Commuting, Migration, and Local Employment Elasticities

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Introduction

- Many changes in the economic environment are local
  - Climate, infrastructure, innovations, institutions, regulations
- The effect of these changes depends crucially on the ability of labor to move in response: The elasticity of local employment
- Two main sources for employment changes: Commuting and migration
  - Workers spend 8% of their work-day commuting
    - Seek balance between residential amenities, cost of living and wage
- We propose a quantitative spatial GE theory with goods trade that incorporates these two channels
  - study the response of local outcomes to local shocks

Introduction

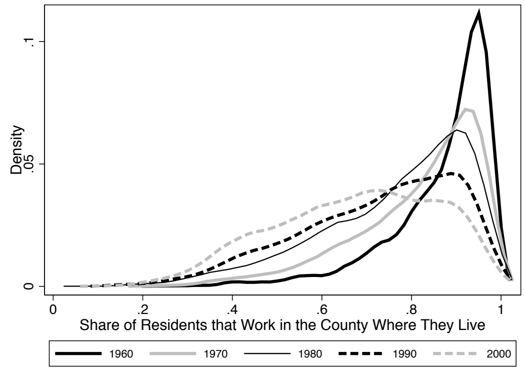
- We discipline our quantitative model to match
  - Gravity in goods trade
  - Gravity in commuting flows
  - Distribution of employment, residents and wages across counties
- The quantitative importance of these two channels varies across counties depending on their local characteristics
  - Leads to significant heterogeneity in the employment elasticity
  - Locations are not independent spatial units as often assumed in cross-section regressions
  - Underscores general equilibrium effects
- Affects the estimated effects of most local policies and shocks and their external validity
  - Heterogeneity is well accounted for by commuting links
- Provide empirical evidence for the importance of commuting
  - Shift-share analysis, Million Dollar Plants, China Shock

Key Mechanisms

- Productivity differences and home market effects
  - Forces for the concentration of economic activity
- Inelastic housing supply and heterogeneous preferences
  - Forces for the dispersion of economic activity
- Commuting allows workers to access high productivity locations without having to live there
  - Effectively reduces the congestion effect in high productivity areas
- Elasticity of employment with respect to local shocks (e.g. productivity, amenities, infrastructure) depends on
  - Ability to attract migrants
  - Ability to attract commuters from surrounding locations

The Extent of Commuting

- Counties become more open over time



- Commuting links are sizeable and heterogeneous

	Min	p5	p10	p25	p50	p75	p90	p95	Max	Mean
Commuters from Residence County	0.00	0.03	0.06	0.14	0.27	0.42	0.53	0.59	0.82	0.29
Commuters to Workplace County	0.00	0.03	0.07	0.14	0.20	0.28	0.37	0.43	0.81	0.22
County Employment/Residents	0.26	0.60	0.67	0.79	0.92	1.02	1.11	1.18	3.88	0.91
Commuters from Residence CZ	0.00	0.00	0.01	0.03	0.07	0.12	0.18	0.22	0.49	0.08
Commuters to Workplace CZ	0.00	0.00	0.01	0.03	0.07	0.10	0.13	0.15	0.25	0.07
CZ Employment/Residents	0.63	0.87	0.91	0.97	1.00	1.01	1.03	1.04	1.12	0.98

Tabulations on 3,111 counties and 709 CZ after eliminating business trips (trips longer than 120km).

Weighted Table

Related Literature

- Quantitative international trade literature on costly trade in goods
  - Eaton and Kortum (2002) and extensions
- Economic geography literature on goods trade and factor mobility
  - Krugman (1991), Fujita et al. (1999), Rossi-Hansberg (2005), Allen and Arkolakis (2014), Allen et al. (2015), Caliendo et al. (2014), Desmet and Rossi-Hansberg (2014), Redding (2014)
- Urban literature on costly trade in people (commuting)
  - Alonso (1964), Mills (1967), Muth (1969), Lucas and Rossi-Hansberg (2002), Desmet and Rossi-Hansberg (2013), Ahlfeldt et al. (2014), Behrens et al. (2014), Monte (2016)
- Local labor markets literature
  - Greenstone et al. (2010), Moretti (2011), Busso et al. (2013), Autor et al. (2013), Diamond (2013), Notowidigdo (2013), Yagan (2014)

Preferences and Amenities

- Utility of an agent ω that lives in n and works in i is

$$U_{ni\omega} = \frac{b_{ni\omega}}{\kappa_{ni}} \left(\frac{C_{n\omega}}{\alpha} \right)^{\alpha} \left(\frac{H_{n\omega}}{1-\alpha} \right)^{1-\alpha}$$

  where $C_{n\omega}$ is the CES consumption basket with elasticity of substitution σ, and $H_{n\omega}$ housing consumption
- Utility cost of commuting are given κ_{ni}
- Amenities, $b_{ni\omega}$, drawn i.i.d. from Fréchet distribution

$$G_{ni}(b) = e^{-B_{ni} b^{-\epsilon}}, \qquad B_{ni} > 0, \epsilon > 1$$

Production

- Horizontally differentiated varieties sold under monopolistic competition
- Labor required to produce $x_i(j)$ units of output in i is

$$l_i(j) = F + \frac{x_i(j)}{A_i}$$

- Prices at n are given by

$$p_{ni}(j) = \left(\frac{\sigma}{\sigma - 1} \right) \frac{d_{ni} w_i}{A_i},$$

  where $d_{ni} \geq 1$ denotes iceberg transport costs between i and n
- Constant equilibrium output $x_i(j) = A_i F (\sigma - 1)$ implies

$$M_i = \frac{L_{Mi}}{\sigma F}$$

Land Market

- There is an inelastic supply of land at H_n
- Price of land Q_n determined from land market clearing

$$H_n Q_n = (1-\alpha)\, \upsilon_n L_{Rn},$$

where υ_n is expected income of residents at n and L_{Rn} is the total number of residents

  - Resulting price of land correlates well with house prices in the data

- Land owned by landlords, who receive income from residents' expenditure on land, and consume goods where they live
  - Total expenditure on goods is the sum of expenditures by residents and landlords

$$P_n C_n = \alpha \upsilon_n L_{Rn} + (1-\alpha)\upsilon_n L_{Rn} = \upsilon_n L_{Rn}$$

▸ Land Prices

Trade in Goods

- Denote by L_{Mi} the number of workers at i
- Then, as in many trade frameworks, expenditure shares are given by

$$\pi_{ni} = \frac{L_{Mi}\left(d_{ni} w_i / A_i\right)^{1-\sigma}}{\sum_{k \in N} L_{Mk}\left(d_{nk} w_k / A_k\right)^{1-\sigma}}$$

- And so the price of the consumption basket at n is given by

$$P_n = \frac{\sigma}{\sigma-1}\left(\frac{L_{Mn}}{\sigma F \pi_{nn}}\right)^{\frac{1}{1-\sigma}} \frac{w_n}{A_n}$$

Work-Residence Decision

- The indirect utility of an agent ω that lives in n and works in i is

$$U_{ni\omega} = \frac{b_{ni\omega} w_i}{\kappa_{ni} P_n^{\alpha} Q_n^{1-\alpha}}$$

which is drawn from

$$G_{ni}(u) = e^{-\Psi_{ni} u^{-\epsilon}}, \text{ with } \Psi_{ni} = B_{ni} \left(\kappa_{ni} P_n^{\alpha} Q_n^{1-\alpha}\right)^{-\epsilon} w_i^{\epsilon}$$

- So the unconditional probability that a worker chooses to live in region n and work in location i is

$$\lambda_{ni} = \frac{B_{ni} \left(\kappa_{ni} P_n^{\alpha} Q_n^{1-\alpha}\right)^{-\epsilon} w_i^{\epsilon}}{\sum_{r \in N} \sum_{s \in N} B_{rs} \left(\kappa_{rs} P_r^{\alpha} Q_r^{1-\alpha}\right)^{-\epsilon} w_s^{\epsilon}}$$

- Free mobility implies that $\bar{U} = E[U_{ni\omega}]$ for all ni

Commuting

- Conditional probability that worker commutes to location i conditional on living in location n is

$$\lambda_{ni|n} = \frac{B_{ni} \left(w_i / \kappa_{ni}\right)^{\epsilon}}{\sum_{s \in N} B_{ns} \left(w_s / \kappa_{ns}\right)^{\epsilon}}$$

- So labor market clearing implies that

$$L_{Mi} = \sum_{n \in N} \lambda_{ni|n} L_{Rn}$$

- Expected residential income is then

$$v_n = \sum_{i \in N} \lambda_{ni|n} w_i$$

General Equilibrium

- The general equilibrium is a vector of prices $\{w_n,\, v_n,\, Q_n,\, P_n\}$ and allocations $\{\pi_{ni},\, \lambda_{ni}\}$ such that
  - Earnings equals expenditures (trade balance), $w_i L_{Mi} = \sum_{n \in N} \pi_{ni} v_n L_{Rn}$
  - Land markets clear
  - Agents move freely and labor markets clear, $\bar{L} = \sum_{i \in N} L_{Mi} = \sum_{n \in N} L_{Rn}$
- We formulate an isomorphic model using Armington or EK with external economies of scale, migration and commuting
- We provide sufficient conditions for equilibrium uniqueness and existence

More

Data for Calibration

- Commodity Flow Survey (CFS)
  - Bilateral trade between 123 CFS regions
  - Bilateral distance shipped
- American Community Survey (ACS)
  - Commuting probabilities between counties
- Bureau of Economic Analysis
  - Employment by workplace county
  - Wages by workplace county
- GIS data
  - County maps
- Parameters
  - Share of expenditure on consumption goods, $\alpha = 0.6$ (Davis and Ortalo-Magne, 2011)
  - Elasticity of substitution, $\sigma = 4$ (Bernard et al., 2003)

County Bilateral Trade and Productivities

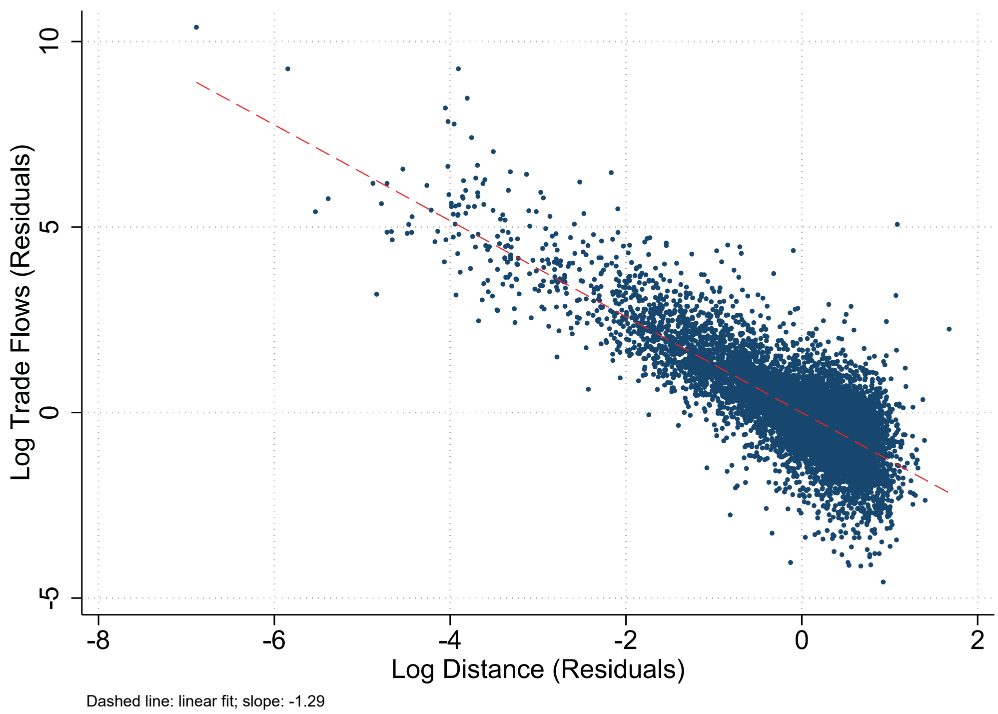
- Model is quantified for counties, but trade observed for CFS regions
- County trade balance implies

$$w_i L_{Mi} = \sum_{n \in N} \pi_{ni} v_n L_{Rn} = \sum_{n \in N} \frac{L_{Mi} \left(d_{ni} w_i\right)^{1-\sigma} A_i^{\sigma-1}}{\sum_{k \in N} L_{Mk} \left(d_{nk} w_k\right)^{1-\sigma} A_k^{\sigma-1}} v_n L_{Rn}.$$

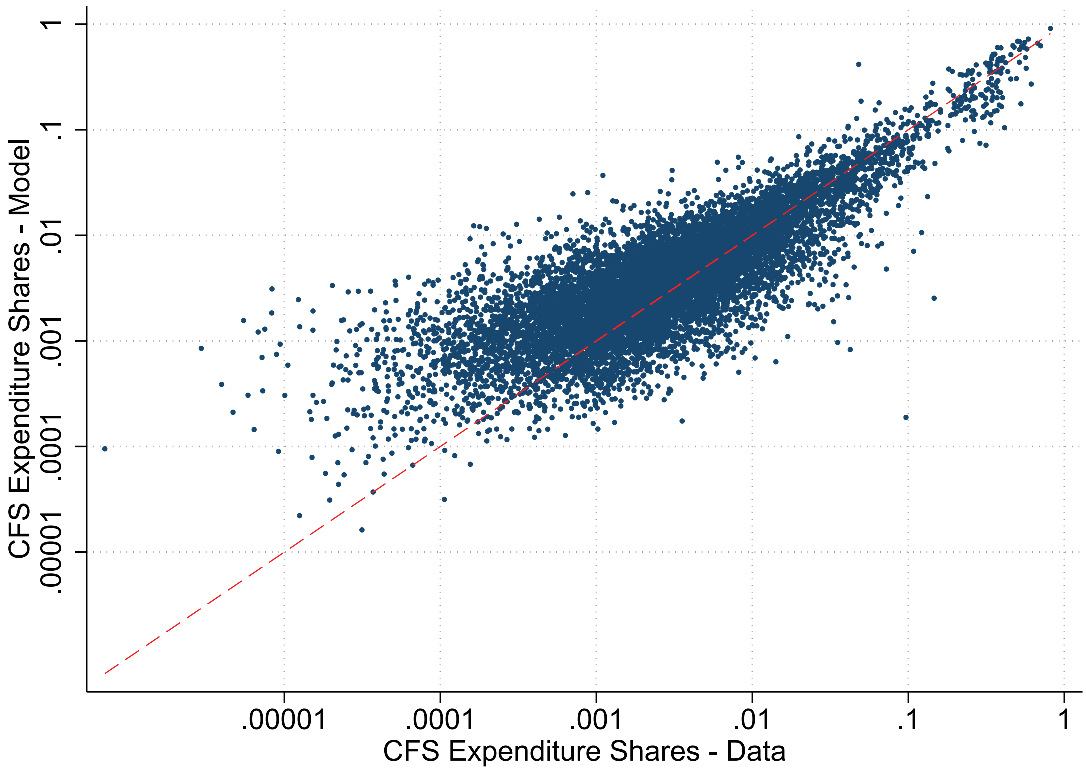
- We observe (or can compute) $\{w_i, L_{Mi}, L_{Ri}, v_i\}$
- Let $d_{ni}^{1-\sigma} = (\text{distance}_{ni})^{-1.29}$, then we can solve uniquely for productivities, A_i
- Obtain predicted county bilateral trade flows, π_{ni}
- Aggregate to CFS level and compare with actual trade shares

Gravity in Goods Trade Across CFS Regions

- Slope: -1.29 (after removing origin and destination fixed-effects)



Data vs. Model CFS Expenditure Shares



County Commuting Probabilities and Amenities

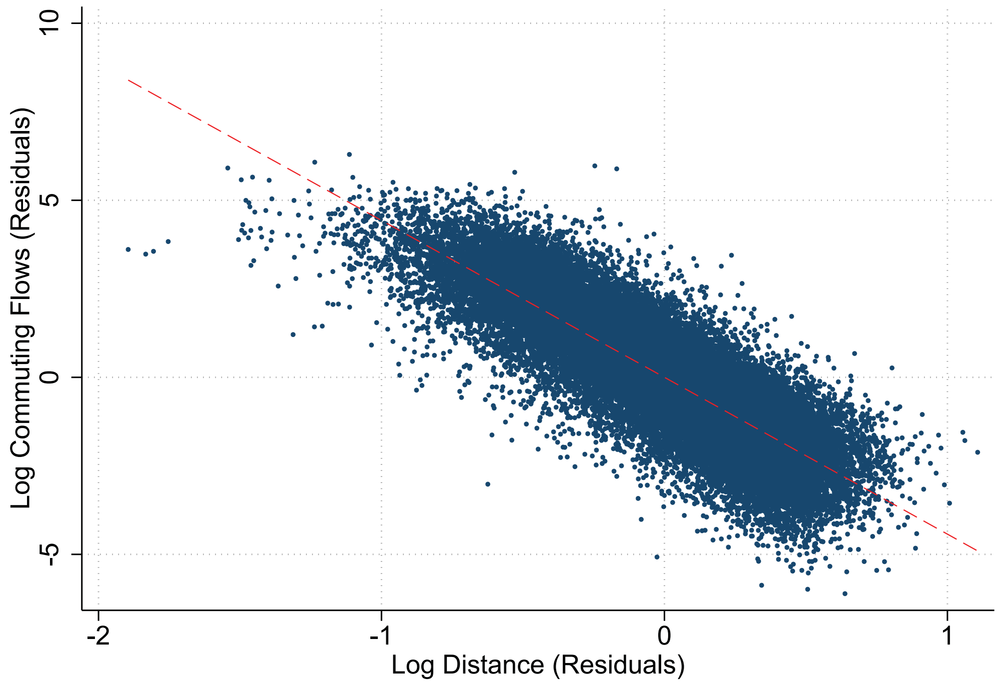
- Bilateral commuting probabilities are:

$$\lambda_{ni} = \frac{B_{ni}\left(\kappa_{ni} P_n^{\alpha} Q_n^{1-\alpha}\right)^{-\epsilon} w_i^{\epsilon}}{\sum_{r\in N}\sum_{s\in N} B_{rs}\left(\kappa_{rs} P_r^{\alpha} Q_r^{1-\alpha}\right)^{-\epsilon} w_s^{\epsilon}},$$

- We observe (or have solved for) $\{w_i, L_{Mi}, L_{Ri}, v_i, \pi_{ii}, A_i\}$ and so can calculate Q_n and P_n
- Use $\kappa_{ni} = \text{distance}_{ni}^{\phi}$, find $\phi\epsilon = 4.43$, we can solve for the unique matrix of amenities B_{ni}

Gravity in Commuting Flows

- Slope: -4.43 (after removing origin and destination fixed-effects)



Dashed line: linear fit; slope: -4.43

Separating ϕ and ϵ

- Can rewrite the bilateral commuting probability in logs as

$$\log \lambda_{ni} = \underbrace{-\log \sum_{r \in N} \sum_{s \in N} B_{rs} \left(\kappa_{rs} P_r^{\alpha} Q_r^{1-\alpha} \right)^{-\epsilon} w_s^{\epsilon}}_{\text{constant}} - \underbrace{\varepsilon \log P_n^{\alpha} Q_n^{1-\alpha}}_{\text{residence f.e.}}$$

$$-\varepsilon\phi \log dist_{ni} + \varepsilon \log w_i + \log u_{ni}$$

- To estimate ε
  - Impose $\varepsilon\phi = 4.43$
  - Instrument $\log w_i$ with $\log A_i$
    - F-stat from first stage: 822.1
- We find $\varepsilon = 3.30$ and $\phi = 1.34$

Quantitative Analysis

1. Shock to productivity of individual counties
   - We find substantial heterogeneity of local employment elasticity
   - Due in large part to commuting
2. The importance of commuting for local labor market outcomes
   - Shift-Share analysis
   - Million-Dollar plants
   - China Shock
3. Counterfactual exercises
   - Reduction in commuting costs
   - Shutting down commuting
   - Reducing trade costs in a world with or without commuting

Local Labor Demand Shocks

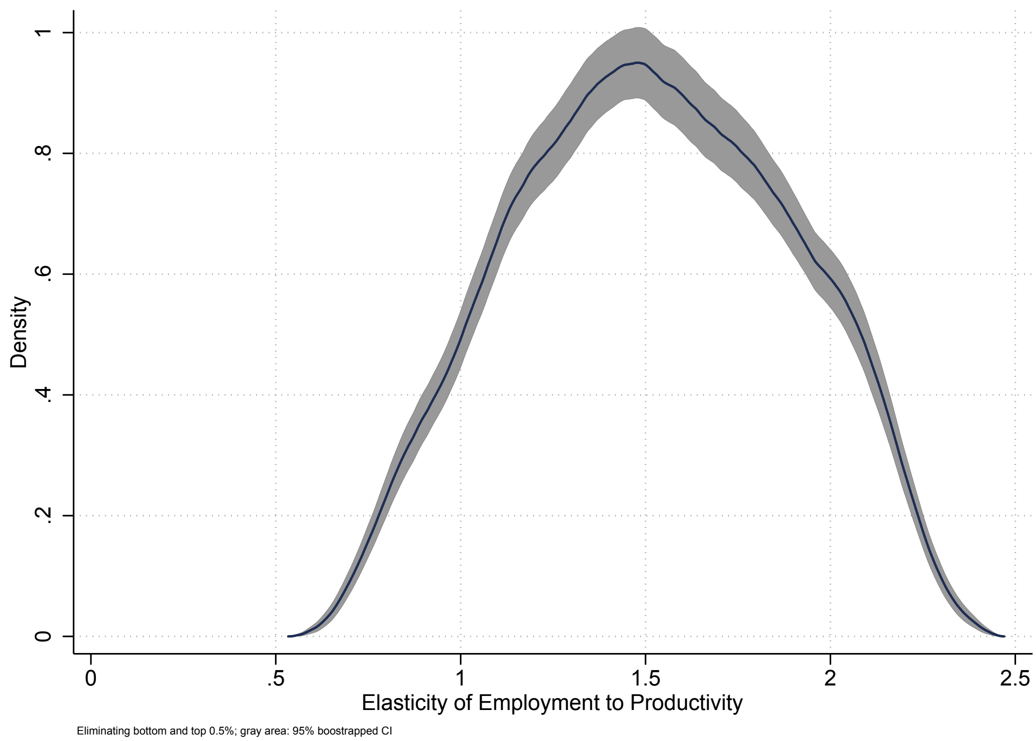
- Large empirical literature on local labor demand shocks ▸ Literature
- "Differences-in-differences" specification across locations i and time t

$$\Delta \ln Y_{it} = a_0 + a_1 \mathbb{I}_{it} + a_2 X_{it} + u_{it}$$

  Y_{it} is outcome of interest and $\mathbb{I}_{it}$ is demand shock (treatment), X_{it} are controls and u_{it} is a stochastic error
- Potential econometric concerns
  - Finding exogenous shocks to labor demand
  - Measuring the shock to local labor demand (interpreting a_1)
  - Heterogeneous treatment effects
  - Spatial linkages between counties and general equilibrium effects
- To what extent are heterogeneous treatment effects, spatial linkages and general equilibrium effects a concern?
- What if anything can be done to address these concerns?

Elasticity of Local Employment to Productivity

5% productivity shocks



Elasticity of Local Employment to Productivity

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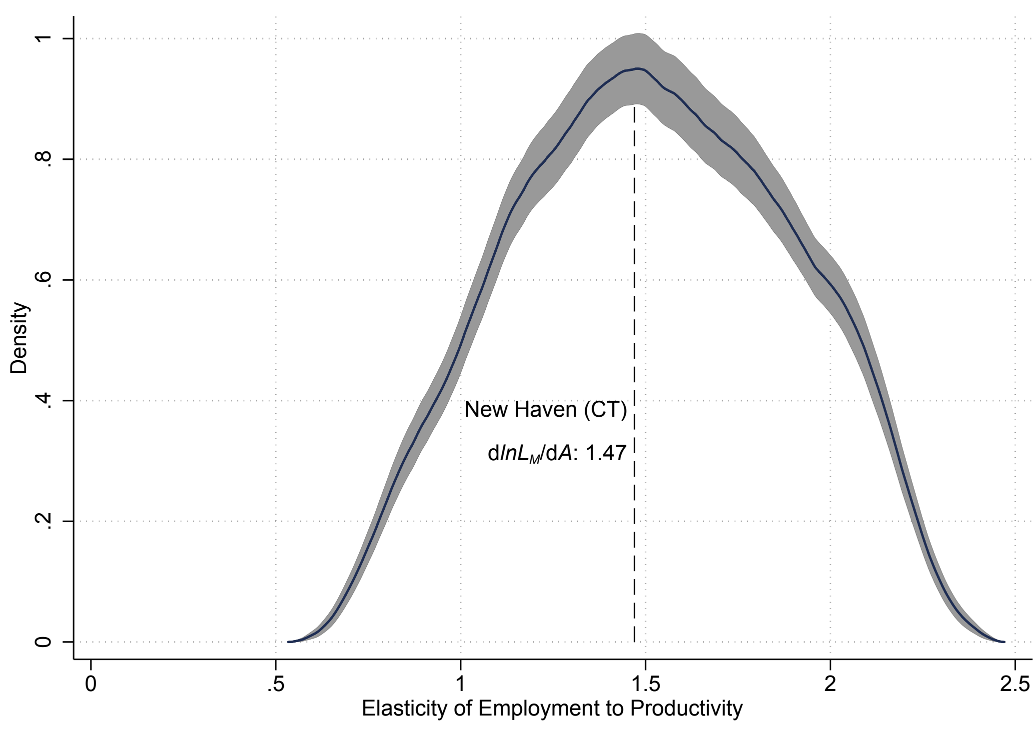

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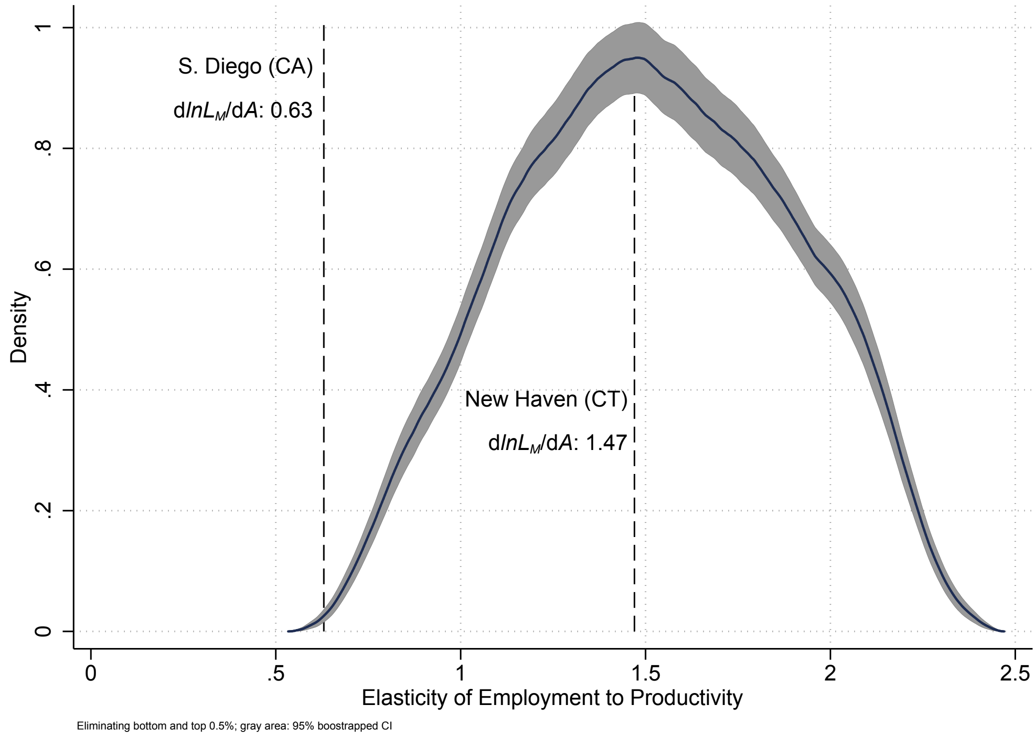
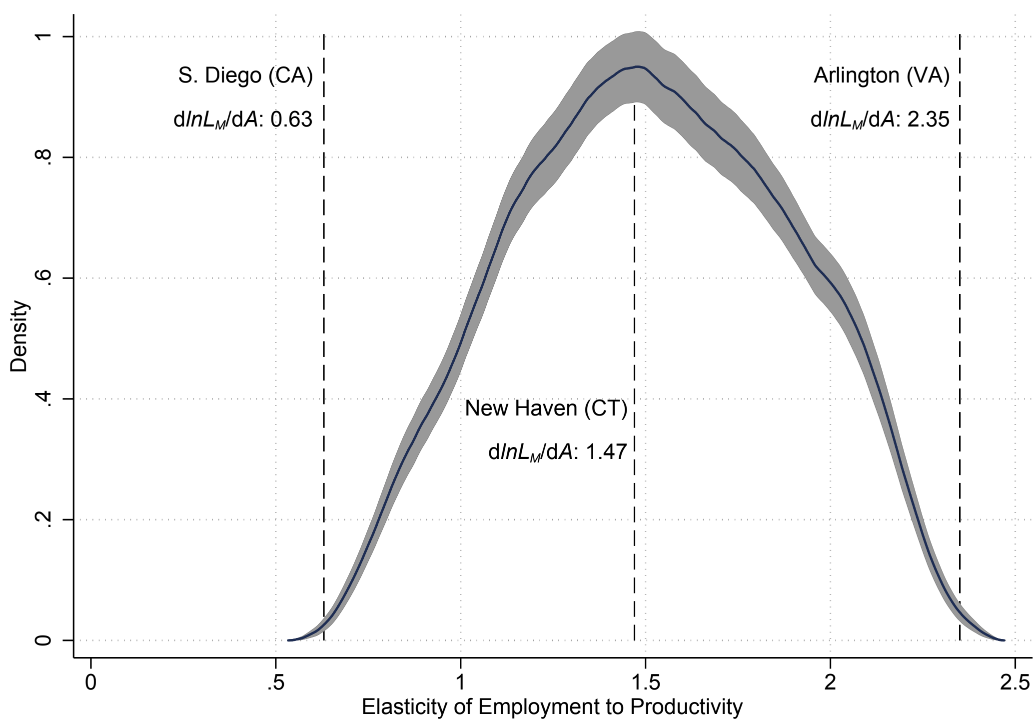


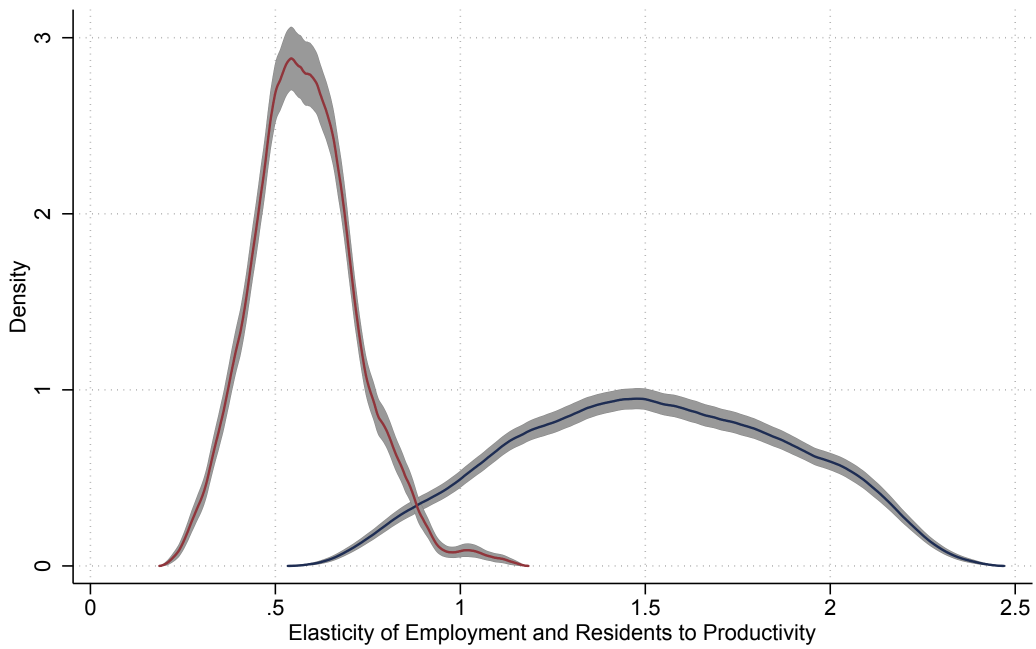
Elasticity of Local Employment to Productivity

5% productivity shocks



Local Employment vs. Resident Elasticity to Productivity

5% productivity shocks



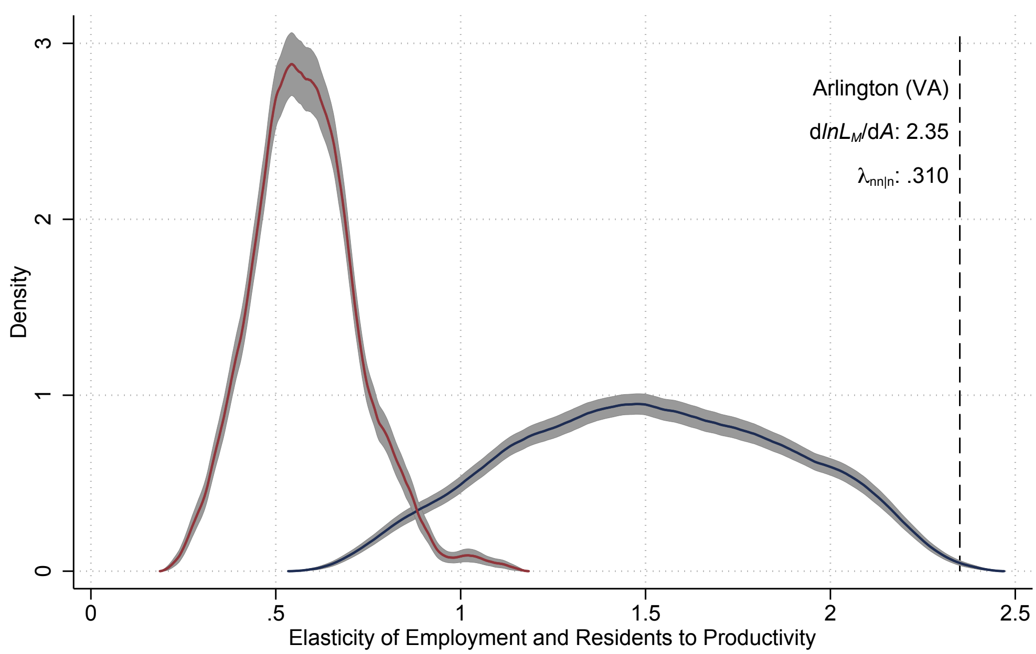
▸ C.Z. ▸ Saiz ▸ Sp. Corr. Shocks

Employment — Residents

Eliminating bottom and top 0.5%; gray area: 95% boostrapped CI

Local Employment vs. Resident Elasticity to Productivity

5% productivity shocks

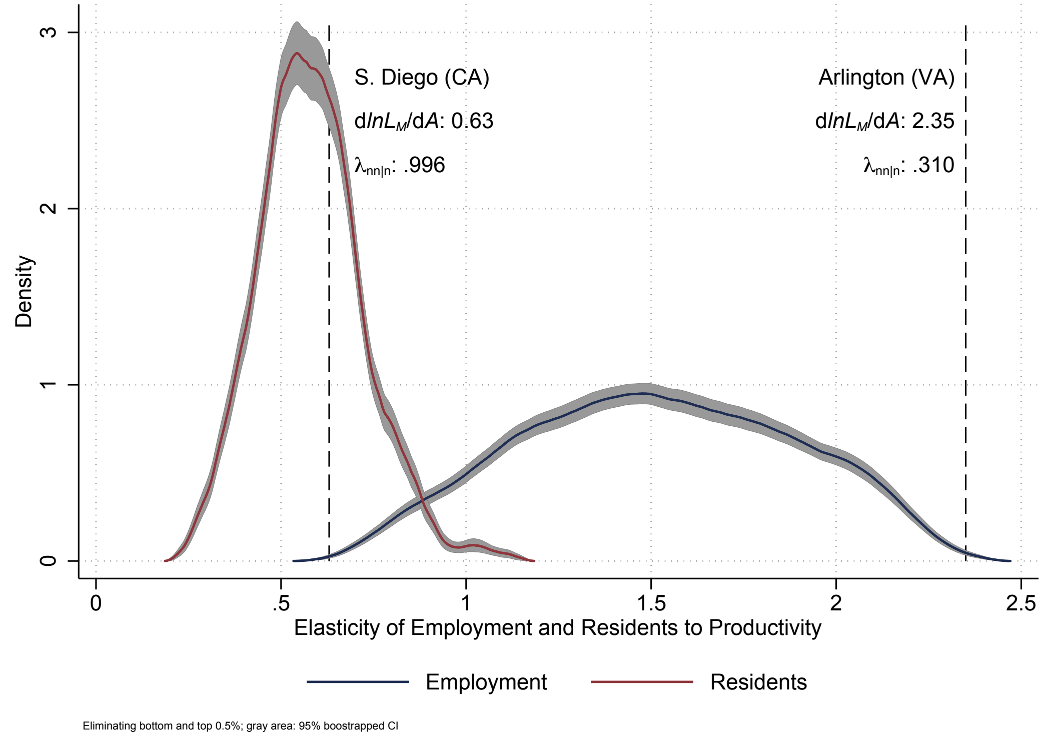


Employment — Residents

Eliminating bottom and top 0.5%; gray area: 95% boostrapped CI

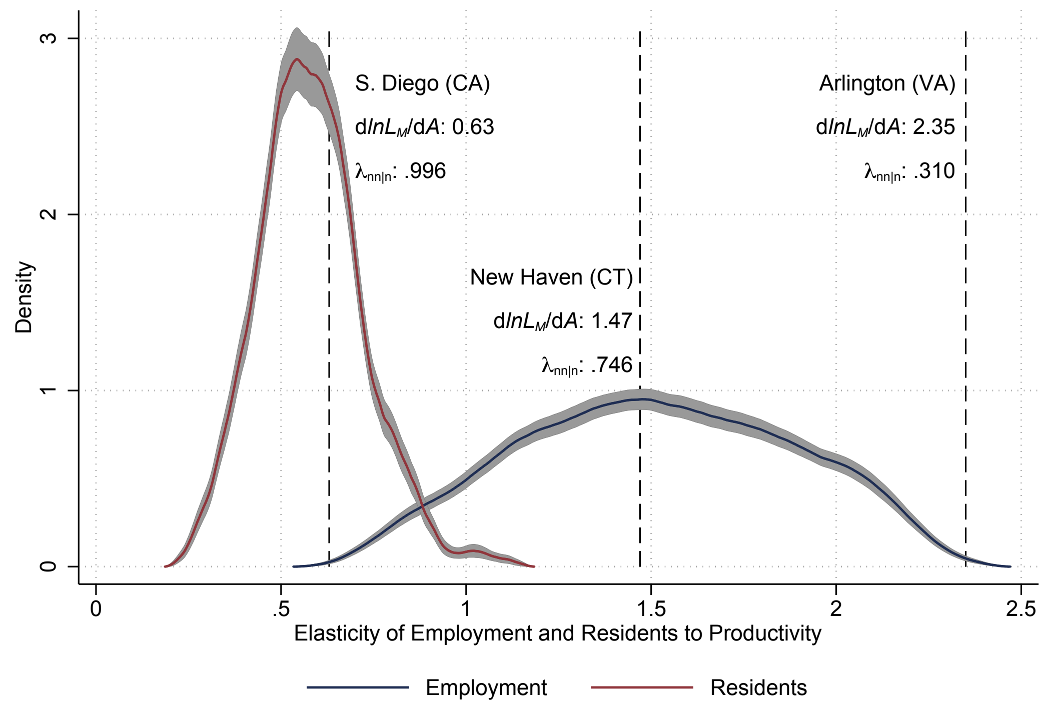
Local Employment vs. Resident Elasticity to Productivity

5% productivity shocks



Local Employment vs. Resident Elasticity to Productivity

5% productivity shocks



Explaining The Elasticity of Employment

	1	2	3	4	5	6	7	8	9
Dependent Variable:					Elasticity of Employment				
log L_i		-0.003	0.009	-0.054**				0.037**	0.033**
		(0.014)	(0.012)	(0.006)				(0.004)	(0.004)
log w_i			-0.201**	-0.158**				-0.257**	-0.263**
			(0.059)	(0.039)				(0.016)	(0.016)
log H_i			-0.288**	-0.172**				0.003	0.009
			(0.021)	(0.015)				(0.009)	(0.009)
log $L_{,-i}$				0.118**				-0.027**	-0.027**
				(0.017)				(0.009)	(0.009)
log $\bar{w}_{-i}$				0.204*				0.163**	0.207**
				(0.083)				(0.037)	(0.038)
$\lambda^R_{ii\|i}$					-2.047**				
					(0.042)				
$\sum_{n\in N}\left(1-\lambda_{Rni}\right)\vartheta_{ni}$						2.784**		2.559**	
						(0.192)		(0.178)	
$\vartheta_{ii}\left(\frac{\lambda_{ii}}{\lambda_{Ri}}-\lambda_{Li}\right)$						0.915**		0.605**	
						(0.210)		(0.175)	
$\frac{\partial w_i}{\partial A_i}\frac{A_i}{w_i}$						-1.009**		-0.825**	
						(0.123)		(0.150)	
$\frac{\partial w_i}{\partial A_i}\frac{A_i}{w_i}\cdot\sum_{r\in N}\left(1-\lambda_{rn\|r}\right)\vartheta_{rn}$							1.038**		1.100**
							(0.090)		(0.091)
$\frac{\partial w_i}{\partial A_i}\frac{A_i}{w_i}\cdot\vartheta_{ii}\left(\frac{\lambda_{ii}}{\lambda_{Ri}}-\lambda_{Li}\right)$							-0.818**		-0.849**
							(0.098)		(0.092)
Constant	1.515**	1.545**	5.683**	1.245	2.976**	0.840**	1.553**	1.861**	2.064**
	(0.034)	(0.158)	(0.632)	(0.797)	(0.022)	(0.201)	(0.087)	(0.404)	(0.352)
R^2	0.00	0.00	0.40	0.51	0.89	0.93	0.93	0.95	0.95
N	3,111	3,111	3,111	3,081	3,111	3,111	3,111	3,081	3,081

Standard errors are clustered by state. * p-value $\leq$ 0.05; ** p-value $\leq$ 0.01.

Definitions | Standardized | Saiz regressions | CZ regressions

Deviation in Diff-in-Diff Estimates

- We estimate

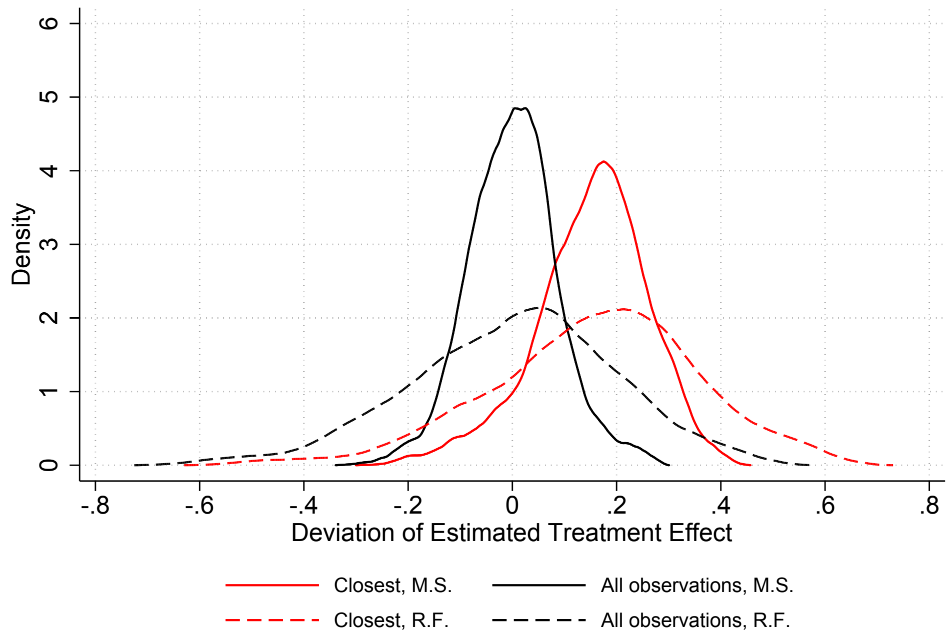
$$\Delta \ln L_{Mi} = a_0 + a_1 \mathbb{I}_i + a_2 X_i + a_3 \left(\mathbb{I}_i \times X_i\right) + u_i$$

- Using different comparison sets of "control counties"
  - Closest county, random county, neighbors, non neighbors, all counties
- Using two sets of controls
  - *Reduced-form controls*: land, employment, residents, workplace wages, employment and wages in neighboring areas
  - *Model-suggested controls*: partial equilibrium elasticities for commuting, migration, and goods market linkages
- Compute the deviation as

$$\beta_i = \frac{\left(a_1 + a_3 X_i\right)}{dA_i} - \frac{dL_{Mi}}{dA_i}\frac{A_i}{L_{Mi}}$$

Distribution of Deviations in Diff-in-Diff Estimates

Using "closest county" and "all observations" control groups



Other Control Groups   Deviations

Commuting Role in Accounting for Employment Variability

Time-series analysis: variation w.r.t. employment in 1990

- Let $\Delta^T L_{it} = L_{i2007} - L_{i1990}$; then,

$$\Delta^T L_{it} = \underbrace{\lambda^R_{ii|it}\Delta^T R_{it}}_{\text{(i) own residents}} + \underbrace{R_{it-1}\Delta^T\lambda^R_{ii|it}}_{\text{(ii) own commuting shares}} + \underbrace{\sum_{n\neq i}\lambda^R_{ni|nt}\Delta^T R_{nt}}_{\text{(iii) other residents}} + \underbrace{\sum_{n\neq i} R_{nt-1}\Delta^T\lambda^R_{ni|nt}}_{\text{(iv) other commuting shares}}$$

1990 to 2006-10	(i) Changes Own Residents, Constant Own Commuting	(ii) Changes Own Commuting, Constant Own Residents	(iii) Changes Other Residents, Constant Other Commuting	(iv) Changes Other Commuting, Constant Other Residents	Sum (i)-(iv)
10th percentile	17.2	2.2	3.1	1.8	-
25th percentile	33.7	6.3	7.3	5.9	-
50th percentile	50.0	16.0	12.3	13.1	-
75th percentile	66.0	30.4	18.6	22.8	-
90th percentile	80.2	46.3	26.8	34.1	-
Mean	49.7	20.4	14.0	15.8	100

Cross Section

The Role of Commuting in Local Labor Demand Shocks

- Announcements of Million Dollar Plants (MDP)
  - Compare winning county where new firm locates to runner-up counties
- 82 MDP announcements from Greenstone and Moretti (2004)
  - GHM(2010) use subset of 47 MDP openings in (confidential) Census data
- We generalize GHM(2010) with commuting interactions

$$\ln L_{it} = \kappa \mathbb{I}_{j\tau} + \theta \left(\mathbb{I}_{j\tau} \cdot \mathbb{W}_i \right) + \beta \left(\mathbb{I}_{j\tau} \cdot \lambda^R_{ii|i} \right) + \gamma \left(\mathbb{I}_{j\tau} \cdot \mathbb{W}_i \cdot \lambda^R_{ii|i} \right) + \\ + \alpha_i + \eta_j + \mu_t + \epsilon_{it}$$

  - i: counties; j: cases; t: calendar year; τ: treatment year index;
  - L_{it}: employment in county i, t years after announcement;
  - $\mathbb{I}_{j\tau}$: 1 for case j starting in treatment year;
  - W_i : indicator for winner county;
  - $\lambda^R_{ii|i}$: residence own-commuting share in 1990 (experiment with more)
  - α_i, η_j, μ_t: counties, cases, calendar years fixed effects.
- Validation: ▸ Balance Table ▸ Event Study

The Role of Commuting in Local Labor Demand Shocks

Variable	Coefficient	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbb{I}_{j\tau} \times \mathbb{W}_i$	θ	0.057**	0.250***	0.191***	0.244***	0.260***	0.223***	0.160**	0.159**
		(0.018)	(0.078)	(0.065)	(0.068)	(0.078)	(0.078)	(0.060)	(0.066)
$\mathbb{I}_{j\tau} \times \mathbb{W}_i \times \lambda^R_{ii\|i}$	γ		-0.242**				-0.219**	-0.190**	-0.195**
			(0.096)				(0.096)	(0.077)	(0.066)
$\mathbb{I}_{j\tau} \times \mathbb{W}_i \times \lambda^L_{ii\|i}$	γ			-0.177**					
				(0.087)					
$\mathbb{I}_{j\tau} \times \mathbb{W}_i \times \lambda^{ARL}_{ii\|i}$	γ				-0.241***				
					(0.088)				
$\mathbb{I}_{j\tau} \times \mathbb{W}_i \times \lambda^{MRL}_{ii\|i}$	γ					-0.281**			
						(0.110)			
$\mathbb{I}_{j\tau} \times \lambda^R_{ii\|i}$	β		0.012				-0.048	-0.203***	-0.213**
			(0.135)				(0.108)	(0.075)	(0.082)
$\mathbb{I}_{j\tau} \times \lambda^L_{ii\|i}$	β			0.243*					
				(0.129)					
$\mathbb{I}_{j\tau} \times \lambda^{ARL}_{ii\|i}$	β				0.124				
					(0.160)				
$\mathbb{I}_{j\tau} \times \lambda^{MRL}_{ii\|i}$	β					0.133			
						(0.145)			
$\mathbb{I}_{j\tau}$	κ	-0.015*	-0.024	-0.200**	-0.113	-0.113	0.021	0.160**	0.159**
		(0.008)	(0.109)	(0.096)	(0.125)	(0.106)	(0.086)	(0.060)	(0.066)
County Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Case Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes			
Industry-year Fixed Effects							Yes		
Census-region-year Fixed Effects								Yes	
State-year Fixed Effects									Yes
Observations		4,431	4,431	4,431	4,431	4,431	4,431	4,431	4,431
R-squared		0.991	0.0991	0.991	0.991	0.991	0.992	0.994	0.996

County observations are weighted by population at the beginning of the sample period. Standard errors are clustered by state. * p-value $\leq$ 0.1; ** p-value $\leq$ 0.05l; *** p-value $\leq$ 0.01.

▸ Non-Parametric, Pre-Trends

Changes in Commuting Costs

- We use observed commuting flows to back out implied values of $\mathcal{B}_{ni} = B_{ni}\kappa_{ni}^{-\epsilon}$, using

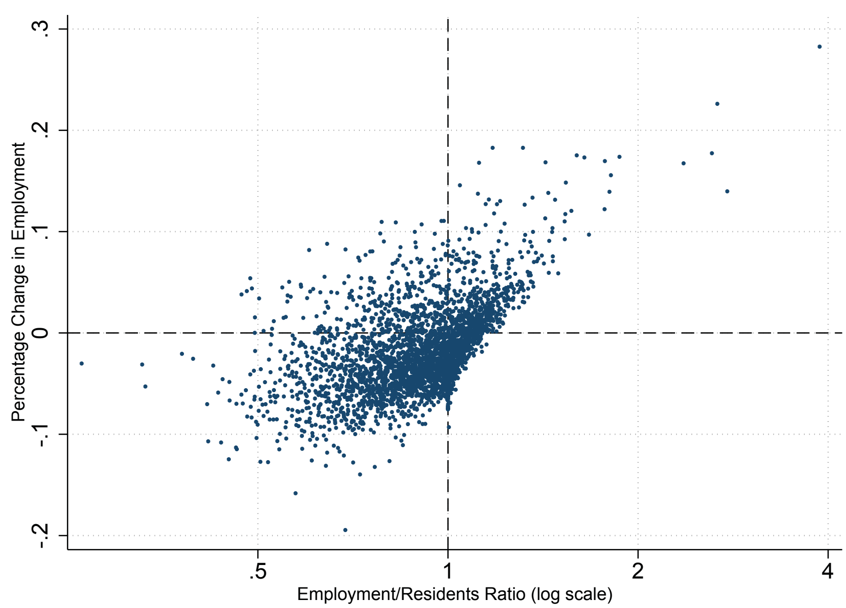
$$\tilde{\mathcal{B}}_{ni} = \left(\frac{\mathcal{B}_{ni}\mathcal{B}_{in}}{\mathcal{B}_{nn}\mathcal{B}_{ii}}\right)^{1/2} = \left(\frac{L_{ni}}{L_{nn}}\frac{L_{in}}{L_{ii}}\right)^{1/2}$$

- Compute this measure for both 1990 and 2007
  - We find a reduction in commuting costs of 4% at the 25th percentile, 12% at the median, and 21% at the 75 percentile
- Associated welfare changes:

	Decrease by p75	Decrease by p50	Decrease by p25	Increase by p50
Change in Commuting Costs	-21%	-12%	-4%	13%
Welfare Change	6.89%	3.26%	0.89%	-2.33%

Changes in Commuting Costs

- Employment response of reductions in commuting cost by median change between 1990 and 2007



More Exercises

- Shutting down commuting between counties ▸ More
  - Large effects on the spatial distribution of economic activities
    - ★ Areas using the commuting technology more intesively lose attractiveness
  - The welfare cost is 7.2%
- Reducing trade costs in a world with or without commuting ▸ More
  - Commuting and trade are
    - ★ complements in terms of employment
    - ★ substitutes in terms of real income

Conclusions

- Study changes in local employment in response to local shocks
  - To do so we introduced migration and commuting into a spatial GE model
- Found that local employment elasticities are very heterogenous
  - Puts into question the external validity of empirical estimates of any single local employment elasticity
- Heterogeneity in commuting patterns important in generating the heterogeneity in employment elasticities
  - The model suggests simple controls to recover such heterogeneity
  - Underscores the importance of GE effects
  - Commuting links are empirically very important
- Emphasize the role of commuting to determine
  - the spatial distribution of economic activity
  - the consequences of reduction in trade costs