

# The Dollar, the Yen, or the RMB?

## The Survey Data Analysis of Invoicing Currencies among Japanese Overseas Subsidiaries

RIETI-IWEP-CESSA Workshop

2020/12/6

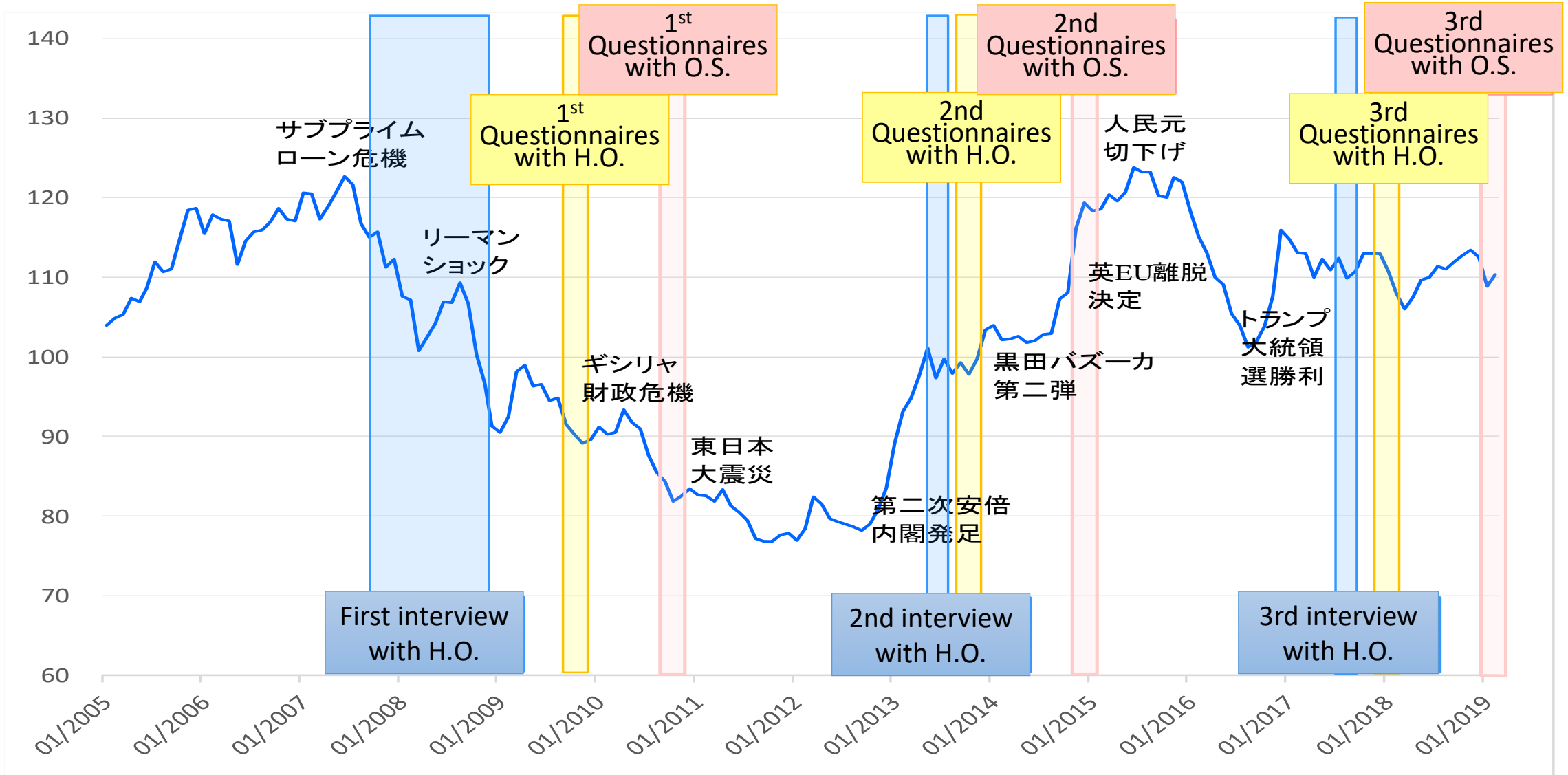
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# Motivation





























- Japanese manufacturing firms, which heavily rely on exports, have long experienced financial impacts from fluctuations of the exchange rates.
  - They have made various efforts to mitigate the impact, by adopting currency risk management, including the choice of invoice currencies.
- Through large scale questionnaire surveys with Japanese head office in 2017 and Japanese overseas subsidiaries in 2018, we found that the share of the Asian local currency steadily increased recently.
- Then, we try to analyze what kind of factors promote local currencies' usage in Japanese trade in Asia.
  - We pick up the case of overseas subsidiaries in Asia and conduct empirical analysis with share of invoice currency and various factors related with the choice of invoice currency.

# RIETI Surveys since 2007

H.O.: Head Office  
O.S.: Overseas Subsidiaries



# Table 1. Share of Invoicing Currency Choice by Japanese Firms (%)

Export to China	JPY Invoicing Share (%)			USD Invoicing Share (%)			Importer's Currency Invoicing Share (%)		
	2009	2013	2017	2009	2013	2017	2009	2013	2017
Total respondent firms	55.4	44.6	47.6 	43.7	47.1	39.2 	1.3	8.2	12.3 
Large (upper 1/3)	45.3	29.1	35.0 	52.4	64.3	48.9 	3.2	6.5	14.9 
Middle (middle 1/3)	60.5	46.3	49.5 	40.9	41.0	37.8 	0.0	12.4	12.4
Small (lower 1/3)	63.4	61.1	58.1	34.2	33.0	30.9 	0.0	5.8	9.5 
Export to Korea	JPY Invoicing Share (%)			USD Invoicing Share (%)			Importer's Currency Invoicing Share (%)		
	2009	2013	2017	2009	2013	2017	2009	2013	2017
Total respondent firms	69.0	58.4	65.1 	25.5	36.1	25.8 	4.5	5.4	8.6 
Large (upper 1/3)	62.5	38.8	52.4 	32.8	51.4	37.1 	4.2	9.8	9.3
Middle (middle 1/3)	68.9	61.4	68.0 	25.8	35.7	21.4 	4.2	2.8	10.3 
Small (lower 1/3)	78.9	77.7	74.2	13.8	19.5	20.0	5.4	2.9	5.8 
Export to Thailand	JPY Invoicing Share (%)			USD Invoicing Share (%)			Importer's Currency Invoicing Share (%)		
	2009	2013	2017	2009	2013	2017	2009	2013	2017
Total respondent firms	60.1	54.6	52.3	30.4	36.3	33.7 	9.4	7.8	14.1 
Large (upper 1/3)	54.7	41.4	32.9	35.4	49.6	48.2 	9.5	8.1	18.9 
Middle (middle 1/3)	57.3	41.6	58.0 	32.5	30.3	30.7	10.1	9.0	11.4 
Small (lower 1/3)	75.5	68.6	71.0 	16.7	21.9	17.5 	7.8	5.8	11.6 

Note: All figures are based on the RIETI Questionnaire Survey on Choice of Invoice Currency to Japanese Firms conducted in 2009, 2013, and 2017. We divide the respondent firms into three size categories (large, medium, and small) by their consolidated sales amounts. Ito *et al.* (2018b).

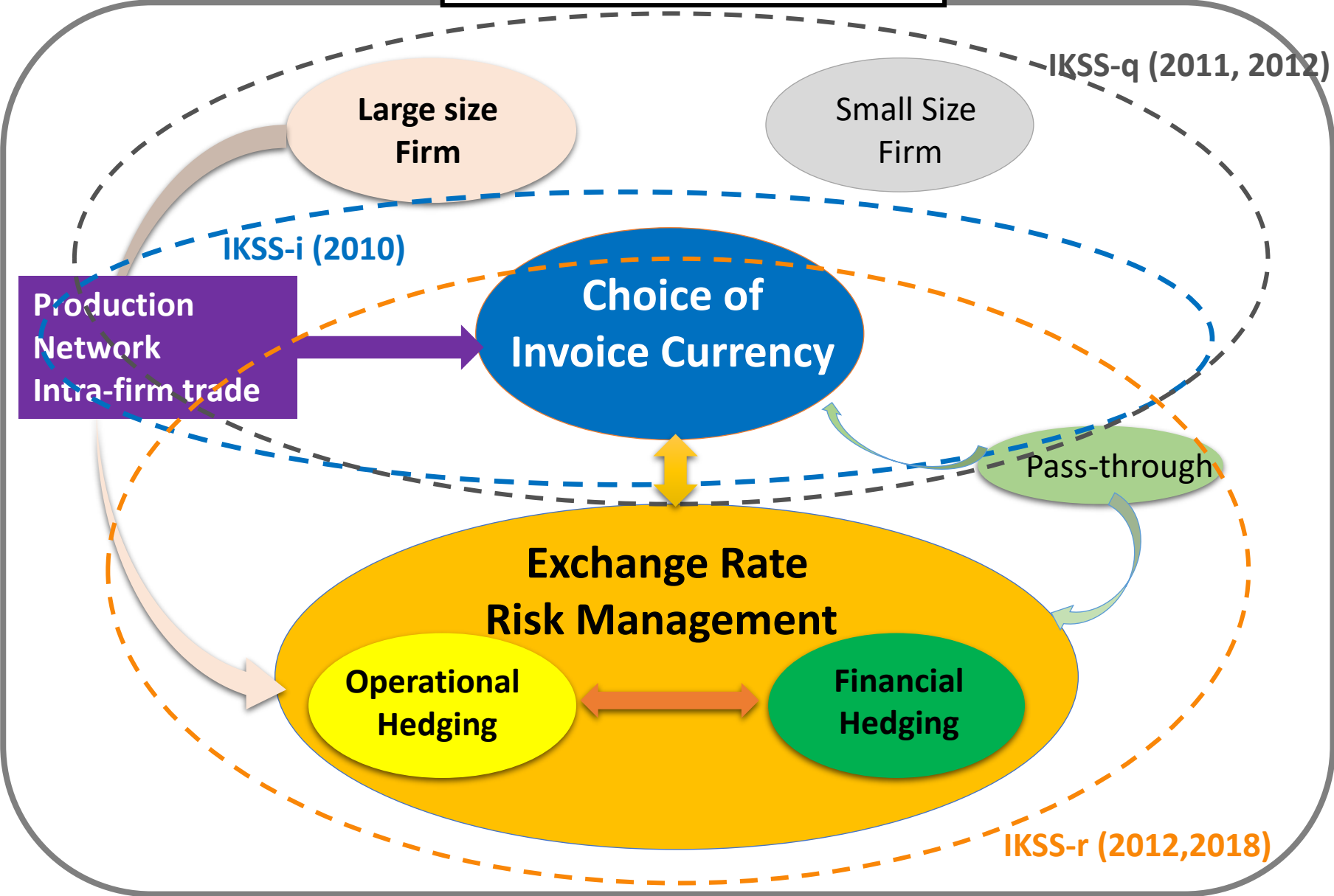
# This Paper's Contribution

- By utilizing the large-scale firm-level questionnaire survey in 2018 on Japanese overseas subsidiaries in Asia, we confirm the following results:
  - Subsidiaries with large sales tend to choose the US dollar, while those with small sales tend to choose the yen or the local currency.
  - Subsidiaries established for sales to the local market tend to choose the local currency.
  - Overseas subsidiaries tend to unify the currency of transactions on both sides of import and export, a practice called natural hedge.
  - Subsidiaries with large local currency borrowing, a high share of local procurement, as a joint venture with local firms, maximizing profits measured in the using local currency, tend to adopt local currency invoicing.
- These results suggest that the role of the US dollar will be declining, as Japanese exporting firms move away from using the Asian subsidiaries as a platform to export to the US, and increasingly use them as a local sales base in Asia, and an export platform to China and back to Japan.

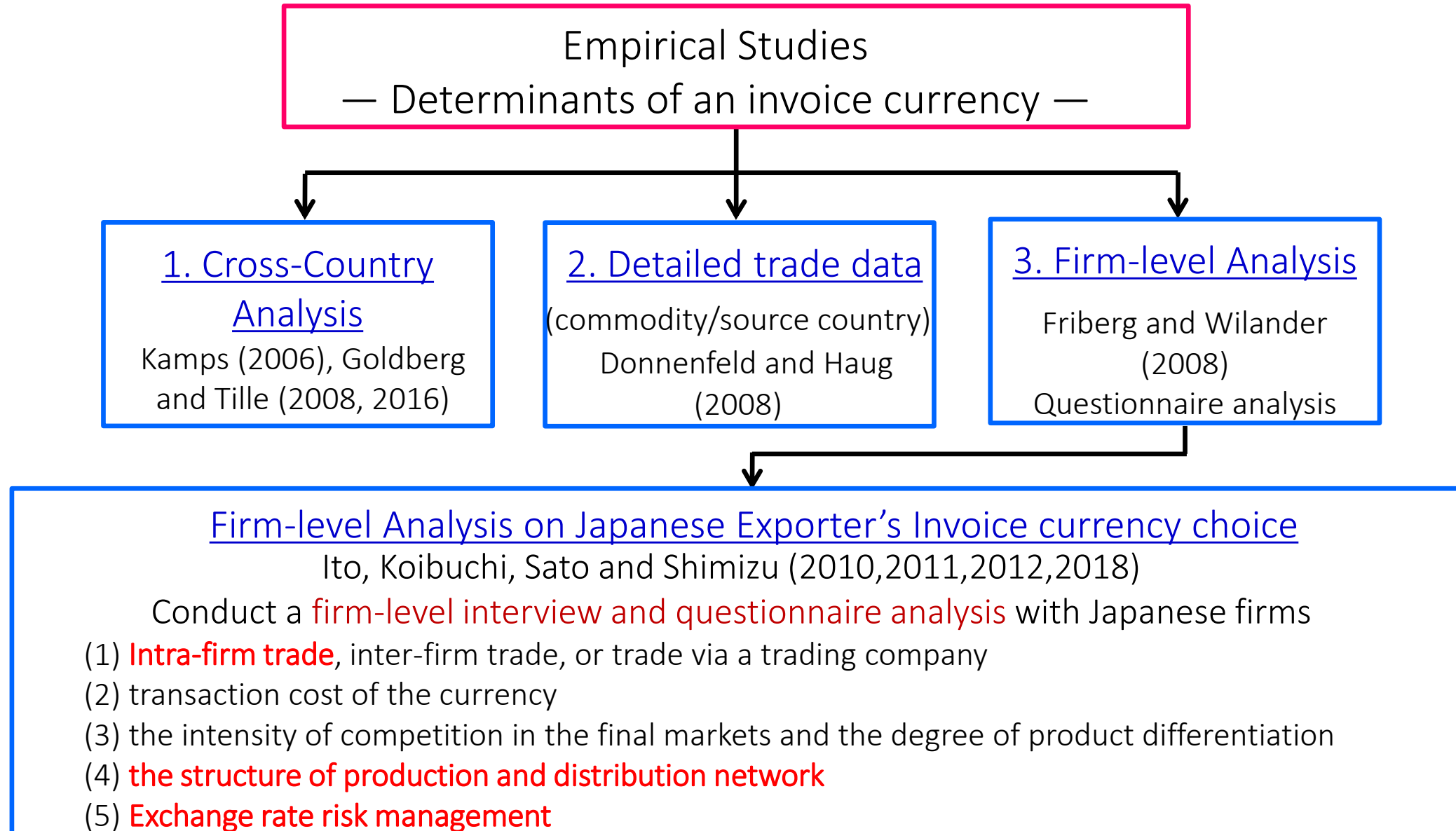
# Contents

1. Overviews of exchange rate risk management and choice of invoice currency
2. Invoice Currency Choice of Japanese Overseas Subsidiaries in Asia
3. Empirical Analysis
4. Conclusion

# Case study of Japanese Firms



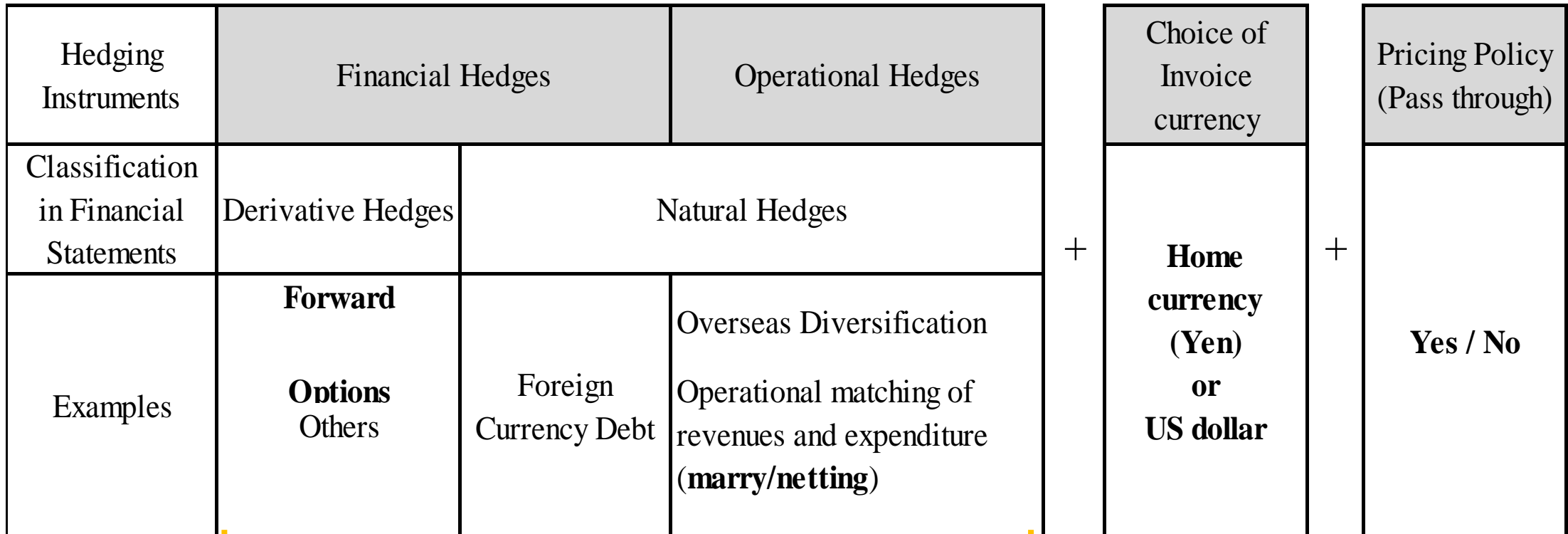
# Previous Studies on Choice of invoice currency





# Classification of FX Risk Management

Figure 1. Concept of Exchange Rate Risk Management



Note: The part of "Hedging instruments" is from Döhning (2008).

# 2018 RIETI Questionnaire Survey with Japanese overseas Subsidiaries

- The 2018 RIETI Questionnaire Survey was conducted with 21,801 Japanese overseas subsidiaries from Jan 2019 to the end of Feb 2019, and we got 2,051 (9.4%) resounded results.
- Our main findings are as follows:
  - Almost 60% Japanese overseas subsidiaries are choosing invoice currency and managing currency risk with their own discretion.
  - The usage of Asian local currencies as an invoice currency is increasing.
  - The RMB and Asian local currencies are used for the trade both with Japan and other countries, and such a usage has increased significantly from the past two surveys.
  - The USD denominated transactions are decreasing behind the increase of Asian local currencies' usage.
  - The Yen invoicing accounts for the largest share in the intermediate goods import from Japan.

Table 2. Production Bases in Asia: Share of Invoice Currency Local Procurement and Import (average of share data, %)

Invoice Currency Share (%) in Local Sales							
	# of responded firms	Yen	USD	Euro	RMB	Local Currency	Other
2018	<b>328</b>	<b>3.9</b>	<b>18.0</b>	<b>0.1</b>	<b>26.9</b>	<b>53.8</b>	<b>1.3</b>
2014	299	3.2	23.2	0.6	23.8	47.2	2.0
2010	414	4.9	21.5	0.2	21.9	50.6	0.9
Invoice Currency Share (%) in Export to Japan							
	# of responded firms	Yen	USD	Euro	RMB	Local Currency	Other
2018	<b>307</b>	<b>31.2</b>	<b>43.9</b>	<b>0.2</b>	<b>11.2</b>	<b>15.8</b>	<b>2.5</b>
2014	209	37.8	52.2	0.0	4.7	4.8	0.4
2010	313	46.0	48.0	0.2	0.2	5.6	0.0
Invoice Currency Share (%) in Export to Other Economies (excluding Japan)							
	# of responded firms	Yen	USD	Euro	RMB	Local Currency	Other
2018	<b>272</b>	<b>9.9</b>	<b>68.3</b>	<b>1.3</b>	<b>4.8</b>	<b>15.9</b>	<b>2.6</b>
2014	220	6.0	80.7	2.9	1.7	5.4	3.3
2010	323	8.6	77.5	3.2	0.7	6.6	3.4

Note: All figures are based on the RIETI Questionnaire Survey on Choice of Invoice Currency to Japanese Firms conducted in 2010, 2014, and 2018. We use the responded answer of Asian economies include China, Korea, Hong Kong, Singapore, Thailand, Indonesia, Malaysia, Philippines, Vietnam, and Chinese Taipei.

# Table 3-A. Trading Local Currency in Asia (2018)

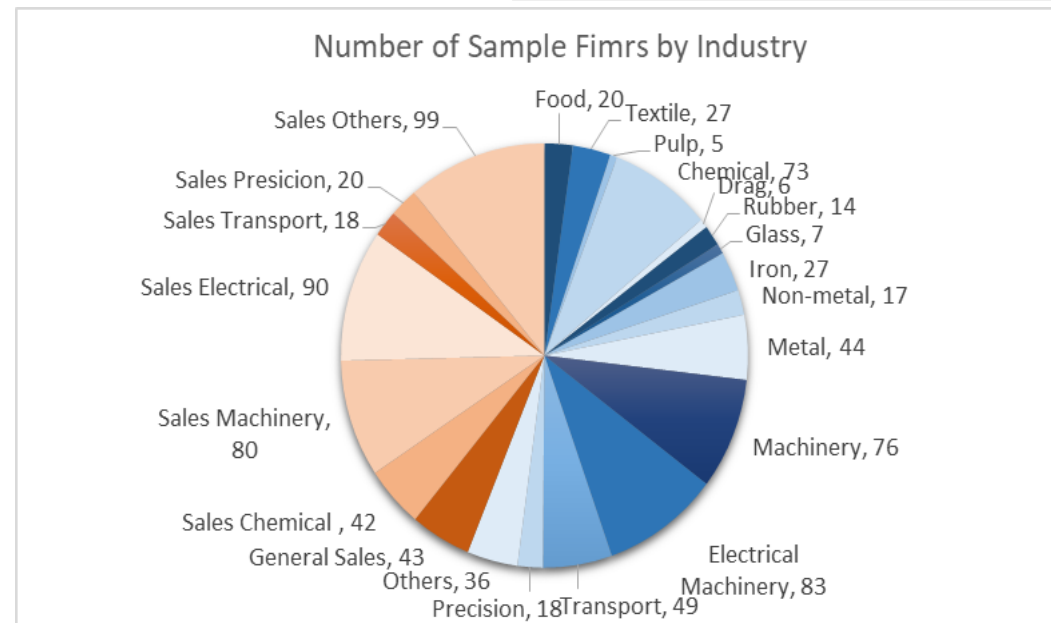
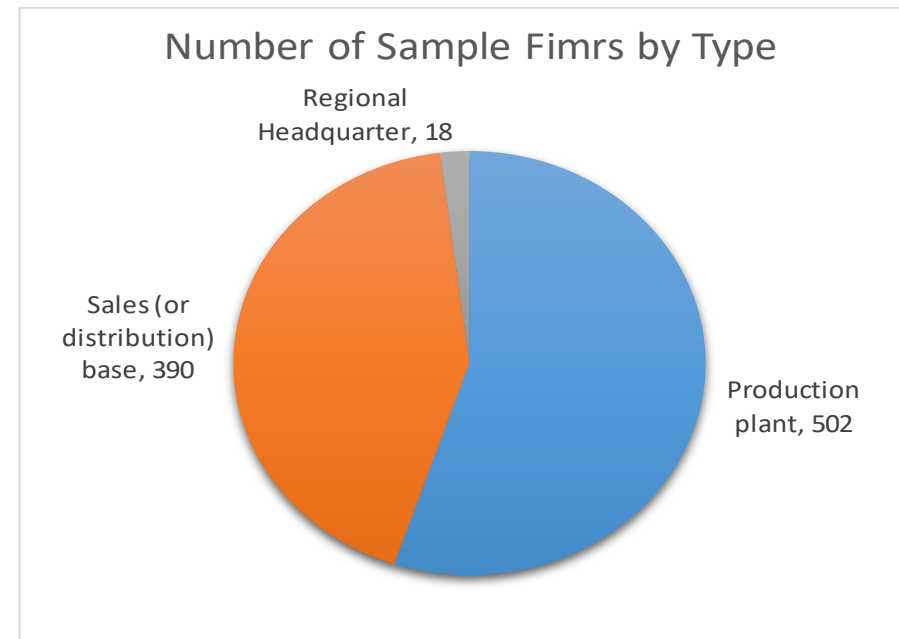
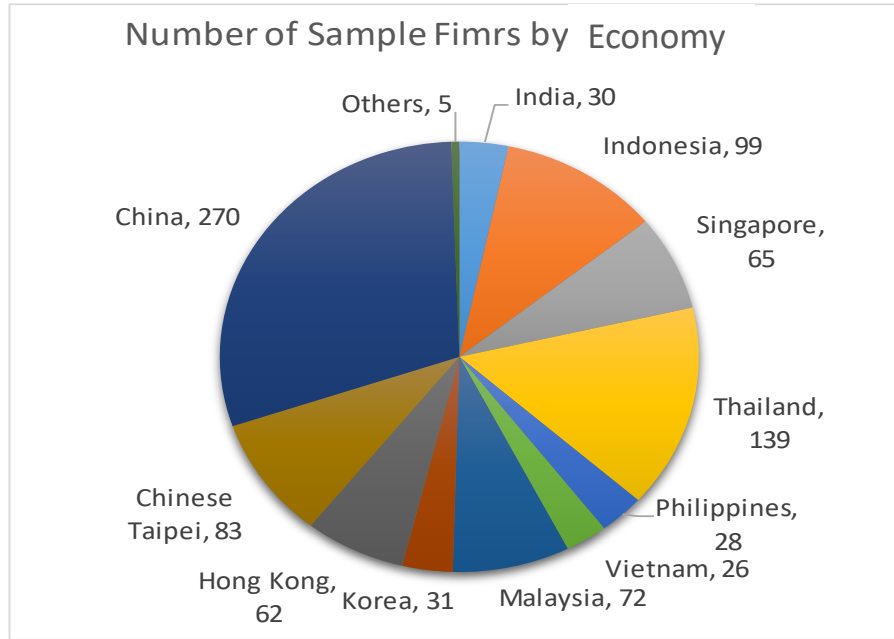
	India	Indonesia	Singapore	Thailand	Phillippines	Viestnam	Malaysia	South Korea	Hong Kong	Chinese Taipei	China
# of responded firms	27	90	61	116	26	23	63	21	52	72	239
Yes	19 70.4	61 67.8	39 63.9	81 69.8	16 61.5	13 56.5	43 68.3	9 42.9	37 71.2	46 63.9	225 94.1
No	8 29.6	29 32.2	25 41.0	35 30.2	10 38.5	10 43.5	20 31.7	12 57.1	15 28.8	26 36.1	14 5.9

Local Currency Usage (Type of Transactions, Select all that apply)

	India	Indonesia	Singapore	Thailand	Phillippines	Viestnam	Malaysia	South Korea	Hong Kong	Chinese Taipei	China
# of responded firms	16	60	35	77	15	13	41	8	19	36	208
Receipts from the local market	14 87.5	50 83.3	23 65.7	66 85.7	7 46.7	7 53.8	31 75.6	8 100.0	13 68.4	29 80.6	198 95.2
Payments made in the local market	12 75.0	43 71.7	21 60.0	60 77.9	14 93.3	12 92.3	31 75.6	7 87.5	15 78.9	32 88.9	184 88.5
Payments for imports (from the headquarters)	3 18.8	7 11.7	8 22.9	15 19.5	1 6.7	1 7.7	2 4.9	2 25.0	3 15.8	8 22.2	45 21.6
Payments for imports (excluding headquarters)	8 50.0	12 20.0	7 20.0	13 16.9	3 20.0	0 0.0	10 24.4	0 0.0	3 15.8	5 13.9	17 8.2
Receipts for exports (to headquarters)	2 12.5	3 5.0	4 11.4	13 16.9	1 6.7	0 0.0	2 4.9	0 0.0	4 21.1	5 13.9	30 14.4
Receipts for exports (excluding headquarters)	2 12.5	6 10.0	9 25.7	17 22.1	0 0.0	0 0.0	4 9.8	0 0.0	5 26.3	10 27.8	16 7.7
Other(s)	0 0.0	3 5.0	3 8.6	0 0.0	1 6.7	0 0.0	1 2.4	0 0.0	2 10.5	1 2.8	6 2.9

# Empirical Analysis with 2018 RIETI questionnaire Survey of Japanese overseas subsidiaries in Asia

# Basic Information of Sample Firms



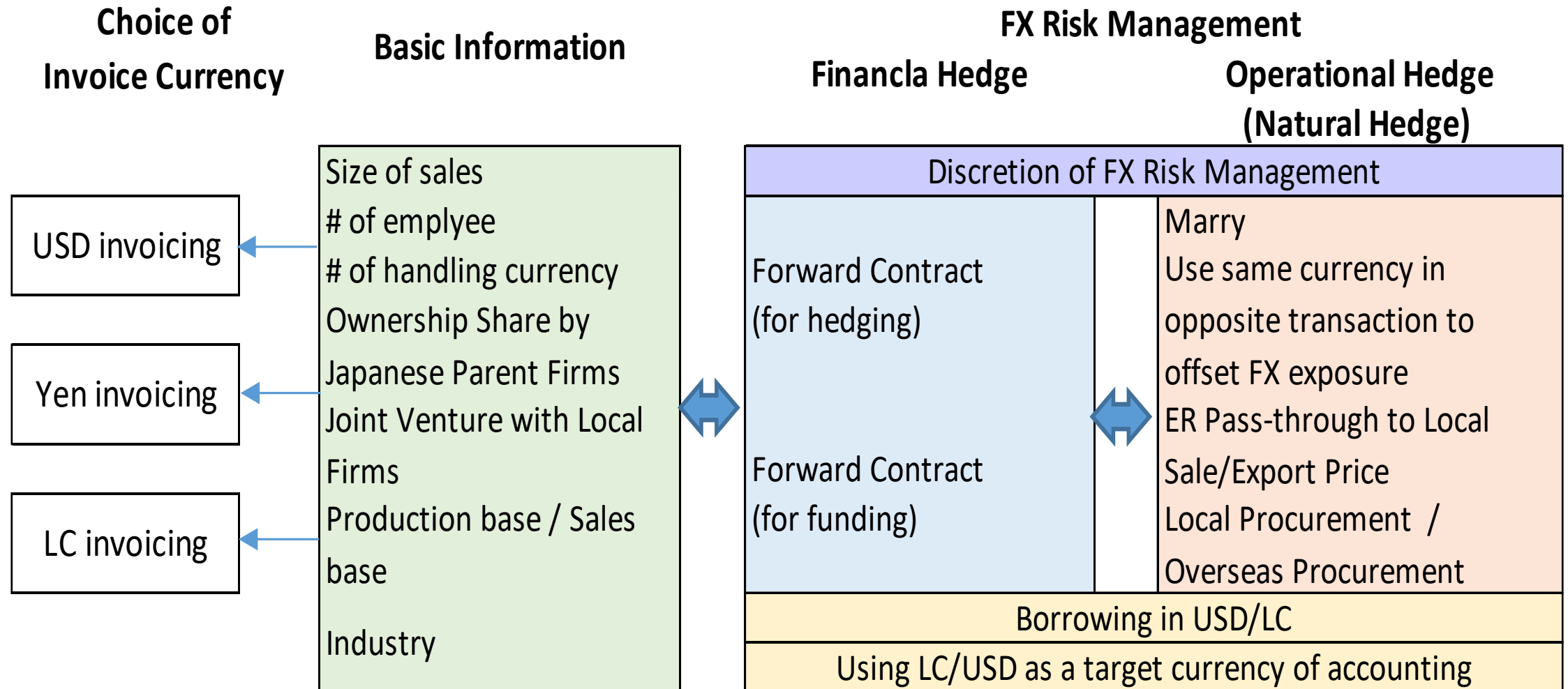
# Empirical analysis with Asian Countries' Data in 2018 RIETI Questionnaire Survey

- We conduct the empirical analysis to investigate the factors to affect the choice of invoice currency of Japanese overseas subsidiaries in Asia.
  - We focus the responded results in Asian economies (China, Korea, Hong Kong, Singapore, Thailand, Indonesia, Malaysia, Philippines, Vietnam, and Chinese Taipei).
- We conduct Tobit estimation to analyze the determinants of USD, Yen and Local currencies invoicing.
  - Dependent variable: the share of USD, Yen, and Local Currency invoicing in both Import & Export.

$$\text{Share of Invoice Currency}_{i,j,k} = \alpha_0 + \alpha_1 \text{Firms}_i + \alpha_2 \text{Risk Management}_i + \alpha_3 \text{Financial Hedge}_i + \alpha_4 \text{Operational Hedge}_{i,j,k} + \varepsilon_{i,j,k}$$

*i:Firm, j:trade (import or export), k:trade partner (Japan or other economies)*

# Research Design of Determinants of Invoice Currency



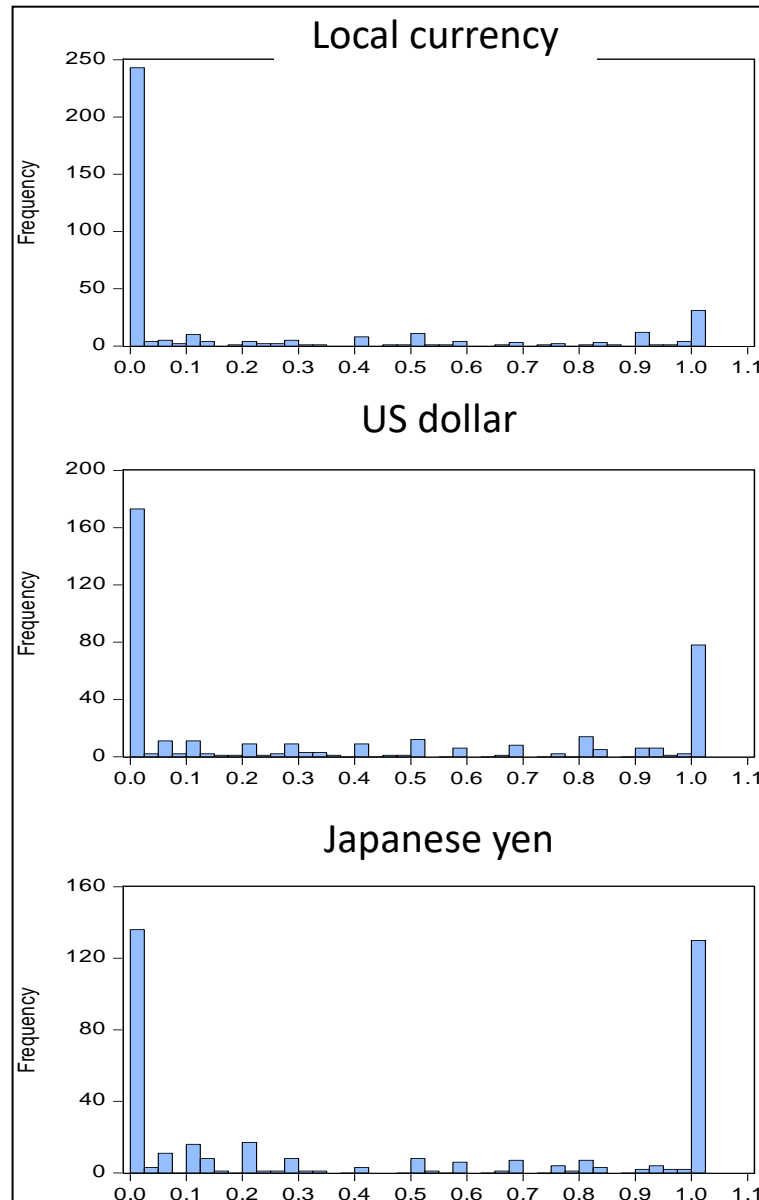
$$\text{Share of Invoice Currency}_{i,j,k} = \alpha_0 + \alpha_1 \text{Firms}_i + \alpha_2 \text{Risk Management}_i + \alpha_3 \text{Financial Hedge}_i + \alpha_4 \text{Operational Hedge}_{i,j,k} + \varepsilon_{i,j,k}$$

$i$ : Firm  
 $j$ : import, export  
 $k$ : trade partner

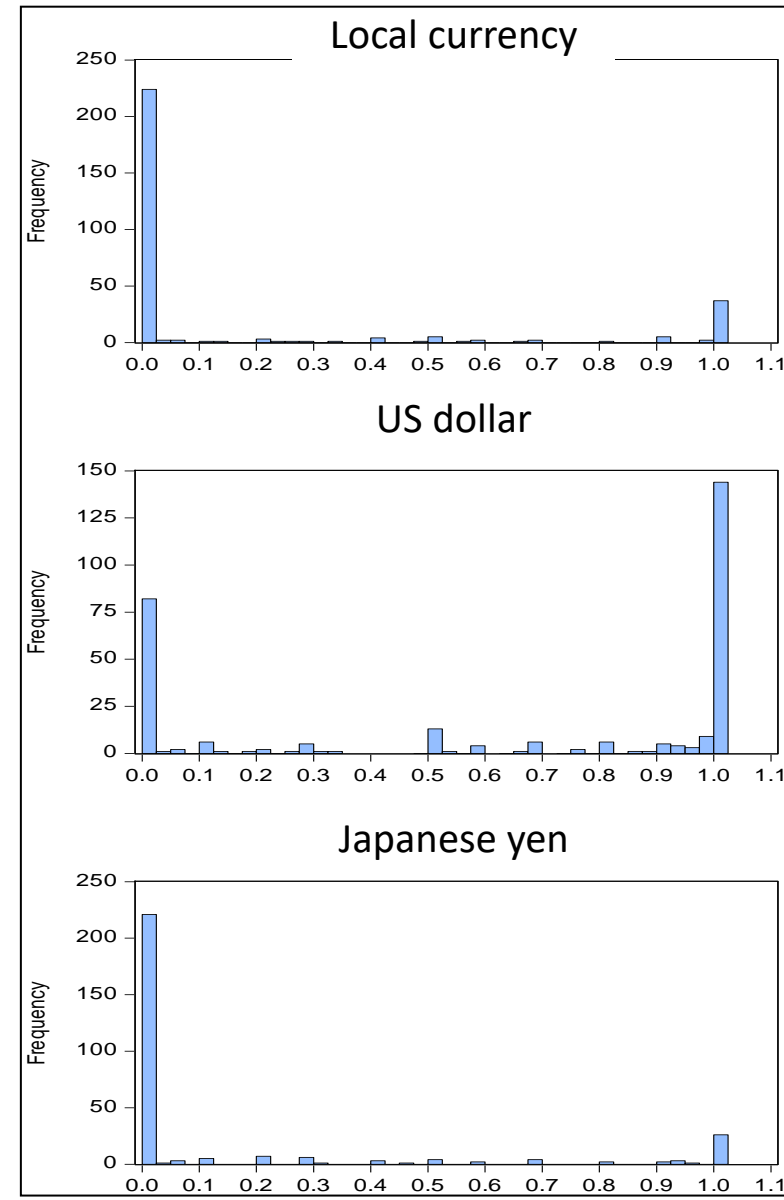


# Distribution of Share of Invoice Currency in Import

<Import from Japan>

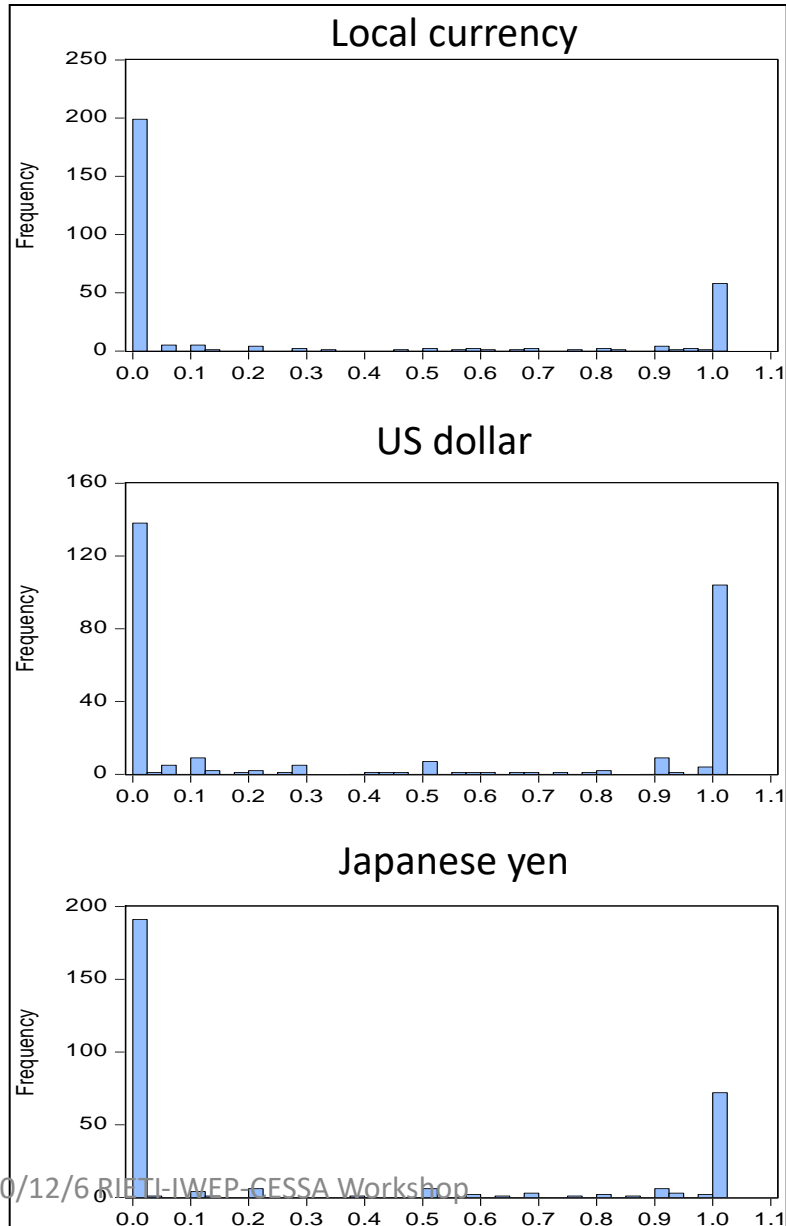


<Import from Overseas Market (excl. Japan)>

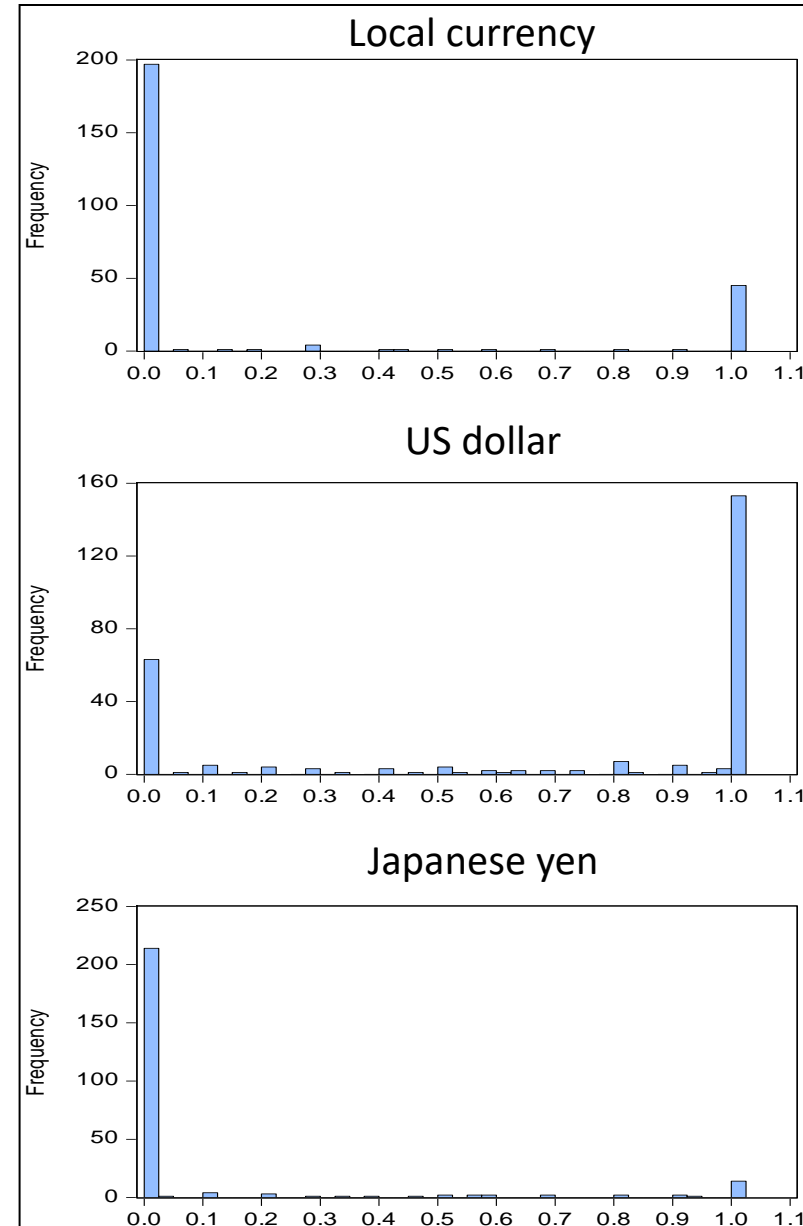


# Distribution of Share of Invoice Currency in Export

<Export to Japan>



<Export to Overseas Market (excl. Japan)>



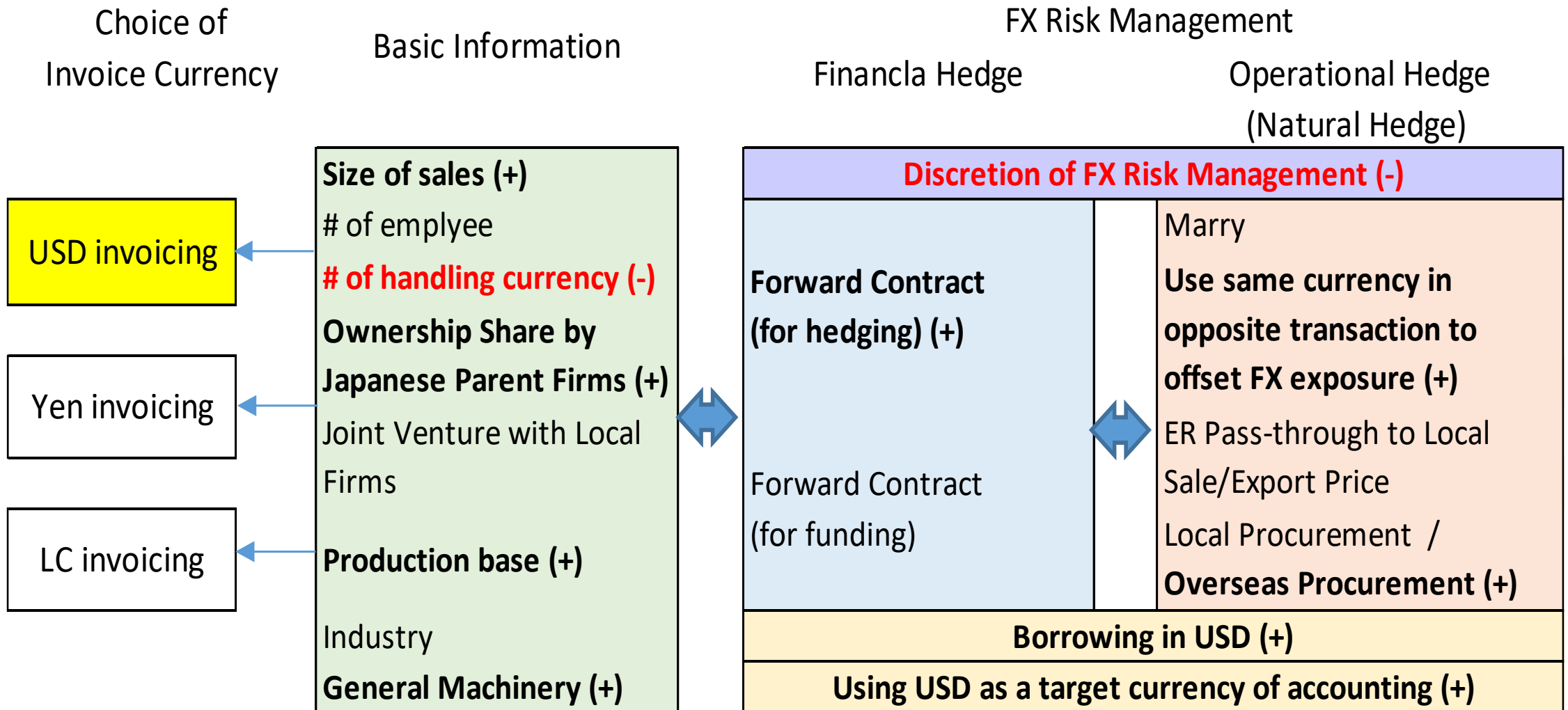
# Explanatory variables 1

- “Size” of overseas subsidiaries
  - log of *annual sales* of sample firms.
- Corporate type
  - Dummy variables: *Production plant and Sales (or distribution) base*
- Subsidiaries’ relationship with their parent firms in Japan
  - *Shareholding Ratio by Japanese Parent Firms*
  - Dummy variable: *Joint Venture with Local Firms*
- Exchange rate risk management
  - Dummy variable for **discretionary** management of exchange rate risk
  - Dummy variable for using **marry/netting**
  - Dummy variable for using **forward** transaction for hedging
  - Dummy variable for using **forward** transaction for funding purpose
  - Dummy variable for **pass-through** in local sales/ in export price

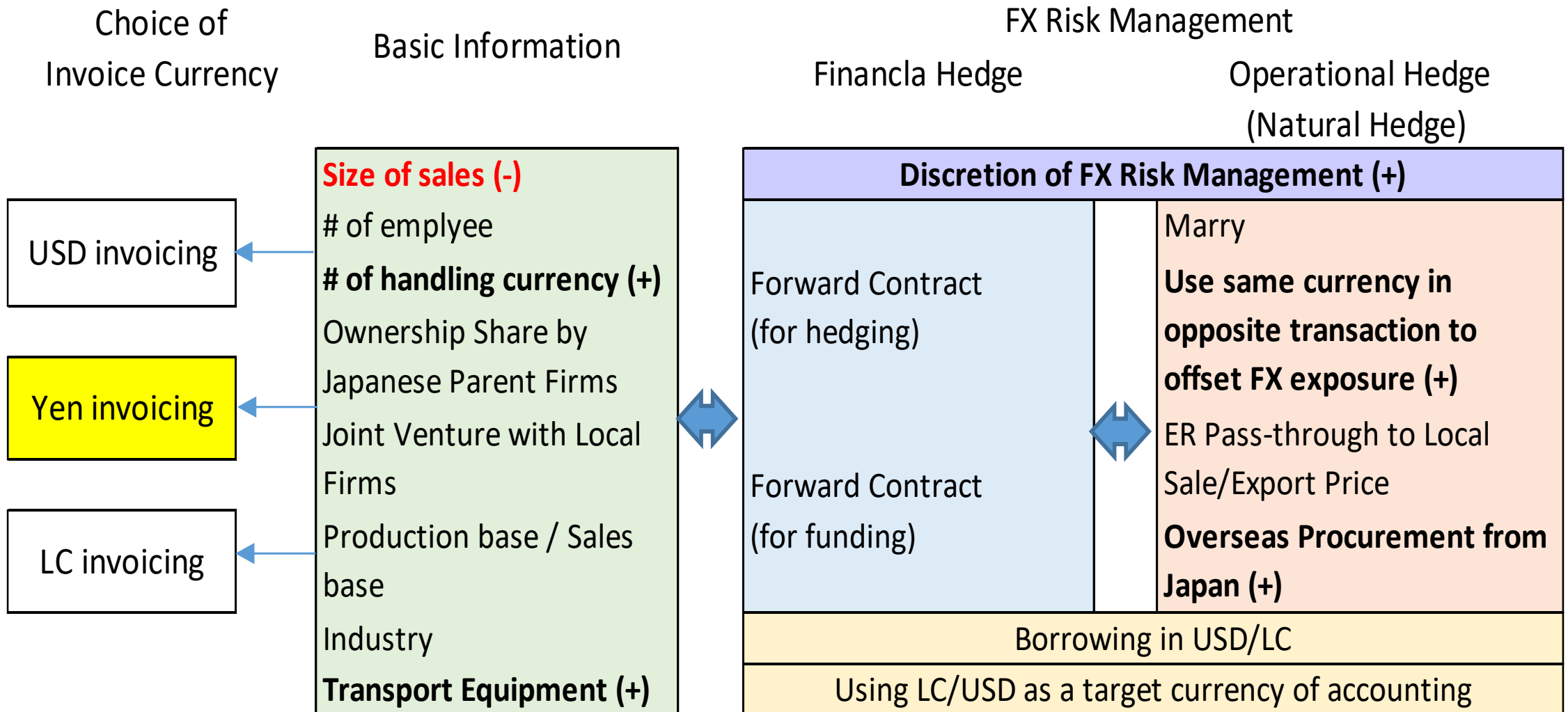
# Explanatory variables 2

- Exchange rate risk management (Natural Hedge)
  - Share of Local Procurement/ Procurement from Japan/ Overseas Procurement
  - Share of Yen/USD/LC invoicing in Import from Japan/Overseas
  - Share of Yen/USD/LC invoicing in Export to Japan/Overseas
  - Dummy variable for *Borrowing in USD/Local Currency*
- Profit Evaluation Policy
  - Dummy variable for *Using USD/Local Currency as a target currency of Risk Management* (Q: Please indicate the currency based on which you build the management plan and set the profit target.)
- Industry dummy variables
  - *Electrical machinery, Transport equipment, and General Machinery*

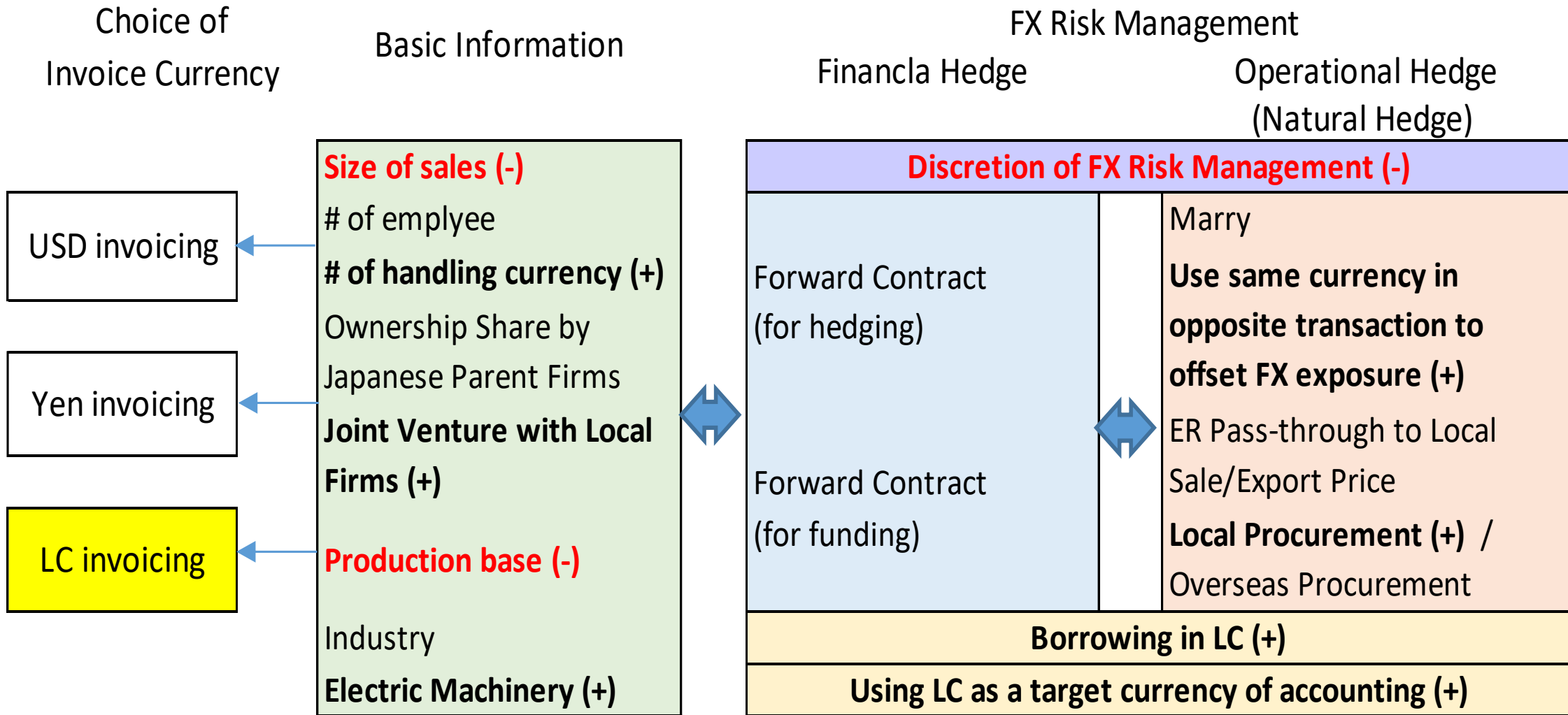
# Results: USD invoicing



# Results: YEN invoicing



# Results: LC invoicing



# Conclusion

- We found that the natural hedge is one of the important factor to decide the invoice currency.
  - Subsidiaries' choice of invoicing currency is strongly influenced by their incentive to use same currency not only in import and export, but also in local sales, local procurement, and borrowing as well, and this feature is common to all their selected invoice currency, such as the US dollar, the Japanese yen and their home currencies.
  - We have recognized that Japanese manufacturing exporters conduct such a policy to manage their FX exposure through our interview and questionnaire survey against Japanese headquarters, and we are able to confirm almost same tendency in this analysis by utilizing overseas subsidiaries data.
- Sales bases also tend to choose LC invoicing.
- Local currency funding, high share of local procurement, joint venture with local firm and profit management policy by LC currency promote LC invoicing.



# Policy Implication

- In Asian subsidiaries, we confirm that the US dollar as an invoicing currency is still widely used, and it will continue as far as US is as a final destination.
- On the other hand, growing and deepening regional production network in Asia is likely to promote local currency transaction particularly if the subsidiaries are jointly owned by local firms, have high share of local procurement, or hold local currency borrowing.
  - Expanding local procurement, maturing local financial market will promote the local currency usage in Asia.
- Regarding the usage of the Japanese yen, high share of importing intermediate goods from Japan tend to use yen invoicing.
  - To avoid a decline in the role of the yen in Asia, Japan should increase its imports with Asia through intra-firm trade and become more important consumer market for Asian exporters.