

Are Chinese Trade Flows Different?

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Introduction

- ▶ China's exporting prowess and ballooning trade surplus have been eliciting increasing attention both from academic and policy circles.
 - ▶ Identified as a major driver of global imbalance;
 - ▶ Identified as one of causes to the global financial crisis of 2008 (Council of Economic Advisers, 2009)



Introduction

- ▶ The often proposed policy remedy is China to adjust its exchange rate policy to alleviate global imbalance.
- ▶ To better calibrate the policy, it is important to exam how Chinese trade flows are affected by its determinants and how much, particularly, the price (exchange rate) and the income (GDP) elasticities are.



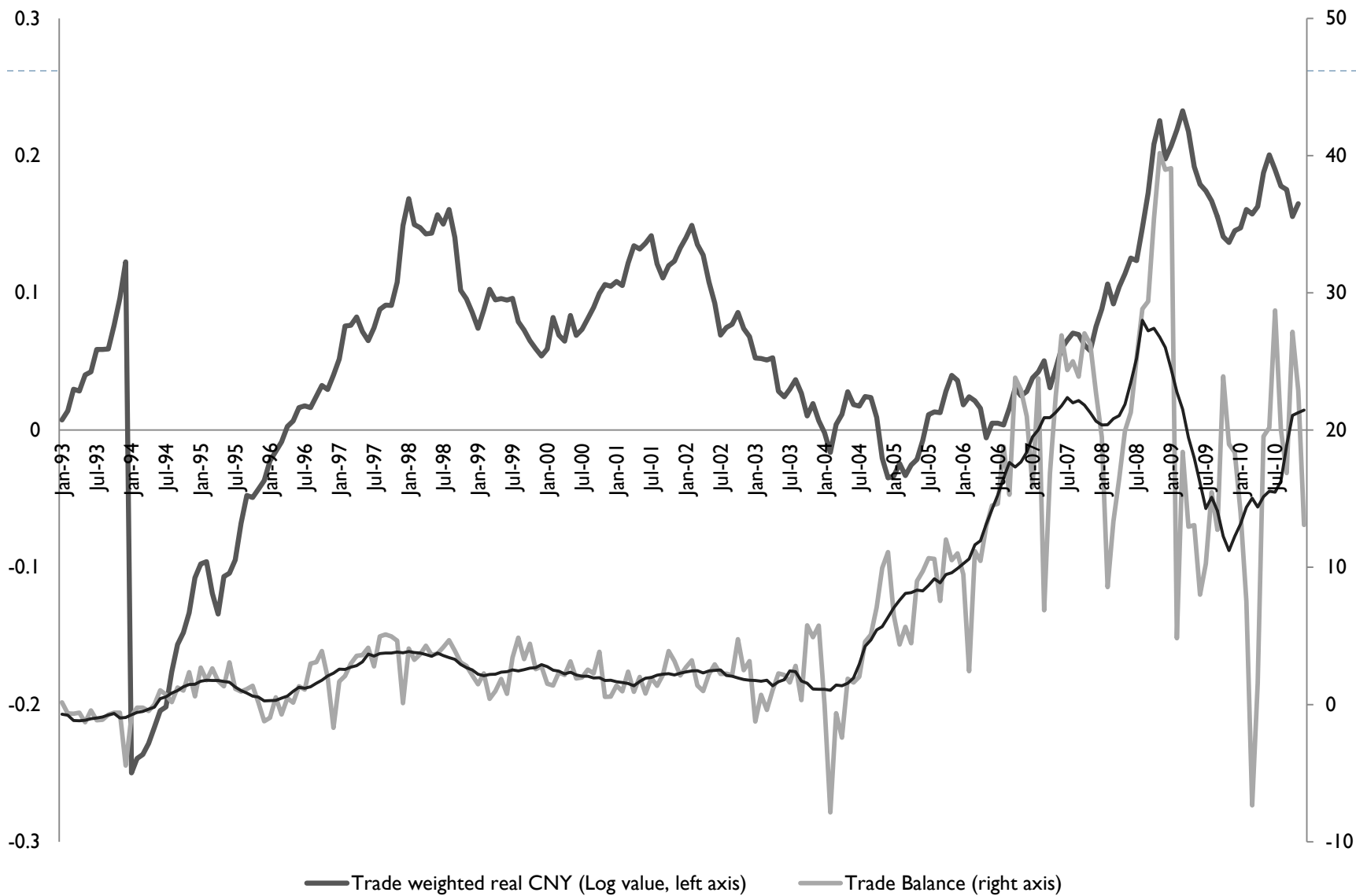


Figure 1: The Log real value of CNY and Chinese trade balance

Introduction

- ▶ An interesting observation from Figure 1: Chinese trade balance has moved together with the appreciation of Chinese Yuan (CNY) since 2003.
- ▶ Much research has been done to answer the question: Do the usual rules apply to Chinese trade?
 - ▶ Do Chinese exports react to foreign economic activities?
Have China's exchange rate changes affected its exports?
 - ▶ More challenging questions related to Chinese imports:
Why don't Chinese imports rise with the income (GDP) ?
Does CNY appreciation increase or decrease China's imports?



Introduction

- ▶ **Several hypotheses have been suggested:**
 - ▶ Large share of processing exports in Chinese total exports may make GDP inappropriate to capture its usual effect to exports;
 - ▶ Exchange rate effect gets mute if only a small share of domestic value was added.
 - ▶ The rapidly changing economic structure and different import intensities may cause the trade elasticity instable over time.
 - ▶ Different types of trade might respond to exchange rates differently.



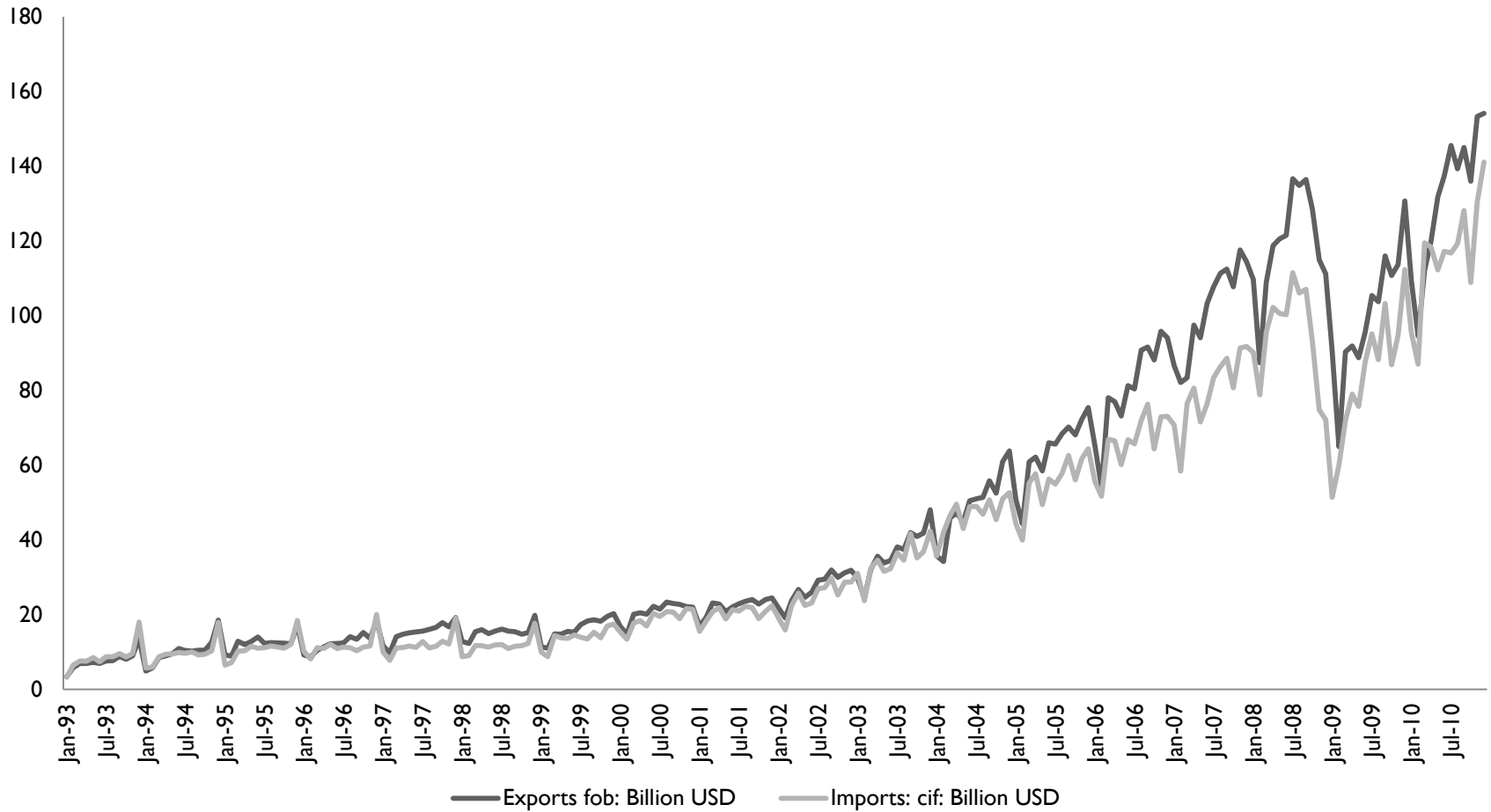
Our research

- ▶ Our analysis of Chinese trade flows examines:
 - Are Chinese trade flows different?
 - What make it different?
- ▶ In addition to exam the aggregated trade flow and the disaggragating other have done, we check other means of classification.
- ▶ To provide better information to evaluate Chinese trade related policies that deal with the current crisis and for policymakers to calibrate their future policies.

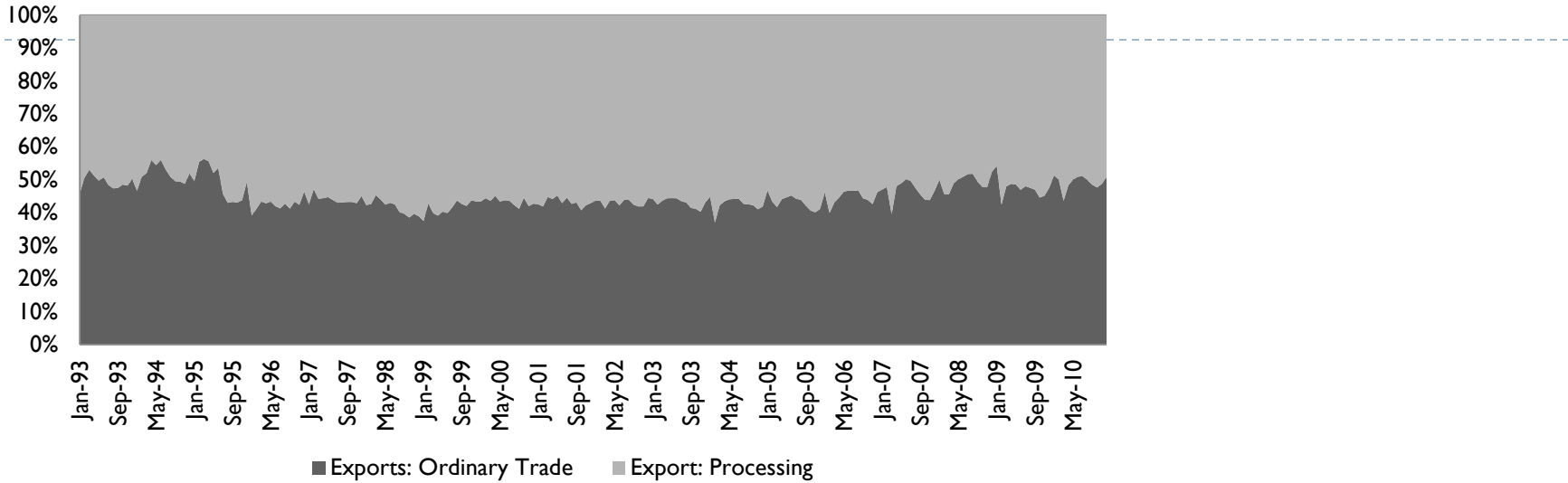


Descriptive Analysis

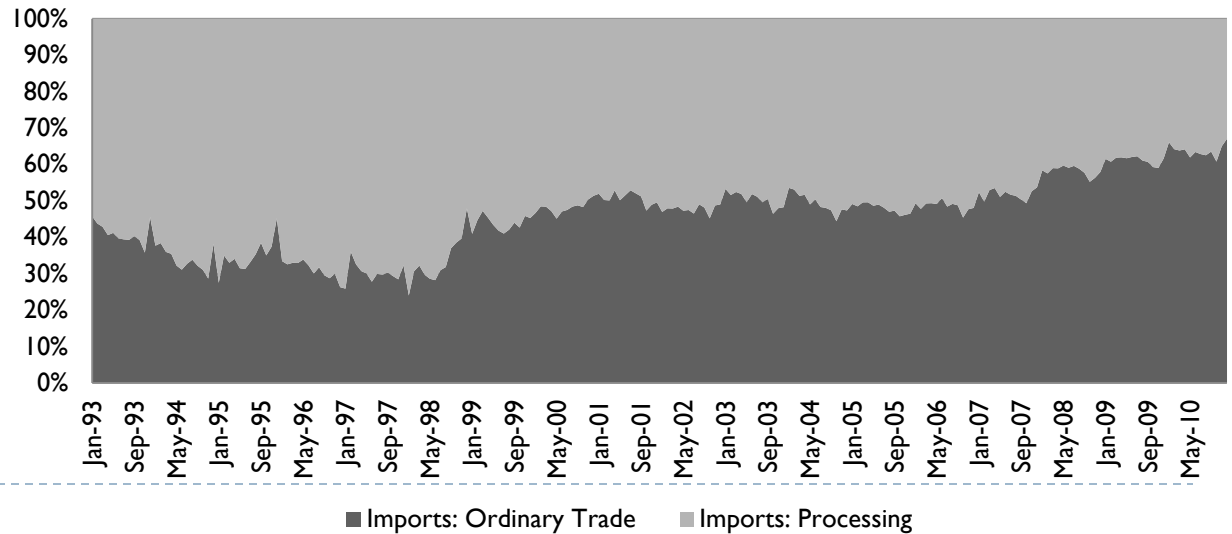
China's Imports and Exports



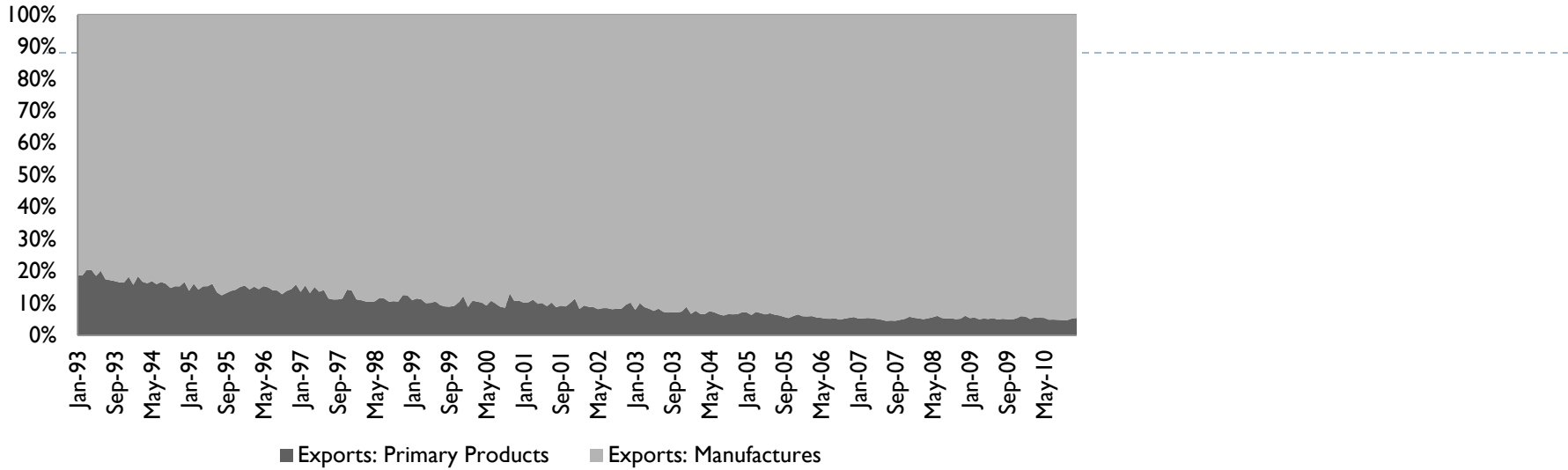
The Share of Ordinary and Processing Exports



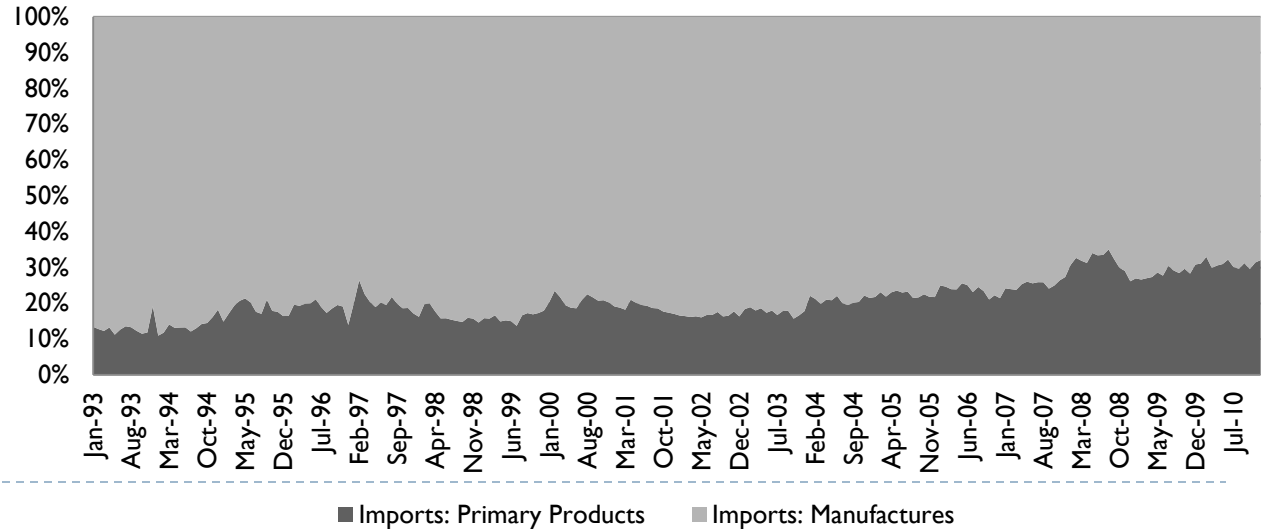
The Share of Ordinary and Processing Imports



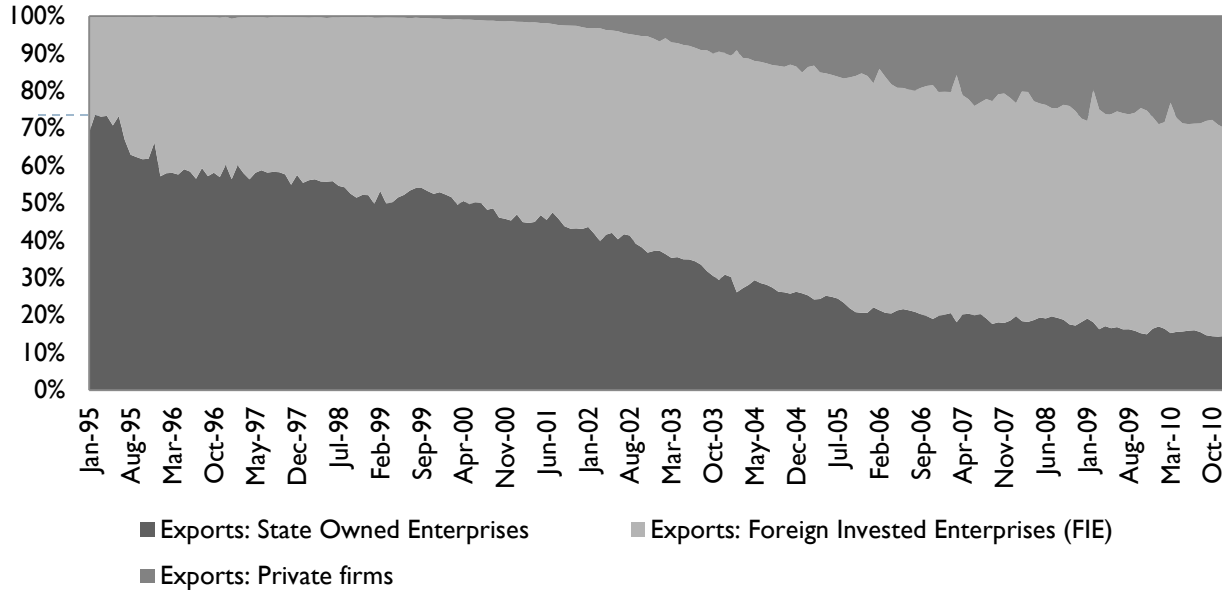
The Share of Primary and Manufactures Exports



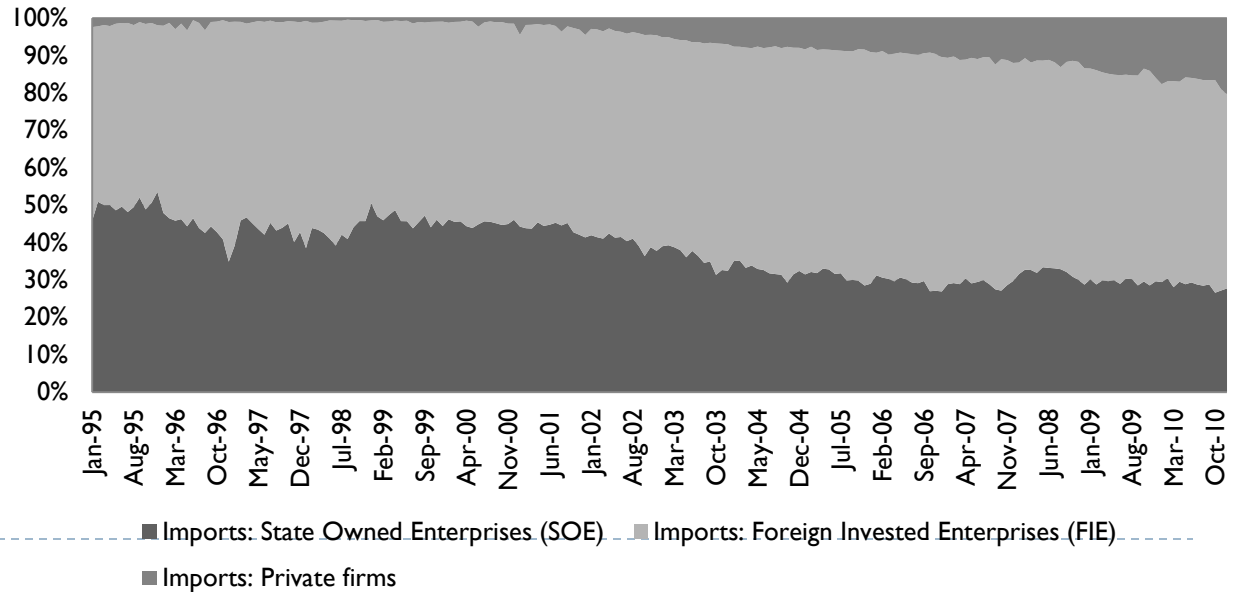
The Share of Primary and Manufactures Imports



The Share of Exports by Types of Firm



The Share of Imports by Types of Firm



Studies on Chinese trade elasticities

- ▶ Kwach et al. (2007), Thorbecke and Smith (2007), Marquez and Schindler (2007), Barcia-Herrero and Koivu (2007), Mann and Pluck (2007), Thorbecke (2006), Ahmed (2009), and Aziz and Li (2008),..., etc.
- ▶ A brief summary of literature paper findings:
 - ▶ Chinese exports - expected income and exchange rate effects
 - ▶ Chinese imports - unexpected income and/or exchange effects
 - ▶ Unstable trade elasticity estimates



Estimation

$$ex_t = \beta_0 + \beta_1 y_t^* + \beta_2 r_t + \beta_3 z_t + u_{1,t} \quad (1)$$

$$im_t = \gamma_0 + \gamma_1 y_t + \gamma_2 r_t + \gamma_3 w_t + u_{2,t} \quad (2)$$

- ▶ Stock-Watson (1993) Dynamic OLS regression method
 - ▶ Leads-lags structure is decided by SBIC; (1,1) in general
 - ▶ Seasonal dummies, a time trend variable
 - ▶ Data are from 1994Q3 to 2010Q4.
-



The results – Aggregate exports

	[1]	[2]	[3]
GDP	1.433*** (0.51)	1.502*** (0.52)	5.648*** (0.61)
REER	-1.575*** (0.17)	-1.584*** (0.17)	-0.906*** (0.23)
CRgrw		0.300 (0.51)	-0.159 (0.38)
WTO			-0.642*** (0.08)
WTO*Trend			0.024*** (0.00)
Trend	0.040*** (0.00)	0.040*** (0.00)	-0.005 (0.01)
RSME	0.08	0.08	0.06
Obs.	63	63	64
Leads-lags	1, 2	1, 2	1, 1

Table 1: Aggregate exports, deflated by Hong Kong re-export unit value index

The results – Aggregate imports

	[1]	[2]
GDP	3.184** (1.51)	-3.005** (1.14)
REER	-2.034*** (0.29)	1.111** (0.48)
Export		0.980*** (0.17)
Trend	-0.033 (0.04)	0.068*** (0.02)
	(11.45)	(6.51)
RMSE	0.06	0.04
Obs.	33	33
Leads-lags	1, 1	1, 1, 1

Table 2: Aggregate imports, deflated by Hong Kong re-export to China unit value index

Results of aggregate trade summary

- ▶ Exports elasticity estimates are largely in accordance to conventional theory;
- ▶ Results from data on imports are difficult to explain
 - Better results from the post-WTO period
 - Still, they are sensitive to time trends
- ▶ Two ways to proceed:
 - ▶ Disaggregate the data (ordinary v.s. processing; primary v.s. manufacture; firm types: SOE, FIE, and Private enterprises)
 - ▶ Search for additional explanatory variables



Results – Ordinary and Processing exports

	[1]	[2]	[3]	[4]	[5]	[6]
	Ordinary	Ordinary	Ordinary	Processing	Processing	Processing
GDP	0.422 (0.78)	0.478 (0.81)	4.809*** (0.73)	3.592*** (0.61)	3.640*** (0.61)	6.878*** (0.77)
REER	-1.864*** (0.25)	-1.869*** (0.25)	-1.319*** (0.25)	-1.199*** (0.22)	-1.203*** (0.23)	-0.875*** (0.23)
CRgrw		0.226 (0.62)	-0.055 (0.53)		0.195 (0.55)	-0.084 (0.44)
WTO			-0.764*** (0.10)			-0.598*** (0.13)
WTO*Trend			0.027*** (0.00)			0.022*** (0.00)
Trend	0.047*** (0.01)	0.047*** (0.01)	0.000 (0.01)	0.024*** (0.00)	0.024*** (0.00)	-0.014* (0.01)
RMSE	0.11	0.11	0.08	0.08	0.08	0.06
Obs.	64	64	64	64	64	63
Leads-lags	1, 1	1, 1	1, 1	1, 1	1, 1	1, 2

Table 3: Disaggregated exports: ordinary and processing trade, deflated by Hong Kong re-export unit value index

Results - Ordinary and Processing imports

	[1]	[2]	[3]	[4]
	Ordinary	Ordinary	Processing	Processing
GDP	2.960	-0.101	3.591***	-2.259**
	(2.02)	(2.37)	(1.13)	(0.80)
REER	-0.962**	0.376	-3.101***	0.787*
	(0.41)	(0.89)	(0.26)	(0.45)
Export		0.255		1.264***
		(0.33)		(0.14)
Trend	-0.026	0.033	-0.051*	0.033**
	(0.05)	(0.05)	(0.03)	(0.02)
RMSE	0.09	0.07	0.06	0.02
Obs.	33	33	33	33
Leads-lags	1, 1	1, 1, 1	1, 1	1, 1, 1

Table 4: Disaggregated imports: ordinary and processing trade, deflated by Hong Kong re-export unit value index

Results – Primary and manufactured products exports

	[1]	[2]	[3]	[4]	[5]	[6]
	Primary	Primary	Primary	Manuf.	Manuf.	Manuf.
GDP	-0.603 (0.44)	-0.518 (0.47)	1.579* (0.80)	2.151*** (0.63)	2.183*** (0.64)	5.938*** (0.61)
REER	-1.143*** (0.18)	-1.152*** (0.18)	-0.728*** (0.23)	-1.492*** (0.21)	-1.496*** (0.22)	-0.918*** (0.24)
CRgrw		0.343 (0.44)	0.050 (0.38)		0.130 (0.55)	-0.214 (0.42)
WTO			-0.321*** (0.12)			-0.631*** (0.09)
WTO*Trend			0.014*** (0.00)			0.024*** (0.00)
Trend	0.032*** (0.00)	0.032*** (0.00)	0.007 (0.01)	0.038*** (0.00)	0.037*** (0.00)	-0.005 (0.01)
RMSE	0.08	0.08	0.07	0.09	0.09	0.06
Obs.	64	64	64	64	64	64
Leads-lags	1, 1	1, 1	1, 1	1, 1	1, 1	1, 1

Table 5: Disaggregated exports: primary and manufactured products exports, deflated by Hong Kong re-export unit value index

Results - Primary and manufactured products imports

	[1]	[2]	[3]	[4]
	Primary	Primary	Manuf.	Manuf.
GDP	3.933 (2.74)	-0.746 (1.69)	2.889** (1.08)	-1.057 (0.99)
REER	-2.210*** (0.44)	-0.349 (0.57)	-2.102*** (0.24)	-0.001 (0.44)
Export		1.431* (0.71)		0.600*** (0.15)
Trend	-0.032 (0.07)	0.041 (0.04)	-0.031 (0.03)	0.033 (0.02)
RMSE	0.11	0.09	0.05	0.03
Obs.	33	33	33	33
Leads-lags	1, 1	1, 1, 1	1, 1	1, 1, 1

Table 6: Disaggregated imports: primary and manufactured products imports, deflated by Hong Kong re-export to China unit value index

Results – SOE, FIE, and private firms exports

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	SOE	SOE	SOE	FIE	FIE	FIE	Priv.	Priv.	Priv.
GDP	2.384*** (0.57)	2.444*** (0.60)	3.813*** (0.74)	5.060*** (0.72)	5.176*** (0.75)	7.355*** (0.84)	7.155*** (1.26)	7.465*** (1.28)	2.268 (1.66)
REER	-0.815*** (0.20)	-0.822*** (0.21)	-0.541** (0.23)	-1.304*** (0.28)	-1.317*** (0.28)	-0.673* (0.37)	-7.518*** (0.55)	-7.555*** (0.56)	-5.768*** (0.58)
CRgrw		0.252 (0.47)	0.071 (0.48)		0.486 (0.64)	0.010 (0.61)		1.295 (1.84)	-0.753 (0.99)
WTO			-0.203** (0.10)			-0.260* (0.13)			1.691*** (0.27)
WTO*Trend			0.008*** (0.00)			0.014*** (0.00)			-0.029*** (0.01)
Trend	0.005 (0.00)	0.005 (0.00)	-0.010* (0.01)	0.025*** (0.01)	0.024*** (0.01)	-0.002 (0.01)	0.107*** (0.01)	0.105*** (0.01)	0.136*** (0.02)
RMSE	0.07	0.07	0.07	0.09	0.09	0.08	0.26	0.26	0.17
Obs.	62	62	62	62	62	62	62	62	62
Leads-lags	1, 1	1, 1	1, 1	1, 1	1, 1	1, 1	1, 1	1, 1	1, 1

▶ Table 7: Disaggregated exports: SOE, FIE, Private firms, deflated by Hong Kong re-export unit value index

Results - SOE, FIE, and private firms imports

	[1]	[2]	[3]	[4]	[5]	[6]
	SOE	SOE	FIE	FIE	Priv.	Priv.
GDP	4.032*	-4.032*	3.412**	-1.760*	0.403	-2.779
	(2.19)	(1.95)	(1.31)	(0.96)	(1.66)	(2.51)
REER	-0.947**	0.976**	-2.730***	0.640	-3.096***	-0.056
	(0.38)	(0.42)	(0.25)	(0.55)	(0.49)	(1.25)
Export		0.969**		0.952**		0.589**
		(0.36)		(0.15)		(0.24)
Trend	-0.067	0.111**	-0.037	0.039*	0.079*	0.099*
	(0.05)	(0.04)	(0.03)	(0.02)	(0.04)	(0.05)
RMSE	0.08	0.05	0.06	0.03	0.11	0.10
Obs.	33	33	33	33	33	33
Leads-lags	1, 1	1, 1, 1	1, 1	1, 1, 1	1, 1	1, 1, 1

Table 8: Disaggregated imports: SOE, FIE, Private firms, deflated by Hong Kong re-export to China unit value index

Results of other considerations

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Aggregate	Primary	Manuf.	Ordinary	Proc.	SOE	FIE	Priv.
Consumption	0.847** (0.40)	-0.925* (0.45)	-0.109 (0.16)	1.304 (0.79)	0.436 (0.32)	0.275 (0.61)	1.333* (0.72)	-1.298 (0.90)
Fixed asset inv.	0.836* (0.47)	1.054** (0.40)	-0.214 (0.20)	1.663** (0.74)	1.186*** (0.41)	1.438* (0.78)	1.488** (0.67)	2.149** (1.00)
REER	-1.561*** (0.52)	1.814* (1.01)	-1.501*** (0.34)	-0.647 (1.54)	0.665 (0.56)	1.177 (0.78)	-0.660 (0.52)	7.155*** (1.33)
Export	0.348** (0.16)	0.898* (0.50)	0.174 (0.11)	-0.360 (0.31)	1.077*** (0.11)	0.312 (0.24)	0.823*** (0.13)	1.676*** (0.18)
WTO	0.366 (0.31)	0.330 (0.36)	0.215 (0.17)	1.857** (0.69)	0.525** (0.22)	1.548*** (0.51)	0.450 (0.31)	-3.363*** (1.05)
WTO*Trend	-0.012 (0.01)	-0.012 (0.01)	-0.003 (0.01)	-0.053*** (0.02)	-0.016** (0.01)	-0.043*** (0.02)	-0.017 (0.01)	0.093*** (0.03)
Trend	0.026*** (0.01)	0.014 (0.01)	0.039*** (0.01)	0.077*** (0.02)	-0.024*** (0.01)	0.026** (0.01)	-0.006 (0.01)	-0.240*** (0.03)
Adj.R-squared	0.99	0.99	0.99	0.99	0.99	0.98	0.99	0.99
Obs.	59	59	65	59	59	59	57	59
Leads-lags	1, 4, 1, 1	1, 1, 2, 4	1, 1, 1, 1	1, 2, 4, 1	1, 4, 1, 3	1, 2, 3, 1	2, 4, 1, 2	1, 1, 1, 2

Table 9: Disaggregated imports, with private consumption and fixed asset investments activity variables.

Results of other considerations

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Aggregate	Primary	Manuf.	Ordinary	Proc.	SOE	FIE	Priv.
GDP	4.099 (2.39)	6.723 (3.98)	1.701 (1.45)	1.563 (8.31)	4.648 (2.62)	-0.504 (2.84)	3.834 (2.21)	11.581** (4.47)
REER	2.785** (1.13)	4.973** (1.86)	1.320** (0.58)	0.586 (1.07)	0.884 (1.21)	2.530*** (0.64)	1.518 (1.01)	5.535*** (1.24)
Export	1.472*** (0.36)	1.822** (0.59)	1.323*** (0.18)	1.820** (0.65)	0.857** (0.37)	1.760*** (0.37)	1.137*** (0.26)	1.262*** (0.17)
Prod	-6.744** (2.28)	-12.606*** (3.53)	-3.021** (1.09)	-2.091 (5.05)	-4.812* (2.42)	-5.637*** (1.58)	-4.472** (1.99)	-12.651*** (2.57)
Trend	-0.009 (0.03)	0.012 (0.07)	-0.013 (0.02)	0.010 (0.12)	-0.032 (0.04)	0.113** (0.05)	-0.027 (0.03)	-0.106 (0.07)
gfc08	-0.849 (28.70)	1.446 (45.72)	8.153 (12.87)	34.195 (50.23)	-1.195 (28.94)	7.133 (16.85)	8.584 (19.45)	67.008* (31.10)
gfc08*REER	-0.008 (5.45)	-0.929 (9.47)	-2.101 (2.44)	-8.217 (9.38)	0.221 (5.38)	-3.168 (3.53)	-1.635 (3.66)	-12.582* (5.98)
gfc08*Export	0.083 (0.43)	0.246 (0.45)	0.156 (0.24)	0.416 (0.62)	0.026 (0.48)	0.639** (0.25)	-0.050 (0.39)	-0.519 (0.52)
RMSE	0.04	0.07	0.02	0.09	0.04	0.04	0.04	0.07
Obs.	35	35	35	35	35	35	35	35

Table 10: Disaggregated imports, with China's relative productivity variable.

Concluding Remarks

- ▶ Chinese exports

Both income and price elasticity estimates are consistent with expectations

These estimates vary across disaggregate exports.

- ▶ Chinese imports

The aggregate imports – elasticity estimates are puzzling

Different estimates across disaggregate import data

Including a relative productivity variable improves results.

- ▶ When properly modeled, Chinese trade flows respond to economic activity and price variables in the expected manner.



The Structural Behavior of China-US Trade Flows

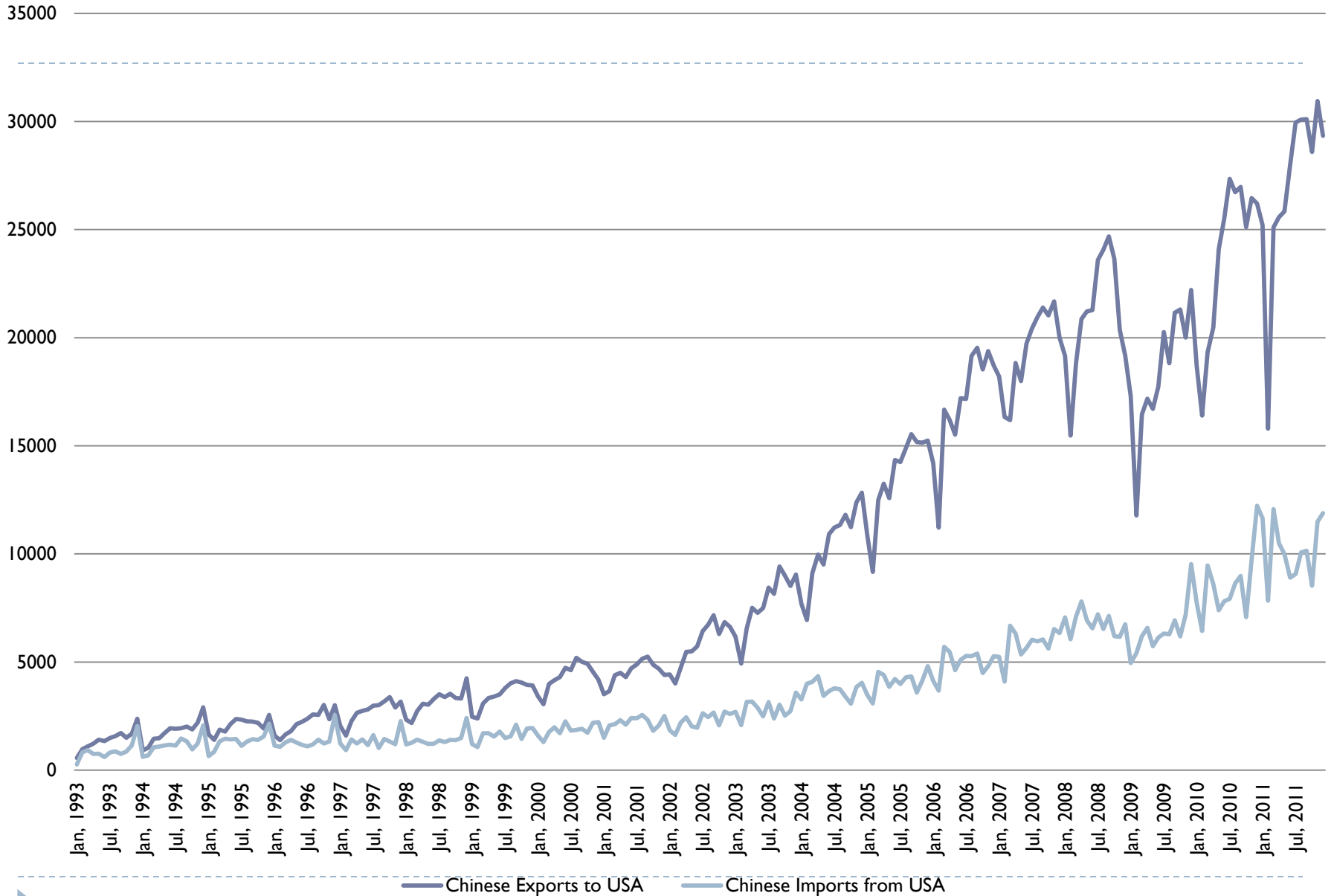


Introduction

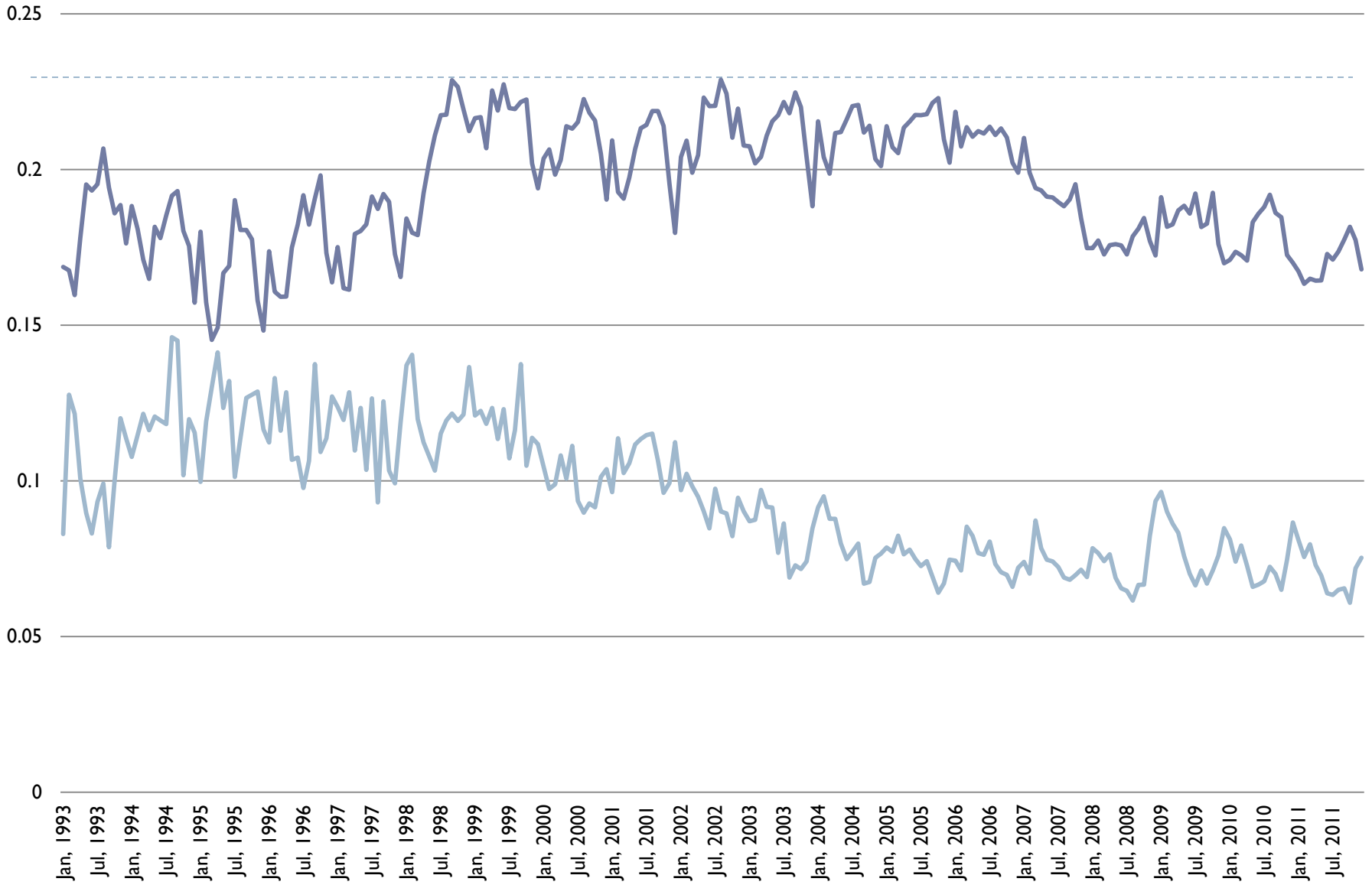
- ▶ We examine the China-US bilateral trade from various structural aspects to reveal some information about the structural behavior of China-US bilateral trade.
 - ▶ Aggregated
 - ▶ Ordinary v.s. processing trade
 - ▶ Primary v.s. manufacture goods trade
 - ▶ Different firm types: SOE, FIE, and Private firms
 - ▶ Subcategories of manufacture goods trade (HS code, 2 digits)



the China-US bilateral trade

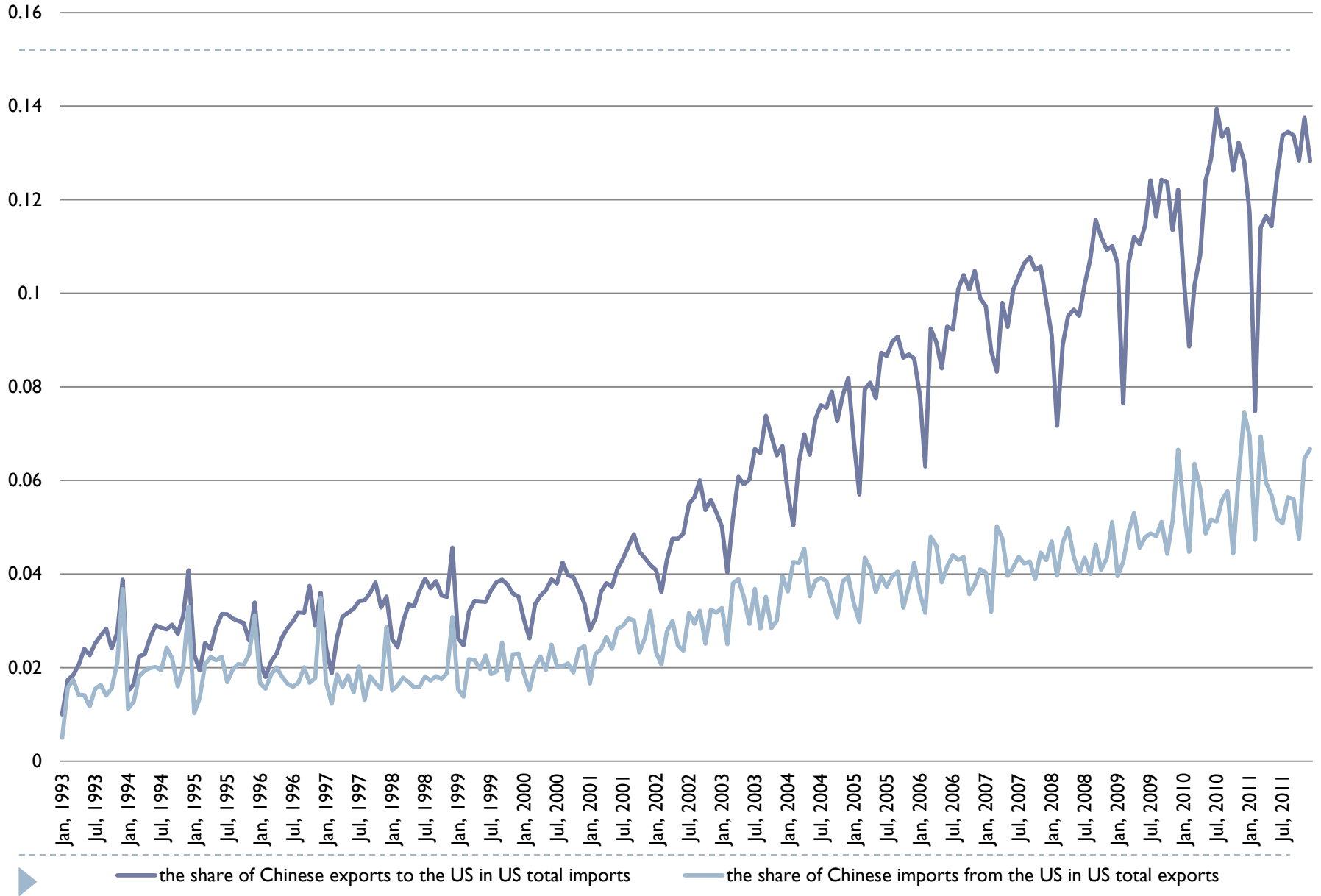


The China-US bilateral trade share in Chinese total trade

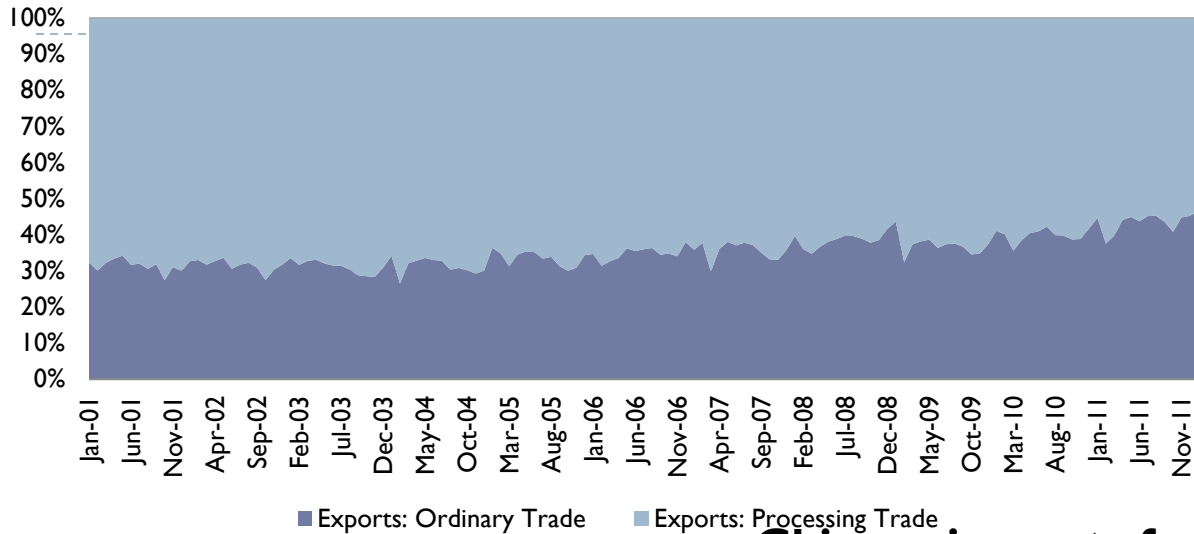


— the share of Chinese exports to the US in Chinese total exports — the share of Chinese imports from the US in Chinese total imports

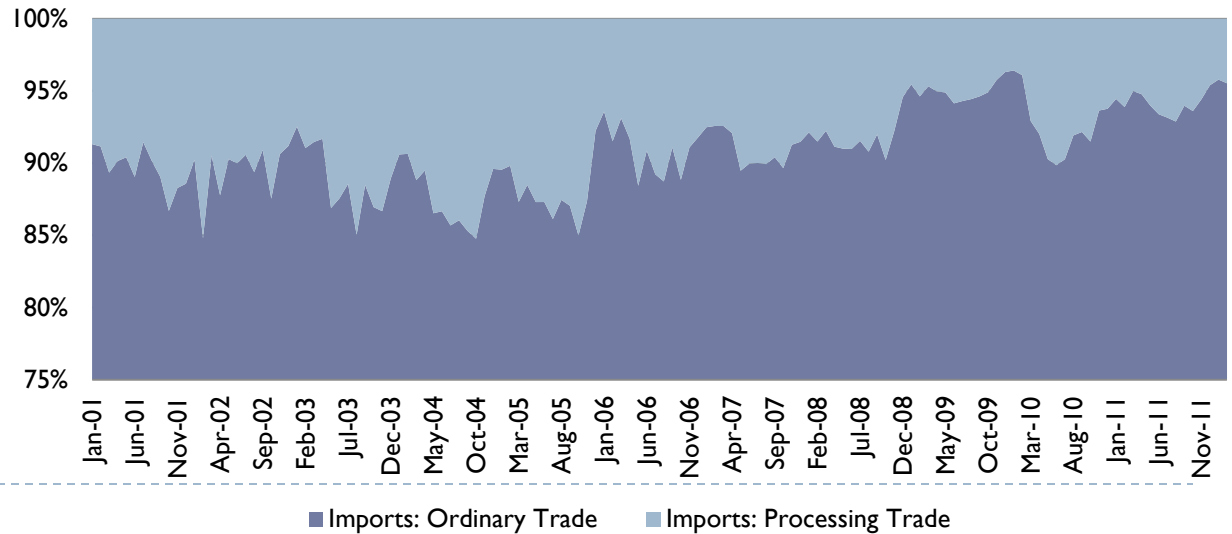
The China-US bilateral trade in the US total trade



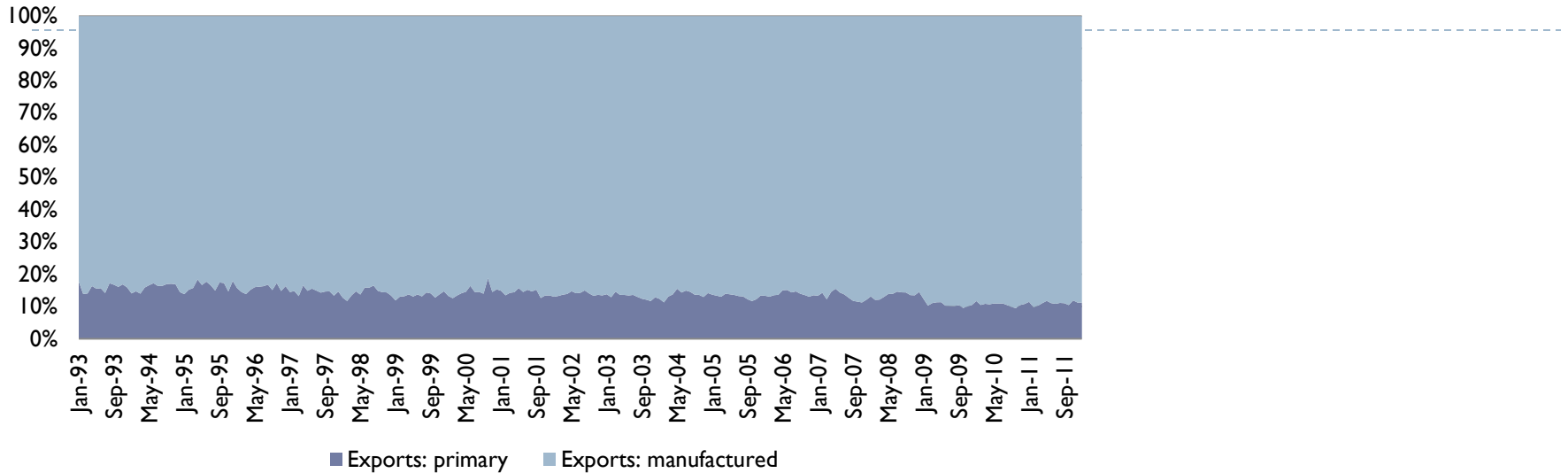
Chinese exports to US: ordinary and processing exports



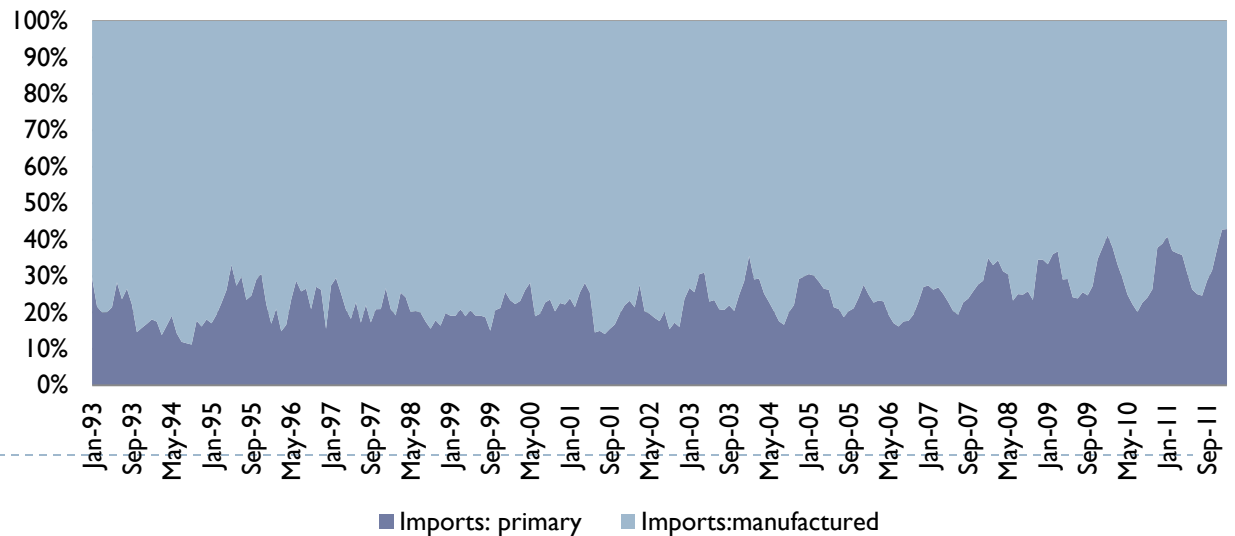
Chinese imports from US: ordinary and processing imports



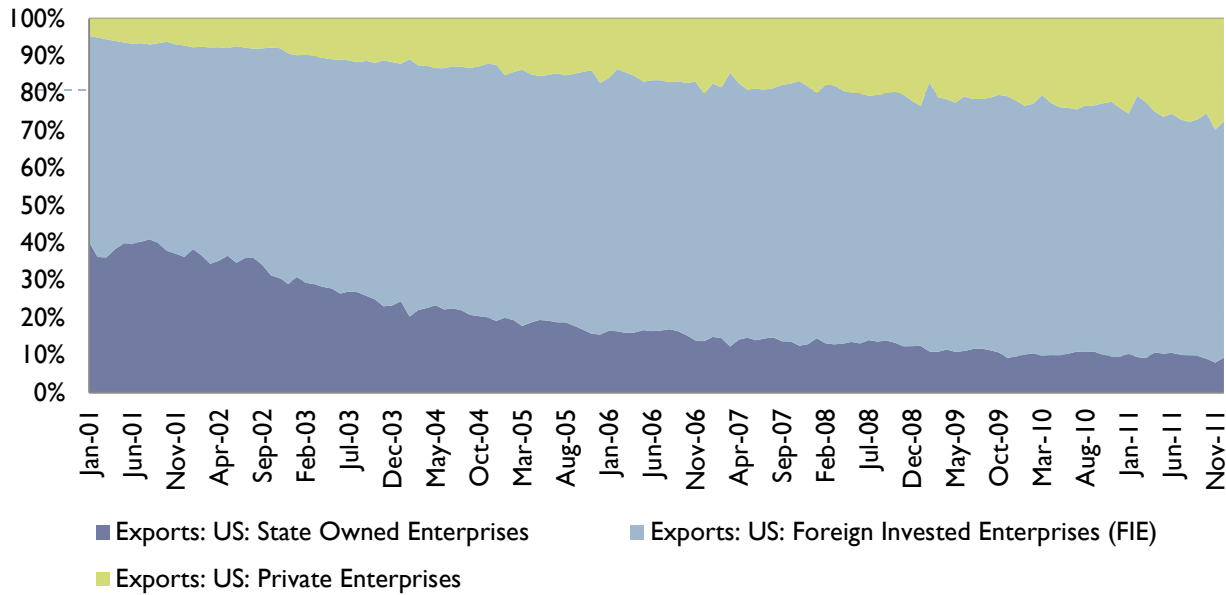
Chinese exports to US: primary and manufactured products



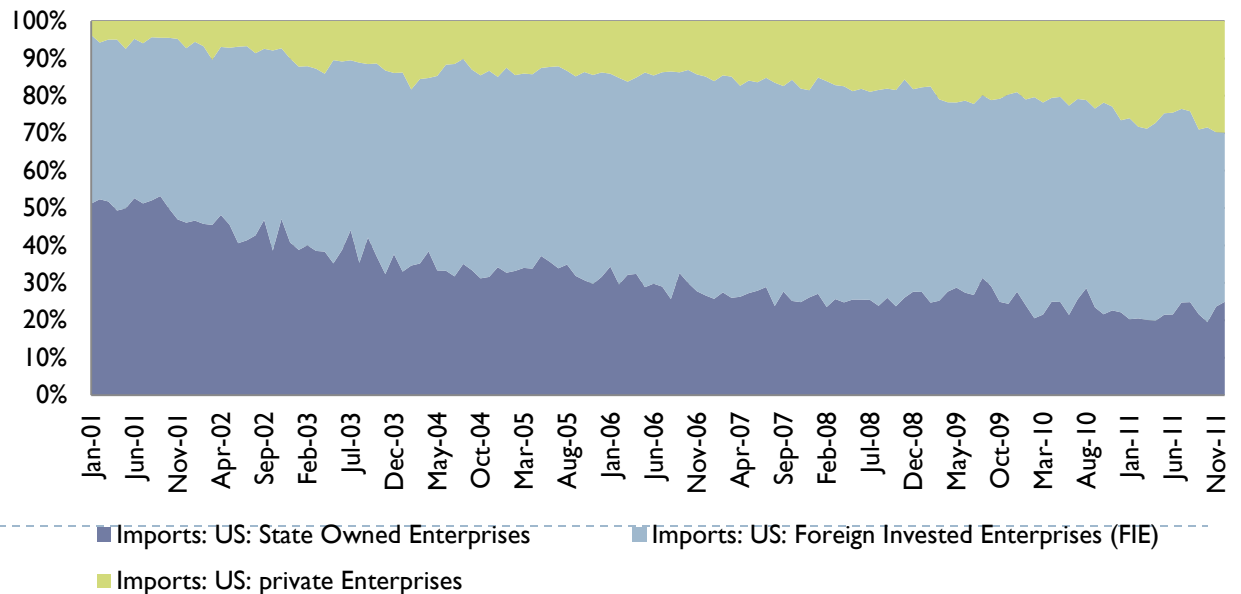
Chinese imports from US: primary and manufactured products



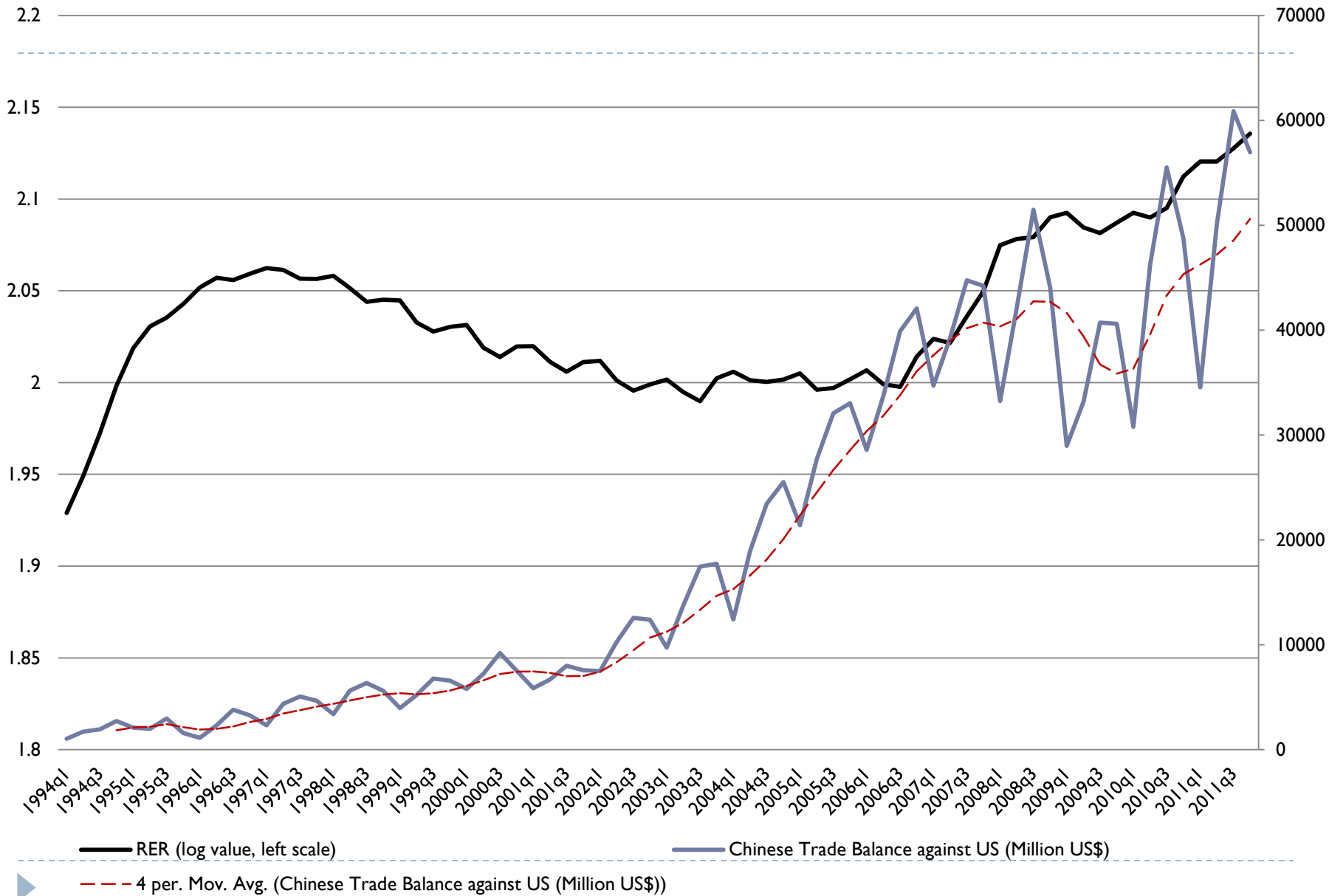
Chinese exports to US: firm types



Chinese imports from US: firm types



the China-US trade balance and RMB real exchange rate



▶ It leads to an important postulation:

It is possible that China's exchange rate policy depends on China's trade balance.



An instrumental method

- ▶ We use Two-Stage method to address this possible endogeneity.
- ▶ First stage:
- ▶ We create a government reaction function of RMB real exchange rate following Taylor Rule framework.
- ▶ $RER = fn(X, TB, Y)$
 - ▶ X includes Taylor rule fundamentals, output gap, inflation differential, interest rate differential
 - ▶ TB is China's bilateral trade balance against U.S.
 - ▶ Y contains other possible factors that RER may respond, e.g. the U.S. –China Strategic and Economic Dialogue (SED), the RMB covered Interest differential (CID)



An instrumental method

- ▶ Second Stage:

$$ex_t = \beta_0 + \beta_1 y_t^* + \beta_2 r_t + \beta_3 z_t + u_{1,t} \quad (1)$$

$$im_t = \gamma_0 + \gamma_1 y_t + \gamma_2 r_t + \gamma_3 w_t + u_{2,t} \quad (2)$$

- ▶ Stock-Watson (1993) Dynamic OLS regression method
- ▶ Leads-lags structure is decided by SBIC;
- ▶ Seasonal dummies, a time trend variable
- ▶ Data are from 1994Q3 to 2011Q4.



Results: China Exports to US – aggregated

	(1)	(2)	(3)
GDP_US	6.261*** (0.69)	4.447*** (1.16)	4.139*** (0.74)
RER	-0.631* (0.35)	-1.582*** (0.51)	-1.264*** (0.35)
REER_US/ASEAN		-1.237* (0.69)	0.303 (0.21)
d.Proc_Imports(-1)		-0.018 (0.10)	0.031 (0.05)
WTO			-1.133*** (0.12)
WTO*Trend			0.039*** (0.00)
Gfc08			0.444* (0.26)
Gfc08*Trend			-0.009** (0.00)
Trend	0.017*** (0.00)	0.028*** (0.01)	-0.002 (0.00)



Results: China Imports from US –aggregated

	(1)	(2)	(3)
GDP_CN	2.130*** (0.69)	2.506*** (0.65)	2.325*** (0.80)
RER	-1.267*** (0.32)	3.404*** (0.91)	2.046*** (0.62)
REER_CNY/EU		0.192 (0.17)	0.001 (0.18)
Prod		-2.428*** (0.54)	-1.797*** (0.48)
WTO			-0.213 (0.36)
WTO*Trend			0.004 (0.01)
Gfc08			-1.416*** (0.25)
Gfc08*Trend			0.021*** (0.00)
Trend	-0.010 (0.02)	0.025 (0.02)	0.019 (0.02)



China Exports to US – Ordinary exports

	(1)	(2)	(3)
GDP_US	4.951*** (0.40)	4.278*** (0.60)	3.858*** (0.83)
RER	-1.634*** (0.25)	-1.976*** (0.29)	-1.484*** (0.31)
REER_US/ASEAN		-0.570 (0.36)	0.242 (0.33)
WTO			-1.256*** (0.36)
WTO*Trend			0.042*** (0.01)
Gfc08			-0.575** (0.25)
Gfc08*Trend			0.007* (0.00)
Trend	0.037*** (0.00)	0.041*** (0.00)	0.003 (0.01)



China Imports from US – Ordinary imports

	(1)	(2)	(3)
GDP_CN	-0.132 (0.99)	0.167 (0.71)	0.963 (0.80)
RER	0.500 (0.37)	4.889*** (0.82)	3.386*** (0.69)
REER_CNY/EU		0.101 (0.31)	-0.651*** (0.23)
Prod		-2.289*** (0.64)	-1.353*** (0.51)
WTO			0.697 (0.85)
WTO*Trend			-0.027 (0.03)
Gfc08			-1.223*** (0.20)
Gfc08*Trend			0.021*** (0.00)
Trend	0.040 (0.03)	0.076*** (0.01)	0.059** (0.02)



China Exports to US – Processing exports

	(1)	(2)	(3)
GDP_US	4.082*** (0.49)	3.870*** (0.55)	2.950*** (1.00)
RER	-2.636*** (0.35)	-2.772*** (0.28)	-2.061*** (0.38)
REER_US/ASEAN		-0.438** (0.20)	-0.153 (0.31)
d.Proc_Imports(-1)		0.225** (0.11)	0.034 (0.14)
WTO			-0.801** (0.33)
WTO*Trend			0.027** (0.01)
Gfc08			1.113*** (0.28)
Gfc08*Trend			-0.020*** (0.00)
Trend	0.036*** (0.00)	0.037*** (0.00)	0.015 (0.01)



China Imports from US – Processing imports

	(1)	(2)	(3)
GDP_CN	-0.673 (2.96)	-1.800 (1.41)	5.413*** (1.85)
RER	-2.459** (1.00)	9.135*** (1.69)	6.539*** (2.07)
REER_CNY/EU		0.041 (0.67)	-2.187*** (0.70)
Prod		-5.551*** (1.48)	-3.300* (1.76)
WTO			2.938*** (1.12)
WTO*Trend			-0.093*** (0.03)
Gfc08			-7.107*** (0.89)
Gfc08*Trend			0.115*** (0.01)
Trend	0.057 (0.08)	0.173*** (0.02)	0.012 (0.04)



China Exports to US – Primary product exports

	(1)	(2)	(3)
GDP_US	7.982*** (1.09)	7.525*** (1.32)	3.384** (1.43)
RER	-0.826** (0.41)	-1.317** (0.56)	-2.868*** (0.61)
REER_US/ASEAN		-0.964* (0.56)	-0.564 (0.51)
WTO			-1.326*** (0.15)
WTO*Trend			0.042*** (0.01)
Gfc08			-0.292 (0.29)
Gfc08*Trend			0.001 (0.00)
Trend	0.003 (0.01)	0.008 (0.01)	0.000 (0.01)



China Imports from US – Primary product imports

	(1)	(2)	(3)
GDP_CN	0.928 (1.56)	0.663 (1.52)	1.413 (1.46)
RER	-0.458 (0.54)	6.276*** (1.22)	4.233** (1.68)
REER_CNY/EU		-0.031 (0.43)	-0.712 (0.74)
Prod		-3.297*** (0.89)	-1.846 (1.36)
WTO			0.970 (1.11)
WTO*Trend			-0.032 (0.04)
Gfc08			-1.209* (0.64)
Gfc08*Trend			0.020* (0.01)
Trend	0.026 (0.04)	0.091*** (0.03)	0.067*** (0.02)



China Exports to US – Manufacture product exports

	(1)	(2)	(3)
GDP_US	6.032*** (0.65)	4.174*** (1.17)	4.109*** (0.63)
RER	-0.603* (0.35)	-1.569*** (0.52)	-1.075*** (0.32)
REER_US/ASEAN		-1.255* (0.71)	0.376 (0.23)
d.Proc_Imports(-1)		-0.027 (0.11)	0.018 (0.05)
WTO			-1.099*** (0.11)
WTO*Trend			0.038*** (0.00)
Gfc08			0.569** (0.27)
Gfc08*Trend			-0.011*** (0.00)
Trend	0.019*** (0.00)	0.030*** (0.01)	-0.002 (0.00)



China Imports from US – Manufacture product imports

	(1)	(2)	(3)
GDP_CN	2.919*** (0.53)	3.351*** (0.62)	2.628** (1.07)
RER	-1.757*** (0.30)	2.141** (0.98)	1.200* (0.72)
REER_CNY/EU		0.248 (0.16)	0.248 (0.27)
Prod		-2.076*** (0.56)	-1.758*** (0.55)
WTO			-0.586 (0.47)
WTO*Trend			0.015 (0.02)
Gfc08			-1.027*** (0.39)
Gfc08*Trend			0.014** (0.01)
Trend	-0.031** (0.01)	-0.003 (0.01)	0.002 (0.02)



China Exports to US – SOE exports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_US	3.867*** (0.58)	2.237*** (0.70)	2.550*** (0.82)	2.529*** (0.80)	0.972 (0.79)	0.152 (0.80)
RER	-0.833*** (0.31)	-1.666*** (0.28)	-0.909*** (0.28)	-0.894*** (0.27)	-1.962*** (0.21)	-2.568*** (0.39)
REER_US/ASEAN		-1.235*** (0.43)	0.159 (0.29)	0.173 (0.27)	-0.402* (0.22)	-0.777*** (0.28)
d.Proc_Imports(-1)		0.238** (0.11)	0.136** (0.06)	0.133** (0.05)	-0.046 (0.09)	-0.065 (0.09)
WTO			0.449 (0.33)	0.454 (0.31)	0.509* (0.28)	0.151 (0.32)
WTO*Trend			-0.012 (0.01)	-0.012 (0.01)	-0.014 (0.01)	-0.003 (0.01)
Gfc08			-1.482*** (0.29)	-1.526*** (0.31)	-1.064*** (0.25)	-0.955*** (0.21)
Gfc08*Trend			0.021*** (0.00)	0.022*** (0.01)	0.015*** (0.00)	0.014*** (0.00)
d.OthFixedInv				-0.023 (0.03)	0.078*** (0.02)	0.083*** (0.02)
d.M2(-1)					-3.148*** (0.36)	-3.670*** (0.42)
CID(-1)						2.711* (1.41)
Trend	-0.007* (0.00)	0.002 (0.00)	0.011 (0.01)	0.012 (0.01)	0.025*** (0.01)	0.020*** (0.01)



China Imports from US – SOE imports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_CN	0.778 (0.48)	1.084** (0.52)	-0.084 (0.86)	0.239 (0.96)	0.205 (0.90)	-0.231 (0.79)
RER	-0.039 (0.35)	2.856*** (0.72)	2.134*** (0.69)	1.786** (0.70)	1.816** (0.72)	-1.254 (0.89)
REER_CNY/EU		0.549** (0.27)	0.301 (0.24)	0.273 (0.24)	0.294 (0.27)	0.247 (0.22)
Prod		-1.953*** (0.54)	-1.578*** (0.50)	-1.469*** (0.48)	-1.497*** (0.48)	0.096 (0.57)
WTO			-0.256 (0.95)	-0.323 (0.96)	-0.350 (1.01)	-1.044 (0.91)
WTO*Trend			0.003 (0.03)	0.005 (0.03)	0.006 (0.03)	0.025 (0.03)
Gfc08			0.303 (0.31)	0.213 (0.29)	0.267 (0.39)	1.457*** (0.44)
Gfc08*Trend			-0.005 (0.01)	-0.003 (0.00)	-0.004 (0.01)	-0.022*** (0.01)
d.OthFixedInv(-1)				0.148 (0.09)	0.151 (0.10)	0.158 (0.10)
d.M2(-1)					-0.105 (0.74)	-0.072 (0.72)
CID(-1)						9.525*** (2.33)
Trend	-0.003 (0.01)	0.032*** (0.01)	0.055* (0.03)	0.043 (0.04)	0.044 (0.03)	0.006 (0.03)

China Exports to US – FIE exports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_US	5.075*** (0.52)	4.241*** (0.67)	3.630*** (1.06)	3.700*** (1.02)	3.396*** (0.80)	0.732 (0.55)
RER	-2.810*** (0.42)	-3.217*** (0.35)	-2.449*** (0.42)	-2.386*** (0.40)	-2.811*** (0.31)	-4.613*** (0.38)
REER_US/ASEAN		-0.573** (0.25)	-0.335 (0.31)	-0.280 (0.31)	-0.581* (0.32)	-1.664*** (0.29)
d.Proc_Imports(-1)		0.227* (0.12)	0.046 (0.14)	0.039 (0.13)	0.004 (0.12)	-0.068 (0.11)
WTO			-1.393*** (0.30)	-1.391*** (0.30)	-1.198*** (0.26)	-2.432*** (0.33)
WTO*Trend			0.047*** (0.01)	0.047*** (0.01)	0.041*** (0.01)	0.077*** (0.01)
Gfc08			1.199*** (0.30)	1.165*** (0.29)	1.248*** (0.24)	1.659*** (0.18)
Gfc08*Trend			-0.021*** (0.00)	-0.020*** (0.00)	-0.021*** (0.00)	-0.026*** (0.00)
d.OthFixedInv				-0.021 (0.03)	0.016 (0.03)	0.026 (0.02)
d.M2(-1)					-1.328*** (0.26)	-2.780*** (0.37)
CID(-1)						8.459*** (1.45)
Trend	0.042*** (0.00)	0.048*** (0.00)	0.003 (0.01)	0.003 (0.01)	0.011* (0.01)	-0.009 (0.01)

China Imports from US – FIE imports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_CN	3.847*** (1.21)	4.308*** (0.86)	3.832*** (1.30)	3.804*** (1.35)	3.604** (1.41)	3.502*** (1.34)
RER	-2.503*** (0.46)	3.496*** (0.94)	1.990*** (0.62)	1.909*** (0.66)	1.829*** (0.62)	1.114 (0.95)
REER_CNY/EU		0.204 (0.26)	-0.043 (0.23)	-0.063 (0.23)	-0.004 (0.24)	-0.015 (0.23)
Prod		-3.130*** (0.70)	-2.086*** (0.45)	-2.026*** (0.45)	-2.013*** (0.43)	-1.642*** (0.60)
WTO			0.210 (0.84)	0.238 (0.85)	0.152 (0.87)	-0.010 (0.83)
WTO*Trend			-0.008 (0.03)	-0.009 (0.03)	-0.006 (0.03)	-0.002 (0.03)
Gfc08			-1.538*** (0.47)	-1.549*** (0.49)	-1.300** (0.59)	-1.023 (0.65)
Gfc08*Trend			0.022*** (0.01)	0.022*** (0.01)	0.018* (0.01)	0.014 (0.01)
d.OthFixedInv(-1)				-0.008 (0.09)	0.008 (0.09)	0.009 (0.09)
d.M2(-1)					-0.562 (0.59)	-0.554 (0.58)
CID(-1)						2.218 (2.34)
-Trend	-0.041 (0.03)	0.006 (0.02)	-0.007 (0.03)	0.007 (0.04)	-0.011 (0.04)	0.002 (0.03)

China Exports to US – Private enterprise exports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_US	5.234*** (0.72)	2.617*** (1.00)	1.852 (1.49)	2.017 (1.47)	1.390 (1.55)	-1.503 (1.33)
RER	-3.848*** (0.60)	-5.235*** (0.51)	-3.755*** (0.50)	-3.654*** (0.49)	-3.933*** (0.44)	-5.999*** (1.03)
REER_US/ASEAN		-1.853*** (0.52)	-1.019* (0.56)	-0.943 (0.59)	-1.067** (0.54)	-2.321*** (0.76)
d.Proc_Imports(-1)		0.187 (0.14)	-0.006 (0.19)	-0.008 (0.19)	-0.055 (0.22)	-0.365** (0.18)
WTO			1.380** (0.64)	1.401** (0.64)	1.380** (0.64)	-0.753 (0.54)
WTO*Trend			-0.042** (0.02)	-0.043** (0.02)	-0.042** (0.02)	0.022 (0.02)
Gfc08			1.160*** (0.43)	1.141*** (0.44)	1.363*** (0.37)	2.343*** (0.29)
Gfc08*Trend			-0.022*** (0.01)	-0.022*** (0.01)	-0.025*** (0.01)	-0.038*** (0.00)
d.OthFixedInv				-0.011 (0.05)	0.021 (0.04)	0.052 (0.04)
d.M2(-1)					-0.959 (0.68)	-3.953*** (0.97)
CID(-1)						13.004*** (3.25)
Trend	0.077*** (0.01)	0.094*** (0.01)	0.139*** (0.02)	0.138*** (0.02)	0.142*** (0.02)	0.094*** (0.02)

China Imports from US – Private enterprise imports

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_CN	-1.740 (2.25)	-2.474* (1.43)	1.195 (3.69)	1.398 (3.74)	-0.178 (3.50)	-0.001 (4.03)
RER	-5.269*** (0.90)	3.745* (1.96)	-0.708 (2.05)	-0.141 (2.38)	0.727 (2.03)	0.560 (2.19)
REER_CNY/EU		-1.041** (0.51)	-2.091*** (0.64)	-2.003*** (0.70)	-2.556*** (0.53)	-2.539*** (0.59)
Prod		-2.405* (1.38)	-0.297 (1.58)	-0.611 (1.62)	-0.066 (1.15)	-0.022 (1.14)
WTO			2.419* (1.38)	2.303 (1.43)	2.692** (1.31)	2.624* (1.49)
WTO*Trend			-0.078* (0.04)	-0.074 (0.05)	-0.086** (0.04)	-0.084* (0.05)
Gfc08			-3.399*** (1.24)	-3.472*** (1.32)	-4.262*** (1.25)	-4.219*** (1.17)
Gfc08*Trend			0.056*** (0.02)	0.057*** (0.02)	0.070*** (0.02)	0.069*** (0.02)
d.OthFixedInv(-1)				0.005 (0.28)	-0.076 (0.25)	-0.070 (0.26)
d.M2(-1)					3.988** (1.99)	3.959* (2.04)
CID(-1)						0.817 (5.61)
Trend	0.153*** (0.06)	0.185*** (0.04)	0.122 (0.09)	0.120 (0.09)	0.142* (0.09)	0.135 (0.11)

A summary of disaggregate bilateral trade results

- ▶ **Exports results are intuitive**
 - ▶ Income elasticities are about 3; where manufactures exports income elasticity is about 4.
 - ▶ price elasticities are 1.1 (manufactures exports) 1.5 (ordinary exports), 2.0 (processing exports), to 2.8 (primary exports).
 - ▶ Private firm has the highest price elasticity (4), FIE (2.5), and SOE(1.5)
- ▶ **Imports results are normal (both GDP and RER are estimated in the correct sign) when the relative productivity and the third country effect are taken considered.**
 - ▶ Income elasticities vary from 1 to 5;
 - ▶ Price elasticities are from 1.2 (manufacture)to 6 (processing).



A summary of disaggregate bilateral trade results

- ▶ In the sub-categories of Chinese manufactures imports from U.S. , the more sophisticate the products, the less price elasticity.
 - ▶ Vehicles,Aircraft,Vessels & Transport Equip has a negative sign;
 - ▶ Nuclear reactors, boilers, machinery and mechanical appliances, computers is estimated an insignificant.
 - ▶ Textiles and Textile Articles have positive and high elasticity.
- ▶ The possible reason:
 - ▶ Sophisticated products are usually in the global product chain
 - ▶ Sophisticated products are subject to more competition



Concluding remarks

- ▶ If model properly, the China-US bilateral trade within the theory prediction.
- ▶ From different aspects of bilateral trade structure, the results are different.
- ▶ To adjust the China-US trade imbalance
 - ▶ RMB exchange rate policy may work
 - ▶ The adjustment of US consumer behavior seems to be more effective, as the income elasticity is larger than the price elasticity.
 - ▶ When adjusting, one needs to consider the sectoral differential, e.g. manufacture and its sub-category.

