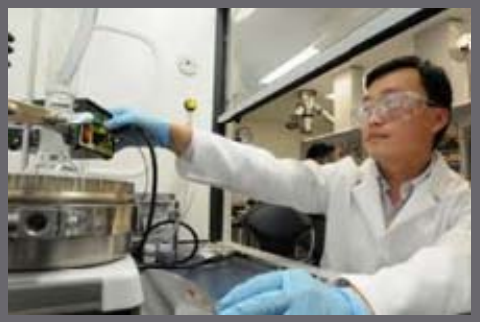


DID IMMIGRATION CONTRIBUTE TO WAGE STAGNATION OF UNSKILLED WORKERS?

Giovanni Peri, IRLE conference

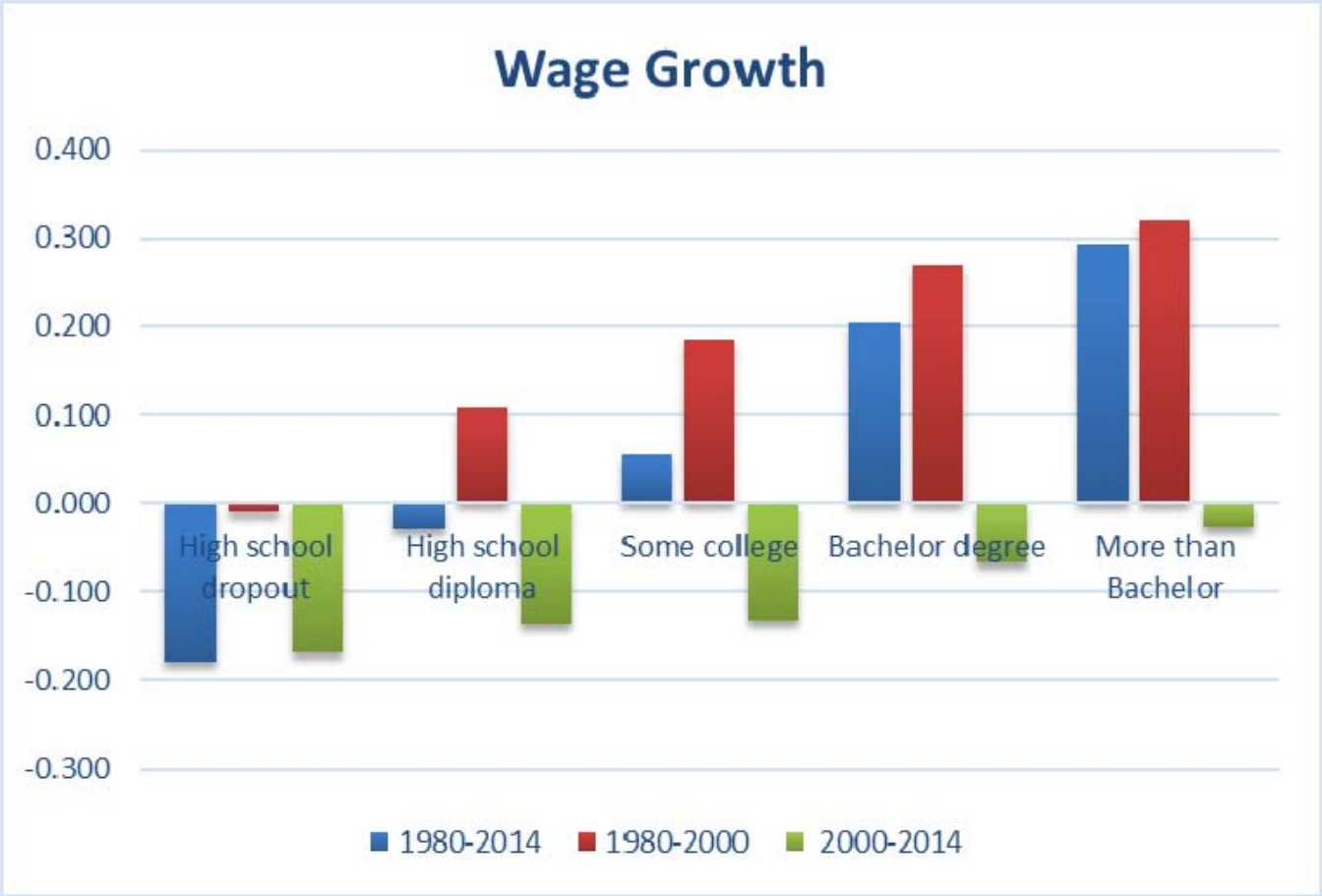
Can Immigration contribute to explain stagnation of low-educated workers' wages 1980-2014?

- A simple national supply story
  - The "flood" of low educated immigrants reduced their wages relative to college educated.

- First, National Level:
  - college non-college
  - within non-college: dropouts and high school graduates.

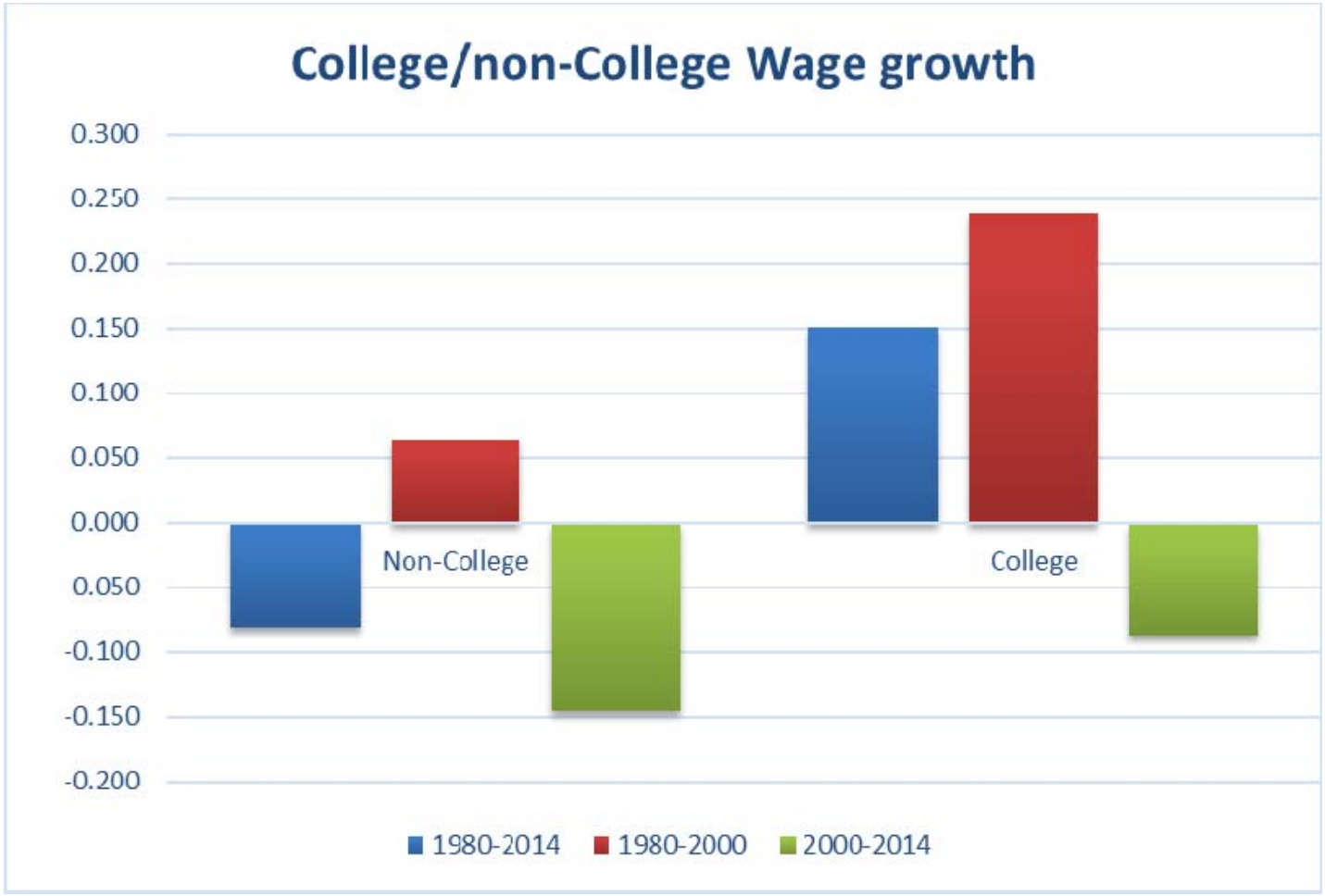
- Other channels
  - Local relative effects of immigrants?
  - Local crowding (or externalities)?
  - STEM/Entrepreneurs?

Wage inequality across education groups

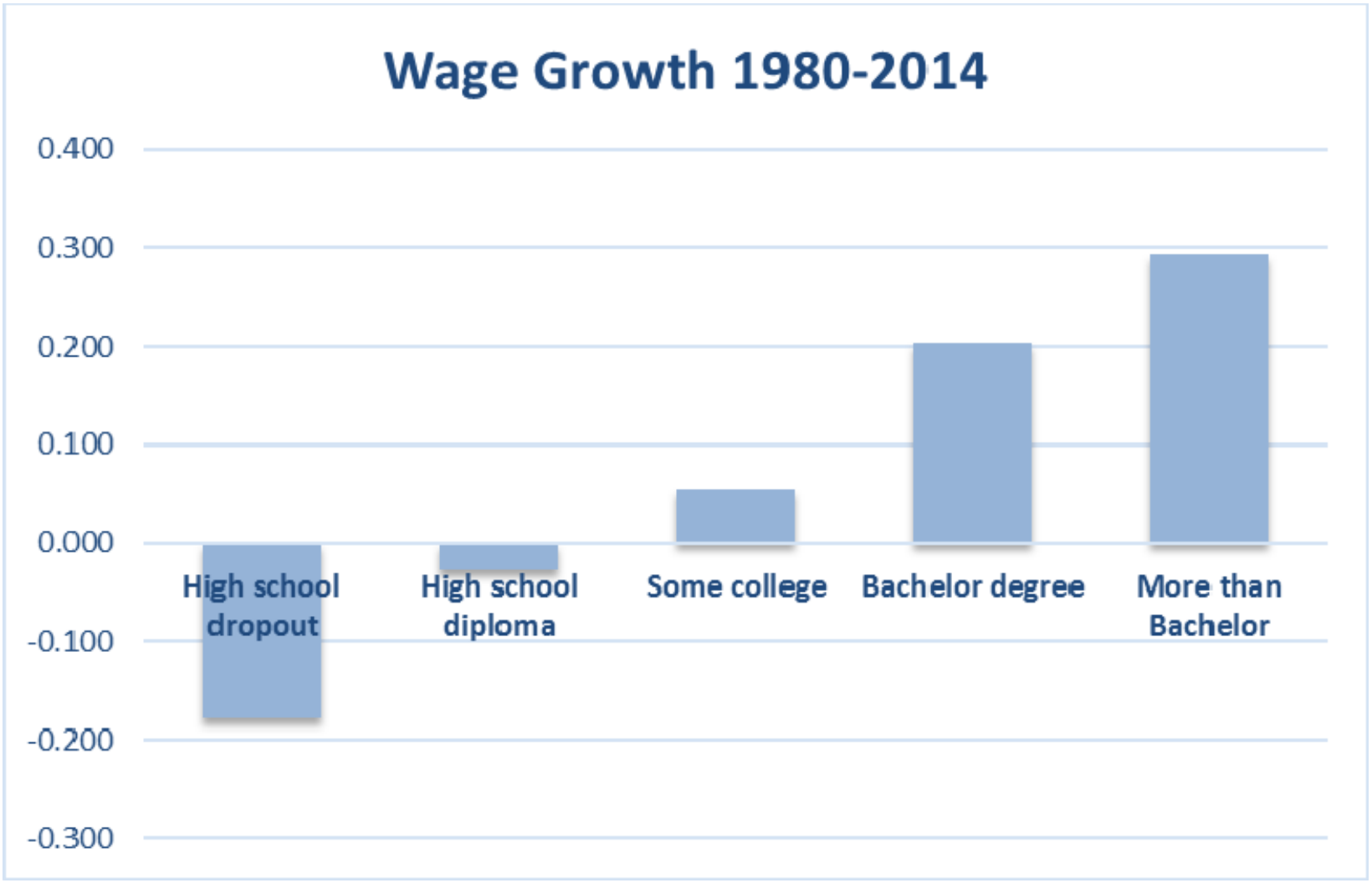


Weekly Wage calculated including US born individuals not in-group quarters, 18-65 who worked at least one week.

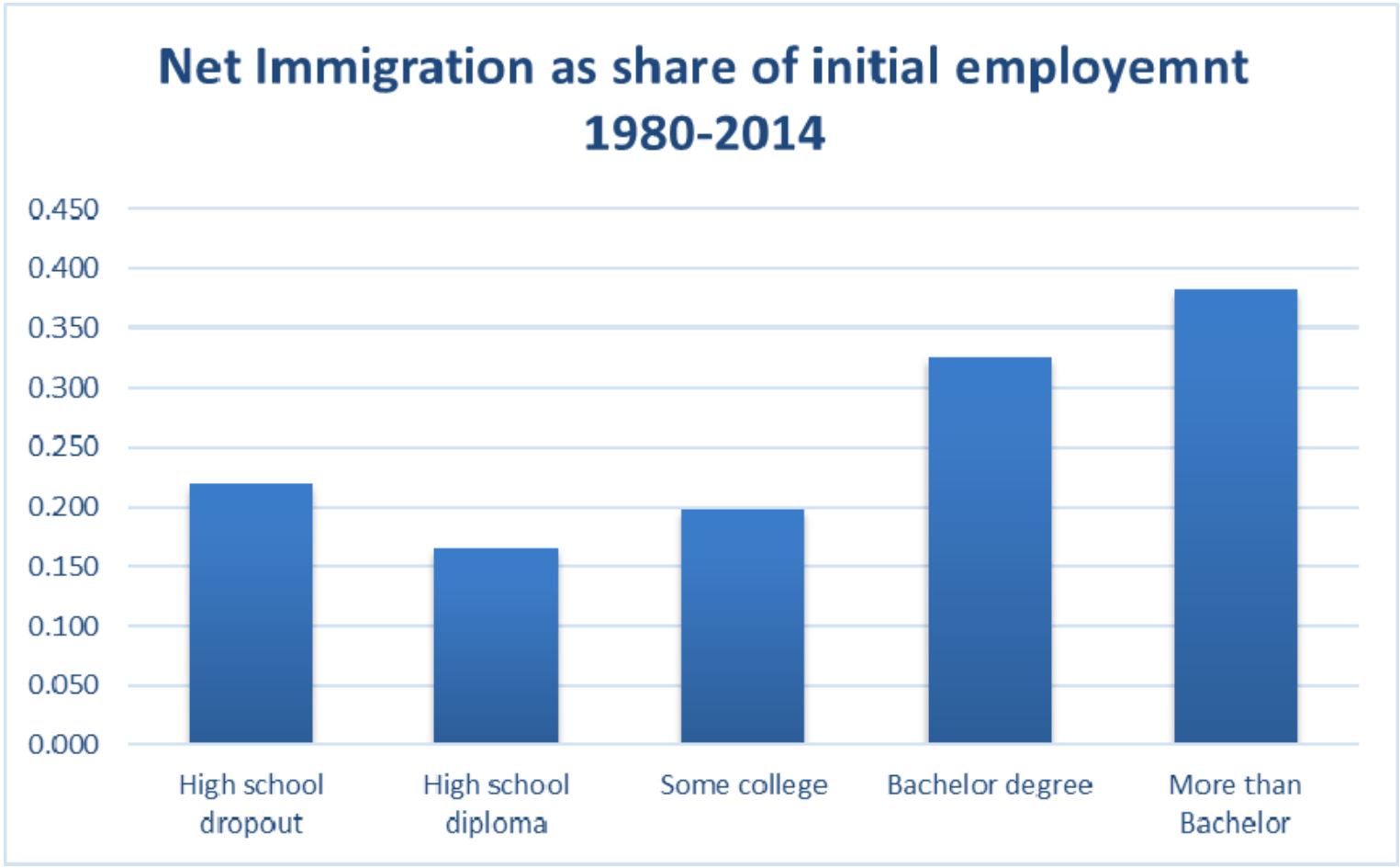
College-Non College Wage inequality



Overall Inequality Increase



…And the relative supply shift produced by immigration



Evaluate the potential contribution by decade

- Use a simple nested CES model of production
- College and non-college as differentiated workers
- Then within non-college distinguish dropouts and high school graduates
- What change in relative wages can be implied by the relative change of immigrants by decade? Compare with actual relative change.

Simple and widely used relative wage formula

Long-run production function

$$Y = A\left[(\theta_{CO}L_{CO})^{\frac{\sigma-1}{\sigma}} + (\theta_{NoCo}L_{NoCo})^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}}$$

Long-run college/non-college relative demand

$$ln\frac{w_{CO}}{w_{NoCO}} = \left(\frac{\sigma-1}{\sigma}\right) ln\frac{\theta_{CO}}{\theta_{NoCO}} - \left(\frac{1}{\sigma}\right) ln\frac{L_{CO}}{L_{NoCo}}$$

Long-run High school/Dropouts relative demand from a similar nested CES

$$ln\frac{w_{HS}}{w_{Dropout}} = \left(\frac{\varepsilon-1}{\varepsilon}\right) ln\frac{\theta_{HS}}{\theta_{Dropouts}} - \left(\frac{1}{\varepsilon}\right) ln\frac{L_{HS}}{L_{Dropouts}}$$

If skill-specific productivity () are fixed relative supply change produce relative wage changes in long run.

Elasticity between education groups

- Between college and non-college is about 1.75 (Katz and Murphy 1992, Card and Lemieux 2002, Borjas 2003, Ottaviano and Peri 2012, Goldin and Katz 2008).

- Between high school graduate and dropouts can be substantially larger (GK 2008, OP 2012, Card 2009).
  - In the recent decades these workers have done similarly skilled jobs, and been affected by similar technology.
  - Other dimensions of jobs (manual, routine content) may be more relevant for wages.

- We take the extreme case =1.75 chosen in studies claiming the largest negative effect of immigrants.

College-No college Calculations of Effects

	1	2	3	4	5	6
	Change of immigrants as % of High school or less	Change of immigrants as % of some college and more	Relative % change	Potential % effect on wage of No College relative to College (elasticity 1.75)	Actual national Change in wage of non-College relative to College	What share of Non-college underperformance can be due to immigrants?
1970-80	4.6	8.7	4.2	+2.4	2.6	91% (lower inequality)
1980-90	3.3	5.2	1.8	+0.1	-13.7	Wrong sign
1990-00	6.7	5.8	-0.9	-0.5	-3.7	14%, very small
2000-10	3.9	4.8	0.9	+0.5	-6.6	Wrong sign
2010-14	0.1	1.3	1.2	+0.7	0.8	91% (lower inequality)

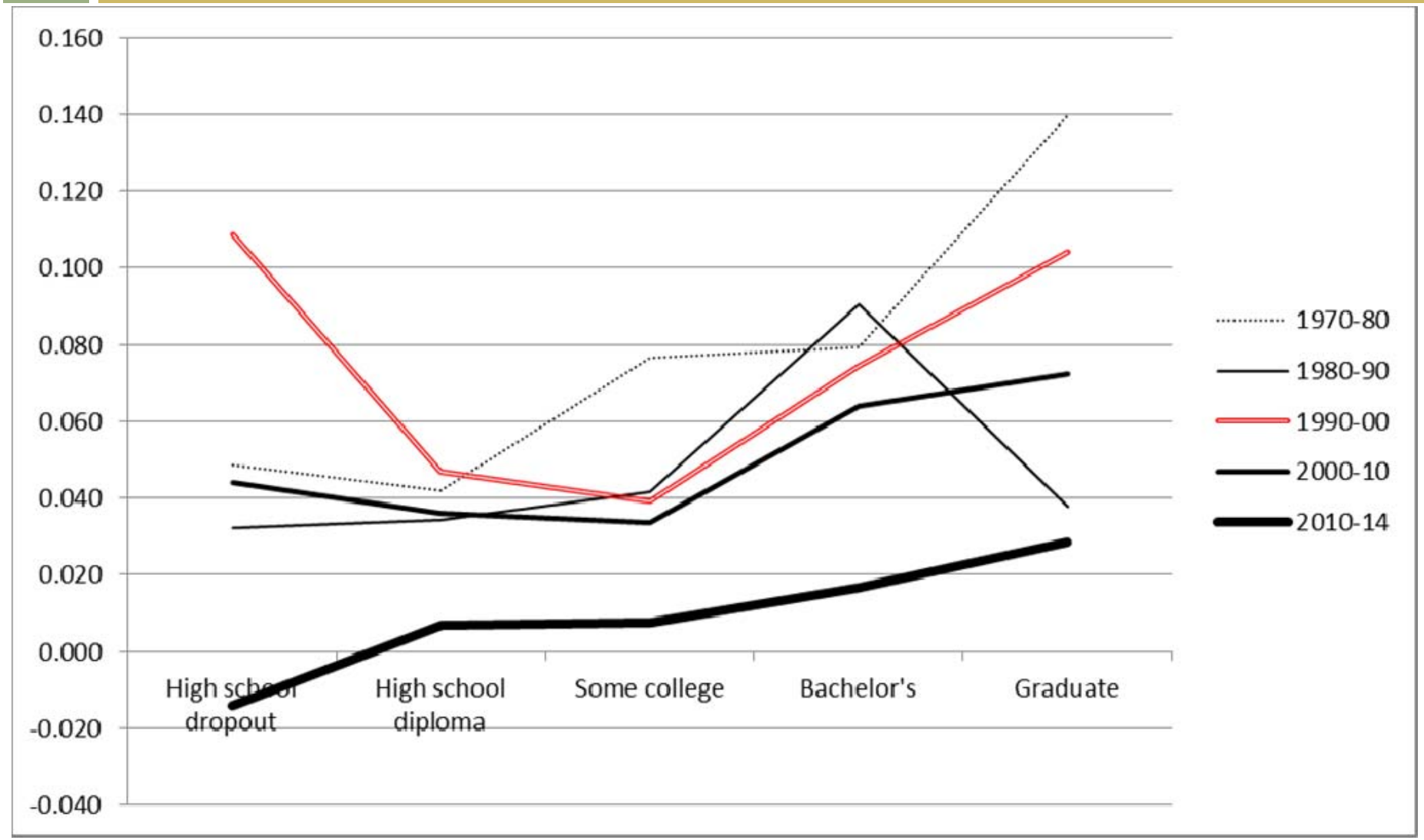
High school Graduate/dropouts Calculations of Effects

	Change of immigrants as % of Dropouts employed	Change of immigrants as % of High School graduates	Relative change	Potential effect on wage of Dropouts relative to Diploma (elasticity 1.75)	Actual national Change in relative wages	What share of Dropouts underperformance can be due to immigrants?
1970-80	4.9	4.2	-0.7	-0.4	2.9	Wrong sign
1980-90	3.2	3.4	0.2	0.1	-7.2	Wrong sign
1990-00	10.9	4.7	-6.2	-3.5	-4.7	75%
2000-2010	4.4	3.6	-0.8	-0.5	-6.3	7% very small
2010-14	-1.4	0.7	0.2	0.12	3.1	39% lower inequality

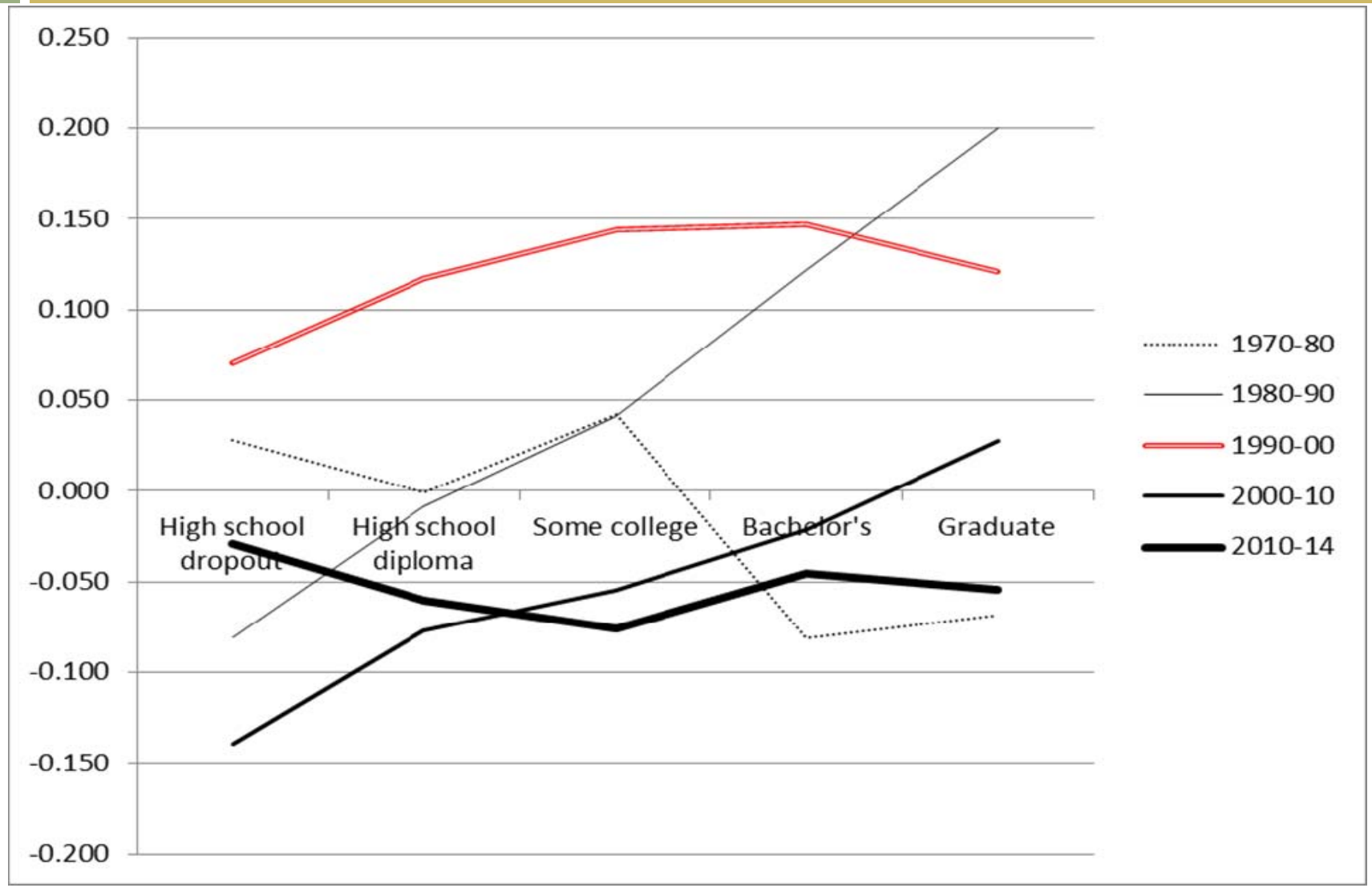
Contributions to relative wage decline

- For College-Non college they are either in the "wrong" direction or extremely small in each decade.
  - 0.1% increase in non-college relative wages vis-à-vis the 24% decrease in 34 years.
- For dropouts-high school graduates, immigration contributes in the wrong direction in 1980-90 and very little in 2000-2010. 1990-2000 is the only period in which immigrant supply may have contributed up to 75% of the difference.
  - 3.9% decrease in dropout relative wage vis-à-vis the 18.2% decrease in 34 years ($1/5^{th}$).
- The 1990-2000 is somewhat different.

Growth of employment due to immigrants by group and decade



Growth of native wages



Local effects?

- Can immigration be the cause of lower wages in labor markets with higher immigration?
  - Local crowding?

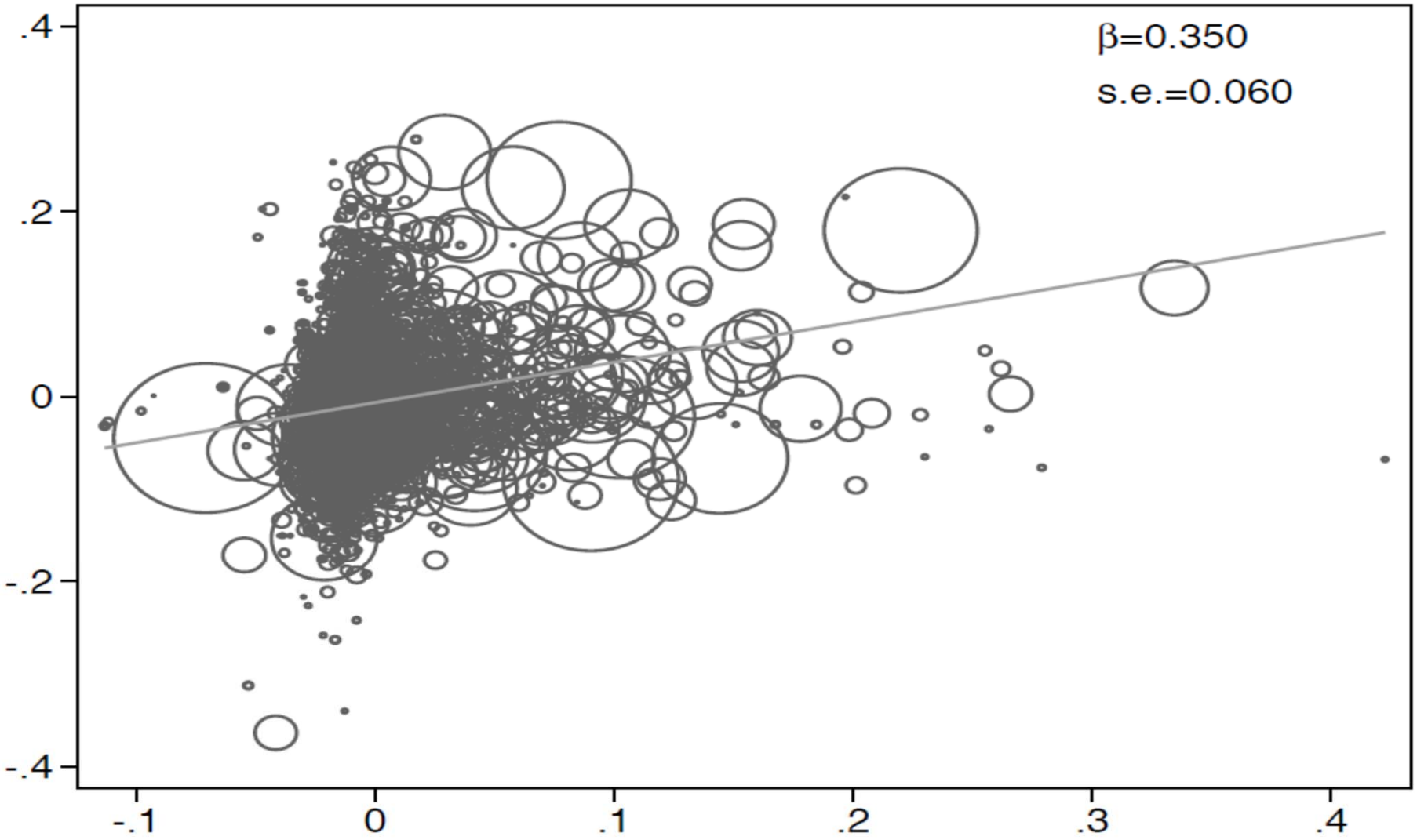
- Long history of not finding significant wage effects on low educated using area approach:
  - Card 2001
  - Card 2009
  - Peri and Sparber, 2009
  - Revisiting some of the area regressions (Basso and peri 2016)

To explain national inequality the Local effects should produce correlation across local labor markets

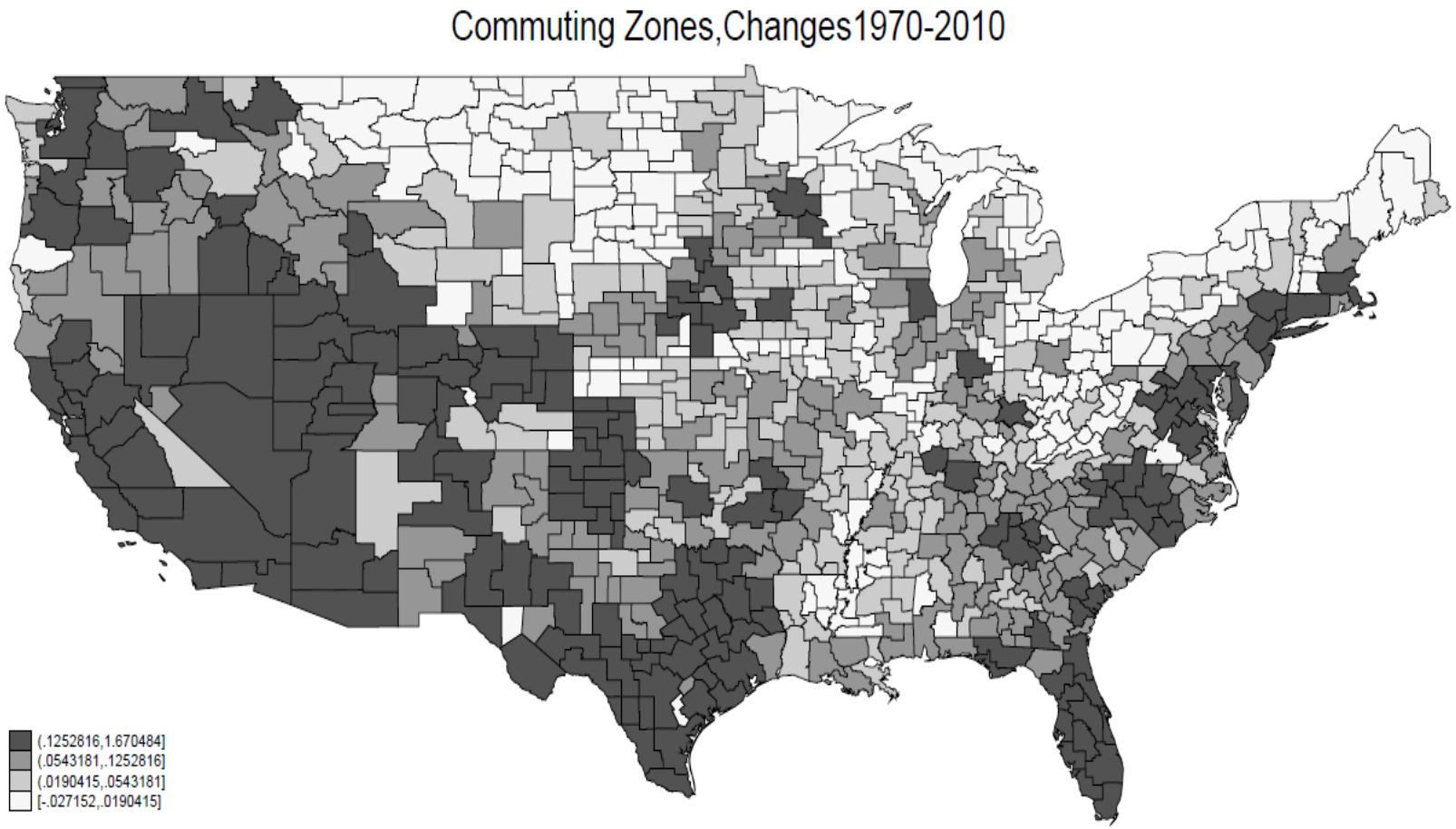
- Look at labor markets with heavy immigrant inflows and how wages and employment of natives changed.

- If there is no negative correlation, this does not rule out some causal effect but implies effects smaller than those of unobservable: possibly an attenuation of positive effects, not negative one

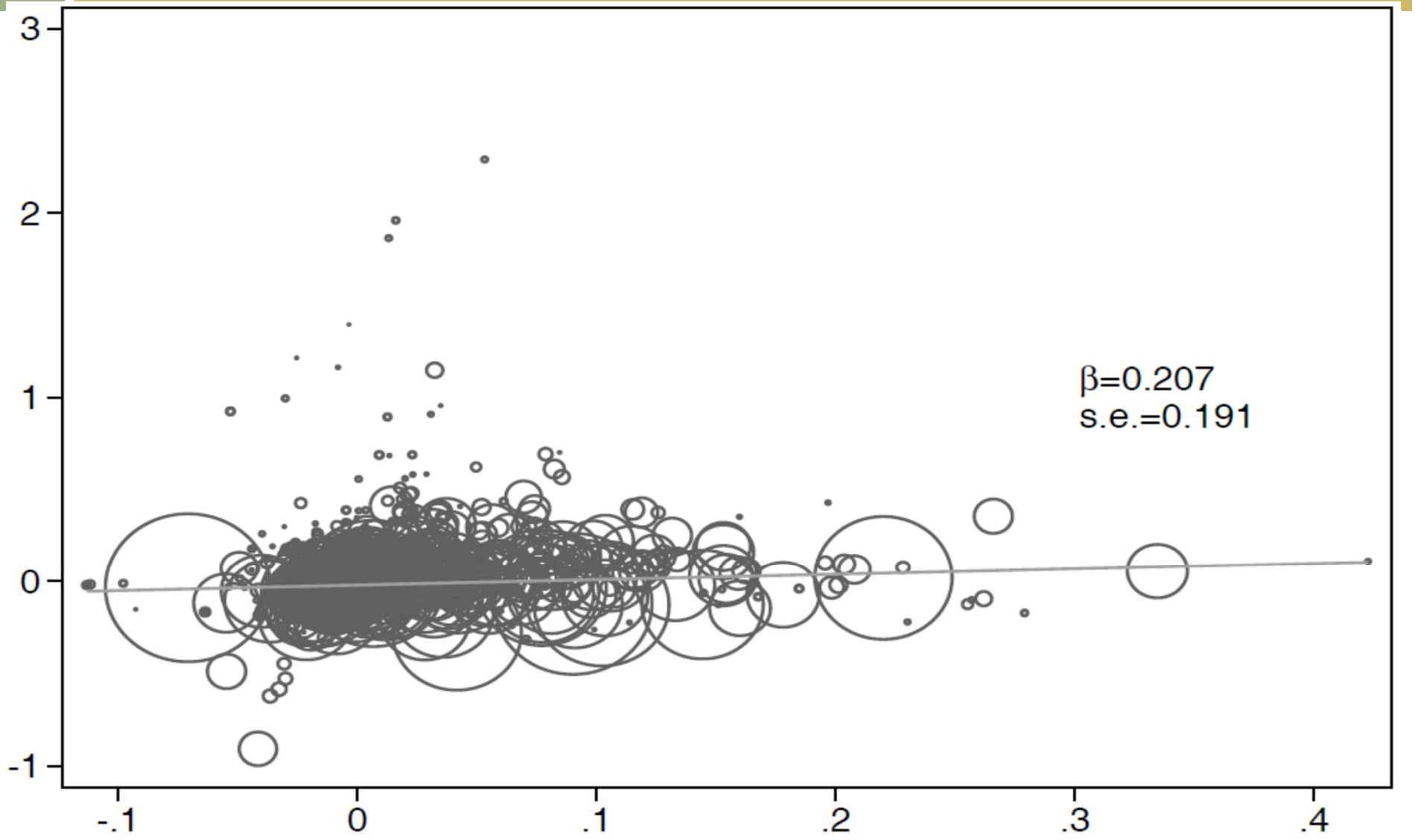
Correlation native wage change and immigrants as share of employment 1970-2010, decades, US Commuting Zones



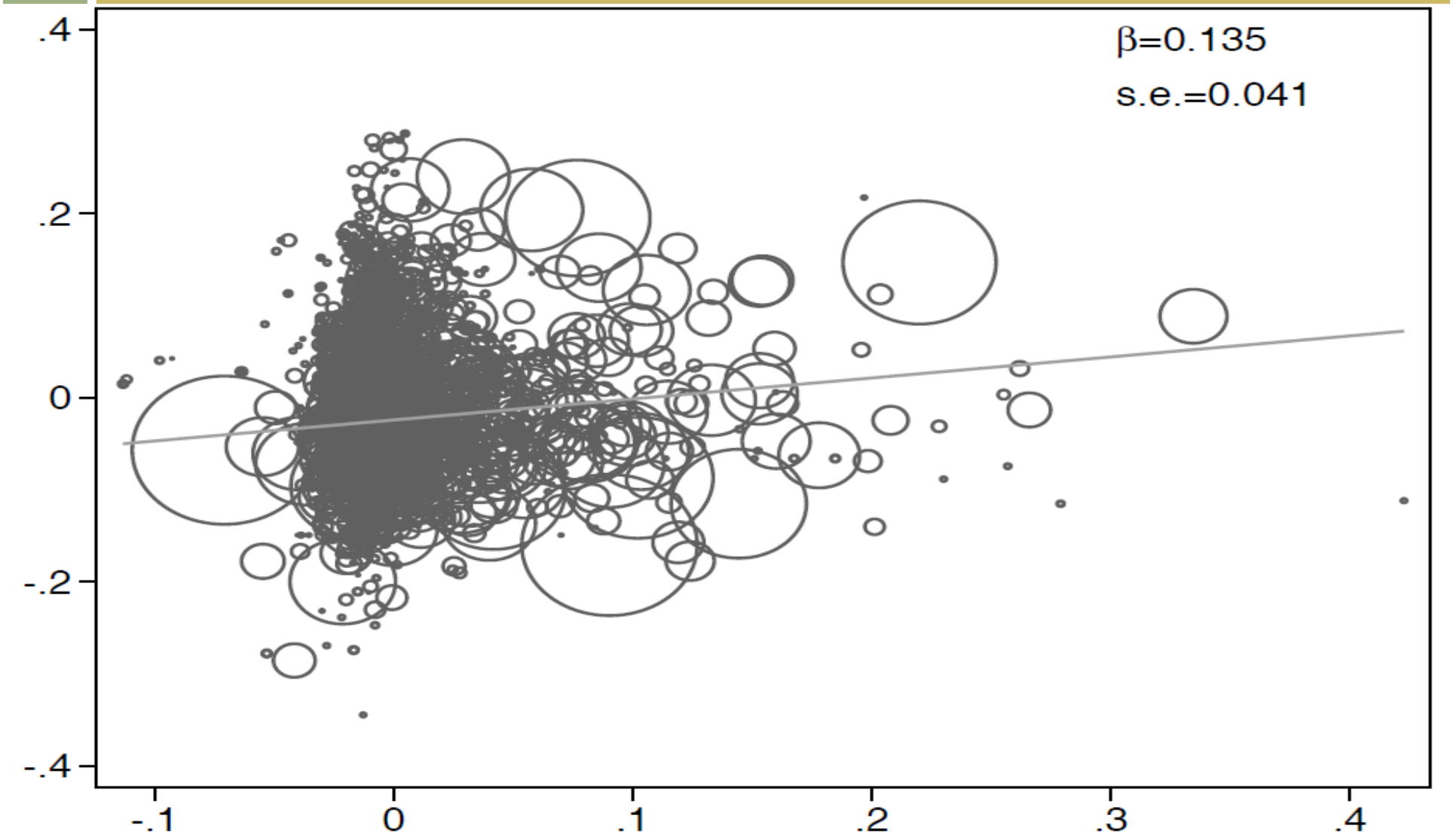
Immigration in US Commuting Zones, 1970-2010



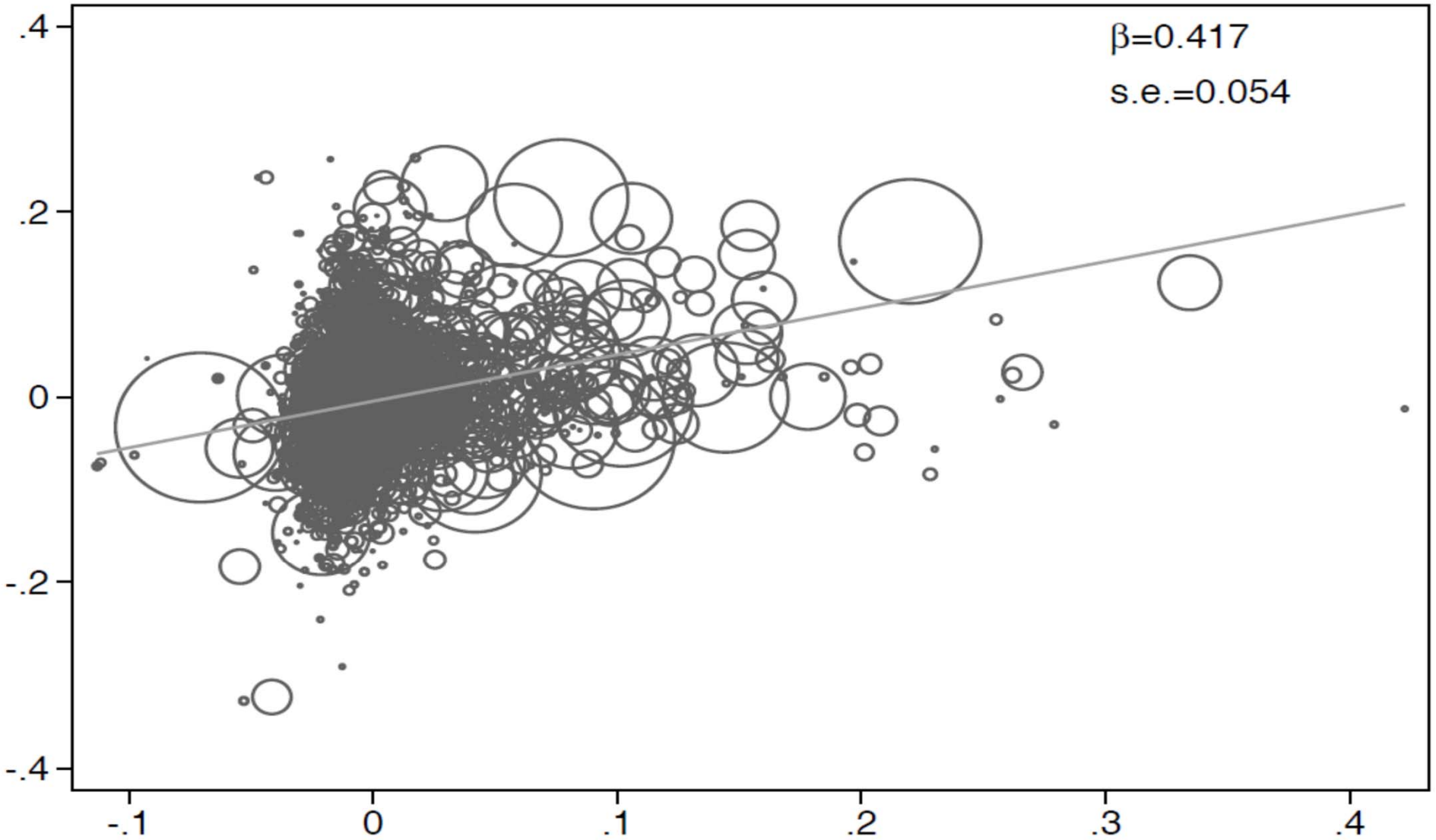
Correlation native employment change and immigrants as share of employment 1970-2010



Correlation: changes in Native HS or less ln(weekly wages)- changes in immigrant as share of initial population 1970-2010



Correlation: changes in Native College or more ln(weekly wages)-changes in immigrant as share of initial population 1970-2010



Correlation between change in immigrants and change in native log weekly wages

Dependent variable: decade change of average native log weekly wage			
Specification	**(1) Commuting Zones**	**(2) States**	**(3) Census regions**
Non-College			
(1) FE: Decade	0.13**	0.12	0.11
	(0.04)	(0.11)	(0.30)
(2) FE: Decade, Area	0.23**	0.33**	0.14
	(0.04)	(0.14)	(0.30)
(3) Only 2000-2010	0.16	0.50	1.28
	(0.12)	(0.31)	(0.72)
College			
(4) FE: Decade	0.41**	0.41**	0.46**
	(0.05)	(0.05)	(0.14)
(5) FE: Decade, Area	0.42**	0.65**	0.60**
	(0.05)	(0.12)	(0.15)
(6) Only 2000-2010	0.29	0.32	0.84
	(0.15)	(0.31)	(0.56)

Correlation native wages-to network-based inflow of immigrants (shift-share, supply-pushed IV)

Dependent variable: decade change of average native log weekly wage , CZ level Instrument: network based immigration changes			
Specification,	**(1) All native workers**	**(2) Native high school or less**	**(3) Natives college or more**
(1) FE: Decade 1970 based instruments	0.25 (0.20)	-0.19 (0.16)	0.38* (0.17)
F-statistics, first stage	92.5	92.5	92.5
(2) FE: Decade 1980 based instruments	0.23 (0.19)	-0.19 (0.16)	0.36* (0.15)
F-Statistics, First stage	51.5	51.5	51.5

So: Immigrants and Employment-Wages of less educated Natives

- No plausible relative effect in the aggregate. No absolute effect locally in areas of large immigration.

- But could there be some **positive** effects of immigration, as revealed by the spatial correlation on overall wages?

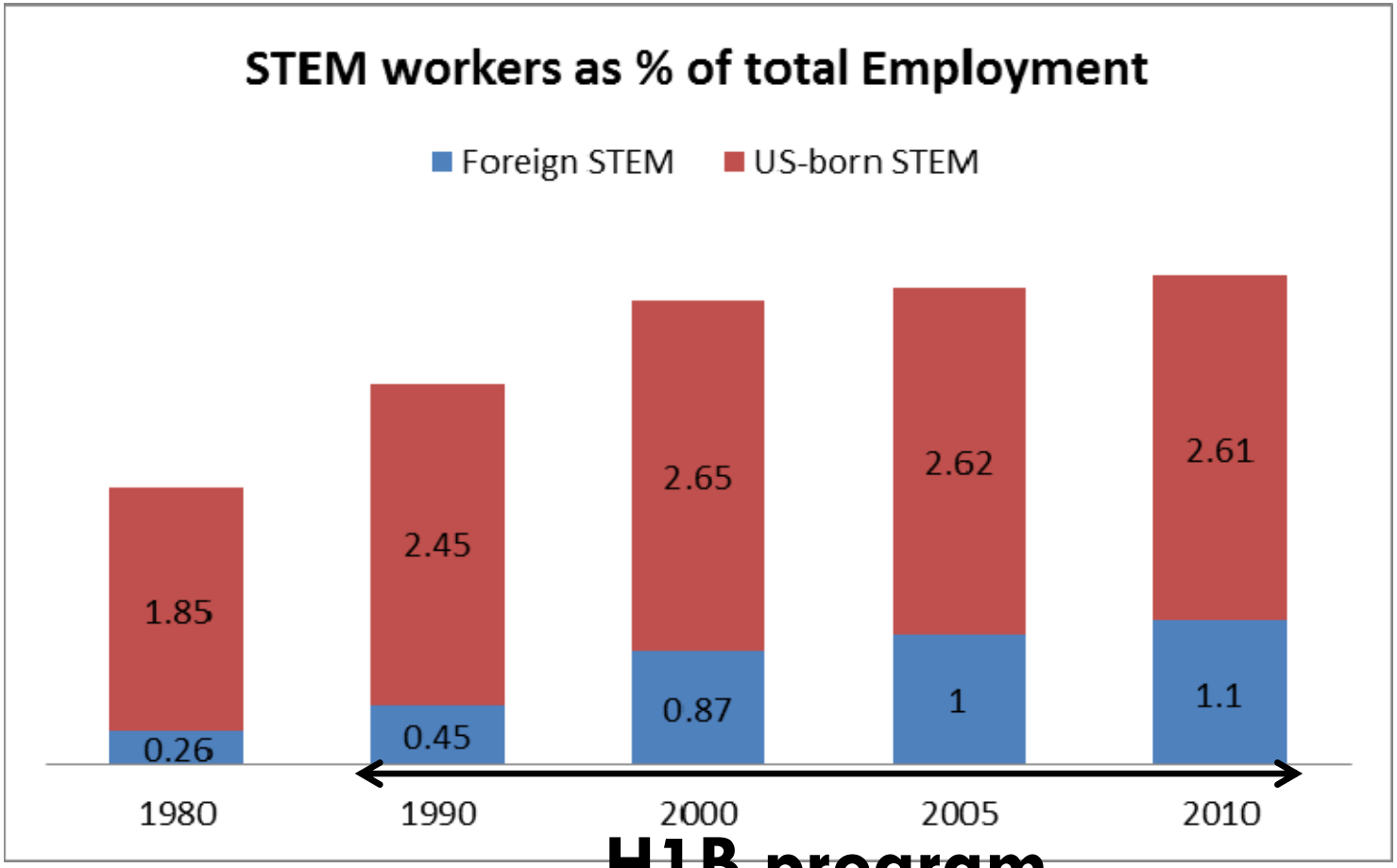
Mechanisms

- Natives are imperfect substitutes for Immigrants (Ottaviano and Peri 2012) they move to occupations that are complementary: less manual and more interactive (Peri and Sparber 2009). Gains from specialization
- Firms respond by using techniques than are more "unskilled labor intensive" (Lewis 2011).
- Firms expand and attract capital (William Olney 2014).
- Immigrants consume and create local demand and varieties of services (Hong and McLaren 2015) or lower local prices of services (Cortes 2008)

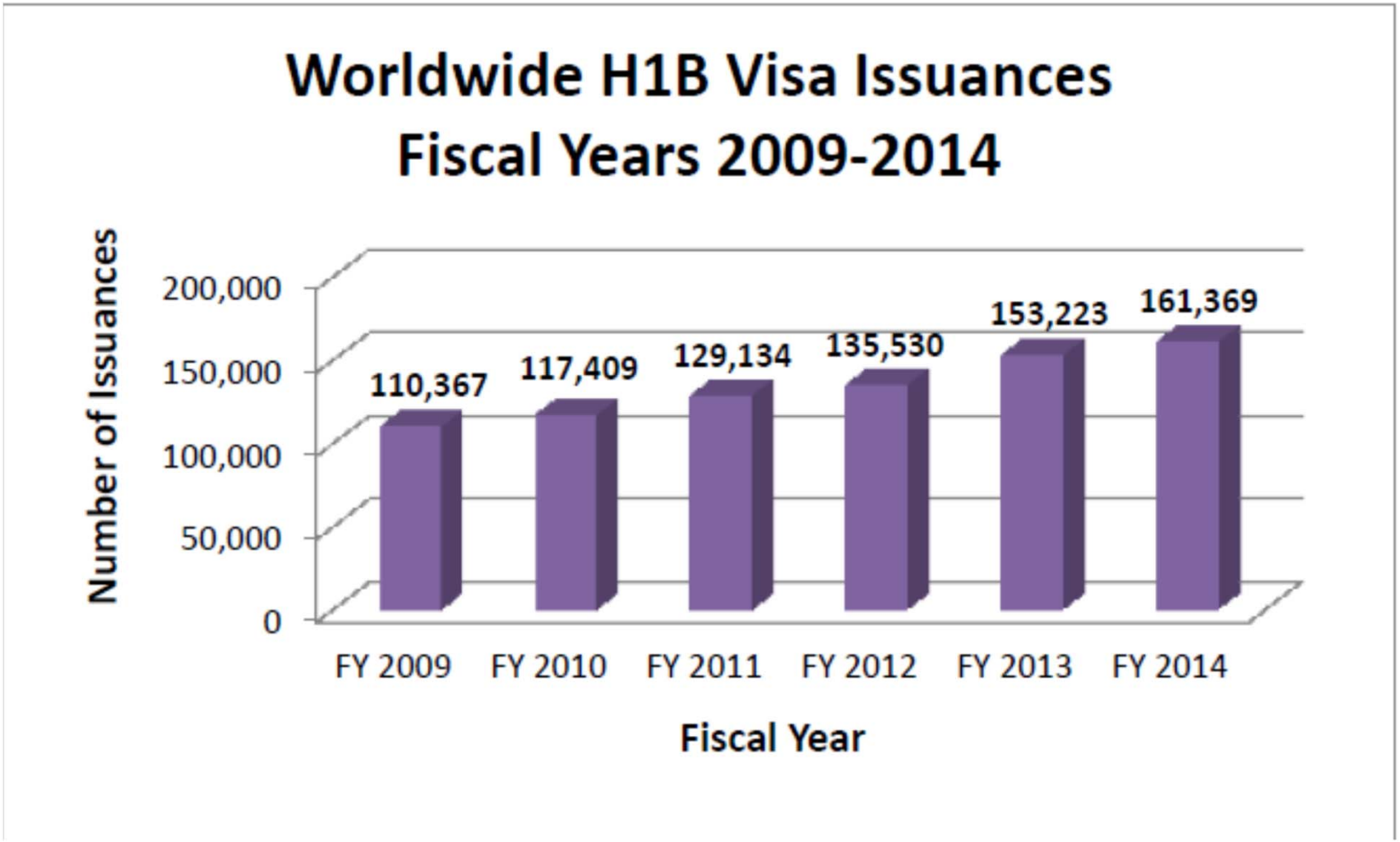
High skilled immigrants

- Crucial contribution to technological and economic growth (Kerr and Lincoln, 2010).
- Potential contributor to productivity growth. Special role of STEM workers (Peri, Shih and Sparber 2015).
- Contributor to local human capital externalities (Moretti 2004)

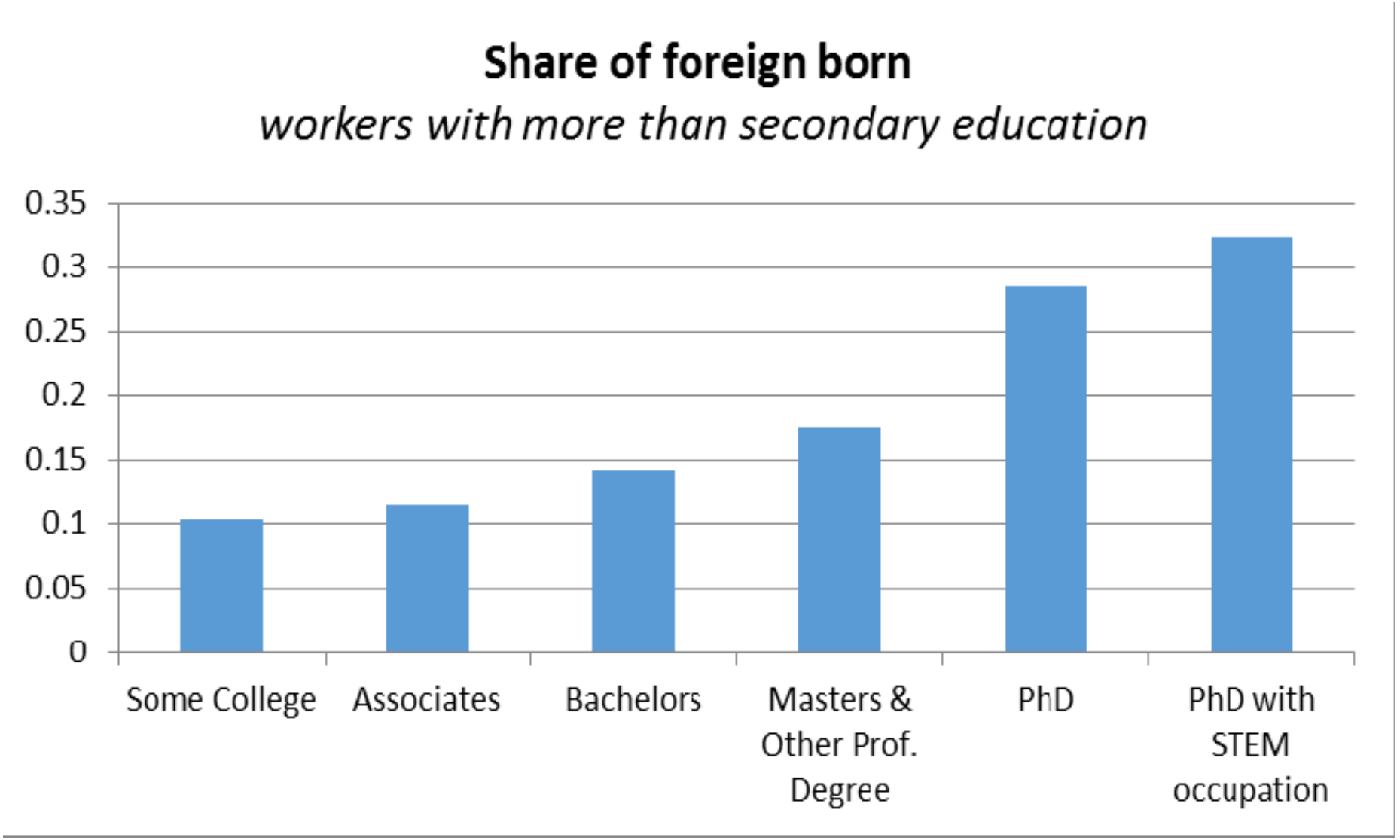
Foreign College-Educated Workers drove growth in STEM



H1B=skilled immigrants, each year



Focus on people with some tertiary education in the US, 2014



Strength of human capital externality due to increased immigrants

	7	8
	Increase in share of college educated due to immigrants	Potential externality range on average wages
1970-80	+1.1	+0.3/1.1
1980-90	+1	+0.3/1
1990-00	+1.7	+0.4/1.7
2000-2010	+1.6	+0.4/1.6
2010-14	+0.6	+0.1/0.6

Role of Scientists and Engineers

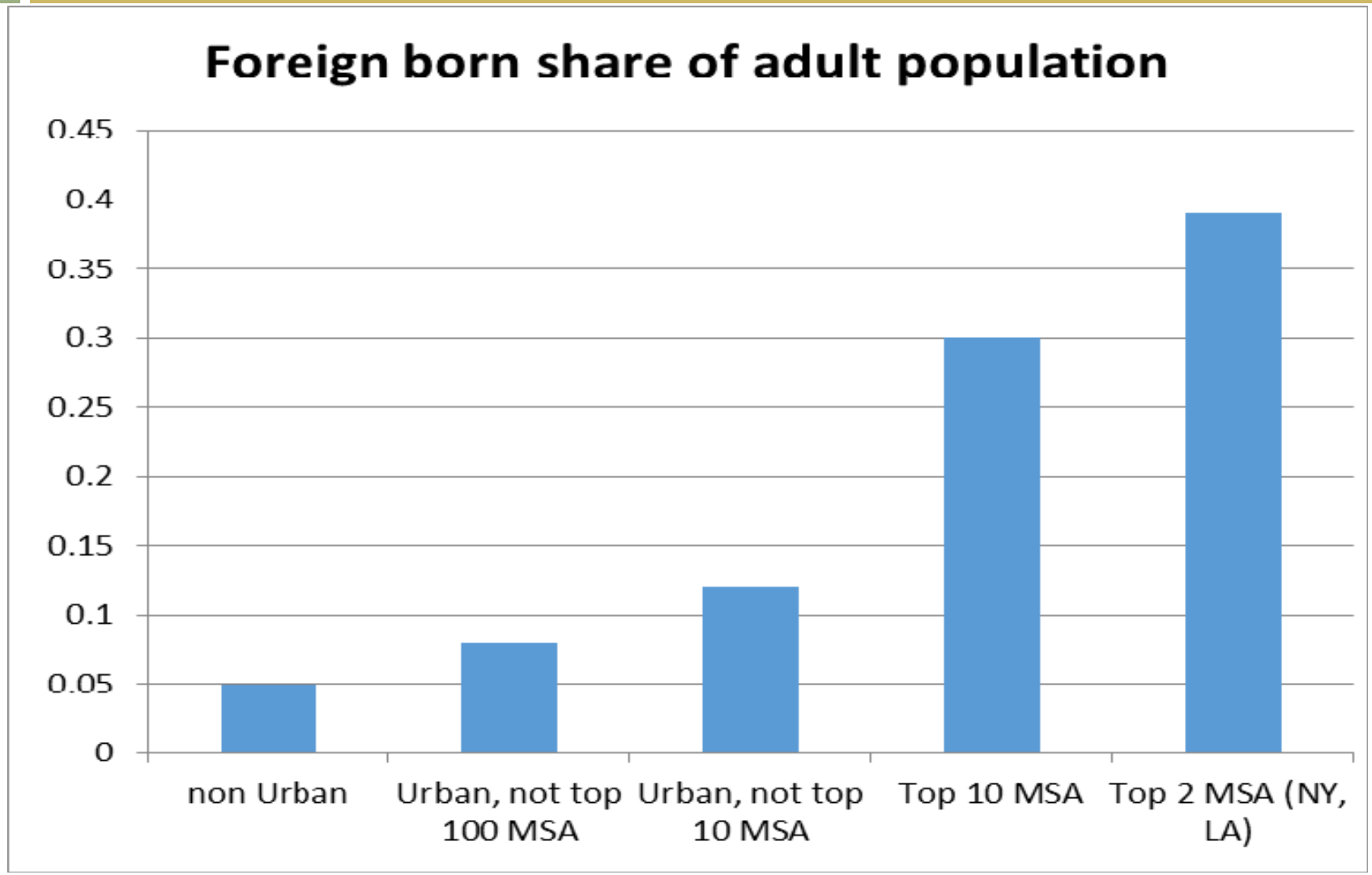
- Peri Shih and Sparber (2015) use the 1990-2010, variation of H1B visas, and the pre-existing communities of foreign scientists across US metro area.
- They find that STEM immigrants increased local productivity.
  - They increased wages of college educated by about 5% in 20 years
  - They increased, but less, wage of non college educated by about 2% in 20 years.
  - They increased local house prices.

Other Potential Channels

- **Increased density of economic activity** given preferences of immigrants.

- Density Externalities from lower transport costs, stronger local learning, thicker labor market (Ciccone and Hall 1996, Greenstone et al 2008, Chassamboulli and Palivos 2014)

Immigrants "agglomerate" much more than natives
Density of cities is much larger because of them



Increase in entrepreneurship

- More than 25% of new US businesses is started by Immigrants.
- 20% of Inc. 500 (largest new Incorporated firms) in 2014 were foreign born.
- 52% of new firms in silicon valley (1995-2005) started by immigrants.
- Immigrant-funded firms are much more likely to export.

Increasing Immigrants' wages, especially for less educated

- Immigrants with no high school degree are paid about 15-20% less than similar natives and they are a large share of that group.
- Their employment rate is much higher.
- A reduction of the gap would reduce wage dispersion between the two groups.
- A path to legal status is estimated to have a potential effect around 5-10% (Barcellos 2010).

Conclusions

- Immigrants at the national level did not change relative supply of skill in a way that can explain the relative wage change of those.
- In most decades (except for the 90's) immigration was very college intensive.
- At the local level immigrants seem associated with higher average wage.
- Through human capital externalities and high tech/STEM/Entrepreneurial contribution Immigrants could increase local labor demand and average wages.