Local currency trade settlement under the international monetary system with the US dollar as a key currency

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Hiitotsubashi University
Eiji Ogawa

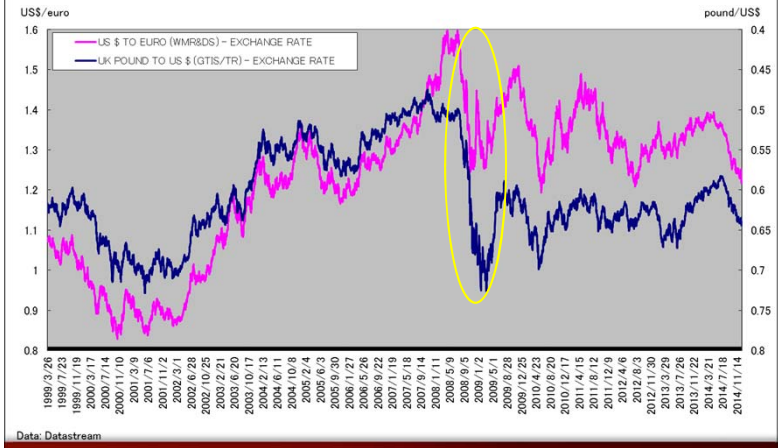
Contents

- Lesson from the European experience during the global financial crisis to Asia
- Inertia of the US$ as a key currency under the current international monetary system
- Questionnaire survey on Japanese firms' choice of invoicing (settlement) currency (Ito, Koibuchi, Sato, and Shimizu (2013))
- Future of Local Currency Trade Settlement in Asia

The global financial crisis depreciated European currencies

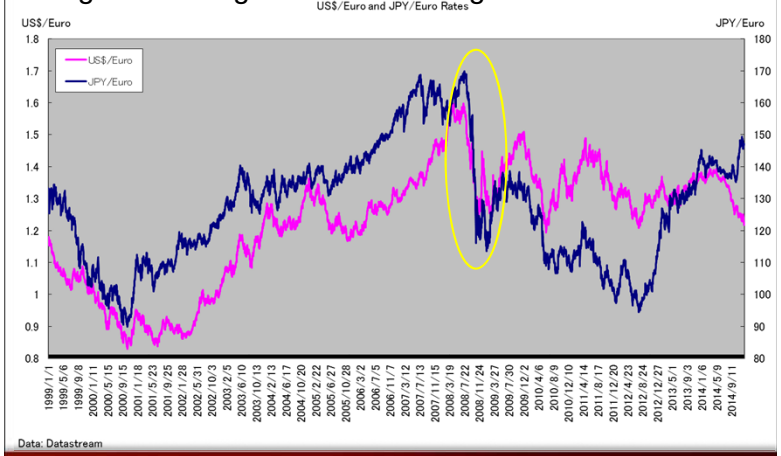
- The global financial crisis, which started from US financial institutions as an epicenter, seemed to erode confidence of US financial sector and the US$ and, in turn, to give depreciating impacts to the US$ against other currencies.
- However, it is not the US$ but European currencies (the euro and the sterling pound) that depreciated during the global financial crisis.
- The euro depreciated against also the JPY during the global financial crisis.

Fig.1: exchange rates of euro and pound against US$



Data: Datastream

Fig.2: exchange rates of euro against US$ and JPY



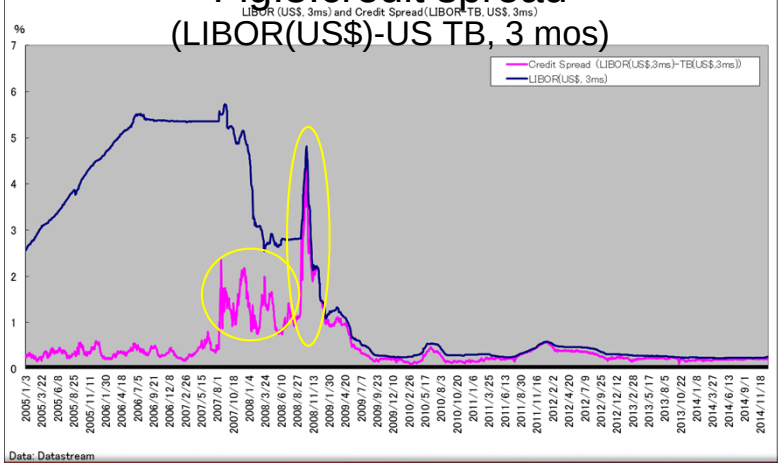
US$ liquidity shortage during the global financial crisis (1)

- European financial institutions played as a role of international financial intermediary in the situation of global imbalance (current account deficit in the US and current account surplus in oil exporting countries) before the global financial crisis. Specifically, they financed oil money and invested in mortgage backed securities (MBS) which were issued in the US.

US$ liquidity shortage during the global financial crisis (2)

- Bubble bursts of housing prices brought about subprime mortgage problem, which damaged their balance sheet of European financial institutions as well as US financial institutions which held the related MBS.
- They faced difficulties in financing US$ liquidity in inter-bank markets in Europe due to counter-party risk under uncertainty regarding how much non-performing MBS were held by their counter-parties in inter-bank financial transactions in terms of the US$. It led excess demand for the US$ in foreign exchange markets.

Fig.3:credit spread (LIBOR(US$)-US TB, 3 mos)



FRB's measures against the US$ liquidity shortage

- The FRB not only started quantitative easing monetary policy with zero FF rate but also provided unlimited supply of US$ liquidity to other major central banks through currency swap arrangements in order to solve the US$ liquidity shortage. The central banks have made unlimited supply of liquidity to European financial institutions based on the US$ liquidity provided by the FRB.
- The counter-party risk in inter-bank markets has reduced since November 2008.
- It clarifies that economic agents in the EU needs the US$ as a settlement currency for external economic transactions even though they can use the euro for intra-regional economic transactions in the euro zone or in the EU.

Currency swap arrangements of FRB

- 12/22/2007: FRB concluded a currency swap arrangement (CSA) with ECB and Swiss National Bank (SNB). ECB and SNB introduced operation of supplying US$ based on the CSA.
- 3/11/2008: FRB increased CSA with ECB and SNB.
- 5/2/2008: FRB increased CSA with ECB and SNB. They increased operation of supplying US$ based on the CSA.
- 7/30/2008: FRB increased CSA with ECB. It increased operation of supplying US$ based on the CSA.
- 9/18/2008: FRB increased CSA with ECB and SNB. Fed concluded a CSA with BOE. BOE introduced operation of supplying US$ based on the CSA.
- 9/24/2008: FRB concluded a CSA with Central Banks of Sweden, Denmark, and Norway.
- 9/26/2008: FRB increased CSA with ECB and SNB. ECB, SNB, and BOE increased operation of supplying the US$ based on the CSA.
- 9/29/2008: FRB increased CSA with the Central Banks and extend it from the end of January 2009 to the end of April 2009.
- 10/13/2008: ECB, SNB, and BOE introduced operation of unlimited supply US$ liquidity within collateral. Fed removed limits of supplying the US$ liquidity to them.

Lesson from the European experience to Asia

- Economic agents in the EU needs the US$ as a settlement currency for external economic transactions even though they can use the euro for intra-regional economic transactions in the euro zone or in the EU. For the reason, they faced the US$ liquidity shortage and in turn depreciation of the European currencies during the global financial crisis.
- If Asian financial institutions suffered from the similar damages in their balance sheets that were caused by the subprime mortgage problem, much severer US$ liquidity shortage would happen in Asia where the US$ is, in general, dominantly used for a large part of trade settlements.

US$ as only one key currency under the Bretton Woods System

- The US$ was only one nominal anchor under the Bretton Woods System from 1944 to 1971. It was a rule of game under the Bretton Woods System that the monetary authority of the US had to fix the US$ to the gold while monetary authorities of the other countries had to fix their home currencies to the US$. In 1971, the US President Richard Nixon stopped convertibility of the US$ into gold. The Bretton Woods System finished at the Nixon shock.
- The US$ was used as a trade settlement currency as well as a intervention currency under the dollar peg system.

A key currency in the current system

- In the current international monetary system, the US$ is still working as a key currency which means a major settlement currency in international trade, capital, and financial transactions while a part of countries accumulate the US$ foreign reserves to intervene in the foreign exchange markets.
- Thus, a function of medium as exchange such as a settlement currency is more important than that of store of value in choosing a key currency.

Gulliver type of currency competition

- A key currency has a function as medium of exchange that is closely related with general acceptance of currency. Network externalities, which means that externalities should be enhanced depending on number of others who give externality effects to an individual, work in the general acceptance. Thus, economies of scale works in using currencies because of the network externalities.
- It is general that markets with economies of scale have little effective competition. It is possible to apply it to a currency competition in selecting a key currency. The current international monetary system with the US$ as a key currency is regarded as a “Gulliver” type of competition which means that only one giant firm compete with other small firms.

Inertia of the US$ as a key currency

- The US$ keeps a position of key currency in such a Gulliver type of currency competition because economies of scale works to give it an advantage of keeping a position of key currency.
- It is called as “inertia” of key currency. In physics, “inertia” define that the resistance of any physical object to any change in its state of motion, including changes to its speed and direction. Like this phenomenon, the US$ as a key currency that have already built up a dominant share in international trade and finance settlements under the Bretton Woods System.

Empirical analysis on inertia of the US$ as a key currency (Ogawa and Kawasaki (2001))

- Analyze inertia of the key currency (US$) after the introduction of the euro to investigate whether the euro might have economies of scale compared with the US$.
- Theoretical framework: money-in-the-utility (MIU) model with benefit (contribution of real balance of currency to utility) and cost (depreciating value of currency) of holding currencies.
- Point estimation of parameters on the US$ and the euro in the MIU model.
- Data on real balances of currencies: Currency Cross-boarder Liabilities in Foreign Currencies ,*BIS*.
- Compare estimated weights for sub-sample periods (a pre-euro period [1986Q1-1998Q4] and a post-euro period [1999Q1-2000Q1]).

MIU model for international currencies

- Money-in-the-utility (Cobb-Douglas type):

$$\int_0^\infty U\left(c_t, m_t^D, m_t^E, m_t^Y\right) e^{-\delta t} dt$$

benefit of holding currencies

weight on US$

$$U\left(c_t, m_t^D, m_t^E, m_t^Y\right) \equiv \frac{\left[c_t^\alpha \left\{m_t^{D\beta}\left(m_t^{E\gamma} m_t^{Y1-\gamma}\right)^{1-\beta}\right\}^{1-\alpha}\right]^{1-R}}{1-R}$$

$$0<\alpha<1, 0<\beta<1, 0<\gamma<1, 0<R<1$$

- Inter-temporal budget constraint (contemporaneous budget constraint):

cost of holding currencies

$$\dot{w}_t^P = \bar{r} w_t^P + y_t - c_t - tax_t \boxed{- i_t^A m_t^D - i_t^D m_t^E - i_t^Y m_t^Y}$$

$$w_t^P \equiv b_t^D + b_t^E + b_t^Y + m_t^D + m_t^E + m_t^Y$$

Share of the US$ and weight on US$ in the utility function

- Share of the US$

$$\phi_t = \frac{m_t^D}{m_t^D + m_t^E + m_t^Y} = \frac{1}{1+\frac{1-\beta}{\beta}\frac{i_t^D}{i_t^{E+Y}}} = \frac{1}{1+\frac{1-\beta}{\beta}\frac{\pi_t^D + \bar{r}}{\pi_t^{E+Y} + \bar{r}}}$$

- Weight on the US$ in the utility function

$$\beta = \frac{1}{1+\left(\frac{1}{\phi_t}-1\right)\frac{i_t^{E+Y}}{i_t^D}} \qquad \beta = \frac{1}{1+\left(\frac{1}{\phi_t}-1\right)\frac{\pi_t^{E+Y} + \bar{r}}{\pi_t^D + \bar{r}}}$$

Table 1: estimated weights on the US$

	Mean	Standard deviation	99% confidence interval
Based on Inflation rate of CPI			
	1986Q1-2000Q1		
Real interest rate = 3%	0.61	0.06	0.59-0.63
Real interest rate = 5%	0.62	0.06	0.60-0.64
Real interest rate = 8%	0.63	0.06	0.60-0.64
	1986Q1-1998Q4		
Real interest rate = 3%	0.62	0.06	0.59-0.64
Real interest rate = 5%	0.62	0.06	0.60-0.64
Real interest rate = 8%	0.62	0.06	0.60-0.64
	1999Q1-2000Q1		
Real interest rate = 3%	0.58	0.03	0.55-0.61
Real interest rate = 5%	0.58	0.02	0.56-0.60
Real interest rate = 8%	0.58	0.01	0.57-0.60
Based on Eurocurrency interest rate			
	1986Q1-2000Q1		
3 months	0.63	0.13	0.59-0.68
6 months	0.63	0.13	0.59-0.68
	1986Q1-1998Q4		
3 months	0.62	0.13	0.57-0.67
6 months	0.62	0.13	0.58-0.67
	1999Q1-2000Q1		
3 months	0.76	0.02	0.73-0.78
6 months	0.76	0.02	0.74-0.78

Analytical results on inertia of the US$ as a key currency

- Weights on the US$ in the utility function were around 60% before and after the introduction of the euro in 1999.
- Weights on the US$ in the utility function did not significantly decrease after the introduction of the euro.
- It implies that it is was possible to keep unchanged benefits of holding the US$ even after the introduction of the euro. We found inertia of the US$ as a key currency.

Global key currency vs. regional key currency

- The inertia of the US$ as a key currency in the global economy ("global key currency") implies that it takes long time to shift the global key currency from the US$ to another currency.
- On one hand, it is possible to make a regional major currency a key currency in the region ("regional key currency"). The euro is regarded as a regional key currency in European region.

=>It is necessary to have a regional key currency instead of the US$ as an international trade settlement currency in Asia from the European experience during the global financial crisis.

Questionnaire survey on Japanese firms' choice of invoicing currency

- Ito, Koibuchi, Sato, and Shimizu (2013) conducted a questionnaire survey on the choice of invoicing currency with all Japanese manufacturing firms listed in the Tokyo Stock Exchange. Questionnaires were sent out to 920 Japanese firms in September 2009, and 227 firms responded.

Table 2: size of manufacturing firms by industries

	920 Firms (All Manufacturing Firms)			227 Firms (Respondents to Questionnaires)		
Type of Industry	(A) Consolidated Sales (Average, Million Yen)	(B) Foreign Sales (Average, Million Yen)	(B)/(A)	(A) Consolidated Sales (Average, Million Yen)	(B) Foreign Sales (Average, Million Yen)	(B)/(A)
All Manufacturing	328,576	159,912	37.6	380,951	190,145	37.0
Foods	859,322	334,191	22.3	483,825	227,374	32.3
Textiles & Apparel	179,476	58,815	24.2	102,142	17,585	23.2
Pulp & Papers	54,182	13,335	21.2	---	---	---
Chemicals	207,557	74,702	30.2	273,090	105,240	34.7
Pharmaceuticals	313,333	123,127	29.7	230,864	22,951	10.5
Oil & Coal Products	2,731,327	369,007	17.6	3,428,211	399,070	11.6
Rubber Products	338,174	223,537	34.5	98,511	47,124	32.2
Glass & Ceramics	185,996	88,000	36.4	55,315	25,978	30.3
Steel Products	576,693	191,604	27.8	882,765	298,665	23.4
Nonferrous Metals	420,983	129,423	28.0	203,383	30,943	17.6
Metal Products	99,223	31,922	30.7	172,879	73,012	37.8
Machinery	128,780	64,683	40.9	158,355	89,751	35.7
Electrical Machinery	352,841	181,586	43.4	529,526	231,003	43.7
Transport Equipment	848,975	580,951	45.7	888,213	631,035	41.3
Precision Instruments	103,474	64,888	44.6	110,474	85,505	48.2
Other Products	200,189	84,130	36.2	57,600	33,241	37.0

(1) Invoice currency vs. settlement currency

- Regarding a preliminary question about whether an invoice currency (a currency to be used at the stage of contracts) is the same as a settlement currency (a currency to be used at the stage of payments), it is found that 200 firms out of 226 respondents, which is equivalent to 88.4 percent of our sample firms, answered that the same currency was used for both invoicing and settlements.
- The findings show that the same currency is used for invoicing and settlements in most cases. We can regard the invoicing currency to be almost the same as the settlement currency.

(2) Currency invoicing in Japanese exports to the world

- In terms of the number of firms, Japanese firms tend to use the JPY (48%) more than the US$ (42%) for export invoicing. In terms of the export amounts, however, the US$ (54%) is much more used than the JPY (29%) in Japanese total exports to the world.
- The firm size does matter in the choice of export invoicing. The smaller the firm size, the higher the share of the JPY invoicing is. Shares of the JPY invoicing are 48% for large group, 50% for medium group, and 58% for small group.

Table 3: share of currency invoicing in Japanese exports to the world (%)

	All Firms		Total Consolidated Sales			Foreign Sales*		
	Arithmetic average[1]	Weighted average[2]	Large[1] (upper 1/3)	Medium[1] (middle 1/3)	Small[1] (lower 1/3)	Large[1] (upper 1/3)	Medium[1] (middle 1/3)	Small[1] (lower 1/3)
Currency: Number of sample firms[3]	217	217	80	70	67	64	70	83
Japanese Yen	48.2	28.7	38.1	50.0	58.3	41.2	52.2	50.2
US Dollar	42.1	54.1	47.8	41.7	35.8	45.5	39.0	42.1
Euro	7.1	11.3	10.5	5.1	5.2	11.0	5.7	5.3
Other Currencies	2.7	5.9	3.7	3.3	0.7	2.5	3.0	2.5

(3) Share of currency invoicing by destination

- In terms of the number of firms, importer's currency invoicing is typically conducted in exports to the US, the Euro area and the UK. While the US$ is the most frequently used currency in exports to North and Latin American countries, the JPY invoicing is generally chosen in Japanese exports to Asia (around 60%), other emerging/developing countries and Australia/New Zealand.
- There is a clear relationship between the size of firms and the choice of invoicing currency in Japanese exports to Asia and other emerging countries. The larger (smaller) the firm size, the higher the share of US$ (JPY) invoicing is.

Table 4: share of invoice currency in Japanese exports by destination (%)

	Destination											
	USA	Canada	Mexico	Brazil	Central & Latin America	Euro Area	UK	Russia	Eastern Europe	Australia	New Zealand	Africa
Number of answers	168	50	36	51	39	133	65	34	40	70	37	35
Japanese Yen												
All Manufacturing	21.8	29.2	34.0	50.3	50.3	35.3	35.0	63.0	58.9	52.5	56.5	63.3
Large	16.0	18.7	23.0	37.6	41.7	20.7	30.5	58.8	52.0	42.4	54.3	61.5
Medium	23.9	45.0	45.7	60.0	55.6	30.1	17.7	37.5	46.8	50.3	33.2	62.5
Small	26.5	61.4	57.1	80.0	71.6	49.2	65.0	90.0	88.9	84.6	80.0	75.0
US Dollar												
All Manufacturing	77.9	48.2	66.0	45.6	45.1	13.6	18.5	29.7	13.1	29.1	32.6	34.7
Large	83.5	59.6	77.0	61.7	54.7	11.4	12.7	30.1	12.5	30.6	32.4	35.4
Medium	76.1	30.0	54.3	30.0	44.4	16.4	30.0	50.0	15.9	41.4	66.8	37.5
Small	72.9	29.5	42.9	11.0	14.4	13.9	21.4	11.1	11.1	7.7	7.5	25.0
Euro												
All Manufacturing	0.3	1.7	0.0	4.1	4.6	51.0	15.7	8.4	28.0	1.3	0.0	2.0
Large	0.7	2.7	0.0	0.6	3.6	58.8	23.6	11.1	35.5	2.4	0.0	3.1
Medium	0.0	0.0	0.0	10.0	0.0	53.2	10.7	12.5	37.3	0.0	0.0	0.0
Small	0.0	0.0	0.0	9.0	14.0	36.9	0.7	0.0	0.0	0.0	0.0	0.0
Importer's Currency												
All Manufacturing	---	20.0	0.0	0.0	0.0	---	32.1	0.0	0.0	18.5	2.7	0.0
Large	---	22.6	0.0	0.0	0.0	---	35.7	0.0	0.1	25.9	0.0	0.0
Medium	---	25.0	0.0	0.0	0.0	---	41.7	0.0	0.0	11.1	0.0	0.0
Small	---	9.1	0.0	0.0	0.0	---	12.9	0.0	0.0	7.7	12.5	0.0
Other Currencies												
All Manufacturing	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	8.2	0.0
Large	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	13.3	0.0
Medium	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Small	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 5: share of invoice currency in Japanese exports by destination: Asia (%)

	China	Korea	Taiwan	Hong Kong	Singapore	Thailand	Malaysia	Indonesia	Philippines	Vietnam	India	Middle-East
Number of firms	174	142	150	106	103	122	94	84	71	61	72	63
Japanese Yen												
All Manufacturing	55.4	69.0	62.5	45.6	56.9	60.1	56.1	61.6	63.0	64.9	76.3	51.9
Large	45.5	62.5	55.3	33.3	52.0	54.7	51.1	53.5	52.6	67.9	68.6	41.5
Medium	60.5	68.9	63.0	44.5	54.0	57.3	45.7	66.7	64.7	41.9	81.3	50.3
Small	63.4	78.9	75.2	68.3	70.5	75.5	84.1	74.9	82.4	80.9	91.0	73.4
US Dollar												
All Manufacturing	43.7	25.5	35.3	49.4	37.8	30.4	42.4	33.8	35.8	35.1	21.2	42.7
Large	52.4	32.8	42.0	61.9	42.0	33.4	48.4	41.0	43.9	32.1	29.4	49.4
Medium	40.9	25.8	35.7	46.7	43.1	32.5	50.7	27.5	35.3	58.1	18.7	49.1
Small	34.2	13.8	24.0	30.7	21.2	16.7	15.4	25.1	18.8	19.1	1.9	23.4
Euro												
All Manufacturing	0.5	1.1	0.3	0.0	0.5	0.2	0.3	0.6	0.0	0.0	1.1	4.2
Large	0.4	0.5	0.0	0.0	1.0	0.4	0.5	1.2	0.0	0.0	2.1	6.7
Medium	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Small	1.2	1.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1
Importer's Currency												
All Manufacturing	1.3	4.5	2.4	4.8	4.8	9.4	1.1	4.0	1.4	0.0	1.4	2.4
Large	3.2	4.2	4.1	4.7	4.2	9.5	0.0	4.5	2.9	0.0	0.0	4.9
Medium	0.0	4.2	2.1	8.9	2.9	10.1	3.6	5.8	0.0	0.0	0.0	0.0
Small	0.0	5.4	0.4	0.0	8.4	7.8	0.0	0.1	0.0	0.0	7.1	0.0
Other Currencies												
All Manufacturing	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Large	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.6
Medium	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Small	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(4) Invoice currency in intra-firm and arm's length trade

- Intra-firm trade (with subsidiaries (plants and sales)): The importer's currency tends to be used in intra-firm trade (with subsidiaries (plants and sales)) from Japan to developed countries/area. The JPY and the US$ are mainly used in intra-firm trade from Japan to Asian countries.
- Arm's length trade (with local agencies and Japanese trade companies): The share of JPY invoicing is the largest in arm's length trade, which is more evident in exports to Asia and other developing countries. The share of US$ invoicing is the second largest, but it is much lower than the corresponding share of JPY invoicing.

Table 6: share of invoice currency by trading partner: Japanese exports to advanced and emerging Countries

	US	Canada	Mexico	Brazil	Central & Latin America	Euro Area	UK	Russia	East European countries	Australia	New Zealand	African countries
Number of respondents	150	44	32	45	35	317	61	31	34	63	34	33
Subsidiaries(plants)												
# of answers	51	6	5	17	4	29	12	1	7	5	3	2
1. JPY	21.6	16.7	0.0	23.5	0.0	24.1	16.7	100.0	28.6	60.0	33.3	50.0
2. USD	78.4	66.7	100.0	64.7	100.0	6.9	16.7	0.0	0.0	20.0	66.7	50.0
3. Euro	0.0	0.0	0.0	11.8	0.0	69.0	25.0	0.0	71.4	0.0	0.0	0.0
4. Importer's currency	---	16.7	0.0	0.0	0.0	---	41.7	0.0	0.0	40.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subsidiaries(sales)												
# of answers	109	17	11	7	8	62	27	6	6	20	7	4
1. JPY	7.3	0.0	18.2	14.3	25.0	24.2	22.2	50.0	50.0	25.0	42.9	50.0
2. USD	85.7	58.8	72.7	85.7	50.0	11.3	11.1	33.3	0.0	25.0	14.3	50.0
3. Euro	0.0	0.0	0.0	0.0	25.0	64.5	18.5	16.7	50.0	5.0	0.0	0.0
4. Importer's currency	---	41.2	9.1	0.0	0.0	---	48.1	0.0	0.0	45.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	0.0
Local agencies (no capital ties)												
# of answers	31	17	8	14	19	46	17	12	14	28	20	15
1. JPY	38.7	52.9	50.0	85.7	63.2	43.7	47.1	83.3	85.7	53.6	65.0	73.3
2. USD	61.3	29.4	50.0	14.3	36.8	6.5	23.5	16.7	7.1	35.7	25.0	26.7
3. Euro	0.0	0.0	0.0	0.0	0.0	47.8	0.0	0.0	7.1	0.0	0.0	0.0
4. Importer's currency	---	17.6	0.0	0.0	0.0	---	29.4	0.0	0.0	10.7	5.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japanese trading companies												
# of answers	25	12	8	11	12	20	8	12	11	14	4	15
1. JPY	56.0	58.3	37.5	54.5	75.0	45.0	62.5	58.3	72.7	78.6	75.0	86.7
2. USD	44.0	16.7	62.5	45.5	25.0	0.0	0.0	41.7	9.1	21.4	25.0	13.3
3. Euro	0.0	8.3	0.0	0.0	0.0	55.0	25.0	0.0	18.2	0.0	0.0	0.0
4. Importer's currency	---	16.7	0.0	0.0	0.0	---	12.5	0.0	0.0	0.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others												
# of answers	30	11	14	10	8	29	15	10	9	14	6	9
1. JPY	43.3	27.3	50.0	80.0	62.5	48.3	40.0	60.0	55.6	71.4	50.0	66.7
2. USD	56.7	54.5	50.0	20.0	37.5	24.1	20.0	30.0	22.2	28.6	33.3	33.3
3. Euro	0.0	0.0	0.0	0.0	0.0	27.6	20.0	10.0	22.2	0.0	0.0	0.0
4. Importer's currency	---	18.2	0.0	0.0	0.0	---	20.0	0.0	0.0	0.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 7: share of invoice currency by trading partner: Japanese exports to Asia

	China	Korea	Taiwan	Hong Kong	Singapore	Thailand	Malaysia	Indonesia	Philippines	Vietnam	India	Mid-East countries
Number of respondents		131	135	96	91	110	82	77	65	56	65	57
Subsidiaries(plants)												
# of answers	93	23	36	10	12	62	33	30	16	17	15	2
1. JPY	51.6	56.5	63.9	20.0	58.3	58.1	51.4	46.7	37.5	29.4	73.3	50.0
2. USD	43.2	30.4	30.6	70.0	41.7	30.6	45.7	43.3	56.3	64.7	26.6	50.0
3. Euro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Importer's currency	3.2	13.0	5.6	10.0	0.0	11.3	2.9	10.0	6.3	0.0	6.7	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subsidiaries(sales)												
# of answers	75	37	44	33	48	28	14	14	9	9	10	9
1. JPY	62.7	64.9	52.3	52.1	37.5	57.1	57.1	35.7	44.4	77.8	60.0	33.3
2. USD	57.3	59.7	40.9	60.4	54.2	35.7	42.9	57.1	55.6	22.2	30.0	66.7
3. Euro	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0
4. Importer's currency	0.0	5.4	6.8	5.7	8.3	10.7	0.0	7.1	0.0	0.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Local agencies (no capital ties)												
# of answers	41	63	65	33	34	31	32	23	26	20	21	25
1. JPY	68.3	73.0	66.2	60.6	85.3	87.1	68.8	69.6	76.9	75.0	71.4	68.0
2. USD	29.3	23.8	32.3	39.4	11.8	12.9	31.3	30.4	23.1	25.0	28.6	32.0
3. Euro	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Importer's currency	2.4	1.6	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Japanese trading companies												
# of answers	47	28	29	10	16	21	14	23	16	19	20	26
1. JPY	76.6	85.7	79.3	70.0	68.8	76.2	71.4	82.6	87.5	78.9	80.0	69.4
2. USD	21.3	17.9	20.7	20.0	25.0	23.8	28.6	8.7	12.5	21.1	10.0	30.8
3. Euro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
4. Importer's currency	2.1	0.0	0.0	10.0	6.3	0.0	0.0	8.7	0.0	0.0	0.0	0.0
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others												
# of answers	39	45	33	20	18	27	24	21	19	18	22	16
1. JPY	56.4	68.9	60.6	45.0	88.9	70.4	62.5	71.4	68.4	72.2	86.4	37.5
2. USD	43.6	28.9	39.4	50.0	11.1	29.6	37.5	28.6	31.6	27.8	13.6	37.5
3. Euro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
4. Importer's currency	0.0	2.2	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
5. Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Summery of the questionnaire survey

- (1) The invoicing (settlement) currency choice depends on whether it is an intra-firm trade or an arms-length trade. While JPY invoicing (settlement) tends to be chosen in arms-length trades, there is a strong tendency that invoicing in the importer's currency is used in intra-firm trades. In exports to Asian subsidiaries, US$ invoicing (settlement) is used.
- (2) Firm size does matter in the choice of invoice currency. The larger (smaller) the size of the firms, the more likely they are to conduct intra-firm (arms-length, resp.) trades.
- (3) In terms of the number of Japanese firms, using JPY invoicing (settlement) is more prevalent than US dollar invoicing (settlement). However, adjusting for the export value of each firm, the share of US$ invoicing (settlement) is on average larger than that of JPY invoicing (settlement), mainly because Japanese firms with a large volume of exports tend to have a global sales and production network where US$ invoicing (settlement) is dominant.

Conclusion: Future of Local Currency Trade Settlement in Asia (1)

- The European experience of the US$ liquidity shortage during the global financial crisis tells us that economic agents in the EU needs the US$ as a settlement currency for external economic transactions even though they can use the euro for intra-regional economic transactions in the euro zone or in the EU. If Asian financial institutions suffered from the similar damages in their balance sheets that were caused by the subprime mortgage problem, much severer US$ liquidity shortage would happen in Asia where the US$ is, in general, dominantly used for a large part of trade settlements.

Conclusion: Future of Local Currency Trade Settlement in Asia (2)

- It is difficult for Asian economy to escape from the US$ as a key currency monetary system in the global economy.
- However, it is possible to make a regional major currency a key currency in the region ("regional key currency"). The euro is regarded as a regional key currency in European region.
- It is necessary to have a regional key currency instead of the US$ as an international trade settlement currency in Asia from the European experience during the global financial crisis.

Conclusion: Future of Local Currency Trade Settlement in Asia (3)

- The above-mentioned questionnaire survey (Ito, Koibuchi, Sato, and Shimizu (2013)) showed that Japanese firms tend to use the JPY (48%) more than the US$ (42%) for export invoicing (settlement) in Japanese total exportsin terms of the number of firms. In terms of the export amounts, the US$ (54%) is much more used than the JPY (29%).
- Japanese firms typically use an importer's currency as well as the JPY for invoicing (trade settlement) in exports to the developed countries. The shares of the JPY in Japanese firms' exporting to Asian countries are around 60%.

Conclusion: Future of Local Currency Trade Settlement in Asia (4)

- It might be possible to shift their invoice (trade settlement) currency from the US$ to any importer's currency, which include the JPY and other Asian local currencies, for international trade settlements in Asia.
- For the sake, currency hedging instruments are needed for foreign exchange risk managements as well as natural hedging such as marry and netting. It is necessary to develop forward, currency option, and other currency derivatives in foreign exchange markets and to deregulate borrowing in term of foreign currencies in order that exporters should use the market hedging in addition to the natural hedging to manage foreign exchange risks in settlements in importers' currencies.

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