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Industry-specific Exchange Rate Volatility and Intermediate Goods Trade in Asia

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Overview

- This presentation will consist of 6 parts:
- 1. Introduction
  - Motivation
  - Literature review
  - Main findings
- 2. Asian Trade and Exchange Rate: Descriptive Analysis
- 3. Research Methodology
  - Benchmark model
  - Industry-specific Exchange Rate
  - Data and Variables
- 4. Estimation Results
- 5. Robustness Check
- 6. Conclusion

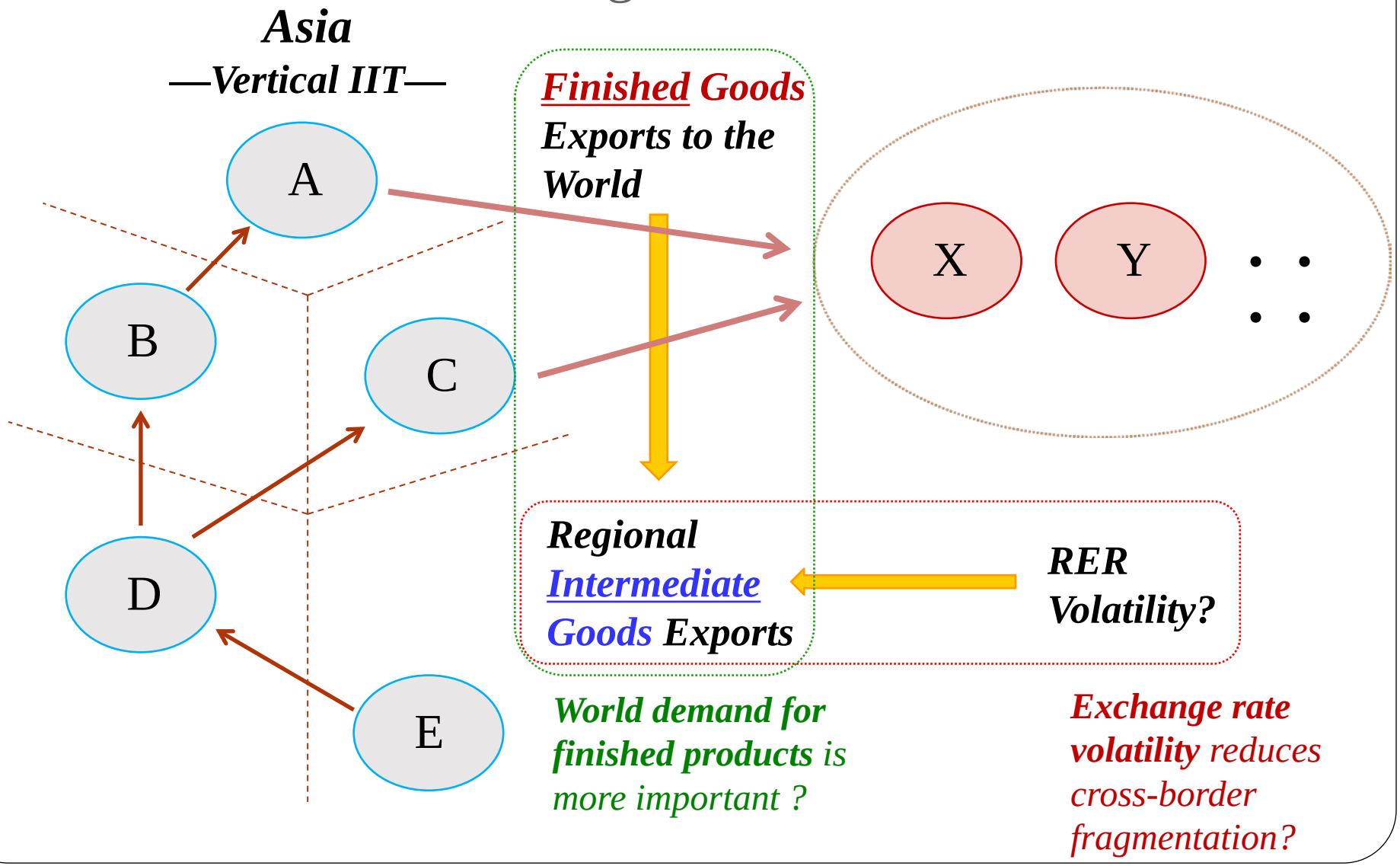
Motivation

- Well-known fact:
  - The Asian region is characterized by intricate production and distribution networks.
    - Vertical intra-industry trade (VIIT)
    - Combinations of intra-firm trade and arms-length transactions
  - The intra-regional exchange rate volatility has increased substantially among Asian countries.

- Question:
  - Whether the volatility of regional exchange rate harms intermediate goods transactions (or VIIT) in Asia ?

Sketch

—Triangular Trade—



Literature Review

- Mixed results, but growing evidence on …
  - A negative relationship between exchange rate volatility and international trade, but the relationship is not robust.(see, e.g., Clark (1973), Clark et al. (2004) and Chit et al. (2010))

- Growing empirical evidence for Asia
  - Using the disaggregated trade data
  - Tends to find evidence supporting the view that the exchange rate volatility harms international trade.
  - See Thorbecke (2008), Hayakawa and Kimura (2009), Tang (2011), etc.

Literature Review (cont'd)

	Hayakawa and Kimura (2009)	Thorbecke (2008)	Tang (2011)
Sample Countries	60 countries Africa, East Asia, Europe, Latin America and Others	9 countries JPN, CHN, KOR, TWN and ASEAN-5	18 Asian countries JPN, CHN, KOR, TWN, HK, ASEAN-9, South Asia-4
Sample Period	1992-2005 (Annual)	1985-2005 (Annual)	1980-2009 (Annual)
Traded Goods	Manufacturing, Machinery, Final goods, Parts	Electric Components	Primary, Intermediate, Equipment, Consumption
RER Volatility Effect	Negative (Significant) for all cases	Negative (Significant)	Negative (Significant) for all cases
Industry-specific Real Exchange Rate	NO	NO	NO
Final Goods Exports to the World	NO	YES	NO
Estimation Method	OLS	Panel DOLS	Panel DOLS

Novelty of This Paper

- More detailed industry-breakdown data is used.
  - Six industries (ISIC rev.3 2digit): general machinery, office machinery, electrical machinery, communication equipment, precision instruments and transport equipment.

- New dataset of Industry-specific Bilateral Real Exchange Rate
  - Never used in the literature.
  - To evaluate whether and how the impact of exchange rate volatility differs across industries.

- Final Processed Exports to the World
  - World demand for Asian exports of finished goods are considered as a possible driving force in the cross-border fragmentation and processing trade.

Main Findings

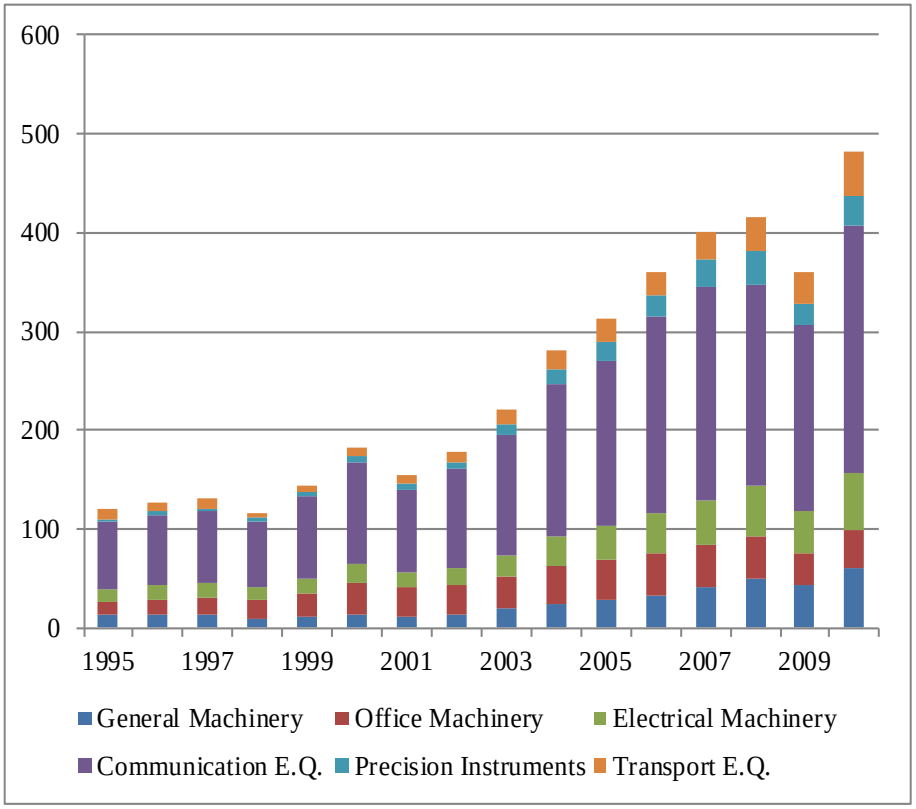
- The exchange rate volatility has negative and significant effect only on two industries, general machinery and electrical machinery.

- The intra-regional intermediate goods transactions are largely driven by final goods exports.

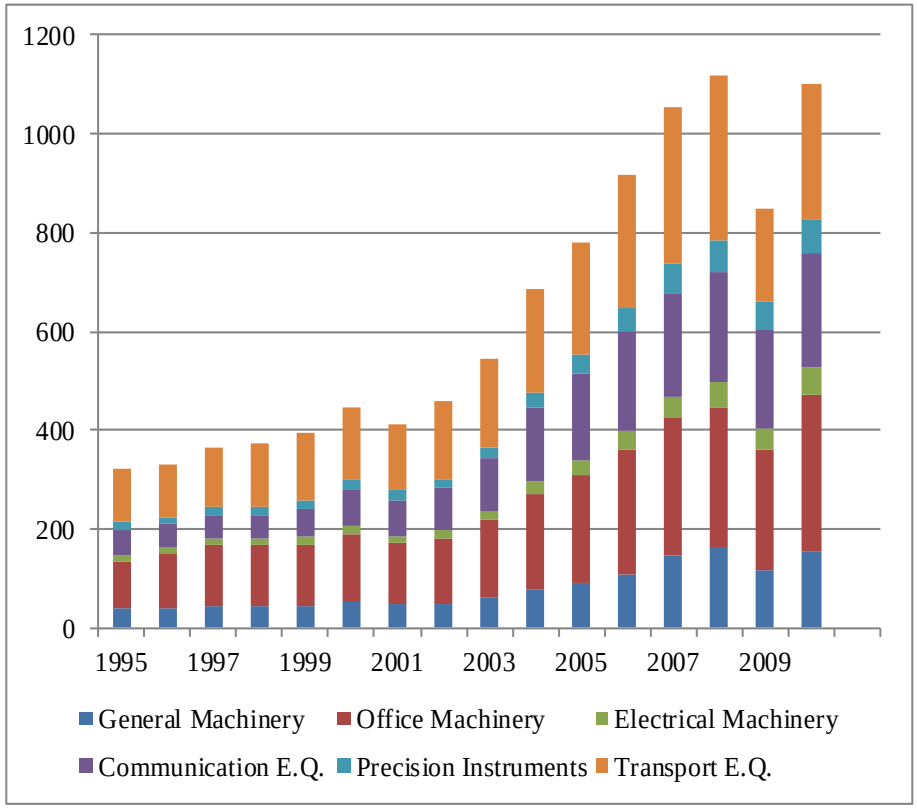
- These findings are supported by various kinds of exchange rate volatility and different sample period.

Descriptive Evidence
—Triangular Trade—

1. Intra-Regional Trade of Intermediate Goods



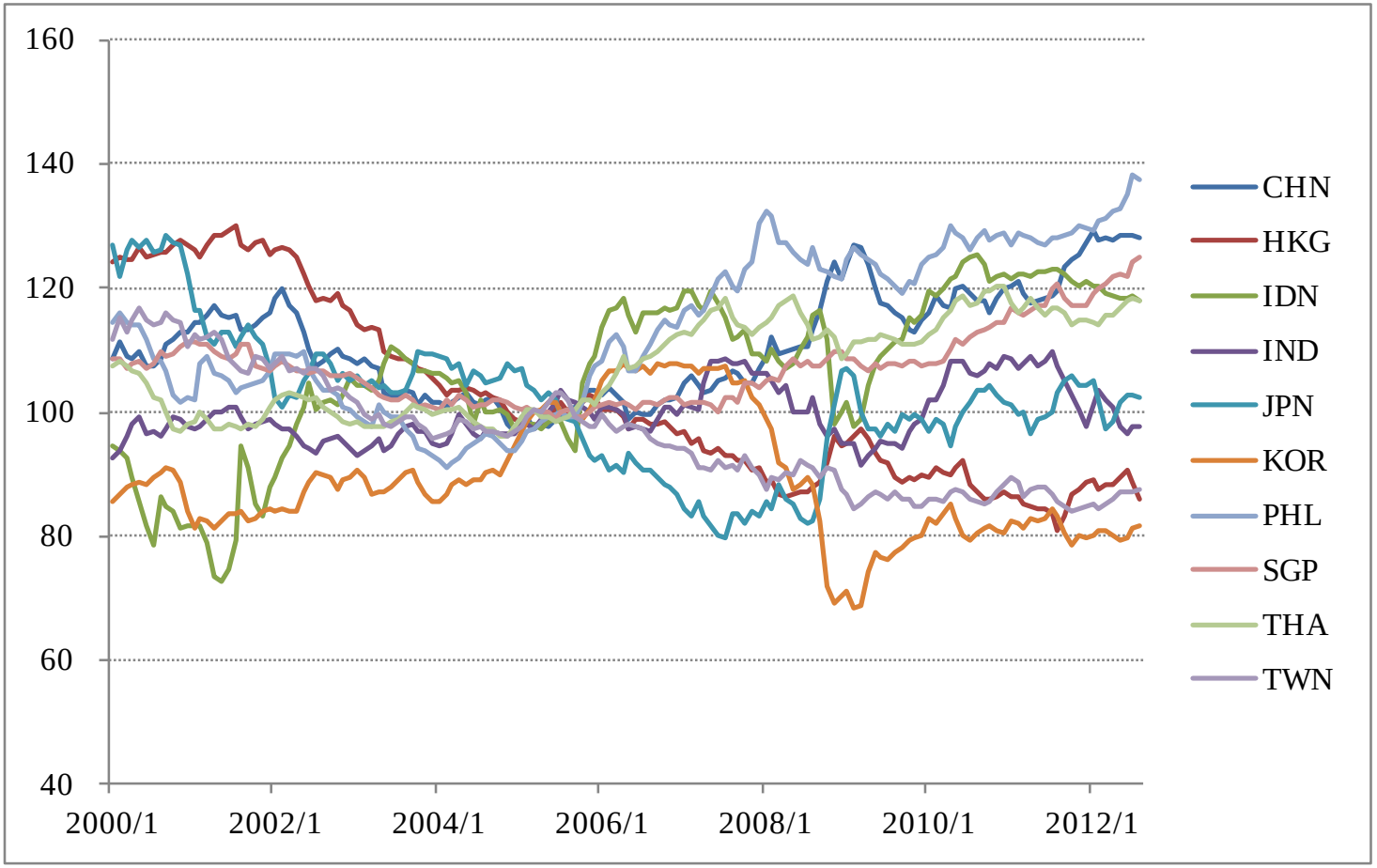
2. Finished Goods Exports to the rest of World



Note: Amounts of intra-regional trade (USD billion) are calculated using the total exports of 29-34 industry in 10 Asian economies (CHN IDN IND JPN KOR MYS PHL SGP THA TWN).
Source: Authors' calculation based on OECD STAN database.

Descriptive Evidence (cont'd)

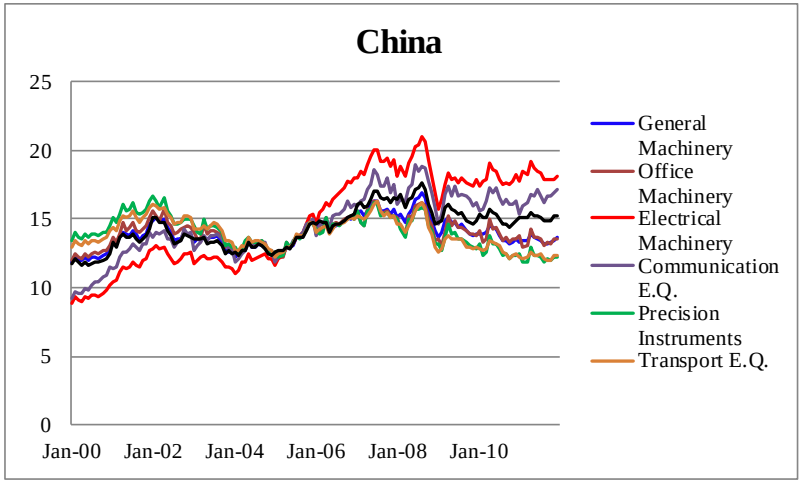
—Real Effective Exchange Rate (All Industries)—

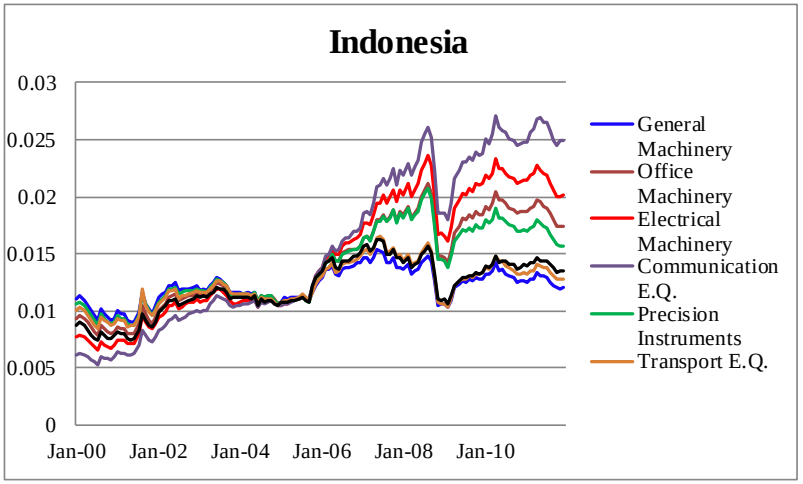


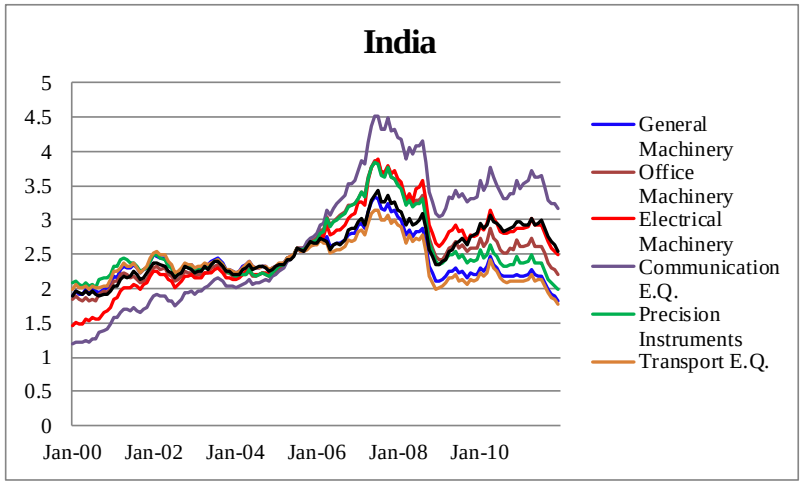
Note: CPI-based Real Effective Exchange Rates (broad indices). Monthly averages (2005=100).
Source: Bank for International Settlements.

Industry-specific RER of the Yen

— Against Asian Currencies: 2000M1-2011M12 —



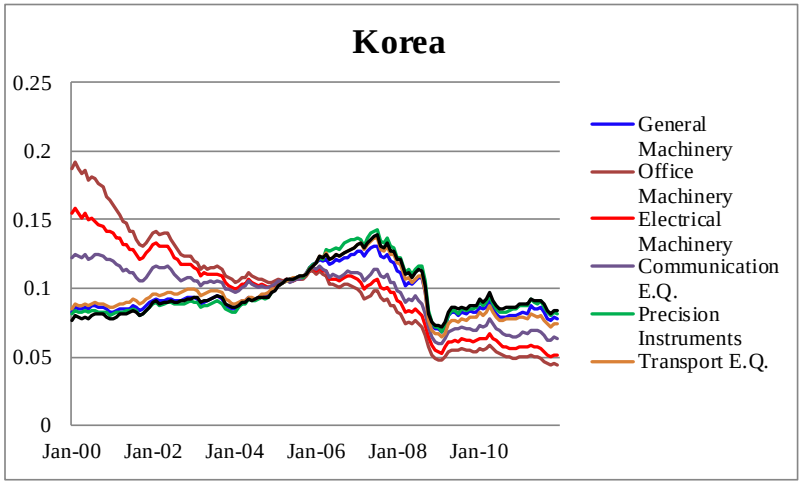


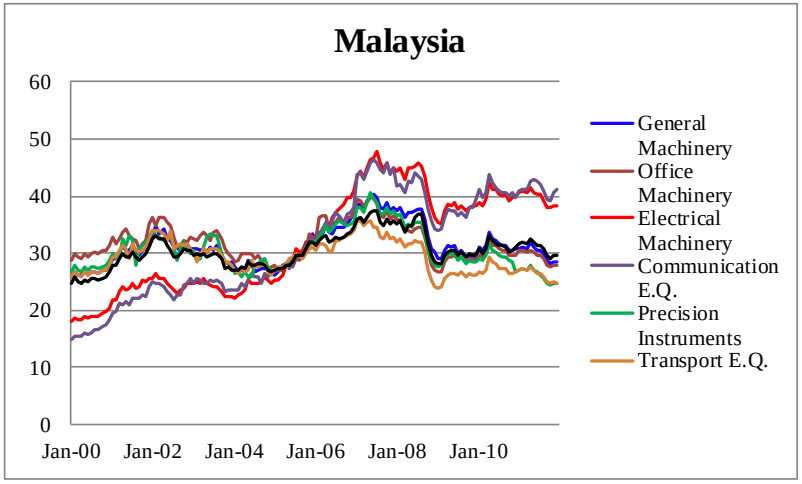


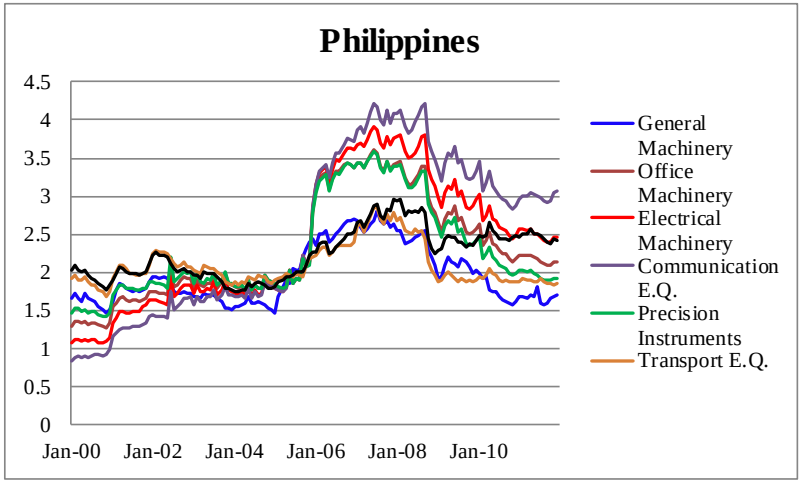
Source: IMF, *International Financial Statistics*, CD-ROM.

Industry-specific RER of the Yen

— Against Asian Currencies: 2000M1-2011M12 —



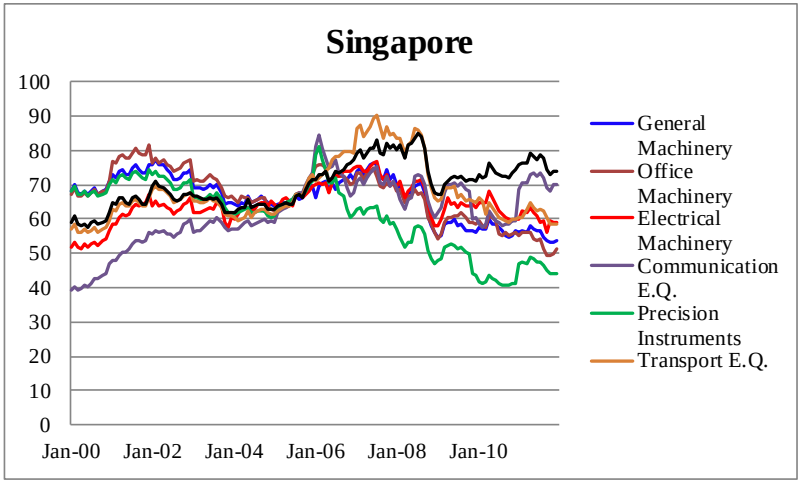


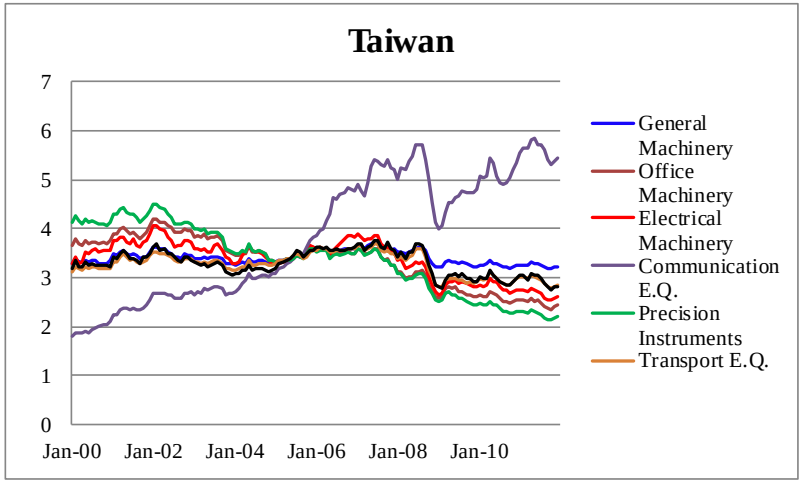


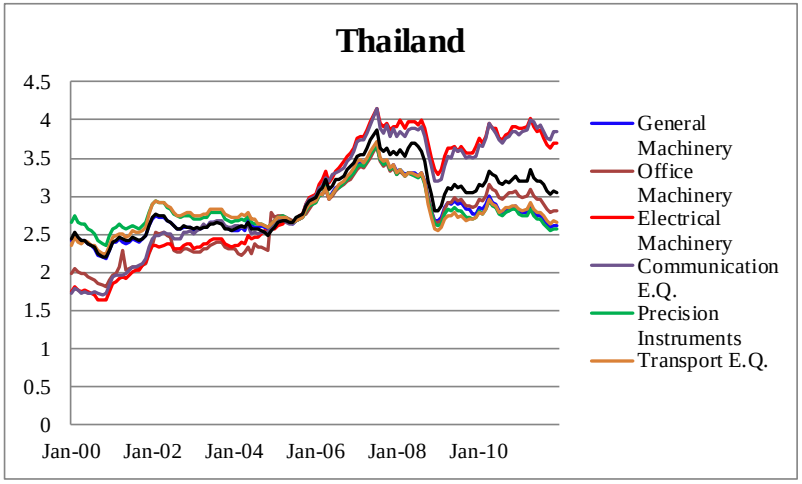
Source: IMF, *International Financial Statistics*, CD-ROM.

Industry-specific RER of the Yen

— Against Asian Currencies: 2000M1-2011M12 —







Source: IMF, *International Financial Statistics*, CD-ROM.

Empirical Methodology

- Gravity Equation

$$\ln X_{ijt}^{k} = \alpha_0 + \alpha_1 VOL_{ijt}^{k} + \alpha_2 \ln FX_{jwt}^{k} + \alpha_5 Dist_{ij} + \alpha_6 Adja_{ij} + \alpha_7 Lang + \alpha_8 s_{it} + \alpha_9 s_{jt} + \mu_{ijt}^{k},$$

- k: industry (ISIC.rev3)
- lnX_{ijt}: log of exports of intermediate goods from i to j.
- VOL_{ijt}: volatility of bilateral real exchange rate between i and j.
- $lnFX_{jwt}$: log of final goods export from j to the rest of the world.
- $lnDist_{ij}$: log of distance between i and j.
- $Adja_{ij}$: dummy of sharing common border between i and j.
- Lang: dummy of common language
- s_i, s_j: multilateral effects (time-varying importer and exporter effect)
- Estimator: OLS

Industry-Specific Bilateral Real Exchange Rate

$$RER_{ij}^{k} = NER_{ij} \times \frac{P_{j}^{k}}{P_{i}^{k}}$$

- k: industry
- NER_{ij}: bilateral nominal exchange rate
- P_i^k: price of k industry of home country
- P_j^k: price of k industry of partner country

Price Data by Industry

ISIC	Industry Classification:	CHN	IDN	IND	JPN	KOR	MYS	PHL	SGP	THA	TWN
29	***General Machinery*** (Machinery and equipment n.e.c.)	▲	○	○	○	○	○	○	●	○	○
30	***Office Machinery*** (Office,accounting and computing machinery)	○	X	X	○	X	○	X	○	○	○
31	***Electrical Machinery*** (Electrical machinery and apparatus n.e.c.)			●		○	○	○	○	○	○
32	***Communication Equipment*** (Communication equipment and apparatus)	○	○	X	○	○	○	X	○	○	○
33	***Precision Instruments*** (Optical instruments)	○		X	○	○	○	X	●	○	
34	***Transport Equipment*** (Motor vehicles, trailers and semi-trailers)	○	○	○	○	○	○	○	○	○	○
35	(Other transport equipment)						○				○
Index		PPI	WPI	WPI	CGPI	PPI	PPI	PPI	PPI	PPI	WPI

Notes:

○ means that the data is available but not exactly corresponds to ISIC.

● means that more detailed data is available, and the industry weight data is also available.

▲ means that more detailed data is available, but the industry weight data is not available.

X means that the data is not available.

Measures of Exchange Rate Volatility

- Two measures:
  - Standard deviation of the first difference of log real exchange rate.
  - GARCH(1,1) model: the conditional variance
    - $\Delta e_{ijt}^{k} = \alpha_0^{\ k} + \alpha_{ijt}^{k} \Delta e_{ijt-1}^{k} + u_{ijt}^{k}$,
    - where $u_{ijt} \sim N(0, h_{ijt})$ and Δe_{ijt}^{k} the first-difference of $\log(RER_{ij}^{k})$.
    - The conditional variance: $h_{ijt}^{k} = \beta_0^{k} + \beta_1^{k} u_{ijt-1}^{k,2} + \beta_2^{k} h_{ijt}^{k}$

- To consider of timing issues, using four time windows:
  - One is current year (one year);
  - Second is current year and previous year (two years);
  - Third is current year and previous two years (three years);
  - The last is previous year, current year and the next year (three years).

Data Description

- Sample countries:
  - Japan and 9 Emerging Asian Economies (China, Korea, India, Indonesia, Malaysia, Philippines, Singapore, Thailand, Taiwan).
- Sample period:
  - Annual: 2003-2010 (Limitation of the data availability.)
- Key Variables:
  - RER volatility: Monthly data is used for calculation.
  - Trade data (both intermediate and final goods): Deflated by sectoral producer price index.

Benchmark Results: Industry-specific Exchange Rate Volatility

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Exchange rate volatility	**-17.07****	6.321	**-26.81****	-3.773	6.261	9.725
(pervious two years and current year)	(5.43)	(13.90)	(8.89)	(8.64)	(8.07)	(14.82)
Final goods exports	0.764***	1.016***	0.737***	1.819***	1.104***	0.360***
	(0.06)	(0.12)	(0.09)	(0.09)	(0.07)	(0.04)
Distance	-0.868***	-0.667***	-0.978***	-0.591***	-0.596***	-0.761***
	(0.06)	(0.14)	(0.07)	(0.06)	(0.09)	(0.09)
Adjacency	-0.291**	0.147	-0.438**	-0.218	-0.205	0.242
	(0.12)	(0.35)	(0.13)	(0.13)	(0.23)	(0.16)
Common Language	-0.135	-0.837***	0.175	-0.277**	0.393**	-0.375**
	(0.13)	(0.20)	(0.11)	(0.11)	(0.17)	(0.12)
ASEAN	0.342**	0.660**	-0.0261	0.195	1.485***	0.571**
	(0.12)	(0.24)	(0.14)	(0.13)	(0.19)	(0.20)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720
R-squared	0.923	0.866	0.912	0.953	0.885	0.771

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

The Aggregate Real Exchange Rate Volatility

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Aggregate real exchange rate: Standard deviation						
Current year (12 months)						
Exchange rate volatility	-2.436	14.75	9.811	1.591	8.307	**26.79****
	(6.26)	(11.57)	(6.78)	(8.00)	(9.53)	(11.88)
Final goods exports	0.773***	1.021***	0.861***	1.807***	1.107***	0.345***
	(0.06)	(0.12)	(0.08)	(0.08)	(0.07)	(0.04)
Previous year and current year (24 months)						
Exchange rate volatility	-2.321	16.61	10.38	-2.789	13.54	**31.08****
	(6.95)	(12.38)	(8.03)	(9.23)	(10.53)	(15.55)
Final goods exports	0.774***	1.017***	0.852***	1.804***	1.142***	0.351***
	(0.06)	(0.12)	(0.08)	(0.08)	(0.07)	(0.04)
Previous two years and current year (36 months)						
Exchange rate volatility	-8.875	7.634	3.302	-10.70	11.46	**29.48***
	(7.09)	(13.05)	(8.43)	(9.32)	(10.74)	(15.67)
Final goods exports	0.771***	1.023***	0.855***	1.810***	1.129***	0.336***
	(0.06)	(0.12)	(0.08)	(0.08)	(0.07)	(0.04)
previous year, current year, next year (36 months)						
Exchange rate volatility	-5.946	18.22	9.299	-0.815	**20.38***	25.14
	(7.30)	(12.97)	(8.42)	(9.29)	(11.44)	(16.89)
Final goods exports	0.773***	1.013***	0.853***	1.805***	1.150***	0.356***
	(0.06)	(0.12)	(0.08)	(0.08)	(0.07)	(0.04)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

Robustness Check

- RER volatility based on different timing windows
- Alternative measurement (S.D. and GARCH)
- Sub-sample period (2003-2008)

RER Volatility Based on Different Timing Windows

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Industry-specific real exchange rate: Standard deviation						
Current year (12 months)						
Exchange rate volatility	**-10.30****	13.68	**-14.64****	3.553	2.909	8.246
	(5.02)	(10.23)	(7.23)	(5.50)	(6.60)	(11.24)
Final goods exports	0.536***	0.953***	0.315**	0.996***	1.031***	0.213***
	(0.05)	(0.09)	(0.11)	(0.09)	(0.08)	(0.06)
Previous year and current year (24 months)						
Exchange rate volatility	**-13.42****	14.12	**-23.19****	-3.353	3.237	12.34
	(5.09)	(12.28)	(8.40)	(7.56)	(7.39)	(13.64)
Final goods exports	0.764***	1.002***	0.725***	1.818***	1.103***	0.366***
	(0.06)	(0.12)	(0.09)	(0.09)	(0.07)	(0.04)
previous year, current year, next year (36 months)						
Exchange rate volatility	**-18.30*****	16.23	**-26.67****	-1.618	8.052	8.066
	(5.26)	(13.92)	(9.67)	(8.87)	(8.62)	(15.19)
Final goods exports	0.752***	0.993***	0.724***	1.811***	1.103***	0.369***
	(0.06)	(0.12)	(0.09)	(0.09)	(0.07)	(0.04)
	(0.06)	(0.12)	(0.08)	(0.08)	(0.07)	(0.04)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

RER Volatility by GARCH

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Industry-specific real exchange rate: GARCH(1,1) Model						
Current year (12 months)						
Exchange rate volatility	**-17.55*** **	5.172	**-21.18** **	0.311	-2.517	7.373
	(5.14)	(7.83)	(7.13)	(4.97)	(6.27)	(11.91)
Final goods exports	0.737***	1.025***	0.734***	1.804***	1.098***	0.368***
	(0.06)	(0.12)	(0.09)	(0.08)	(0.07)	(0.04)
Previous year and current year (24 months)						
Exchange rate volatility	**-20.42*** **	0.502	**-24.82** **	-0.0655	-0.390	10.25
	(6.01)	(9.85)	(7.72)	(5.78)	(7.21)	(13.70)
Final goods exports	0.729***	1.031***	0.739***	1.805***	1.100***	0.365***
	(0.06)	(0.12)	(0.09)	(0.08)	(0.07)	(0.04)
Previous two years and current year (36 months)						
Exchange rate volatility	**-22.73*** **	-2.515	**-28.73*** **	0.862	1.983	16.24
	(6.85)	(11.48)	(8.09)	(6.08)	(8.36)	(15.13)
Final goods exports	0.710***	1.035***	0.741***	1.803***	1.101***	0.364***
	(0.06)	(0.12)	(0.09)	(0.08)	(0.07)	(0.04)
previous year, current year, next year (36 months)						
Exchange rate volatility	**-27.80*** **	5.450	**-32.66*** **	-0.448	4.596	4.832
	(5.95)	(11.08)	(9.74)	(7.07)	(9.34)	(17.20)
Final goods exports	0.720***	1.023***	0.686***	1.806***	1.103***	0.370***
	(0.06)	(0.12)	(0.10)	(0.08)	(0.07)	(0.04)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

Robustness Check by Sub-period

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Volatility Based on Standard deviation						
Current year (12 months)						
Exchange rate volatility	**-11.49***	6.950	**-17.80****	1.596	-0.843	4.603
	(5.92)	(13.11)	(7.86)	(6.42)	(8.39)	(13.14)
Final goods exports	0.761***	1.191***	0.425***	0.393***	0.979***	0.419***
	(0.06)	(0.12)	(0.10)	(0.04)	(0.07)	(0.04)
Previous year and current year (24 months)						
Exchange rate volatility	-11.63	13.64	**-24.96****	-4.911	2.275	14.35
	(7.17)	(16.55)	(9.49)	(8.42)	(9.86)	(17.73)
Final goods exports	0.758***	1.173***	0.359***	0.393***	0.976***	0.421***
	(0.06)	(0.12)	(0.11)	(0.04)	(0.07)	(0.04)
Previous two years and current year (36 months)						
Exchange rate volatility	-12.93	-4.905	**-25.41****	-4.955	8.067	14.31
	(7.93)	(18.49)	(10.10)	(9.58)	(11.19)	(19.84)
Final goods exports	0.759***	1.226***	0.385***	0.393***	0.972***	0.424***
	(0.06)	(0.12)	(0.10)	(0.04)	(0.07)	(0.04)
previous year, current year, next year (36 months)						
Exchange rate volatility	**-17.01****	11.86	**-25.94****	-3.551	8.317	9.053
	(6.52)	(17.87)	(10.65)	(10.20)	(10.86)	(17.95)
Final goods exports	0.746***	1.187***	0.402***	0.392***	0.980***	0.421***
	(0.06)	(0.12)	(0.10)	(0.04)	(0.07)	(0.04)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720

Note: Sample period is 2003-2008.
Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

Robustness check by sub-period

Variables	*Industries*					
	General Machinery	Office Machinery	Electrical Machinery	Communication E.Q.	Precision Instruments	Transport E.Q.
Volatility Based on GARCH(1,1) Model						
Current year (12 months)						
Exchange rate volatility	**-16.86****	15.51*	**-16.26****	5.518	-3.182	32.73**
	(8.51)	(8.95)	(7.56)	(4.85)	(8.39)	(16.17)
Final goods exports	0.730***	1.200***	0.435***	0.401***	0.979***	0.423***
	(0.06)	(0.11)	(0.10)	(0.04)	(0.07)	(0.04)
Previous year and current year (24 months)						
Exchange rate volatility	**-18.85****	8.263	**-20.79****	5.971	-4.376	29.77*
	(8.77)	(11.00)	(8.01)	(5.72)	(9.00)	(16.40)
Final goods exports	0.725***	1.205***	0.429***	0.414***	0.979***	0.425***
	(0.06)	(0.11)	(0.10)	(0.04)	(0.07)	(0.04)
Previous two years and current year (36 months)						
Exchange rate volatility	**-20.56****	0.431	**-25.21****	5.901	-3.892	27.03*
	(8.88)	(12.66)	(8.09)	(6.14)	(9.84)	(16.26)
Final goods exports	0.708***	1.213***	0.425***	0.416***	0.980***	0.422***
	(0.06)	(0.11)	(0.09)	(0.05)	(0.07)	(0.04)
previous year, current year, next year (36 months)						
Exchange rate volatility	**-24.94****	9.885	**-29.56****	8.186	1.513	13.98
	(7.75)	(13.03)	(10.42)	(7.26)	(11.92)	(20.92)
Final goods exports	0.718***	1.202***	0.385***	0.409***	0.979***	0.420***
	(0.06)	(0.11)	(0.11)	(0.04)	(0.07)	(0.04)
Time-varying exporter effects	yes	yes	yes	yes	yes	yes
Time-varying importer effects	yes	yes	yes	yes	yes	yes
Observations	720	720	720	720	720	720

Note: Sample period is 2003-2008.
Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level.

Conclusion

- The industry-specific exchange rate enables us to capture different impacts across sectors.

- Different RER effect across industries:
  - Significantly negative only in General Machinery and Electrical Machinery, this effect tends to be more significant in long run term.
  - Other Electronics and Transport Equipment do not show any significant effect of RER.
    - Maybe because of the degree of product differentiation and difference in trade structures across industries

- World demand for final goods:
  - Positive and significant impacts on intermediate goods trade are found in all industries.
    - Global financial crisis likely affected the intra-regional transactions of intermediate input goods.

Appendix

A1. Price data by industry

ISIC	industry classification	CHN	IDN	IND	JPN	KOR	MYS	PHL	SGP	THA	TWN
15	food and beverage	○	○	●	○	○	○	○	○	○	▲
16	tobabcoo	○		○	○	○	○	○	○		○
17	Textiles and textiles products	▲	○	○	○	○	○	○	○	○	○
18	wearing appeal,fur	○	○	X	●	○	○	○	●	○	○
19	leather,lerther product,footwear	○		○	●	○	○	○	○	○	○
20	Wood products(excl. furniture)	○	○	○	○	○	○	○	○	○	○
21	Paper and paper products	○	○	○	○	○	○	○	○	○	○
22	Printing and publishing	○		○	●	○	○	○	X	○	○
23	Coke,refined petroleum products,nuclear fuel	○	○	X	○	○	○	○	○	○	○
24	Chemicals and chemical products	▲	○	○	○	○	○	○	○	○	○
25	Rubber and plastics products	▲	○	○	○	○	○	▲	●	○	○
26	Non-metallic mineral products	○	○	○	●	○	○	○	○	○	○
27	Basic metals	▲	○	○	●	○	○	○	●	○	○
28	Fabricated metal products	○	X	X	X	X	○	○	X	○	○
29	Machinery and equipment n.e.c.	▲	○	○	○	○	○	○	●	○	○
30	office,accounting and computing machinery	○	X	X	○	X	○	X	○	○	○
31	electrical machinery and apparatus n.e.c.		○	●		○	○	○	○	○	○
32	communication equipment and apparatus	○		X	○	○	○	X	○	○	○
33	optical instruments	○		X	○	○	○	X	●	○	
34	motor vehicles, trailers and semi-trailers	○	○	○	○	○	○	○	○	○	○
35	other transport equipment						○				○
Index		PPI	WPI	WPI	CGPI	PPI	PPI	PPI	PPI	PPI	WPI

○ means that the data is available but not exactly corresponds to ISIC.

● means that more detailed data is available, and the industry weight data is also available.

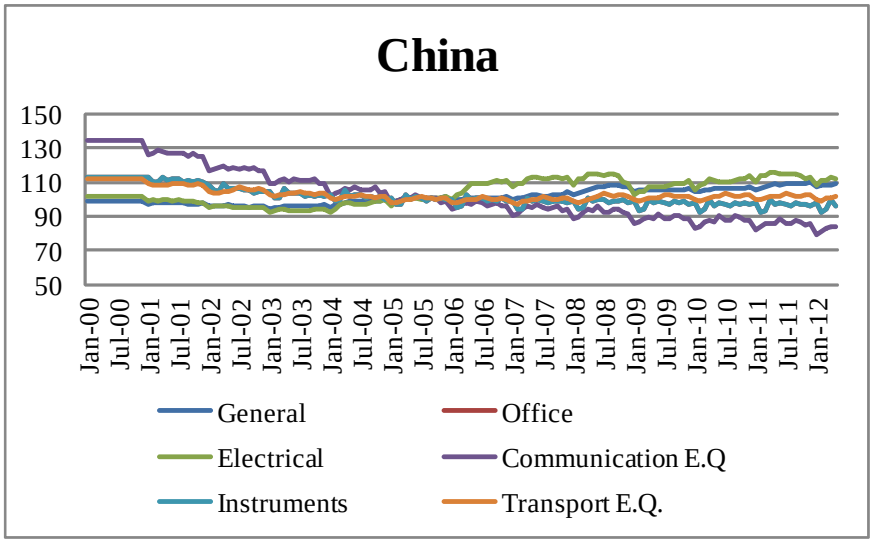
▲ means that more detailed data is available, but the industry weight data is not available.

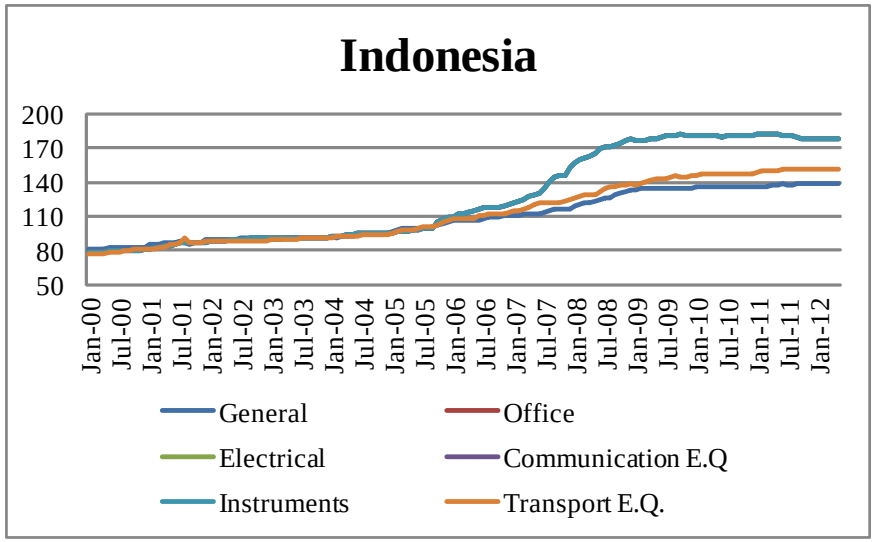
X means that the data is not available.

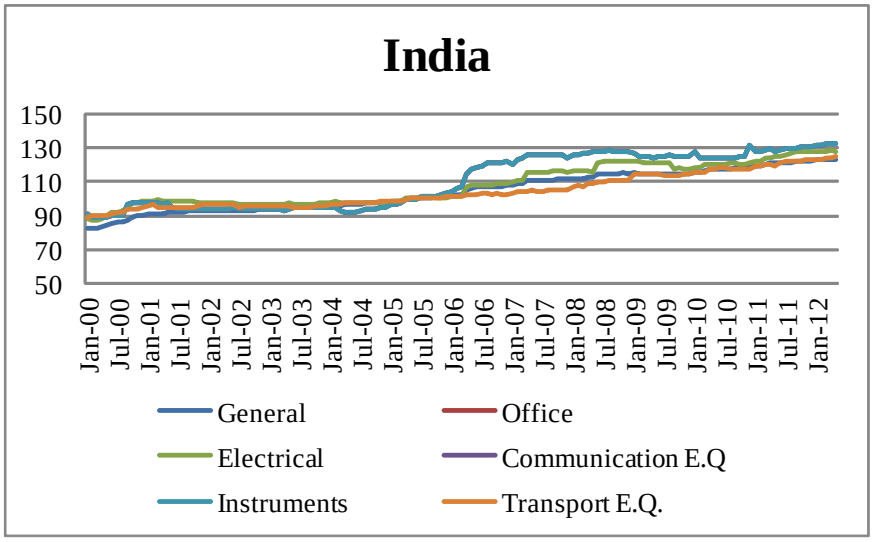
A2. Data source

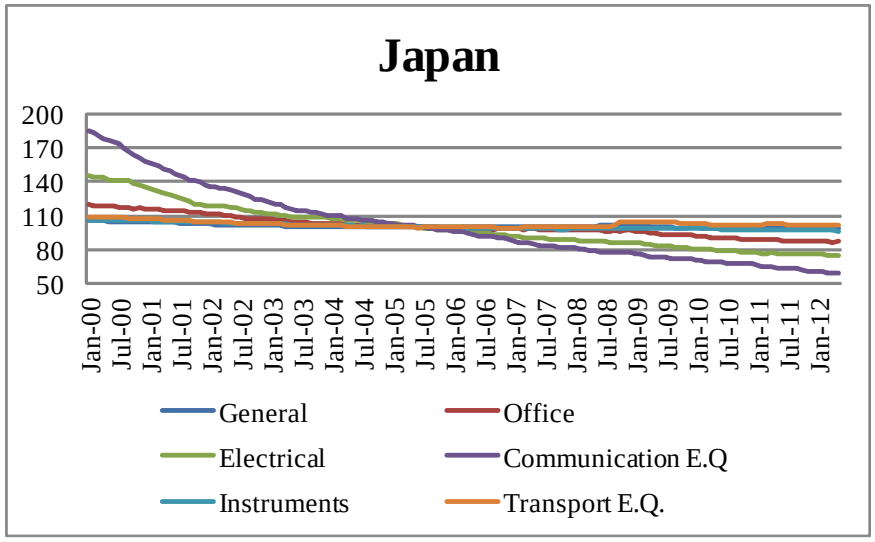
Country	Datasource	Link
China	1. CEIC 2. *China Statistical Yearbook*	
India	Office of Economic Adviser to Government of India	http://eaindustry.nic.in/
Indonesia	1. BPS, *Indikator Ekonomi* (*Economic Indicators*) 2. CEIC	
Japan	Bank of Japan	http://www.boj.or.jp/
Korea	The Bank of Korea	http://eng.bok.or.kr/eng/engMain.action
Malaysia	CEIC	
Philippines	1. Republic of Philippines National Statistics Office 2. *Philippine Yearbook*	http://www.census.gov.ph
Singapore	CEIC Statistics Singapore	http://www.singstat.gov.sg/
Thailand	CEIC	
Taiwan	CEIC(include output data)	
GDP Data	World Bank (WDI)	http://data.worldbank.org/data-catalog
Trade Data	OECD STAN Database	http://stats.oecd.org/

—Sectoral Inflation in Asia (1)—

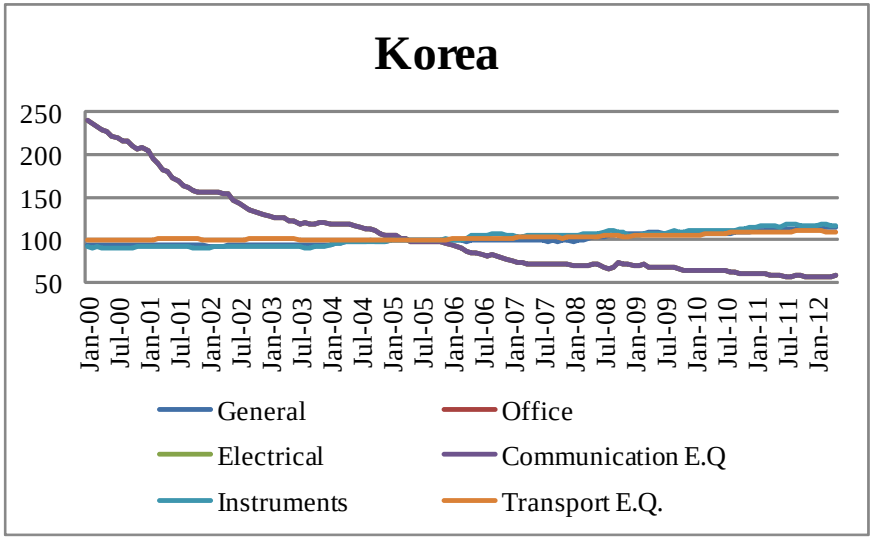


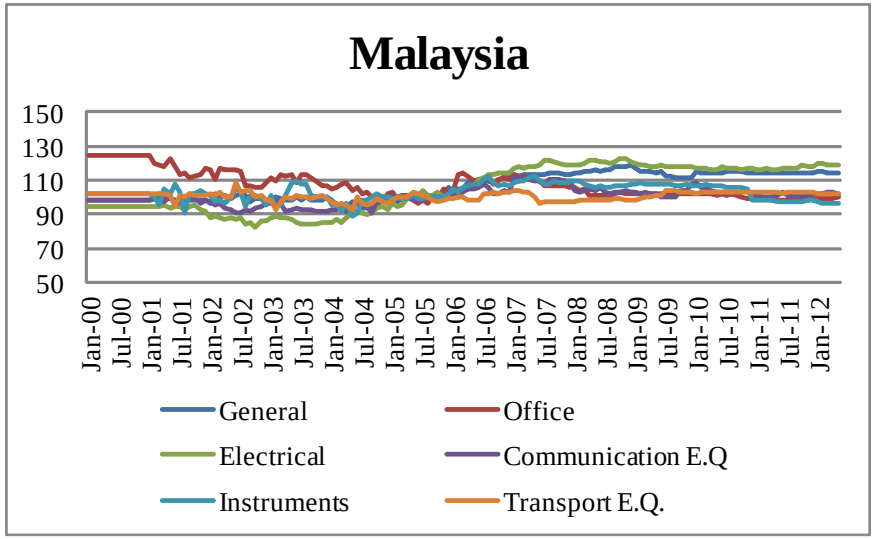


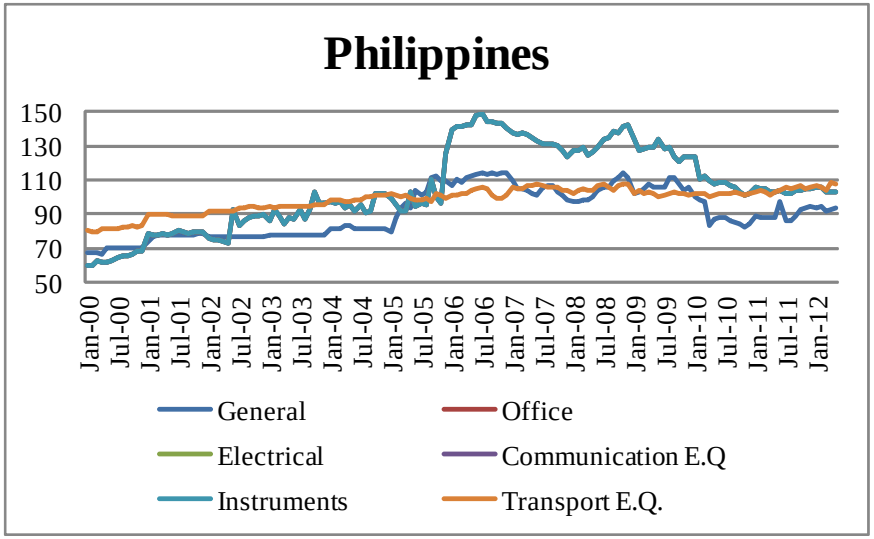


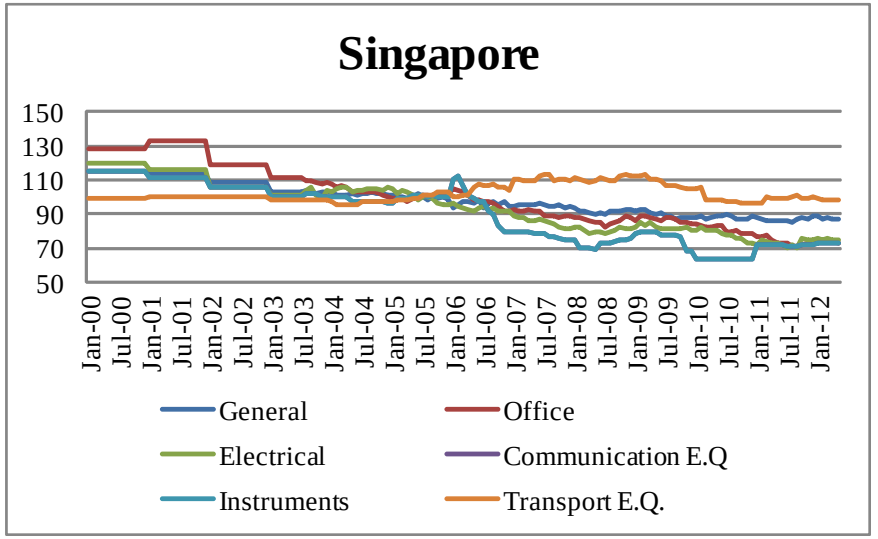


—Sectoral Inflation in Asia (2)—

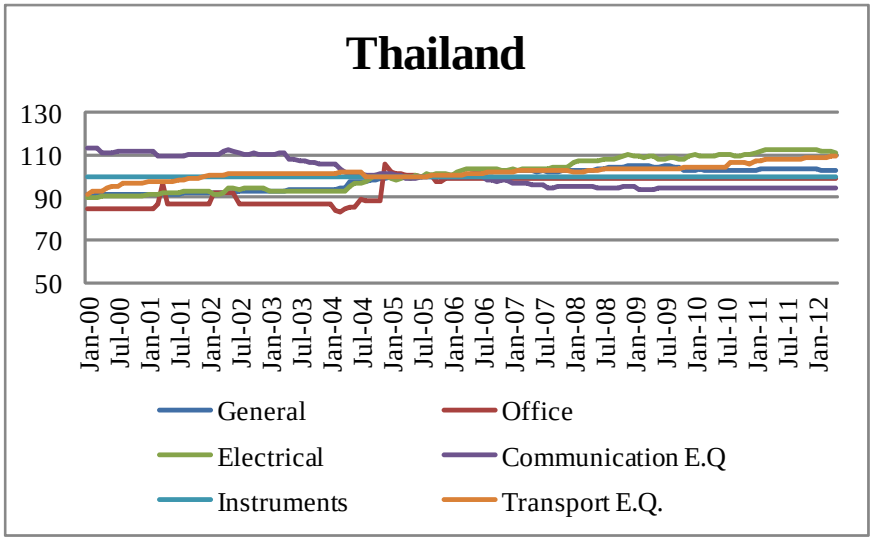


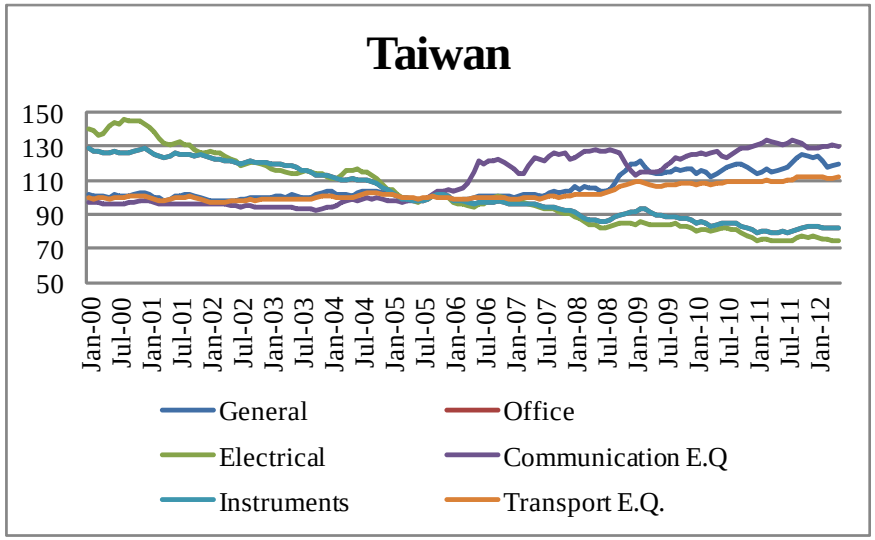






—Sectoral Inflation in Asia (3)—





Details of the industry classification

Machinery and Equipment n.e.c.

- 2911 engines and turbines, except aircraft, vehicle and cycle engines
- 2912 pumps, compressors, taps and valves
- 2913 bearings, gears, gearing and driving elements
- 2914 ovens, furnaces and furnace burners
- 2915 lifting and handling equipment
- 2919 other general purpose machinery
- 2921 agricultural and forestry machinery
- 2922 machine-tools
- 2923 machinery for metallurgy
- 2924 machinery for mining, quarrying and construction
- 2925 machinery for food, beverage and tobacco processing
- 2926 machinery for textile, apparel and leather production
- 2927 weapons and ammunition
- 2929 other special purpose machinery
- 2930 domestic appliances n.e.c.

Office, Accounting and Computing Machinery

- 2000 office, accounting and computing machinery

Electrical Machinery and Apparatus n.e.c.

- 3110 electric motors, generators and transformers
- 3120 electricity distribution and control apparatus
- 3130 insulated wire and cable
- 3140 accumulators, primary cells and primary batteries
- 3150 electric lamps and lighting equipment
- 3190 other electrical equipment n.e.c.

Communication Equipment and Apparatus

- 3210 electronic valves and tubes and other electronic components
- 3220 television and radio transmitters and apparatus for line telephony and line telegraphy
- 3230 television and radio receivers, sound or video recording or reproducing apparatus, and associated goods

Medical, Precision and Optical Instruments

- 3311 medical and surgical equipment and orthopaedic appliances
- 3312 instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
- 3313 industrial process control equipment
- 3320 optical instruments and photographic equipment
- 3330 watches and clocks

Motor Vehicles, Trailers and Semi-trailers

- 3410 motor vehicles
- 3420 bodies (coachwork) for motor vehicles; trailers and semi-trailers