary; JPY (PCP)

To the US: None

To Euro area **in 2005**; Finished product; Through a trading company
; JPY (PCP)

[Current export (in 2019)]

Company A

To China; Intermediate product; To a local subsidiary; USD (VCP)

To the US: None

To the Euro area; Finished product; Through a trading company
; EUR (LCP)

◆ $Experience_f$ = 2019 − 1998 = 21

◆ $Experience2_{fd}$ = 2019 − 1998 = 21 (to China) and 2019 − 2005 = 14 (to the Euro area)
  ➢ To China: Type of product and invoice currency changed
  ➢ To the US: No exports in the company's history
  ➢ To the Euro area: Only invoice currency changed

"Firm(*f*)-destination(*d*)-level" analysis

◆ $SWITCH_{fd} = \alpha_0 + \alpha_1 Experience_f + \alpha_2 DifferentImp_{fd} + \alpha_3 DifferentProd_{fd} + \alpha_4 dln(Sales)_f + f_i + f_r + \epsilon_{fd}$

  ➢ $SWITCH_{fd}$: Dummy variable which takes 1 if the invoice currency has been switched (**from PC to FC**) from first export to current export

  ➢ $Experience_f$: 2019 – the year of first export

    ➢ $Experience2_{fd}$: 2019 – the year of first export (for each destination)

  ➢ $DifferentImp_{fd}$: Dummy for the case where the type of importer changes

  ➢ $DifferentProd_{fd}$: Dummy for the case where the type of product changes

  ➢ $dln(Sales)_f$: Difference in the log of sales from the start year to 2019

  ➢ f_i, f_r: Industry and region FEs

Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Variable	Obs	Mean	Std. Dev.	Min	Max
PCP0	698	0.68	0.47	0	1	*DifferentImp*	698	0.24	0.43	0	1
LCP0	698	0.11	0.32	0	1	*DifferentProd*	698	0.14	0.35	0	1
PCP1	698	0.65	0.48	0	1	*d ln(Sales)*	666	0.25	0.54	-1.22	2.23
LCP1	698	0.11	0.31	0	1	*ln(Sales0)*	666	7.70	1.33	4.64	11.16
US	698	0.16	0.37	0	1	*Initiative*	695	0.74	0.44	0	1
Switch	698	0.04	0.19	0	1	*Shosha*	698	0.27	0.45	0	1
Switch2	698	0.03	0.17	0	1	*CityBank*	698	0.45	0.50	0	1
Experience	698	20.85	13.03	2	64	*AfterGFC*	698	0.52	0.50	0	1
Experience2	696	15.51	11.34	1	64	*Continue*	682	0.91	0.28	0	1

Distribution of *Experience*
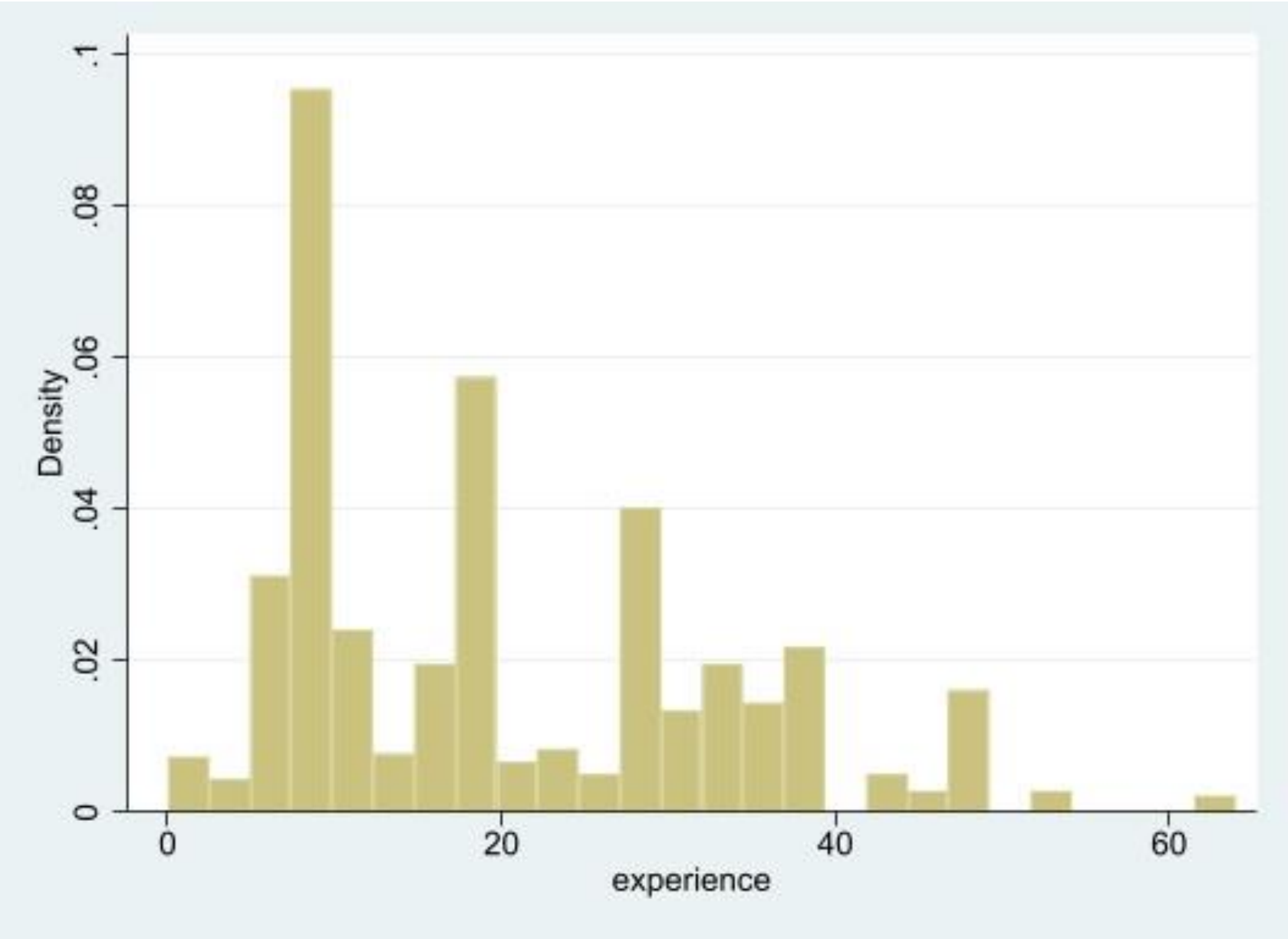
Distribution of *Experience2*
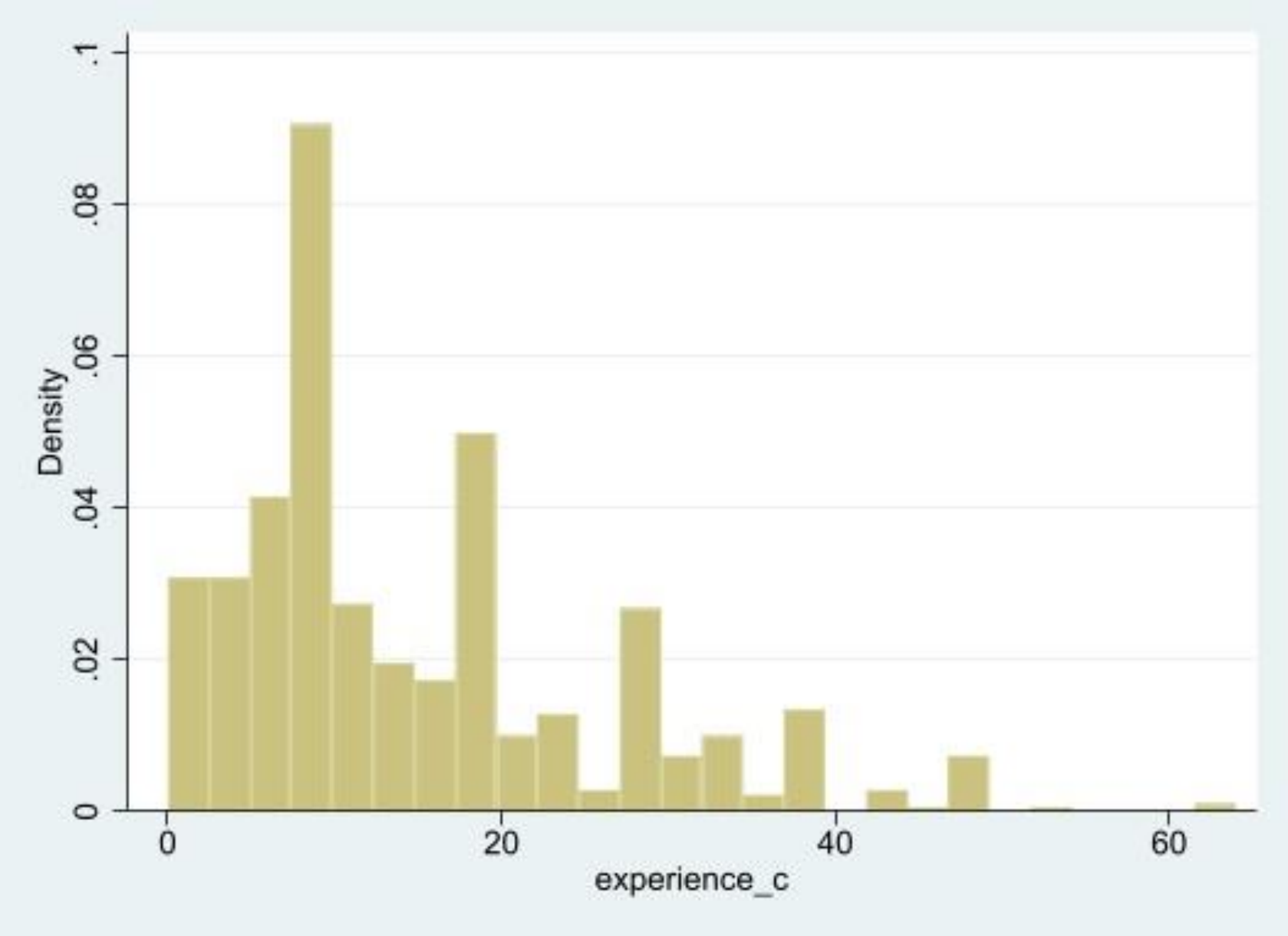
Determinants of the probability that the invoice currency has been changed from PC (in first exports) to FC (in current exports) (Dependent variable: *SWITCH*)

	(I)	(II)	(III)	(IV)	(V)
	Probit	Probit	Probit	OLS	OLS
Experience	0.001**	0.001**		0.002*	
	(0.000)	(0.000)		(0.001)	
Experience2			0.001		-0.002
			(0.000)		(0.002)
DifferentImp	0.149***	0.161***	0.154***	0.153***	0.192***
	(0.048)	(0.053)	(0.051)	(0.042)	(0.056)
DifferentProd	-0.028**	-0.022***	-0.030***	-0.108***	-0.212***
	(0.011)	(0.010)	(0.011)	(0.034)	(0.059)
d ln(Sales)		0.002			
		(0.007)			
Industry FE	YES	YES	YES	YES	NO
Region FE	YES	YES	YES	NO	NO
Country FE	NO	NO	NO	YES	YES
Firm FE	NO	NO	NO	NO	YES
No. Obs.	362	344	362	463	392
R-squared	0.343	0.358	0.333	0.128	0.494

Heckman-Probit analysis

● Selection equation (PCP or FCP in first exports)

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

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

◆ Explanatory variables are given in the next slide.

● Outcome equation (switch to FCP or stay with PCP)

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

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

◆ We use $Experience_f$, $DifferentImp_{fd}$, and $DifferentProd_{fd}$

Explanatory variables in the selection equation

➤ $\ln(Sales0)_f$: Log of sales when the firm started exporting

➤ $Initiative_f$: Dummy variable which takes 1 if the SME chooses (a) to the question for the choice of invoice currency and 0 for other two options (see the next slide).

➤ $Shosha_{fd}$: Dummy variable which takes 1 if the type of importer is a trading company.

➤ $CityBank_f$: Dummy variable which takes 1 if the main bank is one of city banks (Mizuho, Mitsubishi UFJ, Sumitomo Mitsui, Resona or Saitama Resona)

➤ $AfterGFC_f$: Dummy variable which takes 1 if the exporter started exporting on and after 2008.

Question for $Initiative_f$

Q. How do you (does your company) usually determine the invoice currency in exporting?	
(a) The currency that you prefer (your company prefers) is used	215
(b) The currency that your counterpart (importer) prefers is used	57
(c) Other	15
Total	287

Heckman-Probit estimation

- Heckman-Probit model shows a larger likelihood than a standard Probit model.
- Inclusion of the region FE does not affect the results.
- *Experience* has a significant positive impact.
- *CityBank* does not have a significant impact.

	Selection	Outcome	Selection	Outcome
Dependent variable	*PCP0*	*Switch*	*PCP0*	*Switch*
Experience		0.001**		0.000**
		(0.000)		(0.000)
DifferentImp		0.056***		0.004***
		(0.014)		(0.001)
DifferentProd		-0.060***		-0.005**
		(0.023)		(0.002)
ln(Sales0)	-0.033**		-0.037**	
	(0.015)		(0.016)	
Initiative	0.380***		0.402***	
	(0.041)		(0.042)	
Shosha	0.213***		0.224***	
	(0.047)		(0.048)	
CityBank	-0.047		-0.059	
	(0.040)		(0.041)	
AfterGFC	-0.128***		-0.130***	
	(0.038)		(0.039)	
Region FE	NO	NO	YES	YES
Chi-squared statistics	24.597***		4.481**	
No. Obs.	663		663	

Robustness Checks

1. Switch from FCP to PCP

   ➢ *Experience* has a positive impact just because the exporter had many chances to switch?

2. Firms that started exporting after the revision of the Foreign Exchange and Foreign Trade Act in 1998

3. Removing samples with upper and lower 1 percentile

4. Removing samples with the top quartile of the length of export experience

5. Dropping samples where the destination country is the U.S.

6. The interaction term of the dummy variable *Continue*

   ➢ The quality of experience may matter

Switch from FCP to PCP

- Heckman-Probit model is not necessarily superior to a standard Probit model.
- Inclusion of the region FE does not affect the results (except for the impact of *Sales0*).
- *Experience* <u>does not</u> have a significant impact.
- Signs of the coefficients in the selection equation contrast to those in the baseline Heckman-Probit estimation.

	Selection	Outcome	Selection	Outcome
Dependent variable	*FCP0*	*Switch2*	*FCP0*	*Switch2*
Experience		0.000		-0.000
		(0.001)		(0.001)
DifferentImp		0.038		0.042
		(0.028)		(0.029)
DifferentProd		-0.087		-0.084
		(0.062)		(0.062)
ln(Sales0)	0.024		0.027*	
	(0.015)		(0.015)	
Initiative	-0.354***		-0.373***	
	(0.042)		(0.042)	
Shosha	-0.211***		-0.221***	
	(0.046)		(0.047)	
CityBank	0.051		0.066	
	(0.039)		(0.040)	
AfterGFC	0.124***		0.125***	
	(0.038)		(0.039)	
Region FE	NO	NO	YES	YES
Chi-squared statistics	0.974		0.923	
No. Obs.	663		663	

Switch from FCP to PCP

	StartYear ≥ 1998	Removing outliers	Removing the top quartile	Excluding the US	Continuing exporters
	(I)	(II)	(III)	(IV)	(V)
	Probit	Probit	Probit	Probit	Probit
Experience	0.001*	0.001*	0.000*	0.001***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Experience*Continue					0.002**
					(0.00)
DifferentImp	0.102***	0.152***	0.023**	0.183***	0.156***
	(0.047)	(0.049)	(0.014)	(0.053)	(0.050)
DifferentProd	-0.014*	-0.028**	-0.002*	-0.024***	-0.024**
	(0.011)	(0.011)	(0.002)	(0.013)	(0.010)
No. Obs.	230	358	299	313	358
R-squared	0.411	0.341	0.410	0.373	0.354

- The positive impact of *Experience* is robust.
- The impact is significant only for exporters that continued exporting.

Summary

◆Empirical results
  ◆Exporters who have a long experience of exporting tend to switch the invoice currency from PCP to FCP.
  ◆Focusing on start exports, PCP is more likely to be chosen when
    ◆the log of sales is smaller,
    ◆the exporter chooses the invoice currency that it prefers,
    ◆exporting through trading companies,
    ◆or the exporter started exporting before the GFC

◆Policy implication
  ➤Export starters seriously suffer from exchange rate risks
  ➤Continuity is important