Exchange Rate Volatility, Exports and Global Value Chains

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Outline

- Introduction
- Variables and Data
- Empirical Strategy
- Results
- Conclusion

Motivation

- A traditional criticism of flexible exchange rate regimes: exchange rate volatility reduce international trade.
  - Inducing uncertainty into international transactions
  - Reducing risk-averse firm's incentives to trade

- Does exchange rate volatility harm international trade?
  - Earlier studies show the impact is theoretically and empirically ambiguous.
  - Recent studies show the negative impact of the volatility on trade but the impact is small.(See survey in Auboin and Ruta, 2012)

- Growing GVCs
  - Become a dominant feature of world trade
  - Feenstra and Jensen (2009), Hummels, Ishii and Yi (2001).
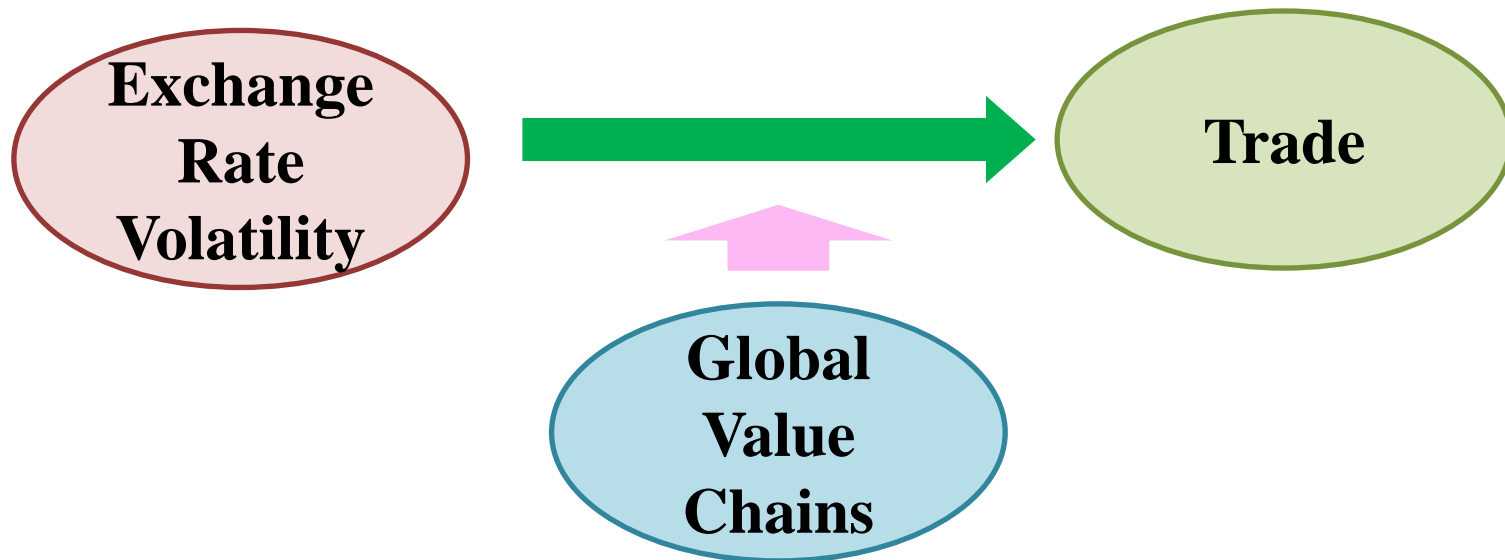
Motivation
—Emergence of Global Value Chains—

Manufacturing
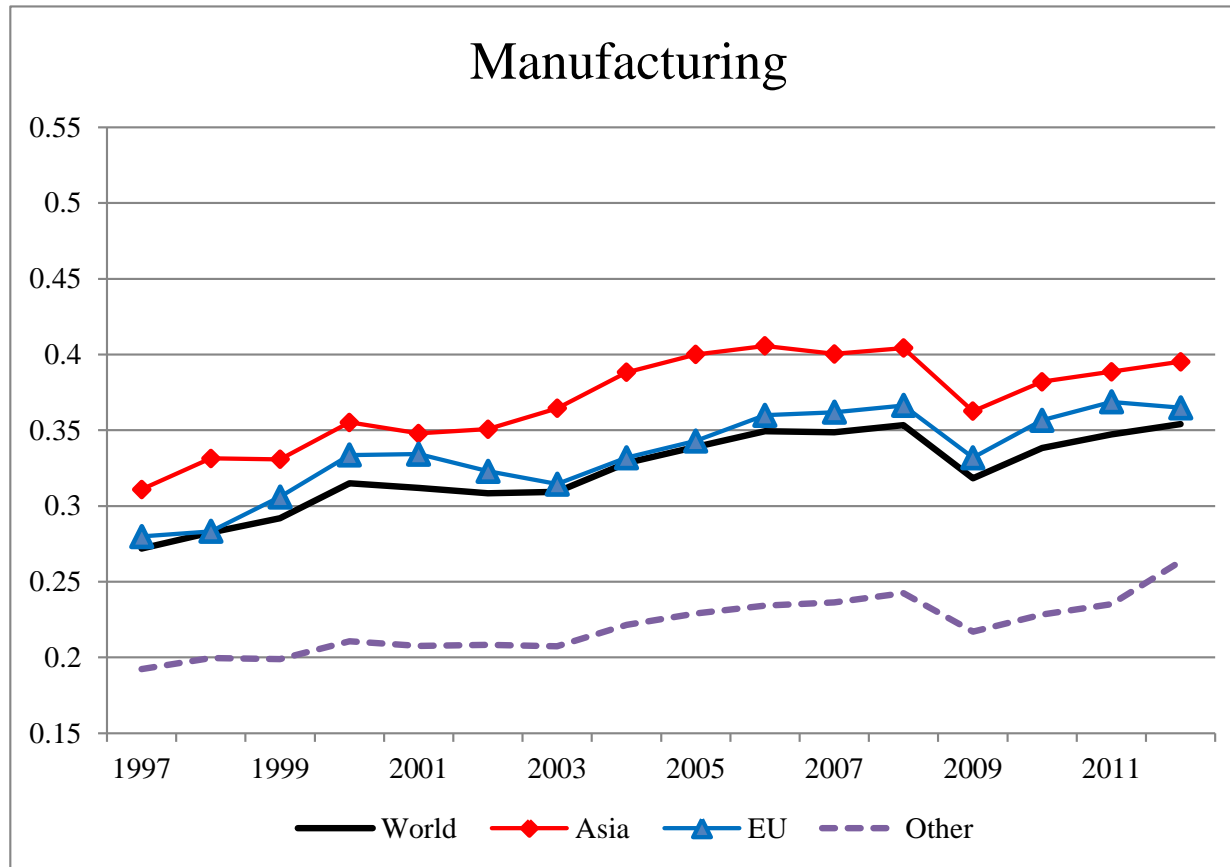
Note: Authors' calculation. The measure of participation to GVCs is following *Koopman* et al. (2010).

Research Question
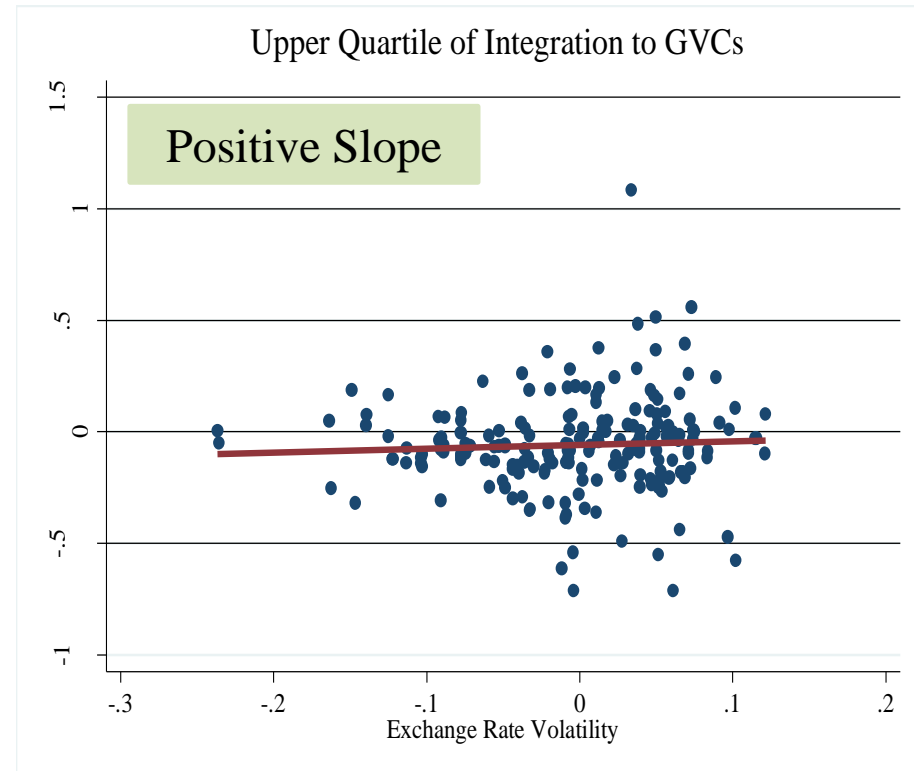

Research Question：
Whether and how the development of Global Value Chains (GVCs) affect trade effect of exchange rate volatility?

Motivation

―Exchange Rate Volatility and Exports in 2012―
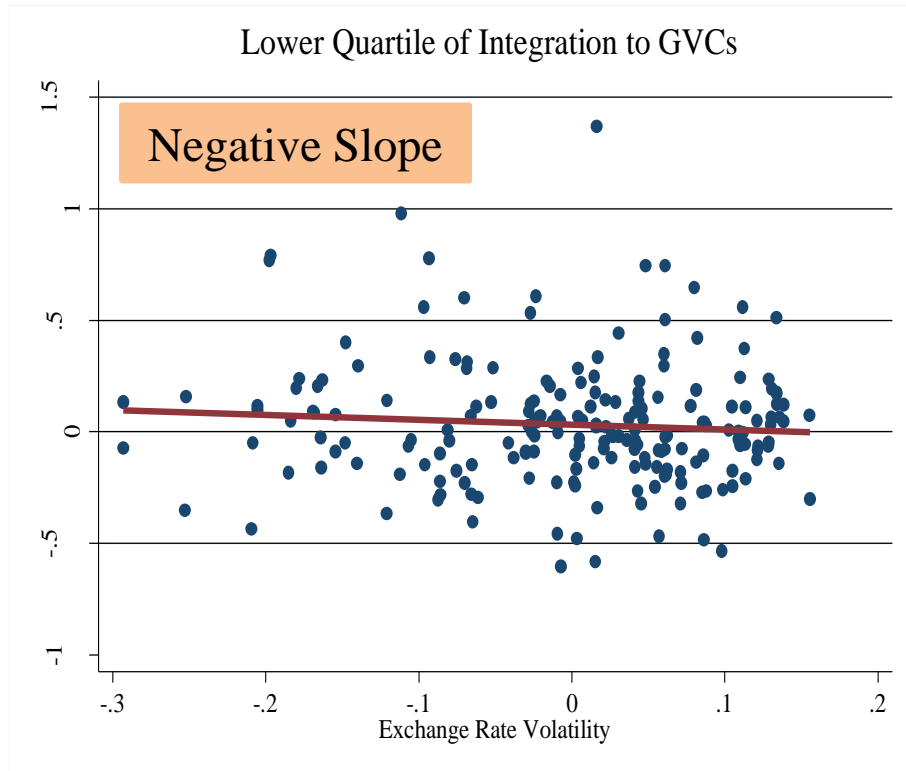
Note: For each quartile, the residuals of a real exports regression on a set of variables are regressed on the residuals of an exchange rate volatility regression on the same variables using data in 2012. Control variables are real GDP of importer and exporter, real bilateral exchange rate.
Year effect and importer-exporter-sector effect are also included.

How do GVCs matter?

- Positive effect:
  - Offsetting effects of exchange rate changes (Ahmed *et al*., 2015)
    - Deeper participation in GVCs and greater foreign contents ← Less affected by exchange rate volatility.

  - Stability of production network (Obashi, 2010)
    - Given GVC participation, it is not easy for firms to switch foreign suppliers or to find new buyers in response to exchange rate changes.

How do GVCs matter?

- Negative effect:
  - Trade costs, due to exchange rate uncertainty, may be more relevant in supply chain trade.
    - Hayakawa and Kimura (2009), Tang (2011) ➔ Adverse effect of exchanger rate volatility is more likely to occur in intermediate goods trade.

- Positive or negative GVC effect?
  - Depends on which effect is more dominant.

Related Literature

- Production sharing and transmission of exchange rate changes

	Amiti et al. (2014)	Ahmed et al.(2015)	Sato and Zhang (2016)
Approach	Model and Empirical	Static Panel model	Dynamic Panel model
Data	firm-product level Data	OECD-WTO TiVA database	YNU-GIO table
Sample Countries	Belgian	46	29
Sample Period	2000-2008	1996-2012	1997-2012
Trade	Exports	manufacturing exports (Country-sector)	manufactoring exports (Bilateral-sector)
Exchange Rate	Exchange Rate Pass-though	Exchange Rate Elasticity (Real Effective Exchange Rate)	Exchange Rate Volatility (Nominal Exchange Rate)
Production Sharing	import share	Participation to GVCs (Koopman et al. ,2010)	Participation to GVCs (Koopman et al., 2010) (Wang, Wei and Zhu, 2013)
Main Results	High import shares and high market shares have low exchange rate pass-through.	The rise in GVC participation reduces the REER elasticity of exports by 22 percent, on average.	GVC participation reduce the negative impact of exchange rate volatility on manufacturing exports.

What we did ?

- Re-examining trade effect of exchange rate volatility using recent bilateral and sectoral data.
  - Sample period: 1997-2012;
  - Coverage: 29 country;18 manufacturing sectors.
  - Trade data: YNU-IO table

- Bilateral nominal exchange rate volatility
  ① Policy Instrument that policy makers can directly affect.
  ② If using aggregated price data (e.g. CPI, WPI), we may have "aggregation bias" (see Byrne et al., 2008).
    - Sectoral price data is not available for all sample countries.

What we did ?

- Building two measures of bilateral production sharing to address the role of GVCs on the trade effect of the volatility
  – First: Koopman et al. (2010)
  – Second: Wang, Wei and Zhu(2013)

- Novelty
  – Directly investigate the role of GVCs on trade effect of exchange rate volatility.
  – Using measures of bilateral and sectoral production sharing.

Main findings

- Significantly negative effect of exchange rate volatility on exports.

  – Robust but small: One S.D. of the volatility reduce exports by around 0.3%

- GVC participation reduces negative impact of exchange rate volatility on exports.

  – by around 76%, on average.

Mapping Global Value Chains
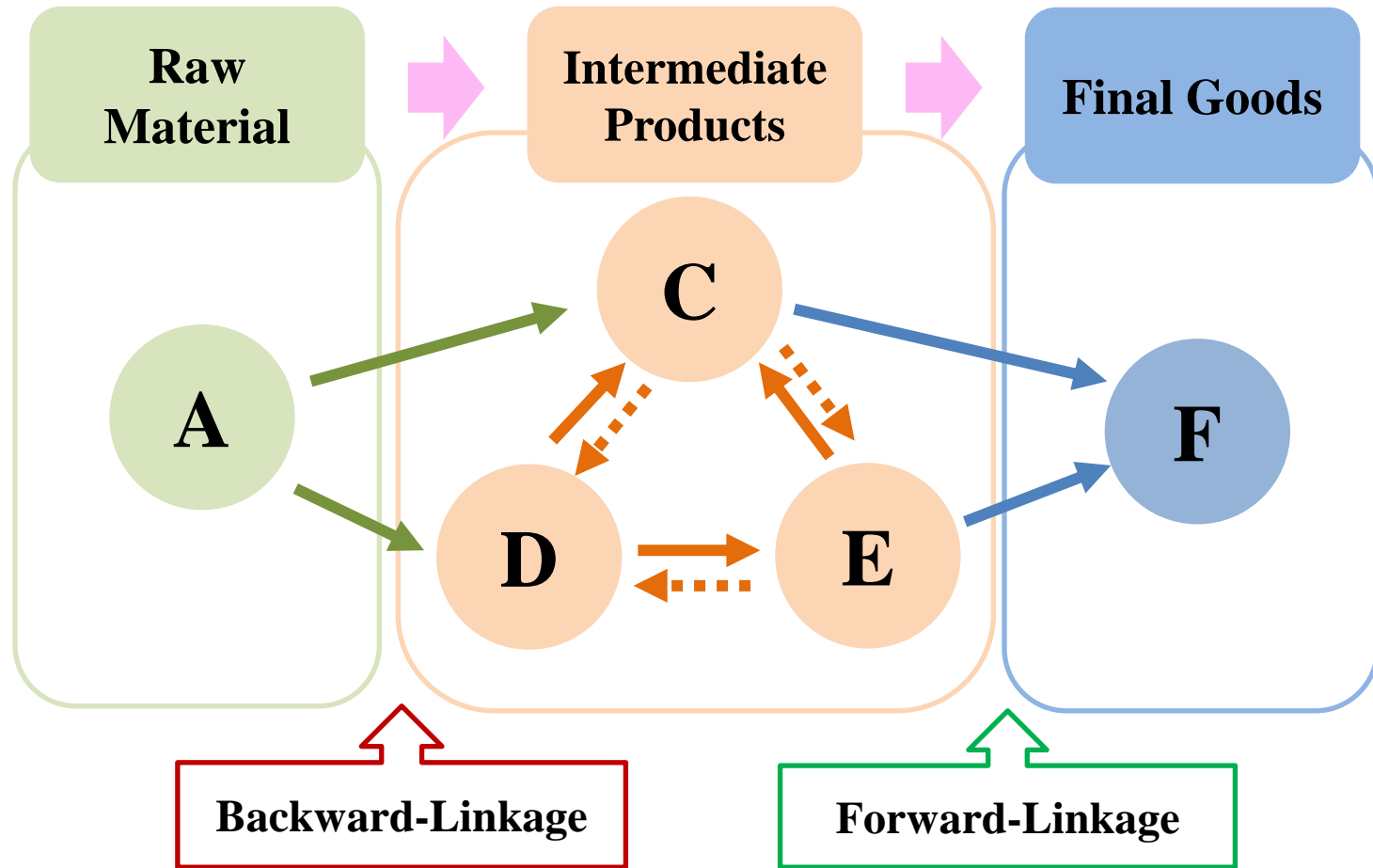
Mapping Global Value Chains
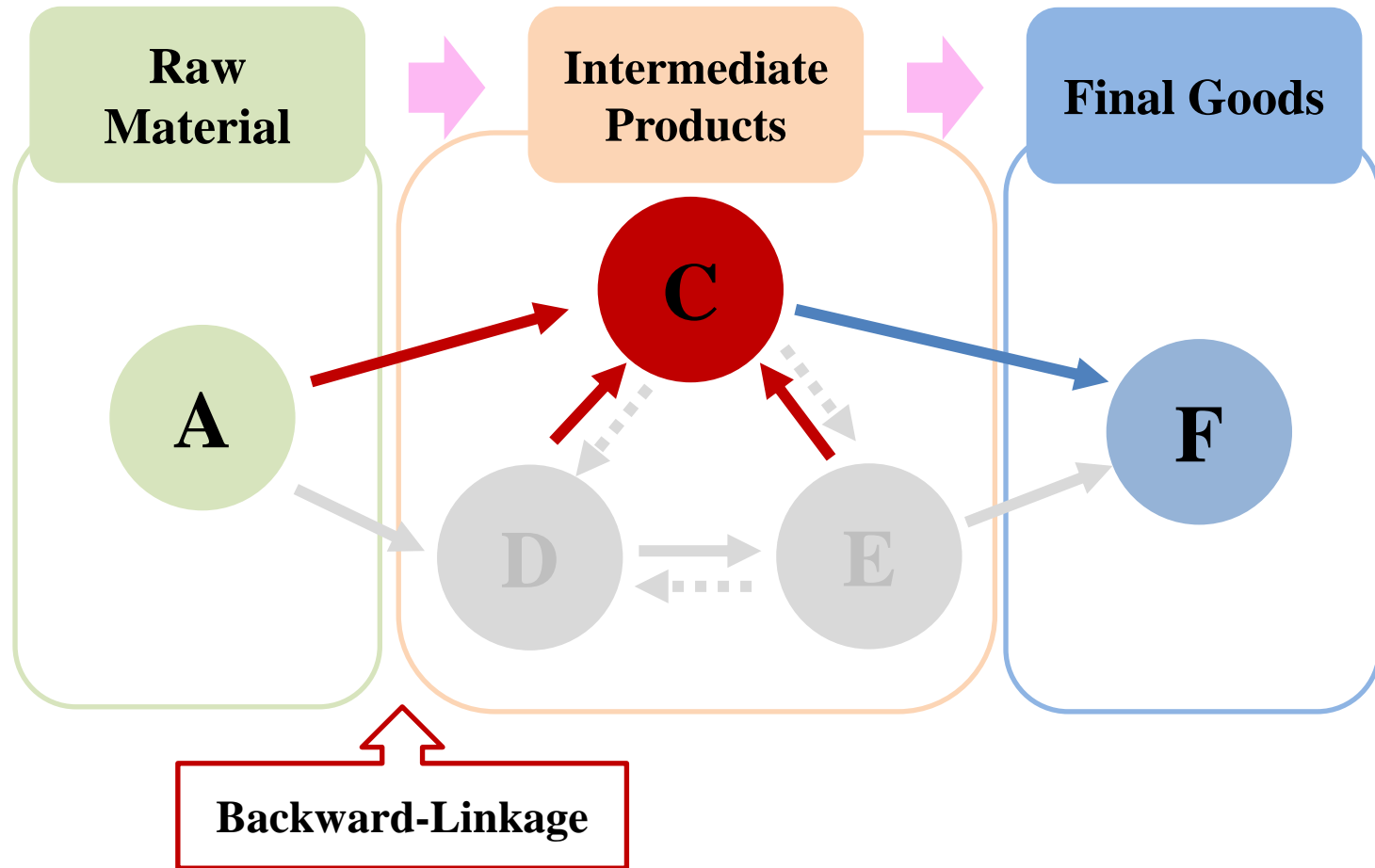
Mapping Global Value Chains
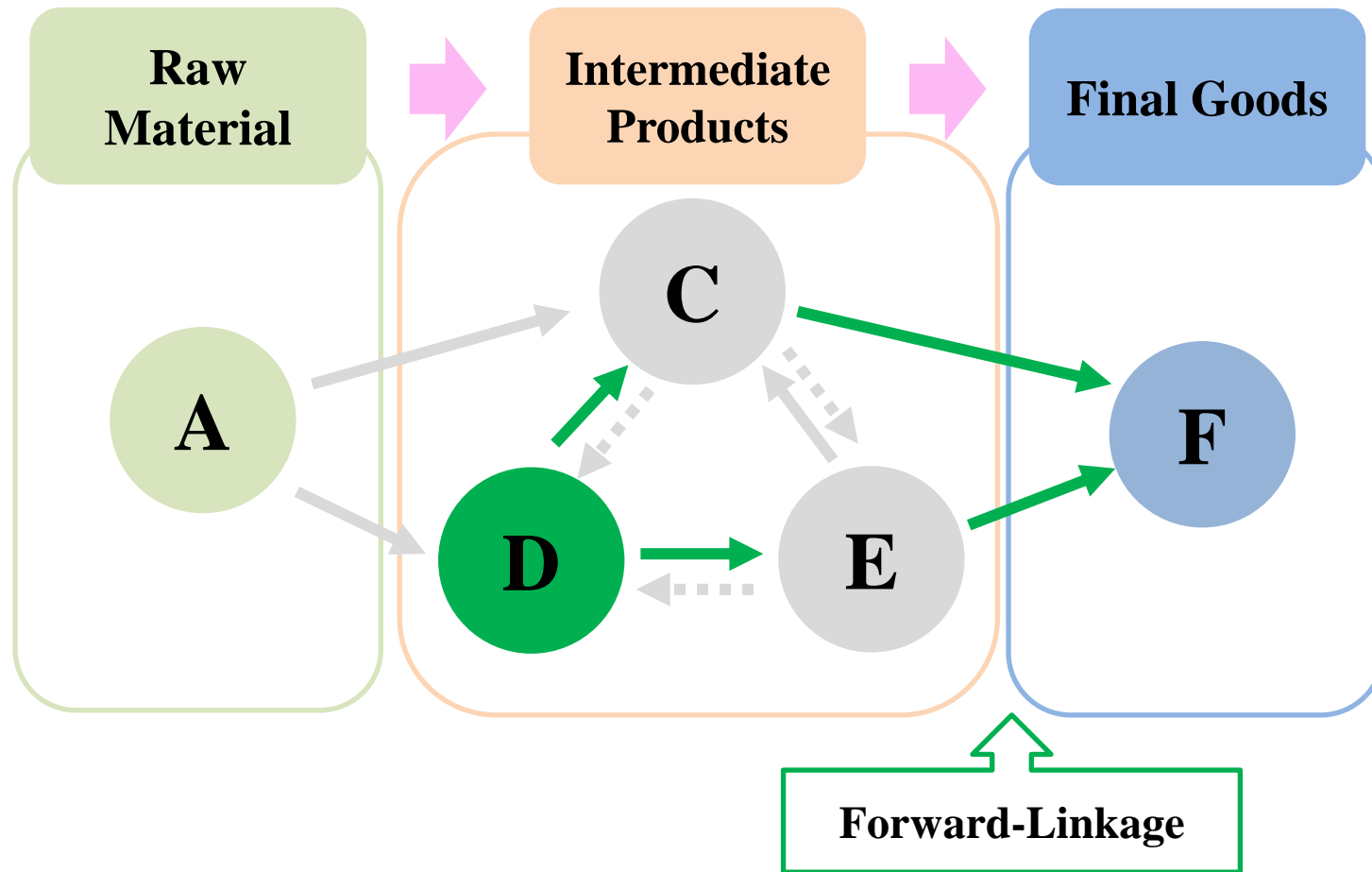
Mapping Global Value Chains
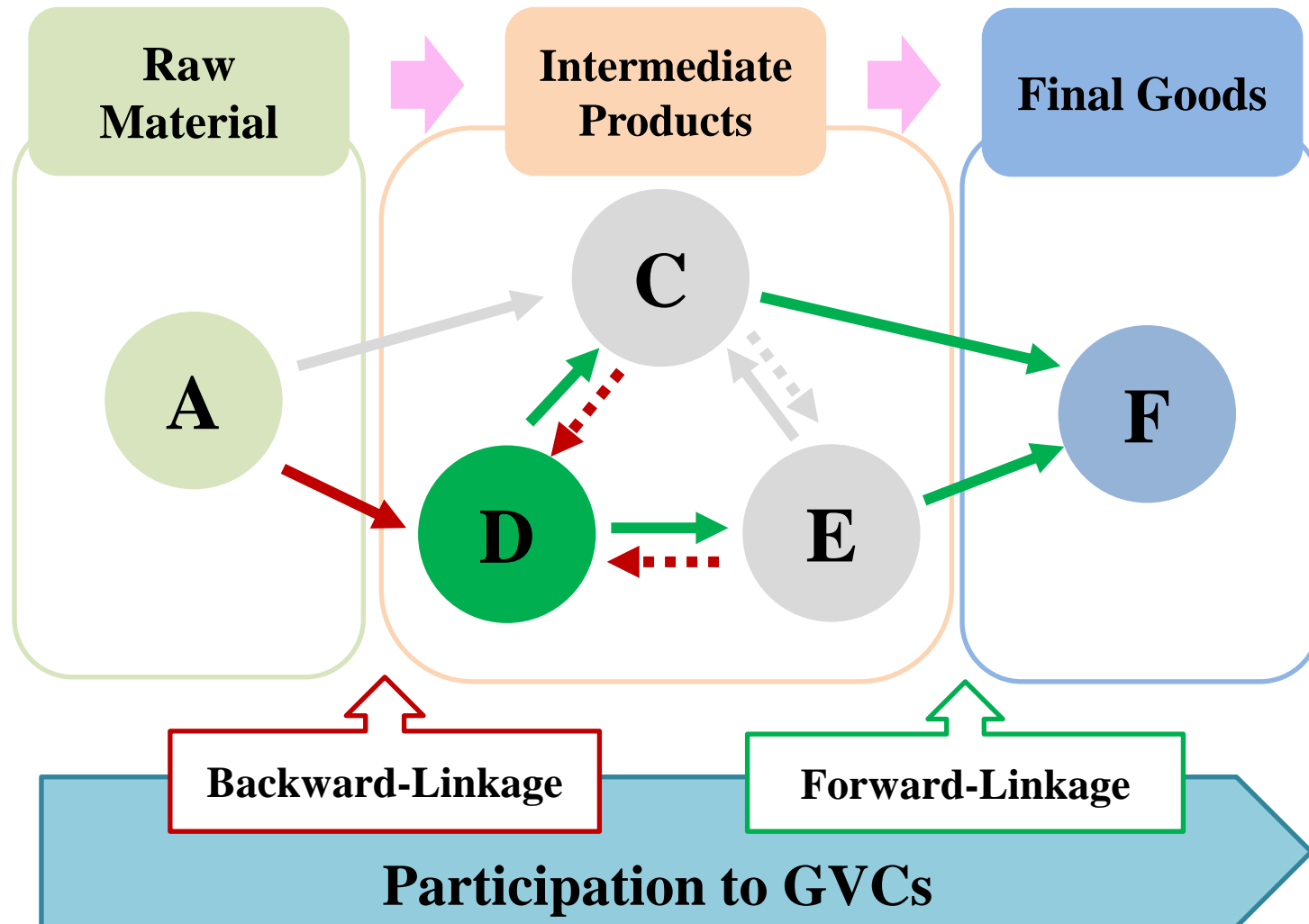
Why YNU-GIO tables?

	YNU-GIO Table	OECD-TiVA database	WIOD
Countries	29 (11 Asian countries)	46 (10 Asian countries)	40 (5 Asian countries)
Period	1997-2012(Annual)	1995, 2000, 2005, 2008, 2009	1995-2011(Annual)
sector	35 (manufacturing, 18 sectors)	34 (manufacturing, 16 sectors)	35 (manufacturing, 14 sectors)

Gross Exports Decomposition

Source: Wang, Wei and Zhu(2013)
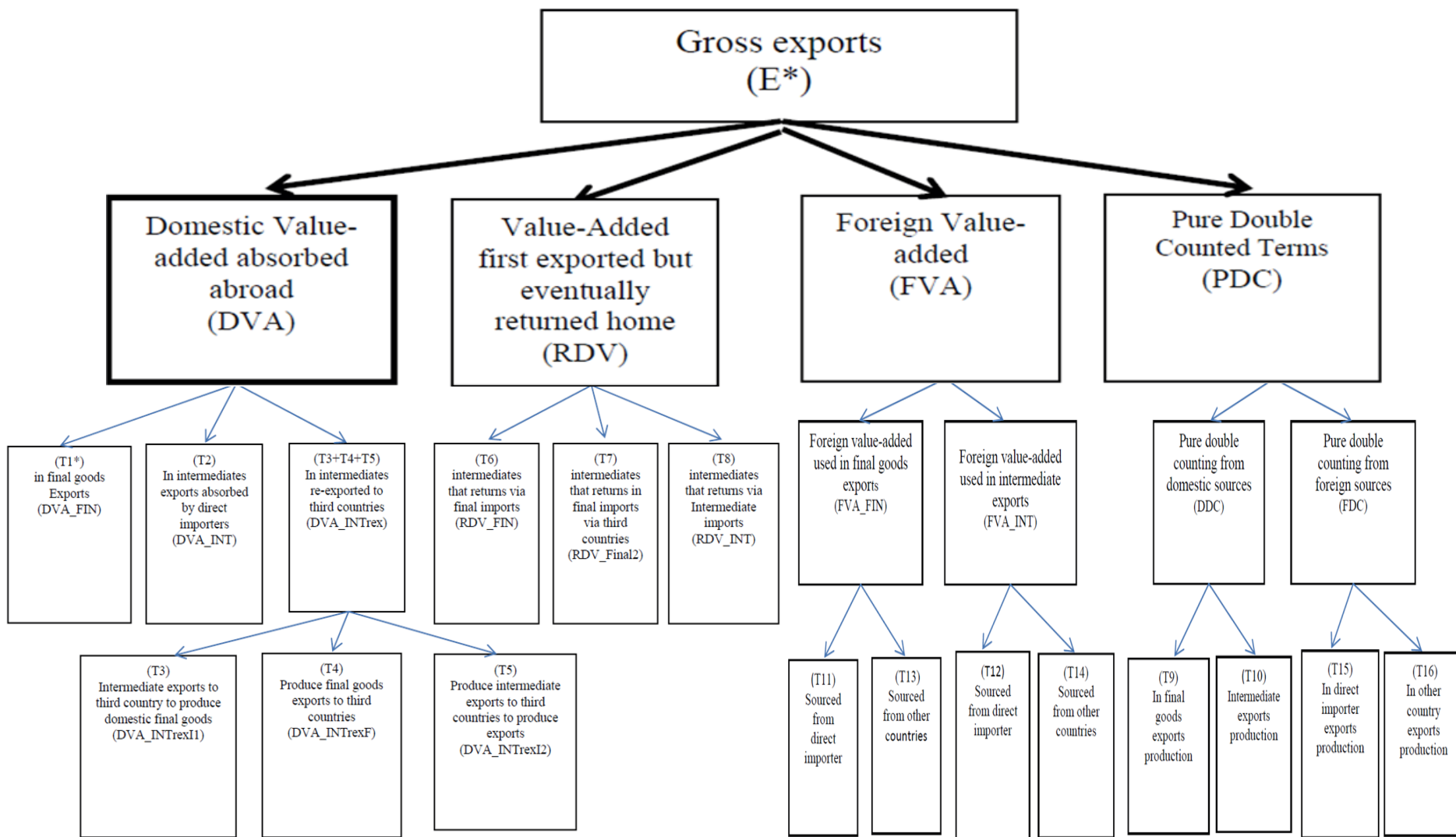
Gross Exports Decomposition

Forward-linkage: $PGVC\_FL_{ijt}^{k} = \dfrac{FL_{ijt}^{k} + FL_{jit}^{k}}{Expt_{ijt}^{k} + Expt_{jit}^{k}}$

Backward-linkage: $PGVC\_BL_{ijt}^{k} = \dfrac{BL_{ijt}^{k} + BL_{jit}^{k}}{Expt_{ijt}^{k} + Expt_{jit}^{k}}$

T1	
T2	DVA in intermediate exports to the direct importer and is absorbed there
T3	DVA in intermediate exports used by the direct importer to produce intermediate exports for production of third countries' domestic used final goods
T4	DVA in Intermediate exports used by the direct importer producing final exports to third countries
T5	DVA in Intermediate exports used by the direct importer producing intermediate exports to third countries
T6	Returned DVA in final goods imports -from the direct importer
T7	
T8	
T9	
T10	Double counted DVA used to produce intermediate exports
T11	Direct importer's VA in source country's final goods exports
T12	Direct importer's VA in source country's intermediate goods exports
T13	Third countries' VA in final goods exports
T14	Third countries' countries' VA in intermediate goods exports
T15	Direct importer's VA double counted in exports production
T16	Third countries' VA double counted in exports production

Source of trade data: YNU-GIO tables from 1997-2012, 29 countries, 18 manufacturing sectors.

Variables and data

- First measure: Method developed by Koopman *et al.* (2010)

  - GVC participation= *Forward linkage + Backward linkage*

$$PGVC_{ijt}^k(1) = \frac{FL_{ijt}^k + BL_{ijt}^k + FL_{jit}^k + BL_{jit}^k}{Expt_{ijt}^k + Expt_{jit}^k}$$

  - FL_{ijt}^k: the value of inputs produced in country *i* embodied in sector *k*'s gross export to country *j* that used in country *j* s exports;

  - BL_{ijt}^k: the foreign content in country *i* sector *k*'s gross export to country *j*;

Variables and data

- Second measure: Method proposed by Wang, Wei and Zhu(2013)
  - Pure double counting terms only occur when there is back and forth trade of intermediate goods.

$$PGVC_{ijt}^{k}(2) = \frac{FDC_{ijt}^{k} + FDC_{jit}^{k}}{BL_{ijt}^{k} + BL_{jit}^{k}}$$

- FDC_{ijt}^{k}: Pure double counting of foreign value added in exporter i sector k's gross exports to country j.

Variable and Data

- Exchange rate volatility:
  - Moving sample standard deviation of the log difference of the bilateral nominal exchange rate.

- To consider of timing issues, using five time windows:
  - ① One-year volatility: current year   ➔   Short-run
  - ② Two-year volatility: current ＋ previous one year ➔ Medium-run
  - ③ Three-year volatility: current ＋ previous two years ➔ Medium-run
  - ④ Five-year volatility: current ＋ previous four year ➔ Long-run
  - ⑤ Three-year volatility*(forward) : previous ＋ current ＋ next year

- Data:
  - Exchange rate, CPI: IMF, *International Financial Statistics*, database
  - GDP: World Bank, World Development Indicators (WDI).

Variable and Data

Industry Classification

YNU-GIO	ISIC.rev3	Industry Name	Description
Y03	15-16	Food	Food, Beverage, Tobabcoo
Y04	17-19	Textile	Textiles, Textile Products, Leather and Footwear
Y05	20	Wood	Wood Products(excl. furniture)
Y06	21-22	Paper	Paper, Paper Products, Printing and Publishing
Y07	23	Petroleum	Coke, Refined Petroleum Products,Nuclear Fuel
Y08	24	Chemical	Chemicals and Chemical Products
Y09	25	Rubber	Rubber and Plastics Products
Y10	26	Non-Metal	Non-metallic Mineral Products
Y11	27	Metals	Basic Metals
Y12	28	Fabricated M.	Fabricated Metal Products
Y13	29	General M.	Machinery and Equipment n.e.c.
Y14	30	Office M.	Office,Accounting and Computing Machinery
Y15	31	Electrical M.	Electrical Machinery and Apparatus n.e.c.
Y16	32	Communication	Communication Equipment and Apparatus
Y17	33	Optical I.	Medical, Precison and Optical Instruments
Y18	34	Motor	Motor Vehicles
Y19	35	Transport E.	Other Transport Equipment
Y20	36-37	Others	Other Manufacturing

Variable and Data

Variable	Obs	Mean	Std. Dev	P10	P50	P90
Log of Real Exports	211038	0.4547	0.7149	0.0015	0.1332	1.4127
Participation in GVCs (PGVC1)	211038	0.3532	0.1522	0.1832	0.3221	0.5832
Participation in GVCs (PGVC2)	211038	0.1654	0.1041	0.0576	0.1397	0.2959
Backward Linkage	211038	0.2022	0.1060	0.0956	0.1743	0.3511
Forward Linkage	211038	0.1510	0.0888	0.0687	0.1280	0.2581
Exchange Rate Volatility (One-Year)	211038	0.0574	0.2087	0.0000	0.0208	0.0494
Exchange Rate Volatility (Two-Year)	211038	0.0724	0.2039	0.0000	0.0237	0.0659
Exchange Rate Volatility (Three-Year)	211038	0.0835	0.1996	0.0000	0.0248	0.1550
Exchange Rate Volatility (Three-Year*)	211038	0.0820	0.1998	0.0000	0.0243	0.1453
Exchange Rate Volatility (Five-Year)	211038	0.1012	0.1917	0.0103	0.0276	0.3384

Empirical Strategy

- Dynamic Panel Model:

$$\ln Exp_{ijt}^{k} = \beta_0 + \beta_1 \ln Exp_{ijt-1}^{k} + \boxed{\beta_2 Vol_{ijt}} + \boxed{\beta_3 Vol_{ijt} * PGVC_{ijt-1}^{k}}$$
$$+ \beta_4 PGVC_{ijt-1}^{k} + \delta' D_{ijt}^{k} + \eta_{ij}^{k} + u_t + \varepsilon_{ijt}^{k}$$

- $lnExp_{ijt}^{k}$: Real exports, deflated by CPI
- Vol_{ijt}^{k}: nominal exchange rate volatility
- $PGVC_{ijt-1}^{k}$: GVC participation
  - Lag 1 year: Control for endogeneity of PGVC
  - Two alternatives: ① GVC participation in 1997, ② period average of GVC participation
- D_{ijt}^{k}: other controls, real GDP of exporter and importer, bilateral real exchange rate
- Expected effect: $\beta_2 < 0$ and $\beta_3 <$ or > 0.
- Estimator: Two-step system GMM estimator developed in Arellano and Bond (1991), Arellano and Bover(1995) and Blundell and Bond(1998)

Results

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exchange Rate Volatility	-0.00463**	-0.0139***	-0.0203***	-0.0207***	-0.0219***	-0.0322***	-0.0200***
	(0.00165)	(0.00331)	(0.00324)	(0.00337)	(0.00362)	(0.00338)	(0.00333)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_$_{t-1}$)		0.0314***			0.0335***		
		(0.00858)			(0.00918)		
Exchange Rate Volatility ×Participation in GVCs(PGVC1_1997)			0.0509***			0.0693***	
			(0.00880)			(0.00878)	
Exchange Rate Volatility ×Participation in GVCs(PGVC1_mean)				0.0467***			0.0454***
				(0.00809)			(0.00795)
Real Exchange Rate ×Participation in GVCs(PGVC1_$_{t-1}$)					-0.00182		
					(0.00137)		
Real Exchange Rate ×Participation in GVCs(PGVC1_1997)						-0.00253	
						(0.00156)	
Real Exchange Rate ×Participation in GVCs(PGVC1_mean)							-0.00245
							(0.00136)
Real Exchange Rate					0.000259	0.000295	0.000431
					(0.000510)	(0.000527)	(0.000524)
Participation in GVCs (PGVC1_$_{t-1}$)		0.0441***			0.133***		
		(0.00896)			(0.00819)		
Threshold Value of GVCs ($-\beta_2/\beta_3$)		0.443	0.399	0.443	0.654	0.465	0.441

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level. Lag real exports, real GDP of importer and exporter, year effects, and exporter-importer-sector effects are included in reach regression.

Results

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Exchange Rate Volatility	-0.00934***	-0.0123***	-0.0138***	-0.00880***	-0.0121***	-0.0138***
	(0.00240)	(0.00222)	(0.00244)	(0.00243)	(0.00219)	(0.00241)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_$_{t-1}$)	0.0323**			0.0284*		
	(0.0114)			(0.0112)		
Exchange Rate Volatility ×Participation in GVCs(PGVC2_1997)		0.0540***			0.0552***	
		(0.00913)			(0.00879)	
Exchange Rate Volatility ×Participation in GVCs(PGVC2_mean)			0.0603***			0.0617***
			(0.0105)			(0.0103)
Real Exchange Rate ×Participation in GVCs(PGVC2_$_{t-1}$)				-0.00647**		
				(0.00229)		
Real Exchange Rate ×Participation in GVCs(PGVC2_1997)					-0.00537*	
					(0.00223)	
Real Exchange Rate ×Participation in GVCs(PGVC2_mean)						-0.00505*
						(0.00211)
Real Exchange Rate				0.000647	0.000391	0.000464
				(0.000416)	(0.000389)	(0.000419)
Participation in GVCs (PGVC2_$_{t-1}$)	0.0353*			0.0366**		
	(0.0150)			(0.0139)		
Threshold Value of GVCs ($-\beta_2/\beta_3$)	0.289	0.228	0.229	0.310	0.219	0.224

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level. Lag real exports, real GDP of importer and exporter, year effects, and exporter-importer-sector effects are included in reach regression.

Results

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Exchange Rate Volatility	-0.0141***	-0.0198***	-0.0210***	-0.0236***	-0.0185***	-0.0203***
	(0.00328)	(0.00316)	(0.00334)	(0.00353)	(0.00312)	(0.00327)
Exchange Rate Volatility ×Backward Participation in GVCs_$_{t-1}$	0.0181 (0.0163)			0.0194 (0.0154)		
Exchange Rate Volatility ×Forward Participation in GVCs_$_{t-1}$	0.0511** (0.0179)			0.0592*** (0.0164)		
Exchange Rate Volatility ×Backward Participation in GVCs_1997		0.0500*** (0.0118)			0.0476*** (0.0114)	
Exchange Rate Volatility ×Forward Participation in GVCs_1997		0.0511*** (0.00978)			0.0477*** (0.00940)	
Exchange Rate Volatility ×Backward Participation in GVCs_mean			0.0591*** (0.0118)			0.0563*** (0.0114)
Exchange Rate Volatility ×Forward Participation in GVCs_mean			0.0337** (0.0114)			0.0366*** (0.0110)
Real Exchange Rate				x	x	x
Interactions Terms of Real Exchange Rate				x	x	x

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level. Lag real exports, real GDP of importer and exporter, year effects, and exporter-importer-sector effects are included in reach regression.
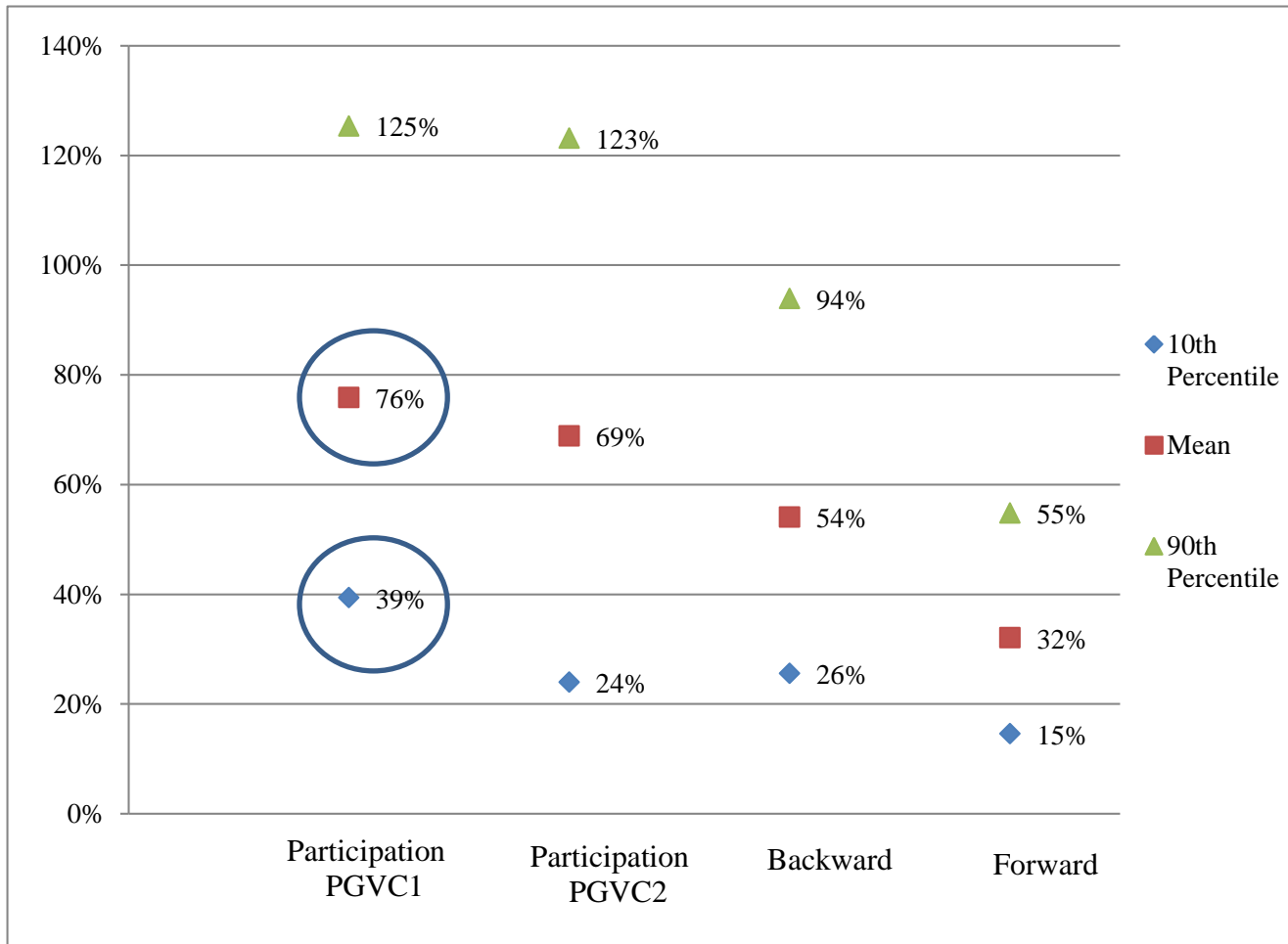
Results

—Impact of GVCs on Trade Effect of Exchange Rate Volatility—

Formula for calculation: $\beta_3 \times GVCs_{10percentile}/\beta_2$

Results

—Trade Effect of Exchange Rate Volatility—
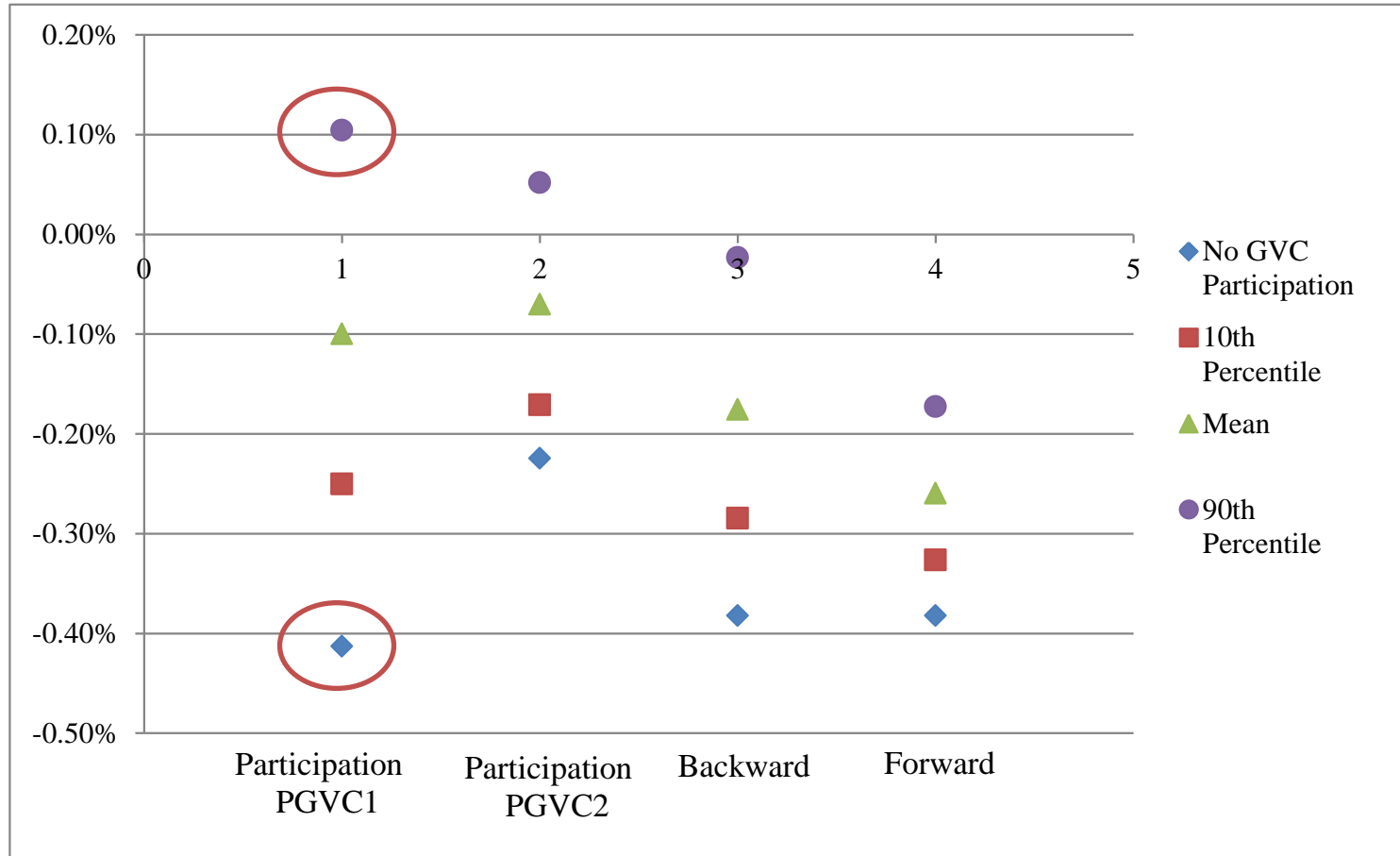
How exports change when exchange rate volatility increase one *Standard Deviation*?
Formula for calculation: $(\boldsymbol{\beta_2} + \boldsymbol{\beta_3} \times \boldsymbol{GVCs_{10percentile}}) \times \boldsymbol{SD}$ *of volatility*

Robustness Checks

① Different time windows of the exchange rates volatility
   1. One-year volatility: current year
   2. Two-year volatility: current and previous one year
   3. Three-year volatility: current and previous two years
   4. Forward Three-year volatility : previous one year, current year and the next year

② Alternative sample period
   – Drop crisis period: 1999-2007
      • Asian Currency Crisis: 1997-1998
      • Global Financial Crisis: 2008

③ Alternative data source
   – Data from WIOD

Robustness Checks ①

	Manufacturing Exports			
	(1)	(2)	(3)	(4)
	Volatility Current Year	Volatility Two-Year	Volatility Three-Year	Volatility* Three-Year
Exchange Rate Volatility	-0.0127***	-0.0259***	-0.0213***	-0.0178***
	(0.00335)	(0.00364)	(0.00312)	(0.00354)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_$t-1$)	0.00943	0.0244*	0.0325***	0.0388***
	(0.00896)	(0.00972)	(0.00809)	(0.00978)
Exchange Rate Volatility	-0.0199***	-0.0340***	-0.0271***	-0.0315***
	(0.00341)	(0.00366)	(0.00303)	(0.00344)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_1997)	0.0288**	0.0467***	0.0484***	0.0565***
	(0.00917)	(0.00992)	(0.00808)	(0.00939)
Exchange Rate Volatility	-0.0141***	-0.0220***	-0.0184***	-0.0144***
	(0.00340)	(0.00340)	(0.00290)	(0.00348)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_mean)	0.0132	0.0272**	0.0333***	0.0405***
	(0.00810)	(0.00847)	(0.00705)	(0.00827)
Exchange Rate Volatility	-0.00986***	-0.0156***	-0.0104***	-0.00304
	(0.00236)	(0.00244)	(0.00219)	(0.00257)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_$t-1$)	0.00353	0.0181	0.0281**	0.0238
	(0.00977)	(0.0118)	(0.0104)	(0.0129)
Exchange Rate Volatility	-0.00981***	-0.0160***	-0.0103***	-0.00514*
	(0.00234)	(0.00232)	(0.00201)	(0.00242)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_1997)	0.00509	0.0231*	0.0285**	0.0368***
	(0.00930)	(0.0114)	(0.00901)	(0.0112)
Exchange Rate Volatility	-0.00976***	-0.0166***	-0.0118***	-0.00576*
	(0.00245)	(0.00246)	(0.00217)	(0.00257)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_mean)	0.00604	0.0267*	0.0320***	0.0382***
	(0.00935)	(0.0117)	(0.00968)	(0.0111)
Real Exchange Rate	x	x	x	x
Real Exchange Rate×Participation in GVCs	x	x	x	x
Lag of Real Exports	x	x	x	x
Real GDP of Importer	x	x	x	x
Real GDP of Exporter	x	x	x	x
Year Effects	x	x	x	x
Exporter-Importer-Sector Effects	x	x	x	x

Robustness Checks ② ―1999-2007―

	Manufacturing Exports				
	(1)	(1)	(2)	(3)	(4)
	Volatility Five-Year	Volatility Current Year	Volatility Two-Year	Volatility Three-Year	Volatility* Three-Year
Exchange Rate Volatility	-0.0419***	-0.0283	-0.0309***	-0.0213***	-0.0404***
	(0.00453)	(0.120)	(0.00592)	(0.00312)	(0.00718)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_$_{t-1}$)	0.0589***	-0.324	0.0156	0.0325***	0.0306
	(0.0122)	(0.345)	(0.0165)	(0.00809)	(0.0198)
Exchange Rate Volatility	-0.0282***	0.0886	-0.0223***	-0.0271***	-0.0290***
	(0.00382)	(0.0822)	(0.00552)	(0.00303)	(0.00667)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_1997)	0.0829***	0.413	0.0239	0.0484***	0.0357
	(0.0117)	(0.312)	(0.0171)	(0.00808)	(0.0205)
Exchange Rate Volatility	-0.0270***	-0.0313	-0.0211***	-0.0184***	-0.0278***
	(0.00398)	(0.0854)	(0.00551)	(0.00290)	(0.00665)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_mean)	0.0702***	0.813**	0.0175	0.0333***	0.0282
	(0.0109)	(0.283)	(0.0149)	(0.00705)	(0.0179)
Exchange Rate Volatility	-0.0155***	0.0918	-0.0196***	-0.0104***	-0.0248***
	(0.00281)	(0.0832)	(0.00365)	(0.00219)	(0.00449)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_$_{t-1}$)	0.0751***	0.433	0.0288	0.0281**	0.0389
	(0.0149)	(0.485)	(0.0199)	(0.0104)	(0.0240)
Exchange Rate Volatility	-0.0190***	0.182**	-0.0180***	-0.0103***	-0.0216***
	(0.00269)	(0.0587)	(0.00352)	(0.00201)	(0.00429)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_1997)	0.105***	-0.602	0.0227	0.0285**	0.0251
	(0.0146)	(0.419)	(0.0199)	(0.00901)	(0.0239)
Exchange Rate Volatility	-0.0182***	0.0892	-0.0176***	-0.0118***	-0.0217***
	(0.00289)	(0.0641)	(0.00392)	(0.00217)	(0.00474)
Exchange Rate Volatility ×Participation in GVCs(PGVC2_mean)	0.0916***	0.469	0.0157	0.0320***	0.0211
	(0.0151)	(0.425)	(0.0217)	(0.00968)	(0.0259)
Real Exchange Rate	x	x	x	x	x
Real Exchange Rate×Participation in GVCs	x	x	x	x	x
Lag of Real Exports	x	x	x	x	x
Real GDP of Importer	x	x	x	x	x
Real GDP of Exporter	x	x	x	x	x
Year Effects	x	x	x	x	x
Exporter-Importer-Sector Effects	x	x	x	x	x

Robustness Checks ③
－Data from WIOD－

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exchange Rate Volatility	-0.00698***	0.00179	-0.0116***	-0.0109***	-0.000626	-0.0135***	-0.0157***
	(0.00132)	(0.00214)	(0.00138)	(0.00222)	(0.00216)	(0.00137)	(0.00227)
Exchange Rate Volatility ×Participation in GVCs(PGVC1_*t-1*)		-0.0618***					
		(0.0127)					
Exchange Rate Volatility ×Participation in GVCs(PGVC1_1997)			0.0402***				
			(0.00722)				
Exchange Rate Volatility ×Participation in GVCs(PGVC1_mean)				0.0261*			
				(0.0127)			
Exchange Rate Volatility ×Participation in GVCs(PGVC2_*t-1*)					-0.0362***		
					(0.00828)		
Exchange Rate Volatility ×Participation in GVCs(PGVC2_1997)						0.0402***	
						(0.00511)	
Exchange Rate Volatility ×Participation in GVCs(PGVC2_mean)							0.0418***
							(0.00883)
Participation in GVCs (PGVC1_*t-1*)		0.0912***					
		(0.00727)					
Participation in GVCs (PGVC2_*t-1*)					0.0772***		
					(0.00482)		

Note: Robust standard errors in parentheses, * 10% significance level; ** 5% significance level; ***1% significance level. Lag real exports, real GDP of importer and exporter, year effects, and exporter-importer-sector effects are included in reach regression.

Conclusion

- Exchange rate volatility have a significantly negative but small effect on exports.
  - The impact is conditional on GVC participations.
  - Robust: different time windows of the exchange rates volatility, different sample period, different data source

- GVC participation reduces negative impact of exchange rate volatility on exports, and its effect is quite large.
  - On average, GVC participation reduce negative impact by around 76%.

Conclusion

- Depends on the degree of one country's participation in GVCs, exchange rate volatility can have positive effect.
  - Above the threshold value.

- Policy implications
  - No or less participation to GVCs:
    ① A country will benefit from stable exchange rate
  - Deeply involved in GVCs:
    ② A country cannot use exchange rate as instrument to boost exports due to the offset effect of exchange rate changes.
    ③ There is no fear of floating exchange rate regime.