Discussion of

Immigration, Innovation and Growth

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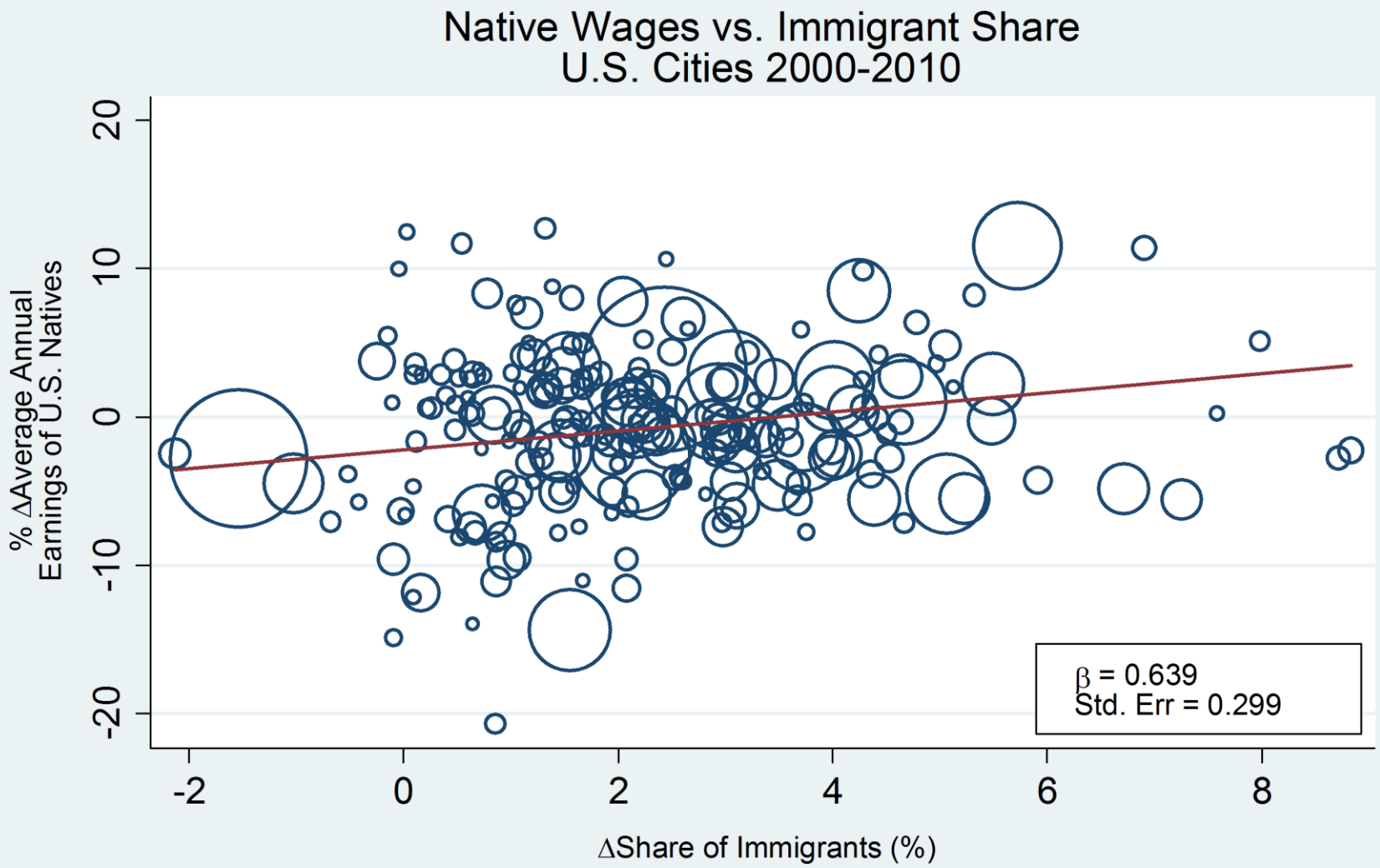
Motivation

from: Lewis and Peri (2015)



- First(?) found in Ottaviano & Peri (2006)
- Peri (2014) also finds impact on TFP

Motivation: Immigration associated with faster wage growth. Why?

- Immigrants complement natives in production (e.g., Borjas, 1994)
  - Problem: very small effect (Ottaviano and Peri, 2012)
- Endogeneity: Immigrants choose higher wage locations
  - Even traditional “Bartik” IV estimates may suffer from this bias
  - New series of papers criticizing this IV (e.g. Jaeger et al., 2018; Goldsmith-Pinkham et al., 2019)
- Direct effect of immigration on wages (through scale or other mechanism)

Important Contributions!

- Estimate “scale effects” of immigration
  - Centrally important, but mostly ignored by research on immigration!
    - Potentially very large welfare impacts of scale (di Giovanni, Levchenko, and Ortega, 2015)
  - Also: mechanisms for such scale effects – innovation, dynamism
- Address endogeneity: Novel identification strategy/approach
  - Addresses recent onslaught of criticism of the standard “Bartik” approach
- So it is a strong general interest contribution
  - My (easily addressed) criticisms are technical in nature

Comments on Interpretation

- Motivated by scale effects, but skills/composition may also matter
  - Education
  - Direct compositional impacts – especially w/wages
  - Diversity: a direct effect of adding "diversity" on income*

    Country Level: Alesina and Rappaport (2016); Ortega and Peri (2015)
    US Metro Area: Ottaviano and Peri (2006)
    Plant-Level: Trax, Brunow, and Suedekum (2015)

- Possible to empirically separate scale and diversity effects? Maybe

*Summarized in Peri and Lewis (2015)

Comments on specification

- Instrument novel, and an improvement, but hard to understand
  - Unlike conventional “Bartik” instrument, scale not clear (to me, yet). 1st stg>1?
- Treatment/IV not scaled at all: raw “counts” of immigrants
  - So may capture pre-existing differences in region size
  - Total immigration is skewed, so few large clusters may make relationship over-precise
  - 1st stg F-stats orders of magnitude larger than is typical

- More off-line in “bonus slides”

First stage F: 1,202 → 94

Table 11: Growth Models and Population Change

	Difference in Patenting per 100,000 People Post-1980		*Patenting per 100,000 People Post-1975*		*IHS of Patents Post-1975*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Immigration_d^t$	0.101***	0.509***	0.501**	2.505***	0.028***			
	(0.031)	(0.090)	(0.190)	(0.268)	(0.011)			
$sq(Immigration_d^t)$		-0.001***		-0.004***				
		(0.000)		(0.000)				
$\Delta\ Population_d^t$						0.033***		
						(0.012)		
$IHS(Immigration_d^t)$							1.723***	
							(0.111)	
$IHS(\Delta\ Population_d^t)$								2.471***
								(0.510)
N	18,846	18,846	21,987	21,987	21,987	21,986	21,987	21,986
First Stage F-Stat	911	95	1,202	102	1,202	102	94	16
First Stage F-Stat		11,231		11,879				

Comments on specification

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  - Unlike conventional “Bartik” instrument, not clear (to me, yet). 1st stg>1?
- Treatment/IV not scaled at all: raw “counts” of immigrants
  - So may capture pre-existing differences in region size
  - Total immigration is skewed, so few large clusters may make relationship over-precise
  - 1st stg F-stats orders of magnitude larger than is typical (some in the millions!)
    - First stage drops dramatically when implicitly scaling (IHS specification, table 11)
  - Anyway, a more meaningful “treatment” might be immigrants *per capita*
- Both might be improved upon with slight changes I think!
  - Scale by area population, for example; maybe control for region x year effects.
  - More off-line in “bonus slides”

Comments on Specification

- Instrument is a generated regressor, can produce lead to biased standard errors, invalid inference (Pagan, 1984, theorem 6?)
  - Bootstrap
- Intermediate years (ending in “5”) are only partly observed
  - Robustness check to drop them
  - Also would allow you to look specifically at native wages, avoiding direct compositional sources of wage change.
  - Also useful in light of Jaeger et al. (2018) criticism that Bartik instrument confounds current and lagged effects of immigration

    (may not apply to your instrument??)

Conclusion

- Despite technical criticisms, I see this as very important contribution
  - The question the paper investigates scale effects of immigration, in an novel and effective way
  - Central to evaluating welfare impacts of immigration
- Thanks for the chance to discuss!

Bonus Slides

- Not for presentation

Detailed Comments on Approach:

- Step 1: Predict $\boldsymbol{A}^{\boldsymbol{t}}_{\boldsymbol{o,d}}$ = "stock" of ancestry of origin "o" in US destination "d" and year "t" using vector of this function of immigration (I) from historical periods (τ):

$$I^{\tau}_{o,-r(d)} \times \frac{I^{\tau}_{Euro,r(d)}}{I^{\tau}_{Euro,-r(d)}} \times \frac{I^{\tau}_{Euro,d}}{I^{\tau}_{Euro}}$$

Proportional to region r(d) in scale

- Seems proportional in scale to r(d) x d, not *d*
  - Why not just $I^{\tau}_{o,-r(d)} \times \frac{I^{\tau}_{Euro,d}}{I^{\tau}_{Euro,-r(d)}}$? The $\hat{b}^{\tau}_{r(d)}$'s probably convert it to this anyway

Detailed comments on approach

- Step 2: Use $\hat{A}^{\tau}_{o,d}$'s from step 1 to predict $I^{t}_{o,d}$, using specifically

$$\sum_{\tau} \gamma^{\tau} \delta_{\tau} \hat{A}^{\tau-1}_{o,d} I^{\tau}_{o,-r(d)} \times \frac{I^{\tau}_{Euro,r(d)}}{I^{\tau}_{Euro,-r(d)}}$$

- $\gamma^{\tau} \delta_{\tau}$ coefficient pair to be estimated, but one is redundant, no? (typo?)
- This step is particularly hard to interpret the relationship's magnitude
  - Scale d outcome regressed on scale d x r(d) regressors

Detailed Comments on Approach:

- Also: Instrument uses historical region x year level variables, interacted with origin x region x year and destination x year immigration variables to predict destination x year immigration flows
  - Might it be more credible with controls for region x year, making it identified only off of the interaction of those variables, rather than their levels.