Public Affairs 856
Trade, Competition, and Governance in a Global Economy
Lecture 23
4/20/2022

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UW Madison
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Outline

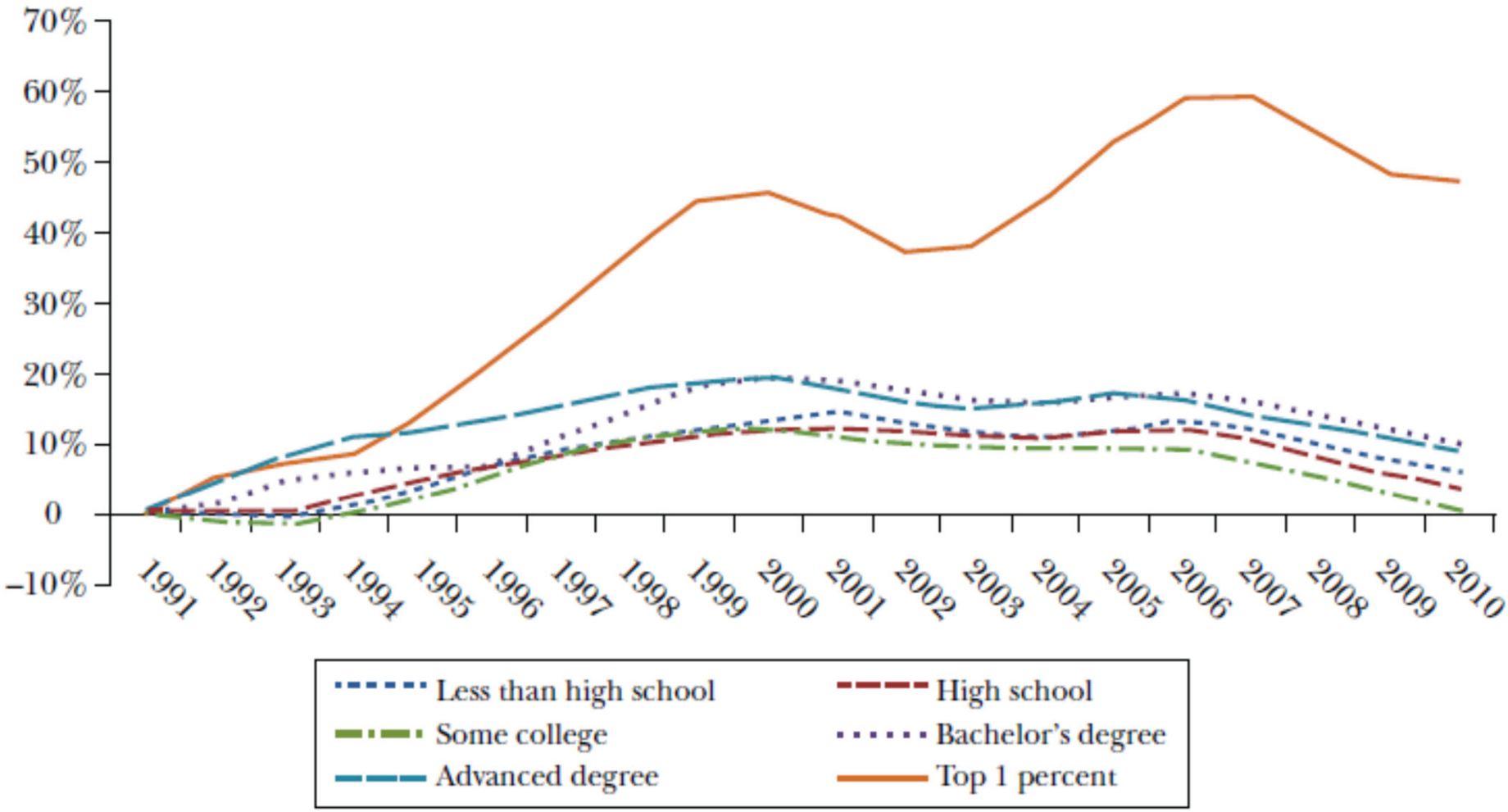
- Inequality
- China effect

Inequality

Inequality

Figure 1

Changes in U.S. Real Income, Working Adults, by Education and for Top 1 Percent



Haskel, Lawrence, Leamer, Slaughter (2012)

earnings. To preview our results, we then work through four main findings: First, there is only mixed evidence that trade in goods, intermediates, and services has been raising inequality between more- and less-skilled workers. Second, it is more possible, although far from proven, that globalization has been boosting the real and relative earnings of superstars. The usual trade-in-goods mechanisms probably have not done this. But other globalization channels—such as the combination of greater tradability of services and larger market sizes abroad—may be playing an important role. Third, seeing this possible role requires expanding standard Heckscher–Ohlin trade models, partly by adding insights of more recent research with heterogeneous firms and workers. Finally, our expanded trade framework offers new insights on the sobering fact of pervasive real-income declines for the large majority of Americans in the past decade. We believe that the connections between globalization, technology, and wages have become much more important during the last 10–15 years.

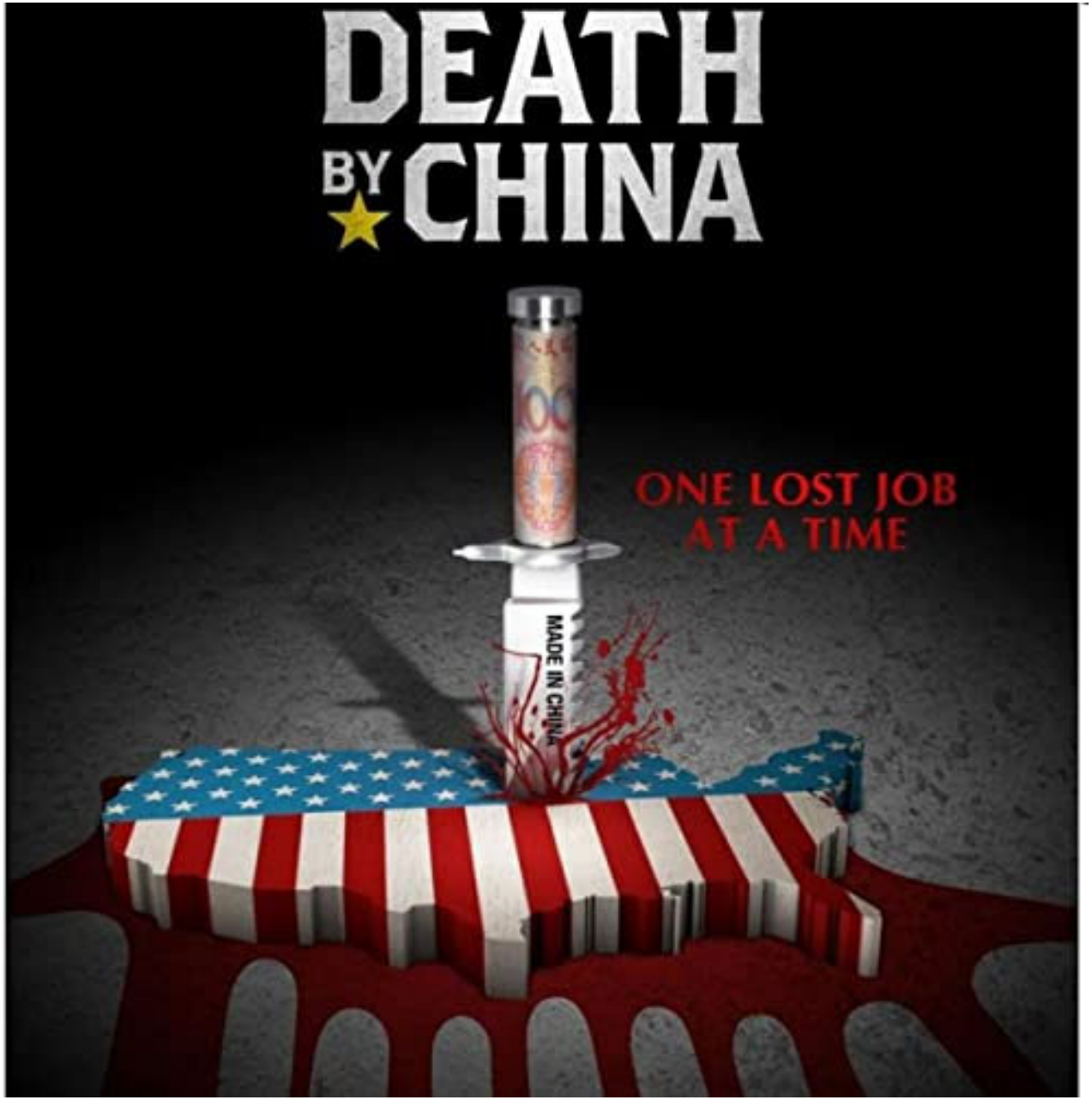
Meta Analysis (Huang et al. (2022))

"[studies] based on high-income countries tend to find that trade has significantly reduced inequality while those based on low-income countries tend to find that trade has significantly increased inequality. These findings contradict the HO model, which predicts that trade reduces inequality in developing countries but increases inequality in developed countries. They are also inconsistent with the predictions of models that predict an inequalityincreasing effect of trade for countries in all income levels."

Huang, Kaixing, et al. "Can trade explain the rising trends in income inequality? Insights from 40 years of empirical studies." *Economic Modelling* 107 (2022): 105725.

https://www.sciencedirect.com/science/article/pii/S026499932100314X

China Shock



Navarro Key Points

- China's combination of its unrivaled size and its willingness to ignore countless norms and rules of the international economy make it a dire threat to workers in the US.
- China "cheats" its way to the top. He slams its government for subsidizing its exports in violation of WTO rules,

Excerpted from Aleem, Vox.com, (2017)
https://www.vox.com/world/2017/4/6/14697762/china-trump-trade-navarro

Navarro Key Points

- The government mandates that American companies hand over key intellectual property to enter the Chinese market,
- China has exceptionally poor consumer safety standards, environmental regulations, and labor protections,
- The gov't has suppressed the value of its currency making Chinese exports cheaper & making American imports to China more expensive.

Excerpted from Aleem, Vox.com, (2017)
https://www.vox.com/world/2017/4/6/14697762/china-trump-trade-navarro

Less Hyperbolic Assessments: Economic Policy Institute, Scott & Mokhiber, (2020)

- **The growth of the U.S. trade deficit with China between 2001 and 2018 was responsible for the loss of 3.7 million U.S. jobs,** including 1.7 million jobs lost since 2008 (the first full year of the Great Recession, which technically began at the end of 2007). Three-fourths (75.4%) of the jobs lost between 2001 and 2018 were in manufacturing (2.8 million manufacturing jobs lost due to the growth in the trade deficit with China).

https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/

Less Hyperbolic Assessments: Economic Policy Institute

- **Surging imports of steel, aluminum, and other capital-intensive products threaten hundreds of thousands of jobs** in key industries such as primary metals, machinery, and fabricated metal products as well. These three sectors, alone, have already lost 372,700 jobs due to growing trade deficits with China between 2001 and 2018.

https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/

Less Hyperbolic Assessments: Economic Policy Institute

- **Global trade in advanced technology products—often discussed as a source of comparative advantage for the United States—is instead dominated by China.** This broad category of high-end technology products includes the more advanced elements of the computer and electronic parts industry as well as other sectors such as biotechnology, life sciences, aerospace, and nuclear technology.

https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/

Less Hyperbolic Assessments: Economic Policy Institute

Growing trade deficits are also associated with wage losses not just for manufacturing workers but for all workers economywide who don't have a college degree.

- **Between 2001 and 2011 alone, growing trade deficits with China reduced the incomes of directly impacted workers by $37 billion per year,** and in 2011 alone, growing competition with imports from China and other low wage-countries reduced the wages of all U.S. non–college graduates by a total of $180 billion.

https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/

Beware the Methodology

- ***Step 1.*** U.S.–China trade data are obtained from the U.S. International Trade Commission DataWeb (USITC 2019)
- ***Step 2.*** To conform to the BLS Employment Requirements tables (BLS-EP 2019a), trade data must be converted into the BLS industry classifications system. The trade data, which are in current dollars, are deflated into real 2012 dollars using published price deflators from the BLS-EP (2019b).
- ***Step 3.*** Real domestic employment requirements tables are downloaded from the BLS-EP (2019a). These matrices are input-output industry-by-industry tables that show the employment requirements for $1 million in outputs in 2012 dollars. So, for industry *i* the *aij* entry is the employment indirectly supported in industry *i* by final sales in industry *j* and, where *i=j*, the employment directly supported.

https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/

Beware the Methodology

- This means EPI analysts assume no deficit change over the relevant period, exogenously
- Assume nothing else in the economy changes
- Then assume domestic production done by US workers, using input-output tables

Autor, Dorn and Hanson (2013) [ADH]

- Examine “commuting zones”
- Relate employment to import competition arising from China
- Find “China Syndrome” effect on wages, employment

China: ADH

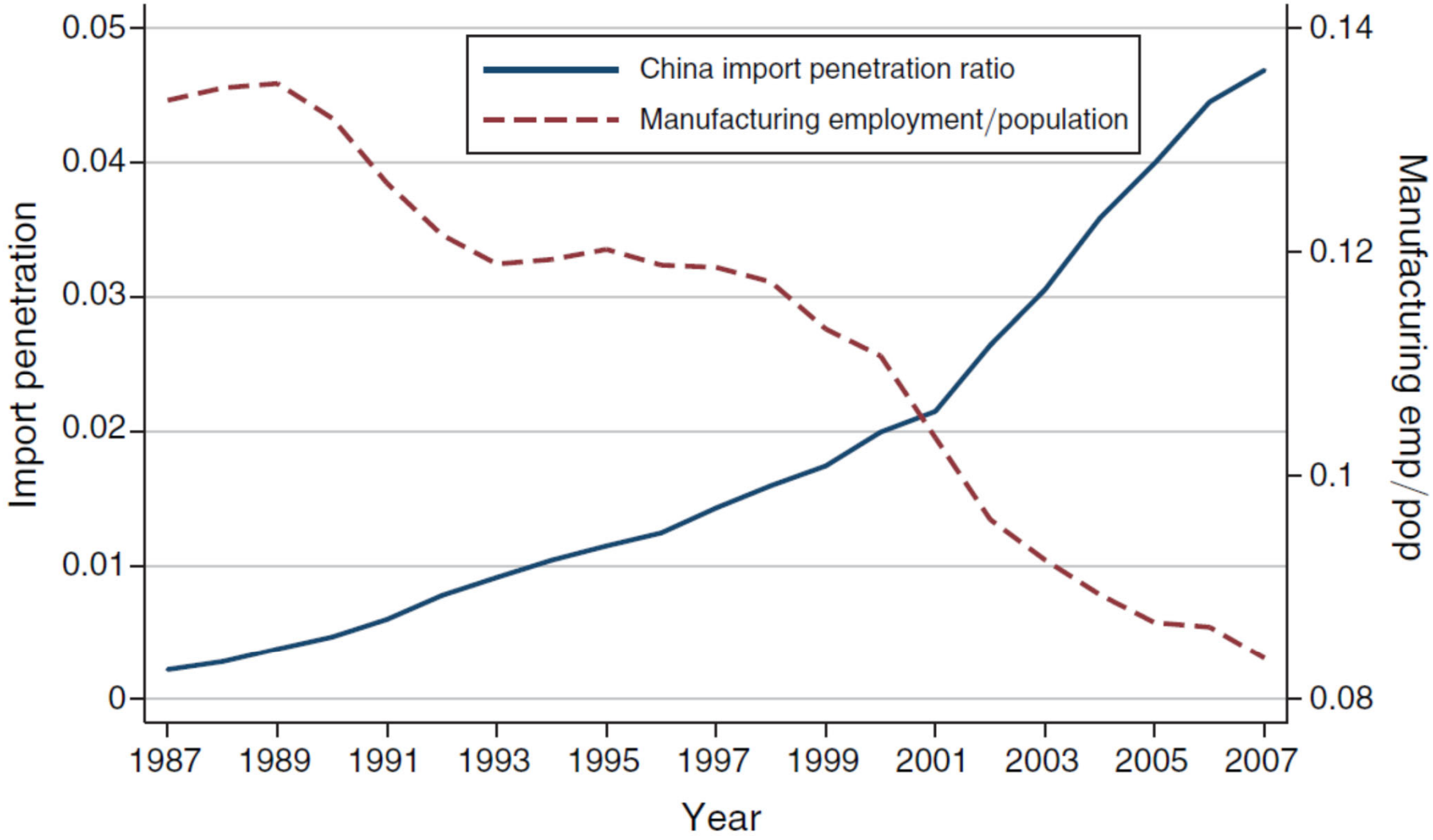


FIGURE 1. IMPORT PENETRATION RATIO FOR US IMPORTS FROM CHINA (*left scale*), AND SHARE OF US WORKING-AGE POPULATION EMPLOYED IN MANUFACTURING (*right scale*)

China: ADH

TABLE 1—VALUE OF TRADE WITH CHINA FOR THE US AND OTHER SELECTED HIGH-INCOME COUNTRIES AND VALUE OF IMPORTS FROM ALL OTHER SOURCE COUNTRIES, 1991/1992–2007

	I. Trade with China (in billions 2007 US$)		II. Imports from other countries (in billions 2007 US$)		
	Imports from China (1)	Exports to China (2)	Imports from other low-inc. (3)	Imports from Mexico/ CAFTA (4)	Imports from rest of world (5)
Panel A. United States					
1991/1992	26.3	10.3	7.7	38.5	322.4
2000	121.6	23.0	22.8	151.6	650.0
2007	330.0	57.4	45.4	183.0	763.1
Growth 1991–2007	1,156%	456%	491%	375%	137%
Panel B. Eight other developed countries					
1991/1992	28.2	26.6	9.2	2.8	723.6
2000	94.3	68.2	13.7	5.3	822.6
2007	262.8	196.9	31.0	11.6	1329.8
Growth 1991–2007	832%	639%	236%	316%	84%

Notes: Trade data is reported for the years 1991, 2000, and 2007, except for exports to China which are first available in 1992. The set of "other developed countries" in panel B comprises Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain, and Switzerland. Column 3 covers imports from all countries that have been classified as low income by the World Bank in 1989, except for China. Column 4 covers imports from Mexico and the Central American and Carribean countries covered by the CAFTA-DR. Column 5 covers imports from all other countries (primarily from developed countries).

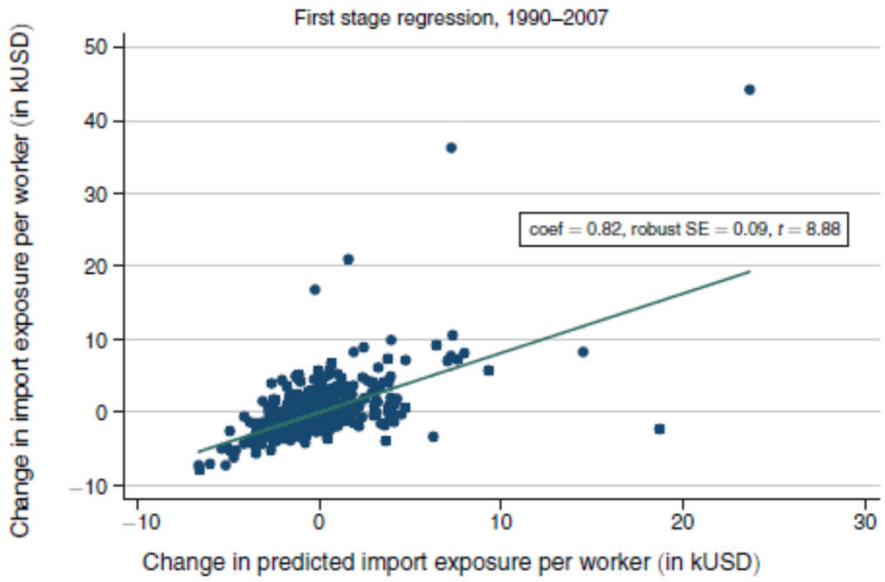
China: ADH

Table 2 presents initial estimates of the relationship between Chinese import exposure and US manufacturing employment. Using the full sample of 722 CZs and weighting each observation by start of period CZ population, we fit models of the following form:

$$\Delta L_{it}^{m} = \gamma_t + \beta_1 \Delta IPW_{uit} + \mathbf{X}_{it}' \beta_2 + e_{it}, \tag{5}$$

where ΔL_{it}^{m} is the decadal change in the manufacturing employment share of the working-age population in commuting zone i. When estimating this model for

Panel A. 2SLS first stage regression, full sample



Panel B. OLS reduced form regression, full sample

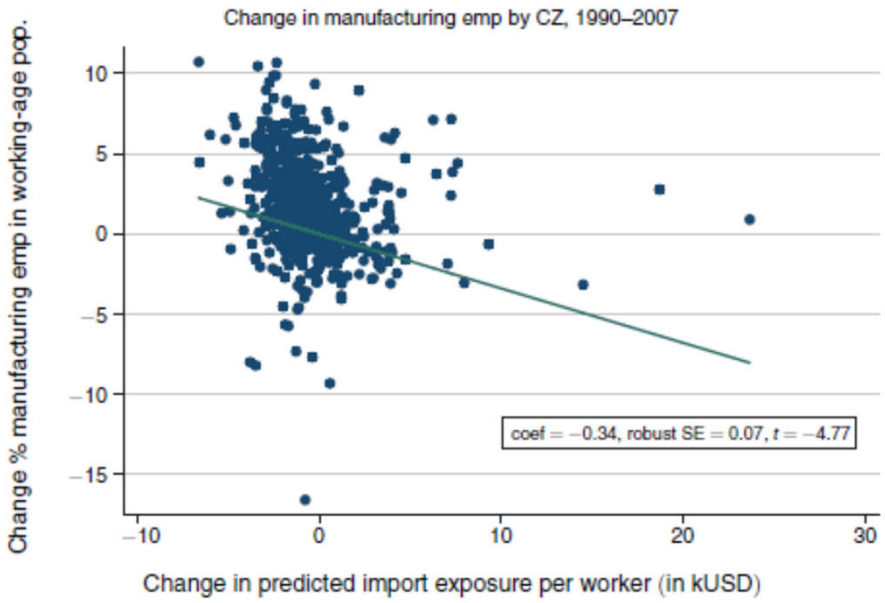


FIGURE 2. CHANGE IN IMPORT EXPOSURE PER WORKER AND DECLINE OF MANUFACTURING EMPLOYMENT: ADDED VARIABLE PLOTS OF FIRST STAGE AND REDUCED FORM ESTIMATES

Notes: $N = 722$. The added variable plots control for the start of period share of employment in manufacturing industries. Regression models are weighted by start of period CZ share of national population.

China: ADH

TABLE 2—IMPORTS FROM CHINA AND CHANGE OF MANUFACTURING EMPLOYMENT IN CZs, 1970–2007: 2SLS ESTIMATES

Dependent variable: 10 × annual change in manufacturing emp/working-age pop (in % pts)

	I. 1990–2007			II. 1970–1990 (pre-exposure)		
	1990–2000	2000–2007	1990–2007	1970–1980	1980–1990	1970–1990
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ current period imports from China to US)/worker	−0.89***	−0.72***	−0.75***			
	(0.18)	(0.06)	(0.07)			
(Δ future period imports from China to US)/worker				0.43***	−0.13	0.15
				(0.15)	(0.13)	(0.09)

Notes: $N = 722$, except $N = 1{,}444$ in stacked first difference models of columns 3 and 6. The variable "future period imports" is defined as the average of the growth of a CZ's import exposure during the periods 1990–2000 and 2000–2007. All regressions include a constant and the models in columns 3 and 6 include a time dummy. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE 3—IMPORTS FROM CHINA AND CHANGE OF MANUFACTURING EMPLOYMENT IN CZs, 1990–2007: 2SLS ESTIMATES

Dependent variable: 10 × annual change in manufacturing emp/working-age pop (in % pts)

	I. 1990–2007 stacked first differences					
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ imports from China to US)/ worker	−0.746*** (0.068)	−0.610*** (0.094)	−0.538*** (0.091)	−0.508*** (0.081)	−0.562*** (0.096)	−0.596*** (0.099)
Percentage of employment in manufacturing$_{-1}$		−0.035 (0.022)	−0.052*** (0.020)	−0.061*** (0.017)	−0.056*** (0.016)	−0.040*** (0.013)
Percentage of college-educated population$_{-1}$				−0.008 (0.016)		0.013 (0.012)
Percentage of foreign-born population$_{-1}$				−0.007 (0.008)		0.030*** (0.011)
Percentage of employment among women$_{-1}$				−0.054** (0.025)		−0.006 (0.024)
Percentage of employment in routine occupations$_{-1}$					−0.230*** (0.063)	−0.245*** (0.064)
Average offshorability index of occupations$_{-1}$					0.244 (0.252)	−0.059 (0.237)
Census division dummies	No	No	Yes	Yes	Yes	Yes
	II. 2SLS first stage estimates					
(Δ imports from China to OTH)/ worker	0.792*** (0.079)	0.664*** (0.086)	0.652*** (0.090)	0.635*** (0.090)	0.638*** (0.087)	0.631*** (0.087)
R^2	0.54	0.57	0.58	0.58	0.58	0.58

Notes: $N = 1{,}444$ (722 commuting zones × 2 time periods). All regressions include a constant and a dummy for the 2000–2007 period. First stage estimates in panel II also include the control variables that are indicated in the corresponding columns of panel I. Routine occupations are defined such that they account for 1/3 of US employment in 1980. The offshorability index variable is standardized to mean of 0 and standard deviation of 10 in 1980. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

TABLE 4—IMPORTS FROM CHINA AND CHANGE OF WORKING-AGE POPULATION IN CZ, 1990–2007: 2SLS ESTIMATES

Dependent variables: Ten-year equivalent changes in log population counts (in log pts)

	I. By education level			II. By age group		
	All (1)	College (2)	Noncollege (3)	Age 16–34 (4)	Age 35–49 (5)	Age 50–64 (6)
Panel A. No census division dummies or other controls						
(Δ imports from China to US)/worker	−1.031** (0.503)	−0.360 (0.660)	−1.097** (0.488)	−1.299 (0.826)	−0.615 (0.572)	−1.127*** (0.422)
R^2	—	0.03	0.00	0.17	0.59	0.22
Panel B. Controlling for census division dummies						
(Δ imports from China to US)/worker	−0.355 (0.513)	0.147 (0.619)	−0.240 (0.519)	−0.408 (0.953)	−0.045 (0.474)	−0.549 (0.450)
R^2	0.36	0.29	0.45	0.42	0.68	0.46
Panel C. Full controls						
(Δ imports from China to US)/worker	−0.050 (0.746)	−0.026 (0.685)	−0.047 (0.823)	−0.138 (1.190)	0.367 (0.560)	−0.138 (0.651)
R^2	0.42	0.35	0.52	0.44	0.75	0.60

Notes: $N = 1{,}444$ (722 CZs × two time periods). All regressions include a constant and a dummy for the 2000–2007 period. Models in panel B and C also include census division dummies while panel C adds the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period commuting zone share of national population.

TABLE 5—IMPORTS FROM CHINA AND EMPLOYMENT STATUS OF WORKING-AGE POPULATION WITHIN CZs, 1990–2007: 2SLS ESTIMATES

Dependent variables: Ten-year equivalent changes in log population counts and population shares by employment status

	Mfg emp	Non-mfg emp	Unemp	NILF	SSDI receipt
	(1)	(2)	(3)	(4)	(5)
Panel A. 100 × log change in population counts					
(Δ imports from China to US)/worker	−4.231***	−0.274	4.921***	2.058*	1.466***
	(1.047)	(0.651)	(1.128)	(1.080)	(0.557)
Panel B. Change in population shares					
All education levels					
(Δ imports from China to US)/worker	−0.596***	−0.178	0.221***	0.553***	0.076***
	(0.099)	(0.137)	(0.058)	(0.150)	(0.028)
College education					
(Δ imports from China to US)/worker	−0.592***	0.168	0.119***	0.304***	—
	(0.125)	(0.122)	(0.039)	(0.113)	
No college education					
(Δ imports from China to US)/worker	−0.581***	−0.531***	0.282***	0.831***	—
	(0.095)	(0.203)	(0.085)	(0.211)	

Notes: N = 1,444 (722 CZs × two time periods). All statistics are based on working age individuals (age 16 to 64). The effect of import exposure on the overall employment/population ratio can be computed as the sum of the coefficients for manufacturing and nonmanufacturing employment; this effect is highly statistically significant ($p \leq 0.01$) in the full sample and in all reported subsamples. All regressions include the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

TABLE 6—IMPORTS FROM CHINA AND WAGE CHANGES WITHIN CZs, 1990–2007: 2SLS ESTIMATES

Dependent variable: Ten-year equivalent change in average log weekly wage (in log pts)

	All workers (1)	Males (2)	Females (3)
Panel A. All education levels			
(Δ imports from China to US)/worker	−0.759***	−0.892***	−0.614***
	(0.253)	(0.294)	(0.237)
R^2	0.56	0.44	0.69
Panel B. College education			
(Δ imports from China to US)/worker	−0.757**	−0.991***	−0.525*
	(0.308)	(0.374)	(0.279)
R^2	0.52	0.39	0.63
Panel C. No college education			
(Δ imports from China to US)/worker	−0.814***	−0.703***	−1.116***
	(0.236)	(0.250)	(0.278)
R^2	0.52	0.45	0.59

Notes: $N = 1{,}444$ (722 CZs × two time periods). All regressions include the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

Wang, Wei, Yu, Zhu (2018) [WWYZ]

The United States imports intermediate inputs from China, helping downstream US firms to expand employment. Using a cross-regional reduced-form specification but differing from the existing literature, this paper (a) incorporates a supply chain perspective, (b) uses intermediate input imports rather than total imports in computing the downstream exposure, and (c) uses exporter-specific information to allocate imported inputs across US sectors. We find robust evidence that the total impact of trading with China is a positive boost to local employment and real wages. The most important factor is employment stimulation outside the manufacturing sector through the downstream channel. This overturns the received wisdom from the reduced-form literature and provides statistical support for a key mechanism hypothesized in general equilibrium spatial models.

Three Channels of Impact

- Direct (covered in ADH)
- Upstream
- Downstream

The Direct Competition Channel

The exposure to direct competition for Sector *j* is defined as the annualized change (in percentage point) in imports7 from China of Sector *j*'s products as a share of the sector's total absorption in year 2000.

Two Additional Channels

- **The Downstream Channel**

The downstream exposure for a commuting zone describes how it benefits from being able to use imported intermediate goods.

- **The Upstream Channel**

The upstream exposure captures how a commuting zone may be affected indirectly when their firms are at an upstream to those US firms that compete with Chinese imports directly.

WWYZ (2018)

Table 6: An Incompletely Specified Model That Only Looks at the Direct Competition Channel

Estimation Method	Manufacturing (1)	Non-Manufacturing (2)	NILF (3)	Unemployment (4)	Total Employment (5)
OLS Estimates:	-4.156***	1.339**	1.884***	0.934***	-2.817***
	(0.319)	(0.652)	(0.638)	(0.152)	(0.706)
2SLS Estimates:	-4.236***	1.393**	1.892***	0.951***	-2.844***
	(0.318)	(0.659)	(0.650)	(0.168)	(0.724)
First Stage F Statistics: 291.63					
Implied Labor Market Effects of the China Trade Shock					
2SLS Estimates:	-0.47%	0.16%	0.21%	0.11%	-0.32%

Note: All regressions include a constant and control for the initial employment share in working-age population and census divisions fixed effects. All models are weighted by each commuting zone's start of period working-age population. Robust standard errors clustered by states in parentheses. *, ** and *** denote coefficient statistically significant at the 10%, 5% and 1% levels, respectively. The implied labor market effects are calculated for a hypothetical commuting zone, whose exposure to the China shock is equal to the mean values across 722 Commuting Zones, relative to another hypothetical commuting zone that have no exposure to the China shock.

WWYZ (2018)

Table 7a: Accounting for Downstream and Upstream Effects

Dependent Variable = ΔEmp Share	Manufacturing (1)	Non-Manufacturing (2)	NILF (3)	Unemployment (4)	Total Employment (5)
ΔDirect	-3.534**	7.839**	-4.287	-0.0184	4.305
	(1.517)	(3.109)	(2.852)	(1.532)	(3.893)
ΔDown	0.298	5.648***	-7.520***	1.574**	5.946**
	(0.834)	(1.912)	(1.928)	(0.753)	(2.446)
ΔUp	-1.889	-17.24**	16.45**	2.686	-19.13*
	(3.843)	(8.103)	(7.464)	(4.038)	(10.01)
Census Divisions Fixed Effects	YES	YES	YES	YES	YES
Observations	722	722	722	722	722
R-squared	0.638	0.389	0.350	0.476	0.506

Implied Labor Market Effects of the China Trade Shock

	Manufacturing	Non-Manufacturing	NILF	Unemployment	Total Employment
(For comparison: ADH Specification) Direct Competition Effect	*-0.47%*	*0.16%*	*0.21%*	*0.11%*	*-0.32%*
Direct Competition Effect	-0.39%	0.87%	-0.48%	0.00%	0.48%
Downstream Effect	0.16%	3.08%	-4.10%	0.86%	3.24%
Upstream Effect	-0.24%	-2.21%	2.11%	0.35%	-2.46%
Total Effect	**-0.47%**	**1.74%**	**-2.47%**	**1.20%**	**1.27%**

Note: All regressions include a constant and control for the initial employment share in working-age population and census divisions fixed effects. All models are weighted by each commuting zone's start of period working-age population. Robust standard errors clustered by states in parentheses. *, ** and *** denote coefficient statistically significant at the 10%, 5% and 1% levels, respectively. The implied labor market effects are calculated for a hypothetical commuting zone, whose exposure to the China shock is equal to the mean values across 722 Commuting Zones, relative to another hypothetical commuting zone that have no exposure to the China shock.

Summary

- Consensus is still negative net impact, at least on manufacturing
- But overall (mfg + nonmfg) employment need not suffer when taking into account downstream effects as well as upstream
- Note only taking into account labor market here, not net welfare