The China shock and supply chains: when rising imports raise exports

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Some facts

Figure 1: Mnfg employment in Japan

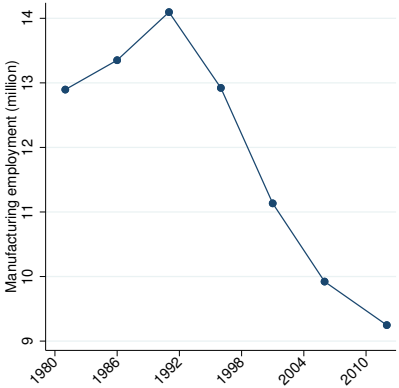
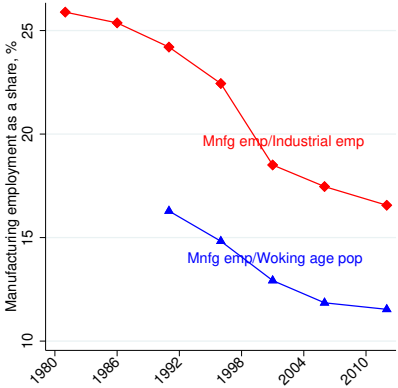


Figure 2: Shares of mnfg employment



Note: Data come from the Establishment and Enterprise Census and the Economic Census for Business Activity.

Some facts

Figure 3: Japan-China trade imbalance

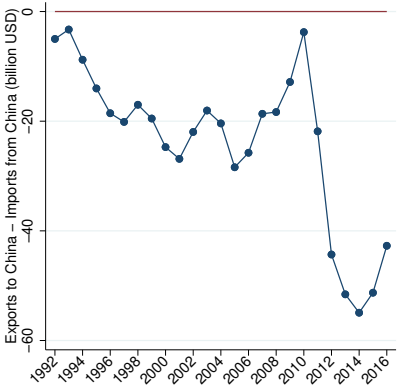
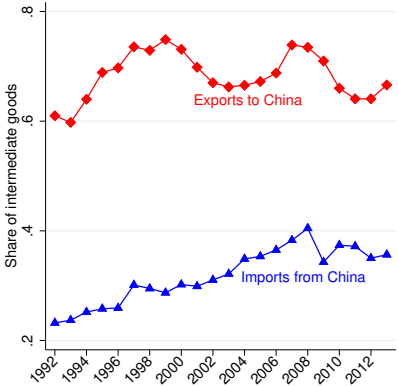


Figure 4: Input share in trade



Note: The data come from UN Comtrade (Figure 1) and from WIOT 2022 and WIOT 2016 (Figure 2).

Overview

Previous findings

- Imports from China reduced mnfg employment in the US (Autor, Dorn, and Hanson, 2013)
- Job creating effects of imported inputs from China in Japan (Taniguchi, 2019)

This paper

- An appropriate definition of "labor market" in the Japanese context (Adachi et al., 2020)
- Quantifying the effect of imports and exports (as in Feenstra, Ma, and Xu, 2019)
- Considering the link between imports and exports through supply chains
  - Japan is a perfect country to study in this context due to ...
    1. its proximity to China
    2. its integration to "Factory Asia" (Baldwin and Forslid, 2014; Kimura and Obashi, 2016)

Firms engaging in trade	*M*&*X*	only *M*	only *X*
The US, 1997 (Bernard et al., 2007)	11%	14%	27%
Japan, 1997 (METI, 2022)	15%	6%	10%
Japan, 2016 (METI, 2022)	25%	8%	12%

Overview

Main results

- Imports from China $\rightarrow L^{mnfg} \downarrow$ and exports to China $\rightarrow L^{mnfg} \uparrow$
  - On net, 0.17 million job losses during 1991-2001, and 0.13 million job gains during 2001-2012
- Among imports: final goods $\rightarrow L^{mnfg} \downarrow$, inputs used $\rightarrow L^{mnfg} \uparrow$, inputs competing $\rightarrow L^{mnfg} \downarrow$
  - On net, 0.16 million job losses during 1991-2001, and 0.14 million job losses during 2001-2012

Literature review

Labor market effects of the China trade shock

- US context (Autor, Dorn, and Hanson, 2013)
- Japanese context
  - Prefecture-level: Taniguchi (2019)
  - Sector-level: Kiyota et al. (2021), Hayakawa, Ito, and Urata (2021a)
  - Firm-level: Hayakawa, Ito, and Urata (2021b), Bellone, Hazir, and Matsuura (2022)
  - CZ-level: Kainuma and Saito (2022), Endoh (2022), This paper

Export opportunities and labor markets

- CZ-level: Feenstra, Ma, and Xu (2018), This paper
- Sector-level: Kiyota et al. (2021), Choi and Xu (2020)
- IO-analysis: Feenstra and Sasahara (2018)

Imports-exports nexus through supply chains

- Flaaen and Pierce (2019), Handley, Kamal, and Monarch (2020)

Regression model

$$\Delta l_{it}^{mnfg} = \beta_t + \beta_1 \Delta IPW_{it}^{CHN} + \beta_2 \Delta EOW_{it}^{CHN} + \mathbf{X}_{it}\boldsymbol{\beta}_3 + u_{it}$$

- Commuting zone i; sector s; and period t
- $\Delta l_{it}^{mnfg} = 100 \times \left(\frac{L_{it+1}^{mnfg}}{L_{it+1}^{wap}} - \frac{L_{it}^{mnfg}}{L_{it}^{wap}} \right)$: change in manufacturing employment as a share of working age population (ages 15–65)
- Key explanatory variables
  - $\Delta IPW_{it}^{CHN} = \sum_s \frac{L_{ist} \times \Delta im_{st}^{CHN \to JPN}}{\sum_{s'} L_{is't}}$ with $\Delta im_{st}^{CHN \to JPN} = \frac{\Delta IM_{st}^{CHN \to JPN}}{\sum_{i'} L_{i's t}}$: weighted import penetration from China
  - $\Delta EOW_{it}^{CHN} = \sum_s \frac{L_{ist} \times \Delta ex_{st}^{JPN \to CHN}}{\sum_{s'} L_{is't}}$ with $\Delta ex_{st}^{JPN \to CHN} = \frac{\Delta EX_{st}^{JPN \to CHN}}{\sum_{i'} L_{i's t}}$: weighted export opportunities to China
- The regression is weighted by the initial population

Regression model

$$\Delta I_{it}^{mnfg} = \beta_t + \beta_1 \Delta IPW_{it}^{CHN} + \beta_2 \Delta EOW_{it}^{CHN} + \mathbf{X}_{it}\boldsymbol{\beta}_3 + u_{it}$$

Controls

- Initial mnfg emp. as a share of working age population (Initial level of the dependent variable)
- Initial unemployment rate
- Initial labor market participation rate
- Initial foreign population share
- Initial urban population share
- Initial female employment share
- Initial log(mnfg emp/number of mnfg affiliates)
- Initial share of non-full time mnfg employment to total mnfg employment
- Initial log(population density)
- Initial share of pop of age 15 or less to total population
- Period dummy and its interaction term with the above controls
- Region dummies

Endogeneity

$$\Delta l_{it}^{mnfg} = \beta_t + \beta_1 \Delta IPW_{it}^{CHN} + \beta_2 \Delta EOW_{it}^{CHN} + \mathbf{X}_{it}\boldsymbol{\beta}_3 + u_{it}$$

Endogenous variables

- $\Delta IPW_{it}^{CHN} = \sum_s \frac{L_{ist} \times \Delta im_{st}^{CHN \to JPN}}{\sum_{s'} L_{is't}}$: weighted import penetration from China
  - $\Delta IPW_{it}^{OTH} = \sum_s \frac{L_{ist-1} \times \Delta im_{st}^{CHN \to OTH}}{\sum_{s'} L_{is't-1}}$: instrument
- $\Delta EOW_{it}^{CHN} = \sum_s \frac{L_{ist} \times \Delta ex_{st}^{JPN \to CHN}}{\sum_{s'} L_{is't}}$: weighted export opportunities to China
  - $\Delta EOW_{it}^{OTH} = \sum_s \frac{L_{ist-1} \times \Delta ex_{st}^{OTH \to CHN}}{\sum_{s'} L_{is't-1}}$: instrument

OTH includes Australia, Denmark, Finland, Germany, New Zealand, Spain, Switzerland, and the United States following ADH (2013)

Data structure

308 commuting zones based on the 1995 version of CZs by Adachi et al. (2020)

- Excluding the commuting zones ...
  - with zero manufacturing employment
  - with Fukushima Daiichi Nuclear Power Plants
  - with Miyake-jima (the evacuation zone due to the volcano eruption in 2000)

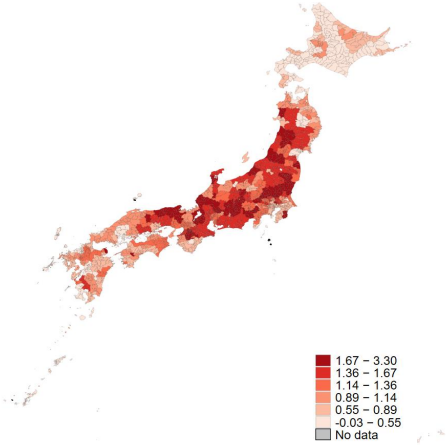
- Two datasets
  - A stacked cross-section of "1991-2001" and "2001-2012," trade data from UN Comtrade (63 mnfg sectors)
  - Three (unstacked) cross-sections, trade data from the WIOT
    - 1991-2001 (WIOT 2022 version, 12 mnfg sectors)
    - 1996-2006 (WIOT 2013 version, 14 mnfg sectors)
    - 2001-2012 (WIOT 2016 version, 18 mnfg sectors)

Data sources

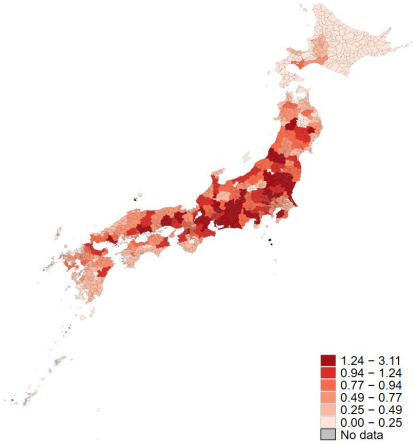
- Employment data
  - Establishment and Enterprise Census of Japan, 1986, 1991, 1996, 2001
  - Economic Census for Business Activity of Japan, 2012, 2016
- Trade data – UN Comtrade and WIOT
  - Converted to Japanese yen using the exchange rates retrieved from PWT
  - Deflated using sectoral CPIs of Japan (Cabinet Office of Japan)
  - Trade data for instruments are not deflated
- Controls
  - Regional Statistics Database (System of Social and Demographic Statistics)
  - Income levels are deflated using prefecture-level GDP deflators from the Cabinet Office

ΔIPW and ΔEOW

Decennial $\Delta IPW^{CHN}_{i,1991-2012}$ (100,000 yen per employee)



Decennial $\Delta EOW^{CHN}_{i,1991-2012}$



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Correlations

Table 1: Correlations between ΔIPW and ΔEOW

	Correlation	Sample size
1991-2012	0.78	616
1991-2001	0.58	308
2001-2012	0.82	308

First-stage

Table 2: First-stage results

	ΔIPW^{CHN}		ΔEOW^{CHN}	
	(1)	(2)	(3)	(4)
ΔIPW^{OTH}	0.20***	0.20***		0.02*
	(0.009)	(0.009)		(0.011)
ΔEOW^{OTH}		-0.02	0.33***	0.32***
		(0.025)	(0.048)	(0.047)
Controls and period dummy	Yes	Yes	Yes	Yes
Observations	616	616	616	616
R-squared	0.949	0.949	0.936	0.937
First-stage F-statistic for excluded instruments	509.13	268.19	47.21	24.29
p-value for the F-statistic	0.000	0.000	0.000	0.000

*** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$; robust standard errors clustered by prefectures are in parentheses.

Baseline results

Table 3: Baseline results

Dependent variable is $\Delta l_{it}^{mnfg} = 100 \times \left(\frac{L_{it+1}^{mnfg}}{L_{it+1}^{wap}} - \frac{L_{it}^{mnfg}}{L_{it}^{wap}} \right)$

	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
ΔIPW^{CHN}	-0.55**	-0.64**			-0.74***	-0.87***
	(0.248)	(0.274)			(0.215)	(0.205)
ΔEOW^{CHN}			0.96***	1.81***	1.15***	1.83***
			(0.248)	(0.337)	(0.234)	(0.258)
Controls and period dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	616	616	616	616	616	616
R-squared	0.800	0.800	0.809	0.795	0.825	0.817
Cragg-Donald Wald F-stat.		1616.7		368.1		191.8
Kleibergen-Paap rk Wald F-stat.		509.1		47.2		24.2

*** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$; robust standard errors clustered by prefectures are in parentheses.

Quantifying the effects

Following the approach by ADH (2013) and Dauth et al. (2015)

- 1991-2001
  - $\Delta L^{mnfg}|_{1991-2001}^{\text{caused by}\Delta IPW^{CHN}} = \frac{1}{2}(L_{1991}^{wap} + L_{2001}^{wap}) \times \overline{\Delta IPW}_{1991-2001}^{CHN} \times \frac{\hat{\beta}_1^{IV}}{100} \times \frac{\hat{\beta}_1^{OLS} - \hat{\beta}_1^{e}}{\hat{\beta}_1^{IV} - \hat{\beta}_1^{e}} = -0.40$ million
  - $\Delta L^{mnfg}|_{1991-2001}^{\text{caused by}\Delta EOW^{CHN}} = \frac{1}{2}(L_{1991}^{wap} + L_{2001}^{wap}) \times \overline{\Delta EOW}_{1991-2001}^{CHN} \times \frac{\hat{\beta}_2^{IV}}{100} \times \frac{\hat{\beta}_2^{OLS} - \hat{\beta}_2^{e}}{\hat{\beta}_2^{IV} - \hat{\beta}_2^{e}} = 0.23$ million
  - On net, -0.17 million
- 2001-2012
  - $\Delta L^{mnfg}|_{2001-2012}^{\text{caused by}\Delta IPW^{CHN}} = \frac{1}{2}(L_{2001}^{wap} + L_{2012}^{wap}) \times \overline{\Delta IPW}_{2001-2012}^{CHN} \times \frac{\hat{\beta}_1^{IV}}{100} \times \frac{\hat{\beta}_1^{OLS} - \hat{\beta}_1^{e}}{\hat{\beta}_1^{IV} - \hat{\beta}_1^{e}} = -0.77$ million
  - $\Delta L^{mnfg}|_{2001-2012}^{\text{caused by}\Delta EOW^{CHN}} = \frac{1}{2}(L_{2001}^{wap} + L_{2012}^{wap}) \times \overline{\Delta EOW}_{2001-2012}^{CHN} \times \frac{\hat{\beta}_2^{IV}}{100} \times \frac{\hat{\beta}_2^{OLS} - \hat{\beta}_2^{e}}{\hat{\beta}_2^{IV} - \hat{\beta}_2^{e}} = 0.90$ million
  - On net, 0.13 million

Decomposing imports from China

Dropping the period subscript t to simplify the notations

- Imports of final goods from China (pro-competitive effects):

$$\Delta IPW_i^{CHN,\text{Final goods}} = \sum_s \left(\frac{L_{is}}{\sum_{s'} L_{is'}} \times \Delta f_{(C,s),J} \right)$$

- Imported inputs from China used by Japanese producers (complementarity effects):

$$\Delta IPW_i^{CHN,\text{Inputs used}} = \sum_s \left(\frac{L_{is}}{\sum_{s'} L_{is'}} \times \sum_{s'} \Delta m_{(C,s'),(J,s)} \right)$$

- Imported inputs from China competing with Japan's domestic inputs (pro-competitive effects):

$$\Delta IPW_i^{CHN,\text{Inputs competing}} = \sum_s \left(\frac{L_{is}}{\sum_{s'} L_{is'}} \times \sum_{s' \neq s} \Delta m_{(C,s),(J,s')} \right)$$

Imported inputs used by Japanese producers

Imported inputs from China used by Japanese producers (complementarity effects):

$$\Delta IPW_i^{CHN,\text{Inputs used}} = \sum_s \left(\frac{L_{is}}{\sum_{s'} L_{is'}} \times \sum_{s'} \Delta m_{(C,s'),(J,s)} \right)$$

	$C,1$	$C,2$	$C,3$	$J,1$	$J,2$	$J,3$	C	J
$C,1$	$m_{(C,1),(C,1)}$	$m_{(C,1),(C,2)}$	$m_{(C,1),(C,3)}$	$m_{(C,1),(J,1)}$	$m_{(C,1),(J,2)}$	$m_{(C,1),(J,3)}$	$f_{(C,1),C}$	$f_{(C,1),J}$
$C,2$	$m_{(C,2),(C,1)}$	$m_{(C,2),(C,2)}$	$m_{(C,2),(C,3)}$	$m_{(C,2),(J,1)}$	$m_{(C,2),(J,2)}$	$m_{(C,2),(J,3)}$	$f_{(C,2),C}$	$f_{(C,2),J}$
$C,3$	$m_{(C,3),(C,1)}$	$m_{(C,3),(C,2)}$	$m_{(C,3),(C,3)}$	$m_{(C,3),(J,1)}$	$m_{(C,3),(J,2)}$	$m_{(C,3),(J,3)}$	$f_{(C,2),C}$	$f_{(C,2),J}$
$J,1$	$m_{(J,1),(C,1)}$	$m_{(J,1),(C,2)}$	$m_{(J,1),(C,3)}$	$m_{(J,1),(J,1)}$	$m_{(J,1),(J,2)}$	$m_{(J,1),(J,3)}$	$f_{(J,1),C}$	$f_{(J,1),J}$
$J,2$	$m_{(J,2),(C,1)}$	$m_{(J,2),(C,2)}$	$m_{(J,2),(C,3)}$	$m_{(J,2),(J,1)}$	$m_{(J,2),(J,2)}$	$m_{(J,2),(J,3)}$	$f_{(J,2),C}$	$f_{(J,2),J}$
$J,3$	$m_{(J,3),(C,1)}$	$m_{(J,3),(C,2)}$	$m_{(J,3),(C,3)}$	$m_{(J,3),(J,1)}$	$m_{(J,3),(J,2)}$	$m_{(J,3),(J,3)}$	$f_{(J,2),C}$	$f_{(J,2),J}$

Imported inputs competing with Japan's inputs

Imported inputs from China competing with Japan's domestic inputs (pro-competitive effects):

$$\Delta IPW_i^{CHN,\text{Inputs competing}} = \sum_s \left(\frac{L_{is}}{\sum_{s'} L_{is'}} \times \sum_{s' \neq s} \Delta m_{(C,s),(J,s')} \right)$$

	$C,1$	$C,2$	$C,3$	$J,1$	$J,2$	$J,3$	C	J
$C,1$	$m_{(C,1),(C,1)}$	$m_{(C,1),(C,2)}$	$m_{(C,1),(C,3)}$	$m_{(C,1),(J,1)}$	$m_{(C,1),(J,2)}$	$m_{(C,1),(J,3)}$	$f_{(C,1),C}$	$f_{(C,1),J}$
$C,2$	$m_{(C,2),(C,1)}$	$m_{(C,2),(C,2)}$	$m_{(C,2),(C,3)}$	$m_{(C,2),(J,1)}$	$m_{(C,2),(J,2)}$	$m_{(C,2),(J,3)}$	$f_{(C,2),C}$	$f_{(C,2),J}$
$C,3$	$m_{(C,3),(C,1)}$	$m_{(C,3),(C,2)}$	$m_{(C,3),(C,3)}$	$m_{(C,3),(J,1)}$	$m_{(C,3),(J,2)}$	$m_{(C,3),(J,3)}$	$f_{(C,2),C}$	$f_{(C,2),J}$
$J,1$	$m_{(J,1),(C,1)}$	$m_{(J,1),(C,2)}$	$m_{(J,1),(C,3)}$	$m_{(J,1),(J,1)}$	$m_{(J,1),(J,2)}$	$m_{(J,1),(J,3)}$	$f_{(J,1),C}$	$f_{(J,1),J}$
$J,2$	$m_{(J,2),(C,1)}$	$m_{(J,2),(C,2)}$	$m_{(J,2),(C,3)}$	$m_{(J,2),(J,1)}$	$m_{(J,2),(J,2)}$	$m_{(J,2),(J,3)}$	$f_{(J,2),C}$	$f_{(J,2),J}$
$J,3$	$m_{(J,3),(C,1)}$	$m_{(J,3),(C,2)}$	$m_{(J,3),(C,3)}$	$m_{(J,3),(J,1)}$	$m_{(J,3),(J,2)}$	$m_{(J,3),(J,3)}$	$f_{(J,2),C}$	$f_{(J,2),J}$

Correlations between the variables

1991-2001 (WIOT 22v), N=308	$\Delta IPW_i^{\text{Final}}$	$\Delta IPW_i^{\text{Inputs used}}$	$\Delta IPW_i^{\text{Inputs competing}}$	ΔEOW_i
$\Delta IPW_i^{CHN,\text{Final}}$	1			
$\Delta IPW_i^{CHN,\text{Inputs used}}$	0.33	1		
$\Delta IPW_i^{CHN,\text{Inputs competing}}$	0.40	0.87	1	
ΔEOW_i^{CHN}	0.48	**0.93**	**0.91**	1
1996-2006 (WIOT 13v), N=308	$\Delta IPW_i^{\text{Final}}$	$\Delta IPW_i^{\text{Inputs used}}$	$\Delta IPW_i^{\text{Inputs competing}}$	ΔEOW_i^{CHN}
$\Delta IPW_i^{CHN,\text{Final}}$	1			
$\Delta IPW_i^{CHN,\text{Inputs used}}$	0.80	1		
$\Delta IPW_i^{CHN,\text{Inputs competing}}$	0.87	0.91	1	
ΔEOW_i^{CHN}	0.84	**0.94**	**0.95**	1
2001-2012 (WIOT 16v), N=308	$\Delta IPW_i^{\text{Final}}$	$\Delta IPW_i^{\text{Inputs used}}$	$\Delta IPW_i^{\text{Inputs competing}}$	ΔEOW_i
$\Delta IPW_i^{CHN,\text{Final}}$	1			
$\Delta IPW_i^{CHN,\text{Inputs used}}$	0.69	1		
$\Delta IPW_i^{CHN,\text{Inputs competing}}$	0.72	0.92	1	
ΔEOW_i^{CHN}	0.78	**0.97**	**0.92**	1

Final goods imports and imported inputs *used*, ΔI_{it}^{mnfg}

Dependent variable is $\Delta I_{it}^{mnfg} = 100 \times \left(\frac{L_{it+1}^{mnfg}}{L_{it+1}^{wap}} - \frac{L_{it}^{mnfg}}{L_{it}^{wap}} \right)$

	1991-2001 WIOT 22v (1)	1996-2006 WIOT 13v (2)	2001-2012 WIOT 16v (3)
ΔIPW^{CHN}, final goods	-1.15**	-1.89***	-0.81***
	(0.473)	(0.512)	(0.146)
ΔIPW^{CHN}, inputs used	3.55**	1.91*	2.03***
	(1.743)	(0.997)	(0.499)
Controls	Yes	Yes	Yes
Observations	308	308	308
R-squared	0.77	0.58	0.67
Cragg-Donald Wald F-stat.	153.3	836.8	1150.5
Kleibergen-Paap rk Wald F-stat.	34.3	259.2	352.4
Implied causal effects of trade (in millions)			
ΔIPW^{CHN}, final goods	-0.41	-0.81	-0.93
ΔIPW^{CHN}, inputs used	0.25	0.54	0.79
Total (on net)	-0.16	-0.28	-0.14

Imported inputs *used* and imported inputs *competing*, ΔI_{it}^{mnfg}

Dependent variable is $\Delta I_{it}^{mnfg} = 100 \times \left(\frac{L_{it+1}^{mnfg}}{L_{it+1}^{wap}} - \frac{L_{it}^{mnfg}}{L_{it}^{wap}} \right)$

	1991-2001 WIOT 22v (1)	1996-2006 WIOT 13v (2)	2001-2012 WIOT 16v (3)
ΔIPW^{CHN}, inputs used	7.70**	2.54***	3.30***
	(3.048)	(0.974)	(0.938)
ΔIPW^{CHN}, inputs competing	-15.11***	-5.32***	-3.86***
	(5.046)	(1.156)	(0.971)
Controls	Yes	Yes	Yes
Observations	308	308	308
R-squared	0.74	0.71	0.61
Cragg-Donald Wald F-stat.	67.18	273.3	252.8
Kleibergen-Paap rk Wald F-stat.	12.6	61.4	35.4
Implied causal effects of trade (in millions)			
ΔIPW^{CHN}, inputs used	0.17	0.98	0.86
ΔIPW^{CHN}, inputs competing	-0.70	-0.86	-1.02
Total (on net)	-0.53	0.12	-0.15

Final goods imports and imported inputs *used*, ΔEOW^{CHN}

Dependent variable is ΔEOW^{CHN}

	1991-2001 WIOT 22v (1)	1996-2006 WIOT 13v (2)	2001-2012 WIOT 16v (3)
ΔIPW^{CHN}, final goods	0.05	0.14	-0.02
	(0.042)	(0.201)	(0.059)
ΔIPW^{CHN}, inputs used	0.39*	1.83***	2.29***
	(0.198)	(0.305)	(0.186)
Controls	Yes	Yes	Yes
Observations	308	308	308
R-squared	0.85	0.75	0.87
Cragg-Donald Wald F-stat.	153.3	836.8	1150.5
Kleibergen-Paap rk Wald F-stat.	34.3	259.2	352.4
Implied causal effects of trade (100,000 yen per employee)			
ΔIPW^{CHN}, final goods	0.04	0.04	-0.02
ΔIPW^{CHN}, inputs used	0.03	0.63	1.18
Total (on net)	0.07	0.67	1.15

Imported inputs *used* and imported inputs *competing*, ΔEOW^{CHN}

Dependent variable is ΔEOW^{CHN}

	1991-2001 WIOT 22v (1)	1996-2006 WIOT 13v (2)	2001-2012 WIOT 16v (3)
ΔIPW^{CHN}, inputs used	0.17	0.38	1.72***
	(0.308)	(0.294)	(0.263)
ΔIPW^{CHN}, inputs competing	0.78	0.39	1.14***
	(0.609)	(0.739)	(0.338)
Controls	Yes	Yes	Yes
Observations	308	308	308
R-squared	0.84	0.82	0.90
Cragg-Donald Wald F-stat.	67.18	273.3	252.8
Kleibergen-Paap rk Wald F-stat.	12.6	61.4	35.4
Implied causal effects of trade (100,000 yen per employee)			
ΔIPW^{CHN}, inputs used	0.007	0.20	1.20
ΔIPW^{CHN}, inputs competing	0.03	0.07	0.40
Total (on net)	0.04	0.27	1.60

Sector-level regression results (similar approach as Acemoglu et al., 2016)

	$\Delta \ln(go)$ (1)	Δex^{CHN} (2)	Δex^{WLD} (3)	$\Delta \ln(emp)$ (4)
Panel A: 1986-1998 (WIOT 22v)				
Δim^{CHN}, final goods	2.19	0.06	11.83**	
	(4.615)	(0.111)	(5.203)	
Δim^{CHN}, inputs used	38.67	1.34**	47.36	
	(35.348)	(0.540)	(35.512)	
Observations	48	48	48	
Cragg-Donald Wald F-stat.	13.80	13.34	13.81	
Kleibergen-Paap rk Wald F-stat.	4.16	4.46	4.87	
Panel B: 1995-2010 (WIOT 13v)				
Δim^{CHN}, final goods	-13.78*	-0.26	-3.62	-3.20
	(7.850)	(0.571)	(6.699)	(2.506)
Δim^{CHN}, inputs used	-4.32	3.41*	59.18	-5.11
	(21.534)	(1.947)	(36.178)	(9.740)
Observations	70	70	70	56
Cragg-Donald Wald F-stat.	7.50	5.84	6.62	5.06
Kleibergen-Paap rk Wald F-stat.	4.19	2.73	4.93	3.79
Panel C: 2000-2012 (WIOT 16v)				
Δim^{CHN}, final goods	5.35**	0.05	6.25**	0.55
	(2.493)	(0.140)	(2.946)	(1.377)
Δim^{CHN}, inputs used	28.62***	1.88***	29.87***	3.41
	(6.998)	(0.476)	(11.463)	(4.215)
Observations	72	72	72	72
Cragg-Donald Wald F-stat.	40.09	32.17	24.82	40.56
Kleibergen-Paap rk Wald F-stat.	41.36	34.92	22.79	39.28

Conclusions

Baseline regressions

- Overall imports from China $\rightarrow L^{mnfg} \downarrow$
- Overall exports to China $\rightarrow L^{mnfg} \uparrow$ (dominant)

Decomposing imports from China

- Final goods imports $\rightarrow L^{mnfg} \downarrow$
- Imported inputs *used* $\rightarrow L^{mnfg} \uparrow$ (dominant)
- Imported inputs *competing* $\rightarrow L^{mnfg} \downarrow$

Imports-exports nexus

- Imported inputs *used* $\rightarrow$ exports $\uparrow$ (when final goods imports are controlled for)
- Sector-level regression results are not inconsistent with CZ-level regression results