

THE EFFECTS OF FOREIGN MULTINATIONALS ON WORKERS AND FIRMS IN THE UNITED STATES

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- Foreign multinationals in the U.S.
 - account for 6% of private sector employment
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 - ② Direct effects
 - Unpack worker-quality differences from firm wage premia
 - Average foreign firm premium of 7%
 - ③ Indirect effects
 - New identification approach to measure the indirect effects of foreign firms exploiting firm clustering by country of origin
 - 1 job by a foreign firm creates locally 0.42 jobs by domestic firms and raises domestic firms' value added by 90,000 USD

OUTLINE

- Data
- Model
- Direct Effects
- Indirect Effects
- Aggregate and Local Implications

Data

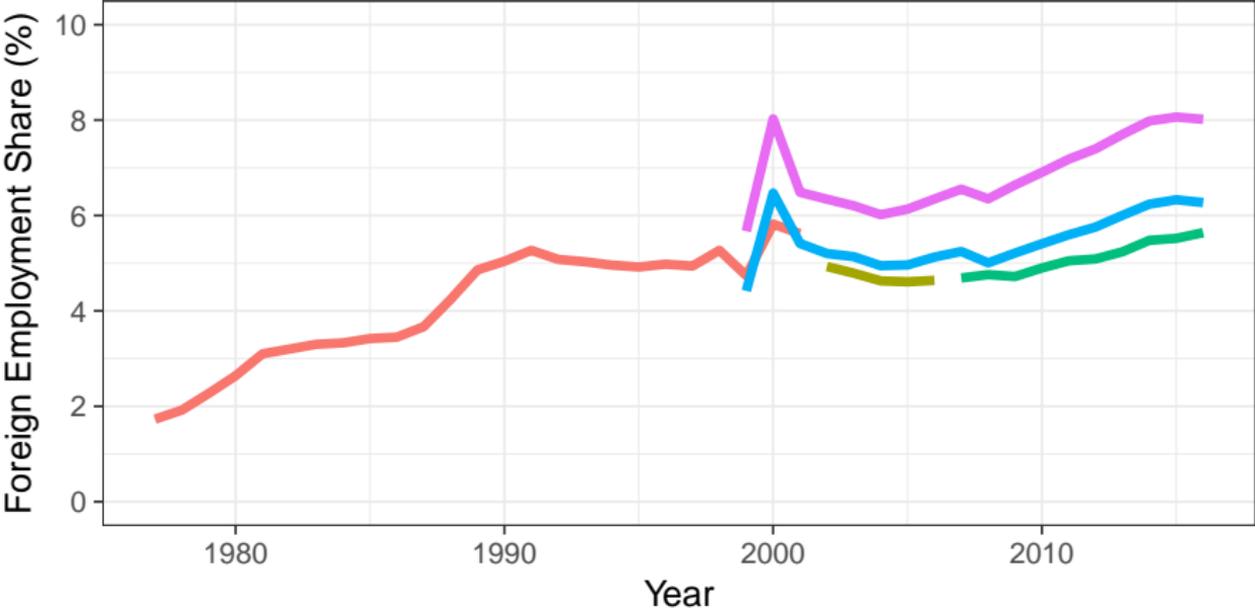
DATA

- Linked annual tax records from 1999-2017:
 - Worker data: earnings and zip code from W-2
 - Firm data: value added (sales - cost of goods sold) and NAICS from forms 1120 (C-corp), 1120-S (S-corp), and 1065 (partnership)
 - Foreign-ownership: Form 5472 “Information return for a 25% foreign-owned US Corporation”, incl. country of ownership
 - Sample: Prime-aged FTE workers in non-FIRE industries

DATA

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 - Sample: Prime-aged FTE workers in non-FIRE industries
- Two data challenges:
 - Many employees of foreign multinationals are employed at non-filing subsidiaries \implies Infer parent-subsidiary linkages from Form 851 “Affiliations Schedule”
 - Address of firm may not coincide w location of economic activity \implies Infer firm-location from workers’ commuting zone

EMPLOYMENT AT FOREIGN-OWNED FIRMS



- BEA, All excl. Banks
- BEA, Majority-owned excl. Banks
- BEA, Majority-owned incl. Banks
- IRS, excl. FIRE - All Workers
- IRS, excl. FIRE - Restricted Sample of Workers

Direct Effects of Foreign Multinationals

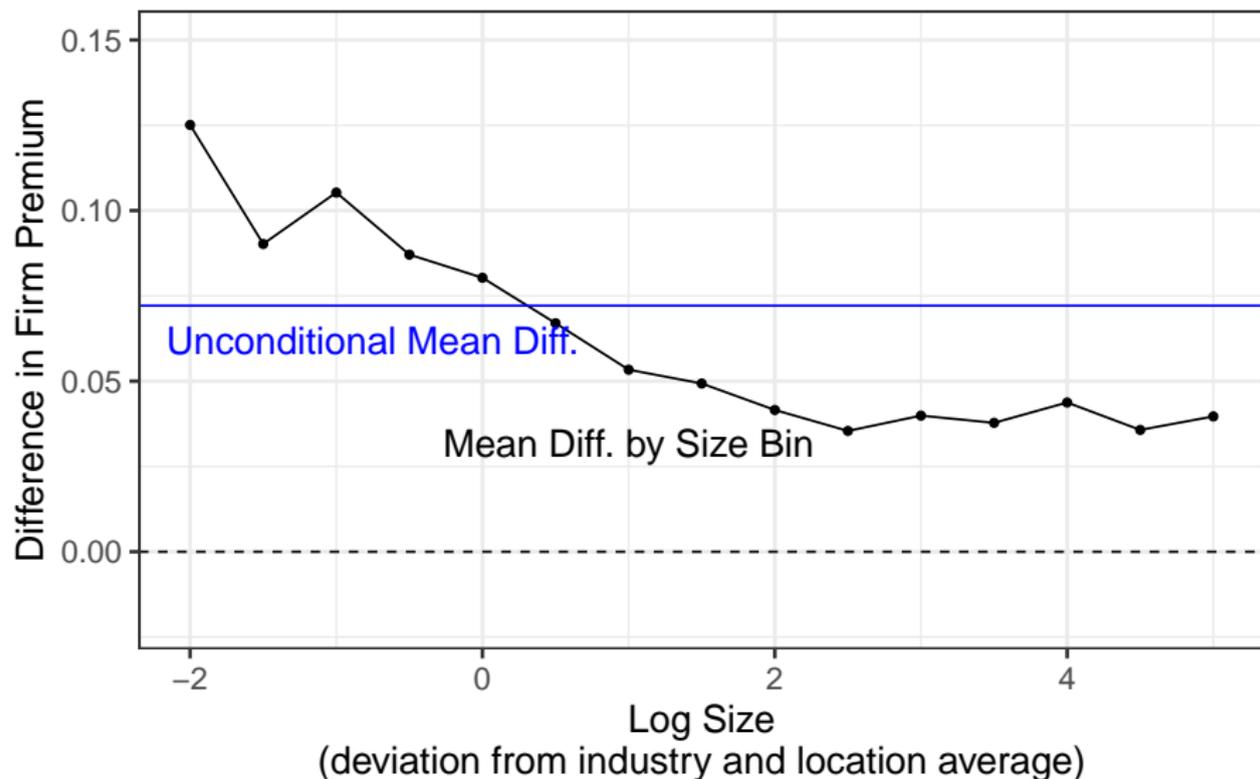
FIRM PREMIUM VS. WORKER QUALITY

- Estimate the two-way fixed effects wage regression

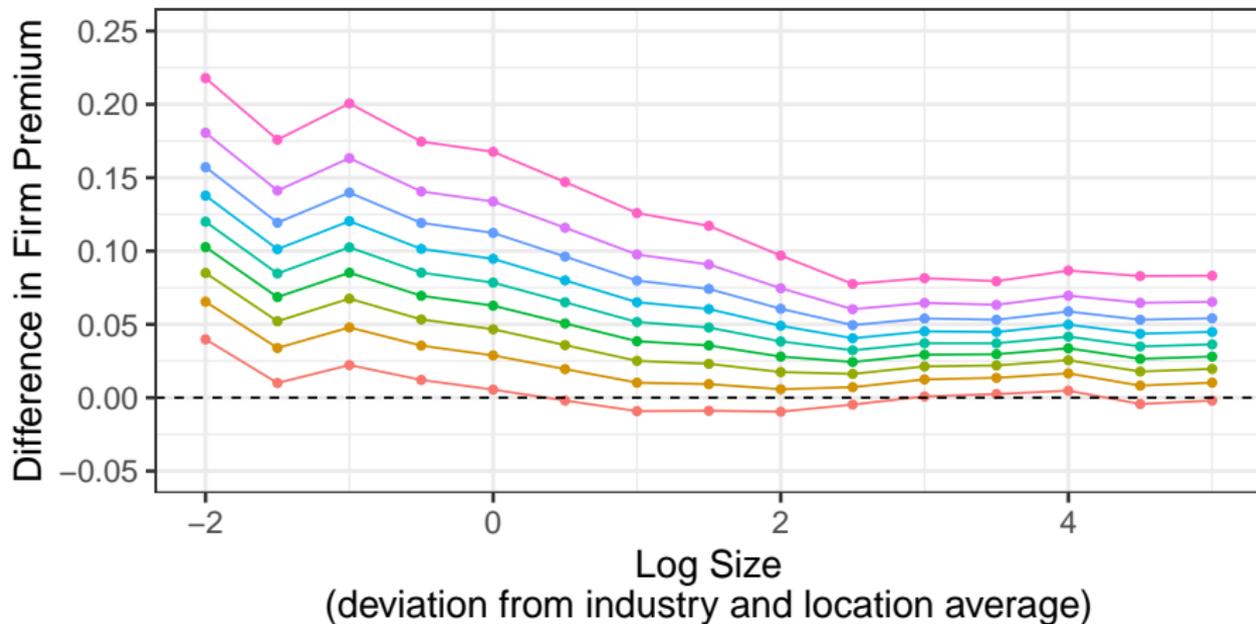
$$\log w_{i,t} = \psi_{j(i,t)} + x_i + \chi'_{i,t}\beta + \epsilon_{i,t}$$

- $j(i,t)$ denotes the firm j that employs worker i in year t ,
 - ψ denotes the firm premium,
 - x denotes worker quality,
 - χ denotes a vector of observable determinants of earnings (age polynomial, industry-year f.e., and commuting zone-year f.e.).
-
- Known estimation issue:
 - Limited worker mobility leads to biased f.e. estimates \implies use Bonhomme, Lamadon, Manresa (2019) bias correction procedure

DIRECT EFFECTS, FIRM PREMIUM DIFFERENCE



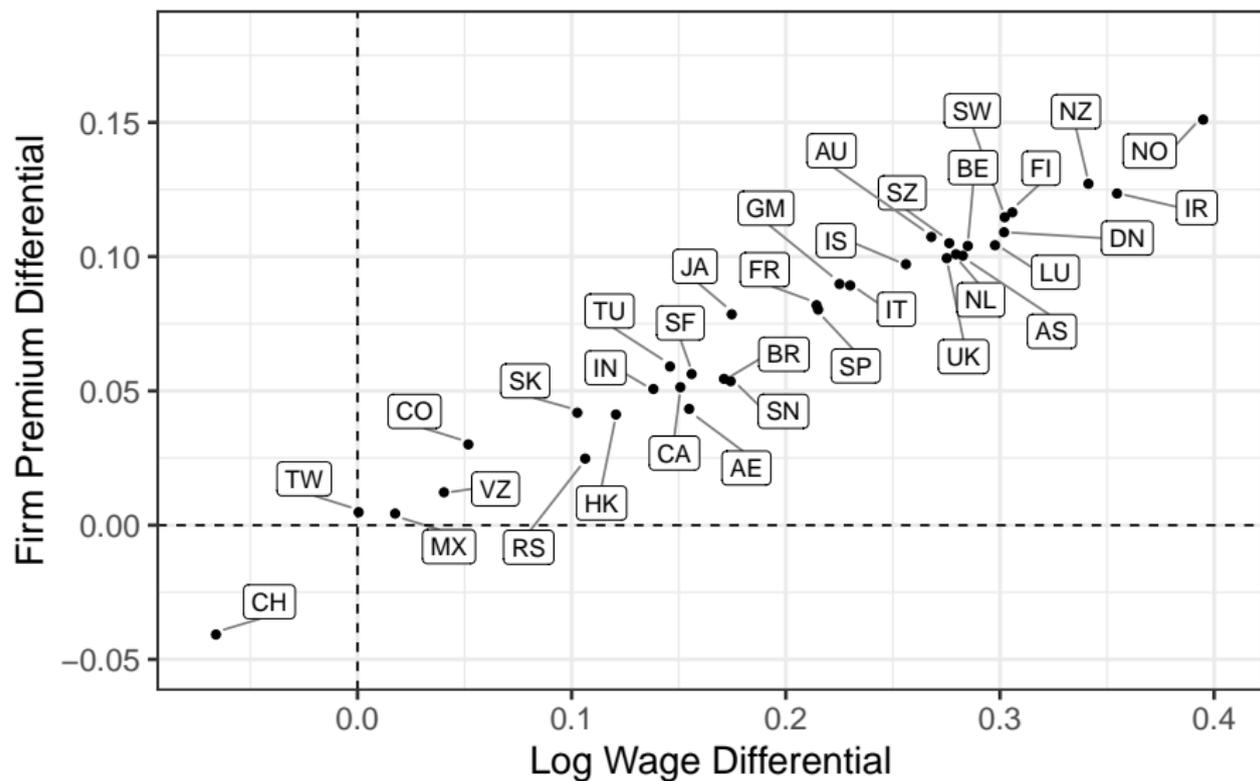
FIRM PREMIUM WITH FIRM-WORKER INTERACTIONS



Worker Quality Quantile

10	20	30	40	50	60	70	80	90
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COUNTRY-SPECIFIC FIRM PREMIUM



ROBUSTNESS AND IMPLICATIONS

- Movers event study design [▶ Result](#)
 - Analysis of pre-trends [▶ Result](#)
- Aggregate wage gain due to the direct wage premium at foreign multinationals of about 34 billion USD annually (0.6% of total private sector wage bill)
- Alternatives to a TFP interpretation of firm premiums:
 - Hours worked
 - Risk premium
 - Amenities

Indirect Effects of Foreign Multinationals

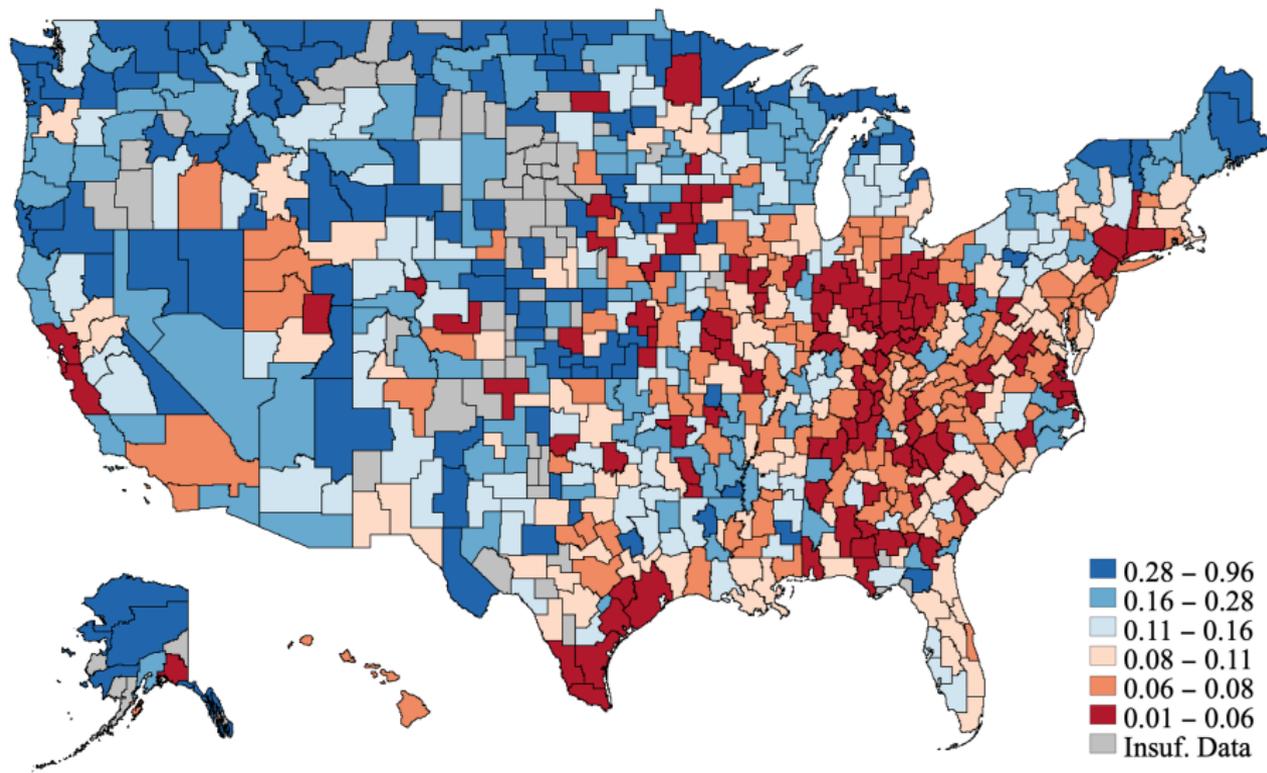
EMPIRICAL STRATEGY

- Activity of foreign firms in commuting zones is endogenous
- Exploit spatial clustering of foreign firms by nationality
- Similar to the Card (2001) instrument used to study the effects of immigration
 - Widely used for effects of immigration
 - Has not yet been used to study effects of FDI

WHY FOREIGN FIRMS CLUSTER BY COUNTRY OF ORIGIN?

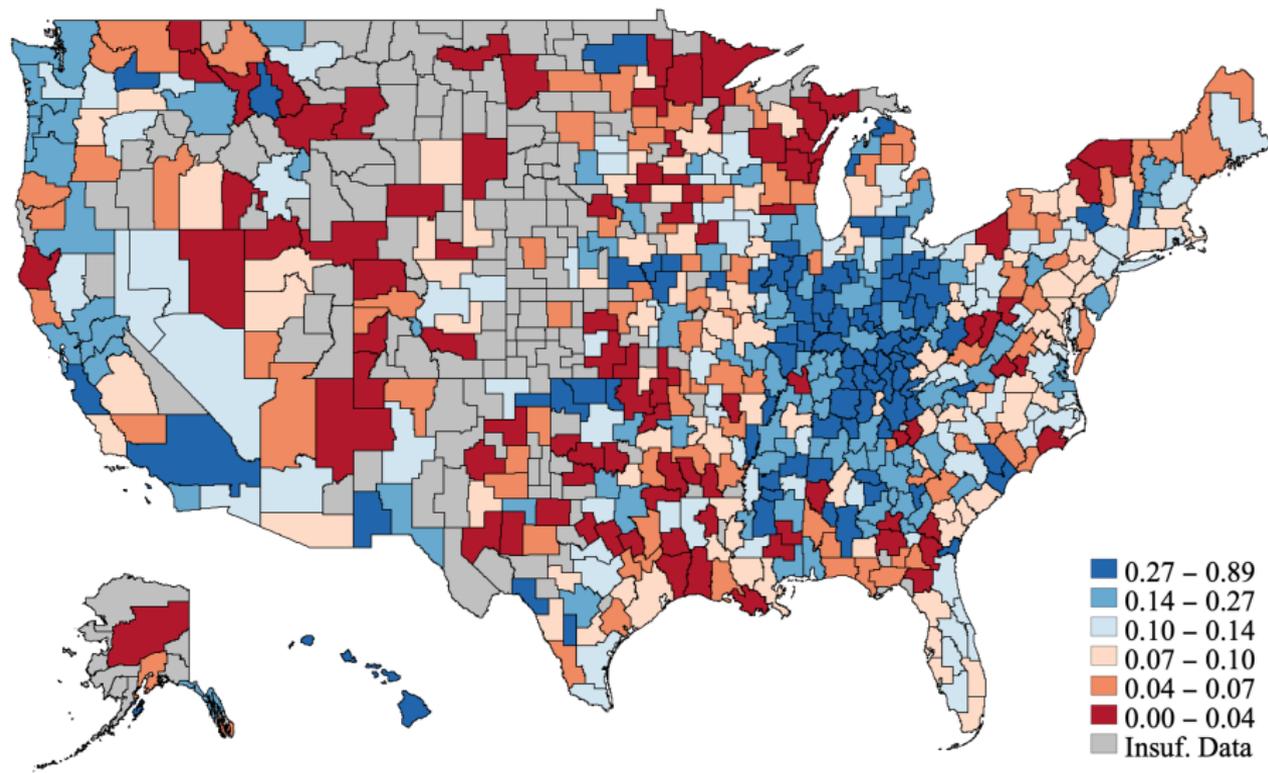
- ① Distance to home country affects trade costs and costs of technology transfer (Keller and Yeaple 2013)
- ② Airline routes (Giroud 2013; Campante and Yanagizawa-Drott 2017)
- ③ Foreign employees want to live near others from the same nationality
- ④ Foreign firms follow ancestors' clusters by nationality (Burchardi, Chaney, and Hassan 2016)
- ⑤ Information about available sites differs by country origin
- ⑥ Countries specialized in different industries (Head, Ries, and Swenson 1995)

SHARE OF WORKERS AT CANADIAN FIRMS



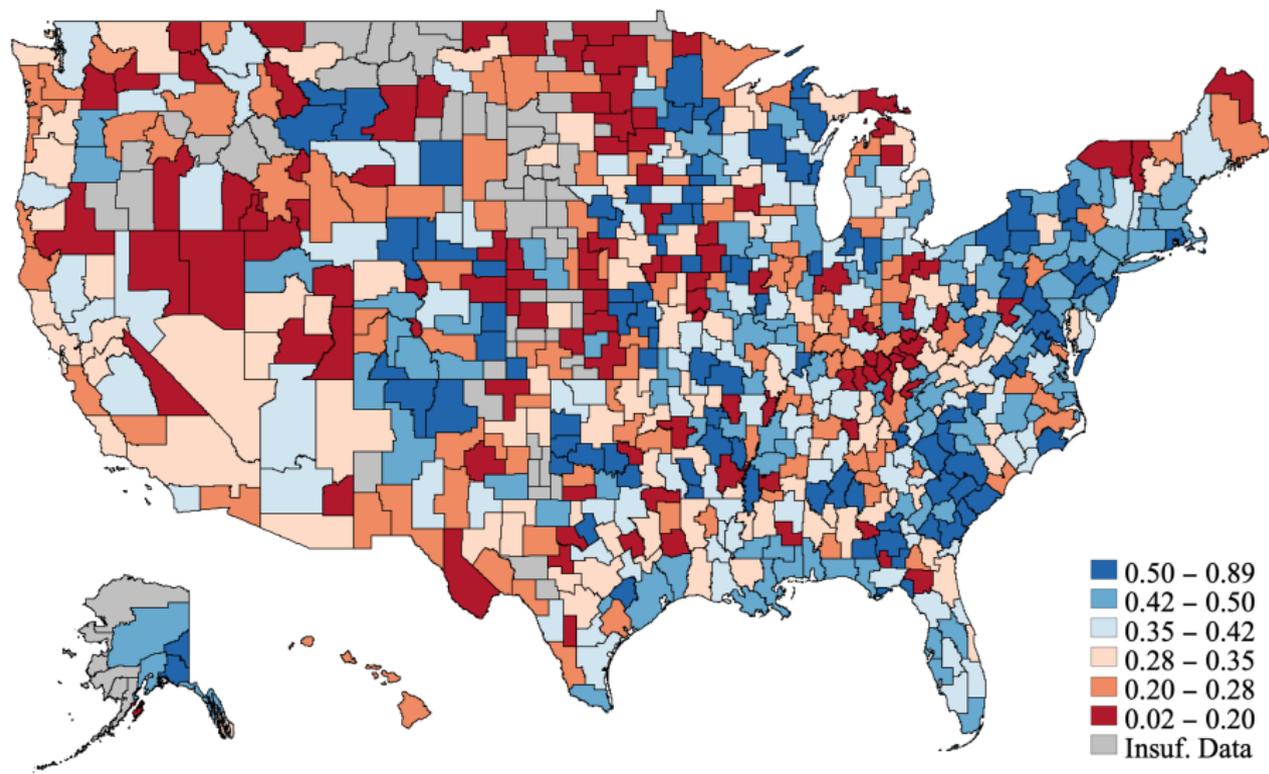
... out of total employment at foreign firms in the CZ

SHARE OF WORKERS AT EAST ASIAN FIRMS



... out of total employment at foreign firms in the CZ

SHARE OF WORKERS AT WESTERN EUROPEAN FIRMS



... out of total employment at foreign firms in the CZ

EMPIRICAL STRATEGY

- Change in outcome at domestic firm j in commuting zone cz :

$$\log y_{j,t} - \log y_{j,t-1} = \beta m_{cz(j),t} + \gamma' K_{j,t} + \epsilon_{j,t},$$

- Employment growth at foreign-owned firms in cz

$$m_{cz,t} \equiv \frac{L_{cz,t}^F - L_{cz,t-1}^F}{L_{cz,t-1}^F + L_{cz,t-1}^D}$$

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$$m_{cz,t} \equiv \frac{L_{cz,t}^F - L_{cz,t-1}^F}{L_{cz,t-1}^F + L_{cz,t-1}^D}$$

- Use firms' countries of ownership to construct

$$S_{cz,t}^o \equiv \frac{L_{cz,t}^{F_o}}{\sum_{cz'} L_{cz',t}^{F_o}}$$

- Analogous to immigration literature, construct IV for $m_{cz,t}$

$$Z_{cz,t} = \frac{\sum_o (\sum_{cz' \neq cz} L_{cz',t}^{F_o} - L_{cz',t-1}^{F_o}) S_{cz,t-5}^o}{L_{cz,t-5}^F + L_{cz,t-5}^D}$$

INDIRECT EFFECTS, LOG VALUE ADDED BY FIRM TYPE

	Full Sample	By Firm Size			By Sector	
		Size 1-9	Size 10-99	Size 100+	Tradables	Non-tradables
Outcome: Log Value Added						
2SLS Indirect Effect	0.64** (0.27)	0.11 (0.08)	0.42*** (0.15)	1.66* (0.99)	3.37* (1.98)	0.31 (0.19)
First Stage Coefficient	0.60*** (0.03)	0.63*** (0.03)	0.59*** (0.03)	0.53*** (0.04)	0.56*** (0.04)	0.52*** (0.04)
First Stage F-statistic	299	431	292	147	169	197
Firm Observations (Millions)	41.7	34.9	6.3	0.5	3.9	5.9

- Controls: polynomial in lagged firm size; fixed effects for commuting zone, Census division-year, and 3-digit NAICS industry-year
- Standard errors clustered by commuting zone-year

▶ OLS

▶ Log Full-time Workers

▶ Log Wage Bill

INDIRECT EFFECTS, LOG WAGE BY WORKER WAGE QUINTILE

	By Income Quintile Group					
	Full Sample	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
	Outcome: Log Wage (continuing workers)					
2SLS Indirect Effect	0.067 (0.063)	-0.086 (0.074)	-0.038 (0.062)	0.016 (0.066)	0.192** (0.081)	0.292*** (0.092)
First Stage Coefficient	0.599*** (0.035)	0.595*** (0.036)	0.594*** (0.035)	0.598*** (0.035)	0.595*** (0.035)	0.599*** (0.036)
First Stage F-statistic	301	280	282	288	295	280
Worker Observations (Millions)	369.6	73.9	73.9	73.9	73.9	73.9

- Controls: polynomials in worker age and firm size; fixed effects for commuting zone, Census division-year, and 3-digit NAICS industry-year
- Standard errors clustered by commuting zone-year

ROBUSTNESS AND IMPLICATIONS

	Baseline	6-digit NAICS Fixed Effects	Lagged FDI as a Control	Exclude Dom. Multinationals	Exclude 250m Radius from Z	Exclude Tax Havens
	Outcome: Log Value Added					
2SLS Indirect Effect	0.644** (0.266)	0.712*** (0.220)	0.629** (0.268)	0.579*** (0.221)	0.610** (0.286)	0.670** (0.295)
First Stage Coefficient	0.598*** (0.035)	0.596*** (0.034)	0.591*** (0.035)	0.612*** (0.034)	0.647*** (0.046)	0.574*** (0.035)
First Stage F-statistic	299	300	291	333	196	268
Firm Observations (Millions)	41.7	41.7	41.7	40.4	41.7	41.7

► Log Full-time Workers

► Log Wage Bill

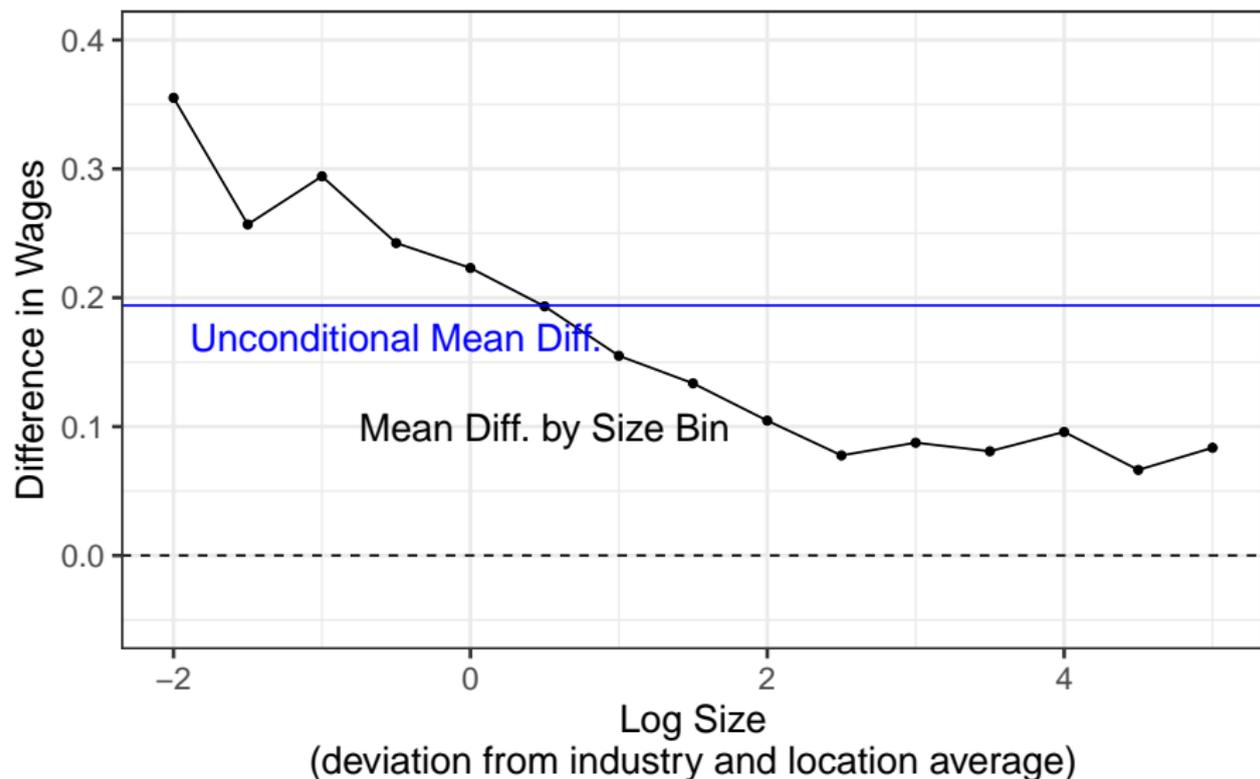
- Per job at a foreign-owned firm
 - indirectly increases employment at domestic firms by 0.42,
 - indirectly increases value added at domestic firms by 92,000 USD.

CONCLUDING REMARKS

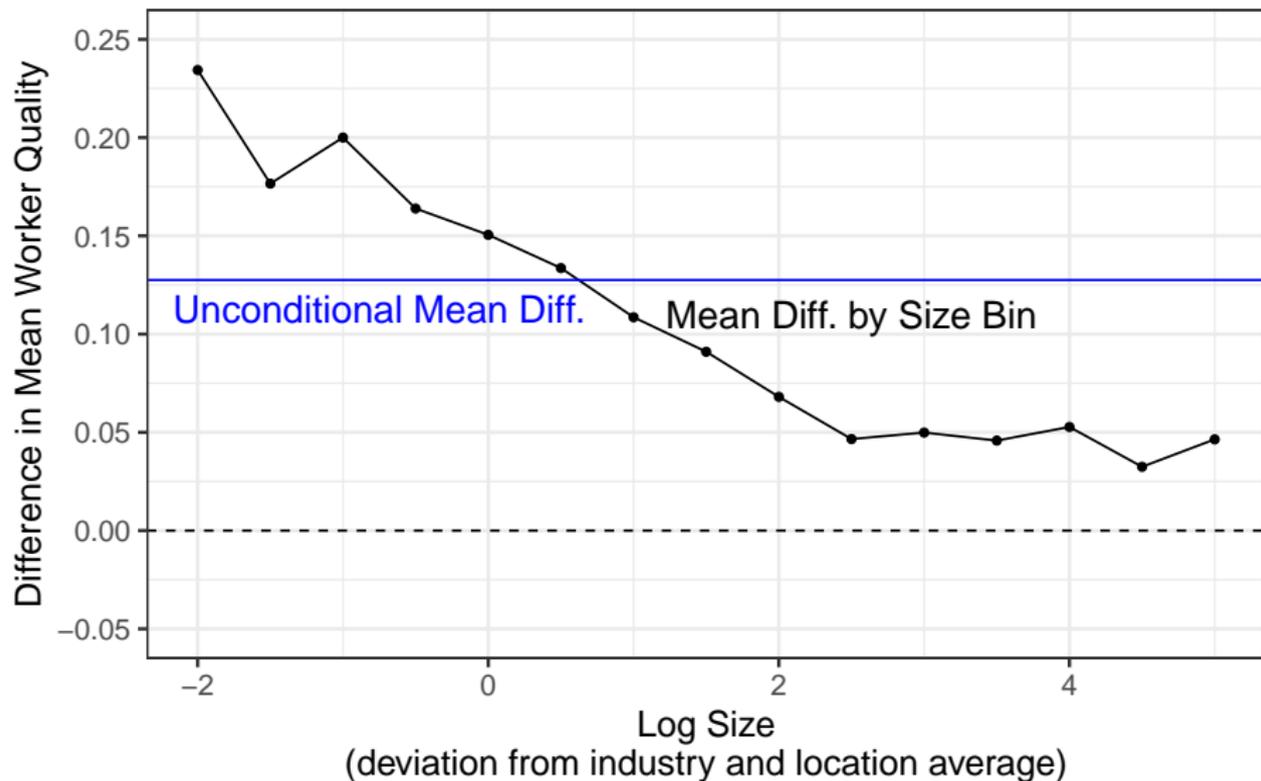
- Find sizable direct and indirect benefits of foreign firms in the US on firms and workers
 - (on average, and especially for high skilled workers)
- Foreign multinationals face entry costs to enter the US
 - Explains why they are more productive
 - Interestingly, even conditional on size, foreign firm premium persists
- Other studies on indirect effects of foreign firms focus on national industry-level effects finding mixed results
 - New angle: local labor market approach
 - Indirect effects estimates are comparable to the literature's estimates for domestic firm expansions

Appendix

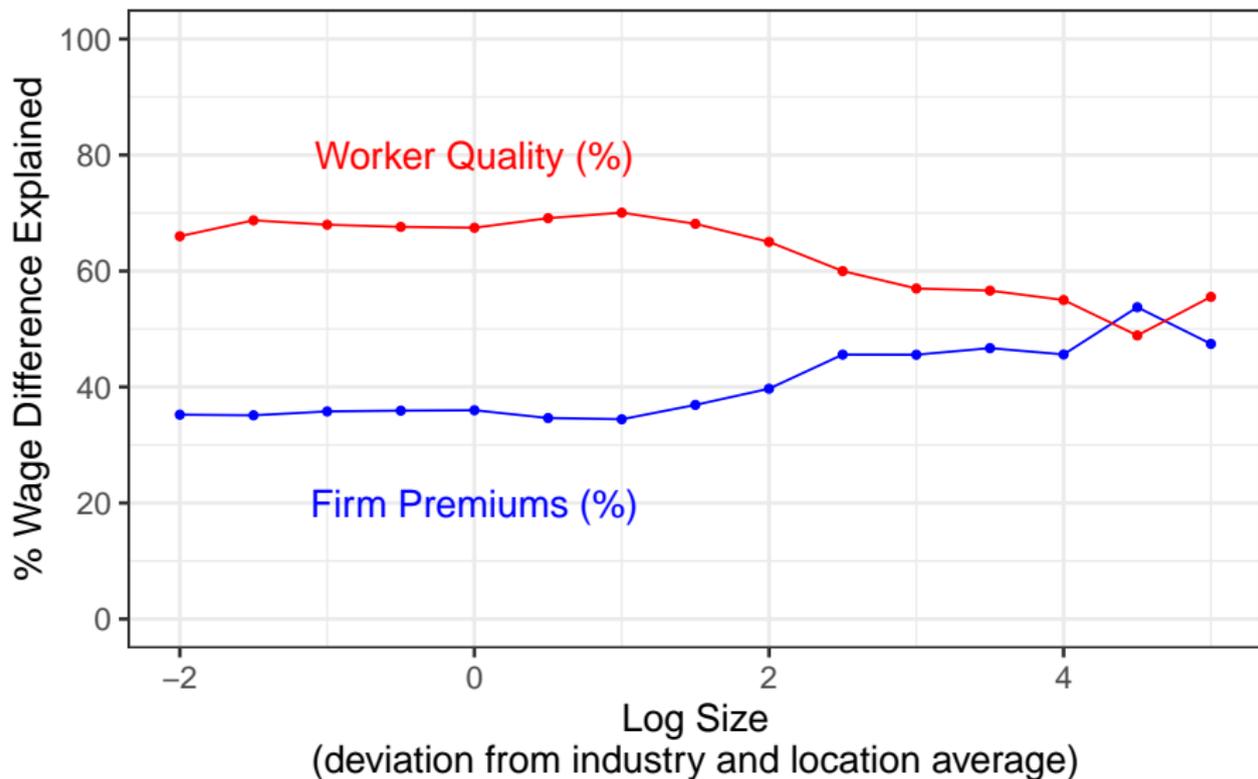
DIRECT EFFECTS, TOTAL WAGE DIFFERENCE



DIRECT EFFECTS, WORKER QUALITY DIFFERENCE



DIRECT EFFECTS, WAGE DIFFERENCE EXPLAINED

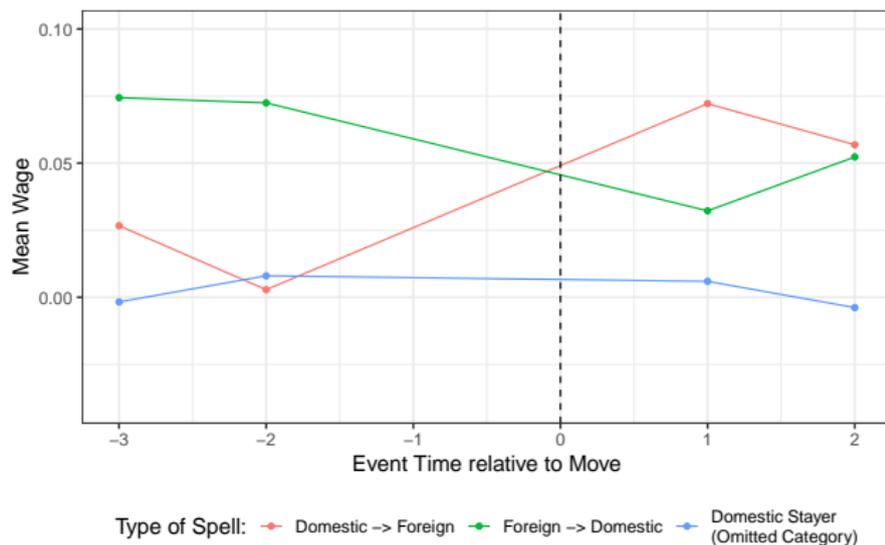


ROBUSTNESS OF AVERAGE FIRM PREMIUM ESTIMATE: EVENT STUDY APPROACH

Outcome:		Shorter-term Wage Growth $\log(w_t) - \log(w_{t-1})$	Longer-term Wage Growth $\log(w_{t+1}) - \log(w_{t-2})$
Domestic to Foreign Moves:	N = 364,732	0.045*** (0.002)	0.073*** (0.003)
Foreign to Domestic Moves:	N = 265,566	-0.042*** (0.002)	-0.035*** (0.002)
Domestic to Domestic Moves:	<i>N</i> = 12,485,029	0.005*** (0.001)	0.012*** (0.001)
Foreign to Foreign Moves:	<i>N</i> = 275,301	0.014*** (0.004)	0.031*** (0.003)
Stayers at Foreign Firms:	<i>N</i> = 4,661,673	-0.001 (0.001)	0.000 (0.001)
Stayers at Domestic Firms:	<i>N</i> = 58,780,343	(Omitted Category)	(Omitted Category)

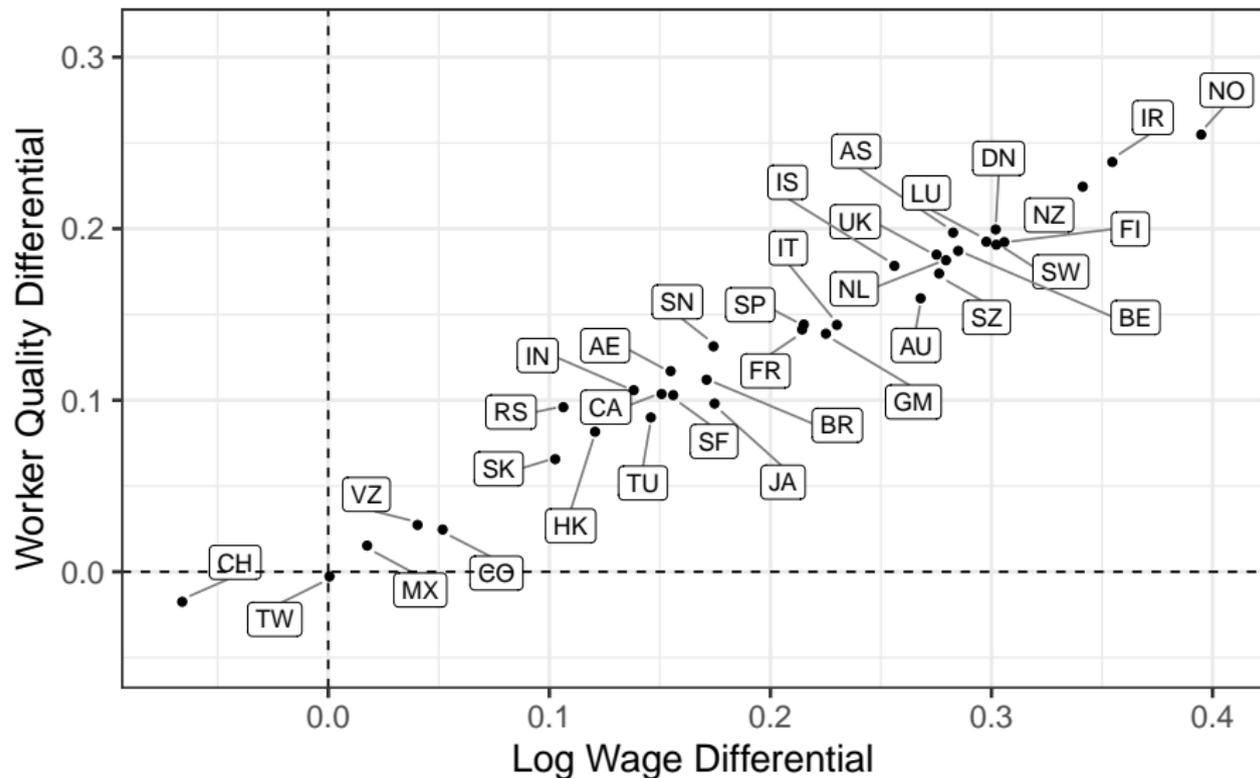
- Controls: polynomials in firm size; fixed effects for commuting zone-year and 3-digit NAICS industry-year (for movers, separate controls for origin and destination)
- Standard errors clustered by commuting zone-year

EVENT STUDY FOR MOVERS TO AND FROM FOREIGN FIRMS



- Controls: polynomials in age and firm size; fixed effects for commuting zone-year and 3-digit NAICS industry-year (for movers, separate controls for origin and destination)

COUNTRY-SPECIFIC WORKER QUALITY DIFFERENTIALS



INDIRECT EFFECTS, OLS REGRESSION

	(1)	(2)	(3)
	Outcome: Log Value Added		
Indirect Effect Estimate	-1.21*** (0.22)	0.32** (0.13)	0.64** (0.27)
Firm Observations (Millions)	41.7	41.7	41.7
Specification:			
Controls for CZ-Year, Industry-Year, and Size	✗	✓	✓
Instrument for FDI Growth	✗	✗	✓

- Controls: polynomial in lagged firm size; fixed effects for commuting zone, Census division-year, and 3-digit NAICS industry-year
- Standard errors clustered by commuting zone-year

INDIRECT EFFECTS, LOG FULL-TIME WORKERS BY FIRM TYPE

	Full Sample	By Firm Size			By Sector	
		Size 1-9	Size 10-99	Size 100+	Tradables	Non-tradables
Outcome: Log Full-time Workers						
2SLS Indirect Effect	0.45*** (0.12)	0.08 (0.06)	0.39*** (0.14)	1.23*** (0.43)	0.89** (0.38)	0.54*** (0.20)
First Stage Coefficient	0.60*** (0.03)	0.63*** (0.03)	0.58*** (0.03)	0.53*** (0.04)	0.56*** (0.04)	0.52*** (0.04)
First Stage F-statistic	297	434	292	151	171	192
Firm Observations (Millions)	45.9	38.3	7.0	0.5	4.2	6.2

Notes:

- Controls: polynomial in lagged firm size; fixed effects for commuting zone, Census division-year, and 3-digit NAICS industry-year
- Standard errors clustered by commuting zone-year

INDIRECT EFFECTS, LOG WAGE BILL BY FIRM TYPE

	Full Sample	By Firm Size			By Sector	
		Size 1-9	Size 10-99	Size 100+	Tradables	Non-tradables
	Outcome: Log Wage Bill					
2SLS Indirect Effect	0.47*** (0.14)	0.03 (0.09)	0.37** (0.16)	1.15*** (0.42)	0.89** (0.41)	0.90*** (0.28)
First Stage Coefficient	0.60*** (0.03)	0.63*** (0.03)	0.58*** (0.03)	0.53*** (0.04)	0.56*** (0.04)	0.52*** (0.04)
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INDIRECT EFFECTS, LOG FULL-TIME WORKERS, ROBUSTNESS

	Baseline	6-digit NAICS Fixed Effects	Lagged FDI as a Control	Exclude Dom. Multinationals	Exclude 250m Radius from Z	Exclude Tax Havens
	Outcome: Log Full-time Workers					
2SLS Indirect Effect	0.446*** (0.125)	0.434*** (0.120)	0.441*** (0.125)	0.410*** (0.120)	0.449*** (0.134)	0.457*** (0.138)
First Stage Coefficient	0.598*** (0.035)	0.597*** (0.035)	0.592*** (0.035)	0.609*** (0.034)	0.648*** (0.046)	0.574*** (0.035)
First Stage F-statistic	297	298	289	325	195	264
Firm Observations (Millions)	45.9	45.9	45.9	44.5	45.9	45.9

▶ Back

INDIRECT EFFECTS, LOG WAGE BILL, ROBUSTNESS

	Baseline	6-digit NAICS Fixed Effects	Lagged FDI as a Control	Exclude Dom. Multinationals	Exclude 250m Radius from Z	Exclude Tax Havens
	Outcome: Log Wage Bill					
2SLS Indirect Effect	0.466*** (0.138)	0.457*** (0.137)	0.453*** (0.138)	0.455*** (0.140)	0.477*** (0.151)	0.487*** (0.152)
First Stage Coefficient	0.598*** (0.035)	0.597*** (0.035)	0.592*** (0.035)	0.609*** (0.034)	0.648*** (0.046)	0.574*** (0.035)
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▶ [Back](#)