The New Geography of Jobs

Enrico Moretti

University of California at Berkeley

Outline

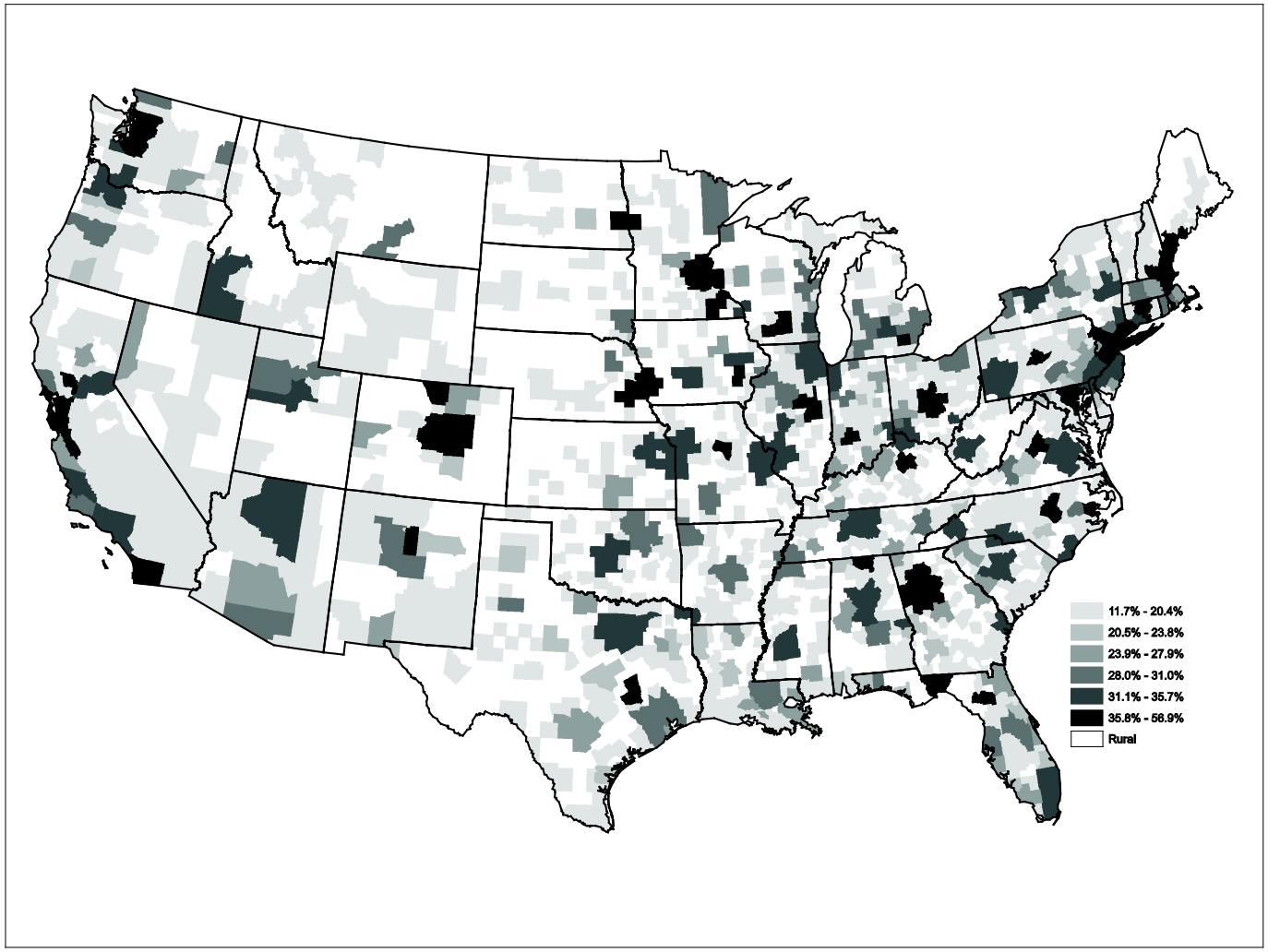
1. Document growing differences in economic success of cities and regions
2. What explains these growing differences?
3. What are the implications for the US and Europe?

The Economic Success of Cities

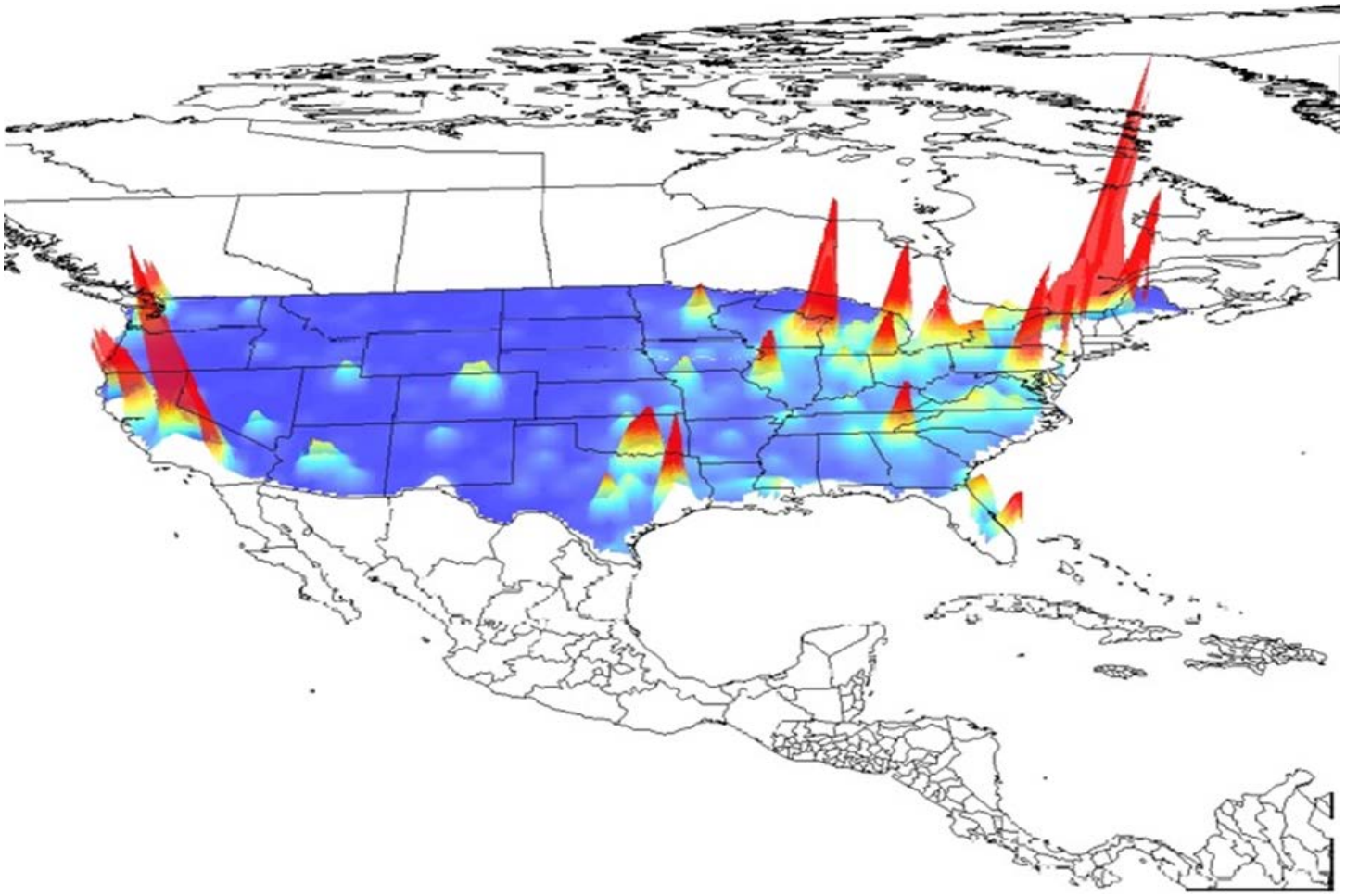
- 1945-1980: The best predictor of a city future economic growth is physical capital

- 1980-2013: The best predictor of a city future economic growth is human capital

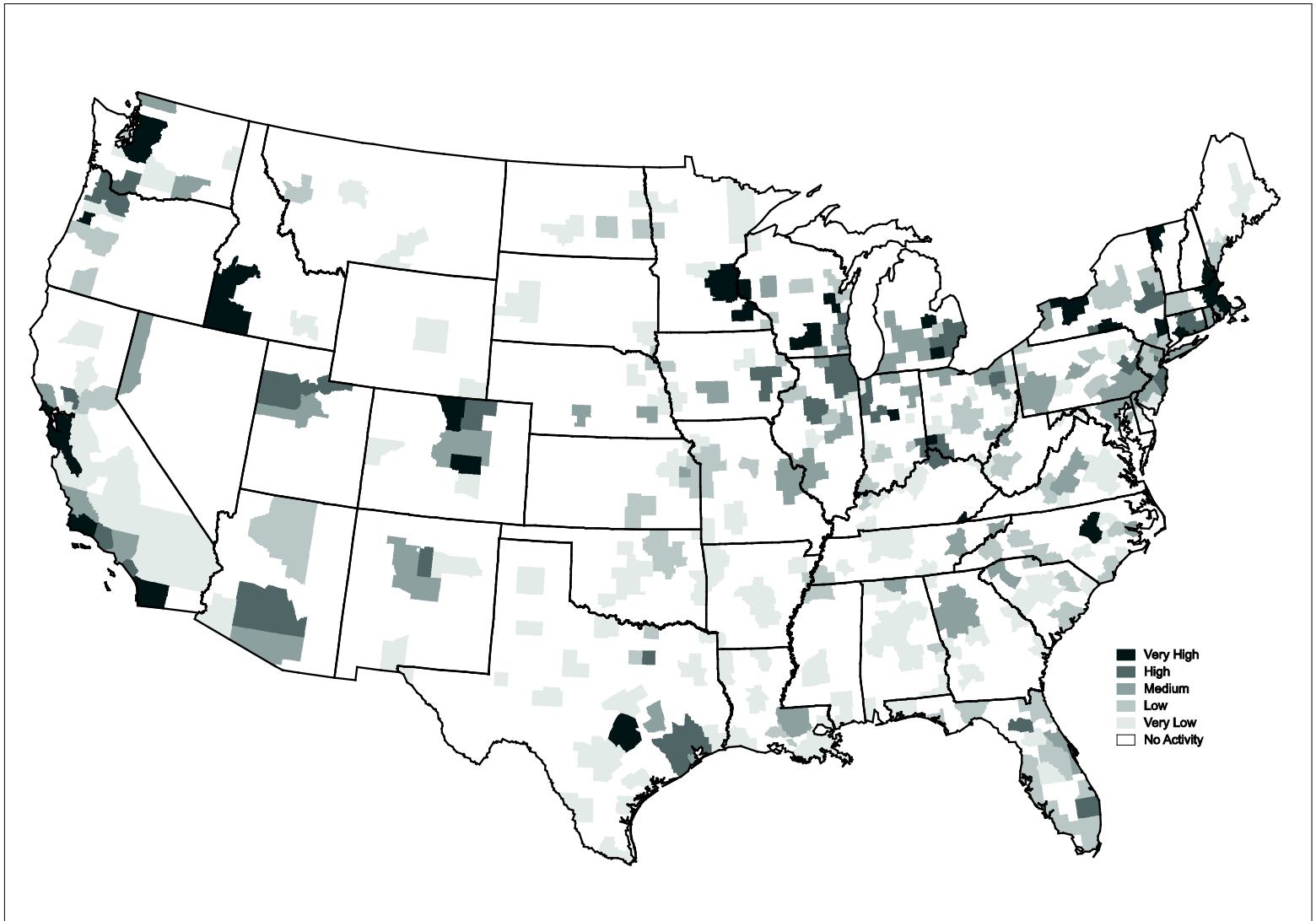
Share of Workers with College Degree



Economic Output Per Square Kilometer



Patents per Worker



The Three Americas

1. At one extreme are the brain hubs

2. At the other extreme are cities with an unskilled labor force and employers in traditional industries

3. In the middle are a number of cities that could evolve either way

The three Americas are growing apart at an accelerating rate.

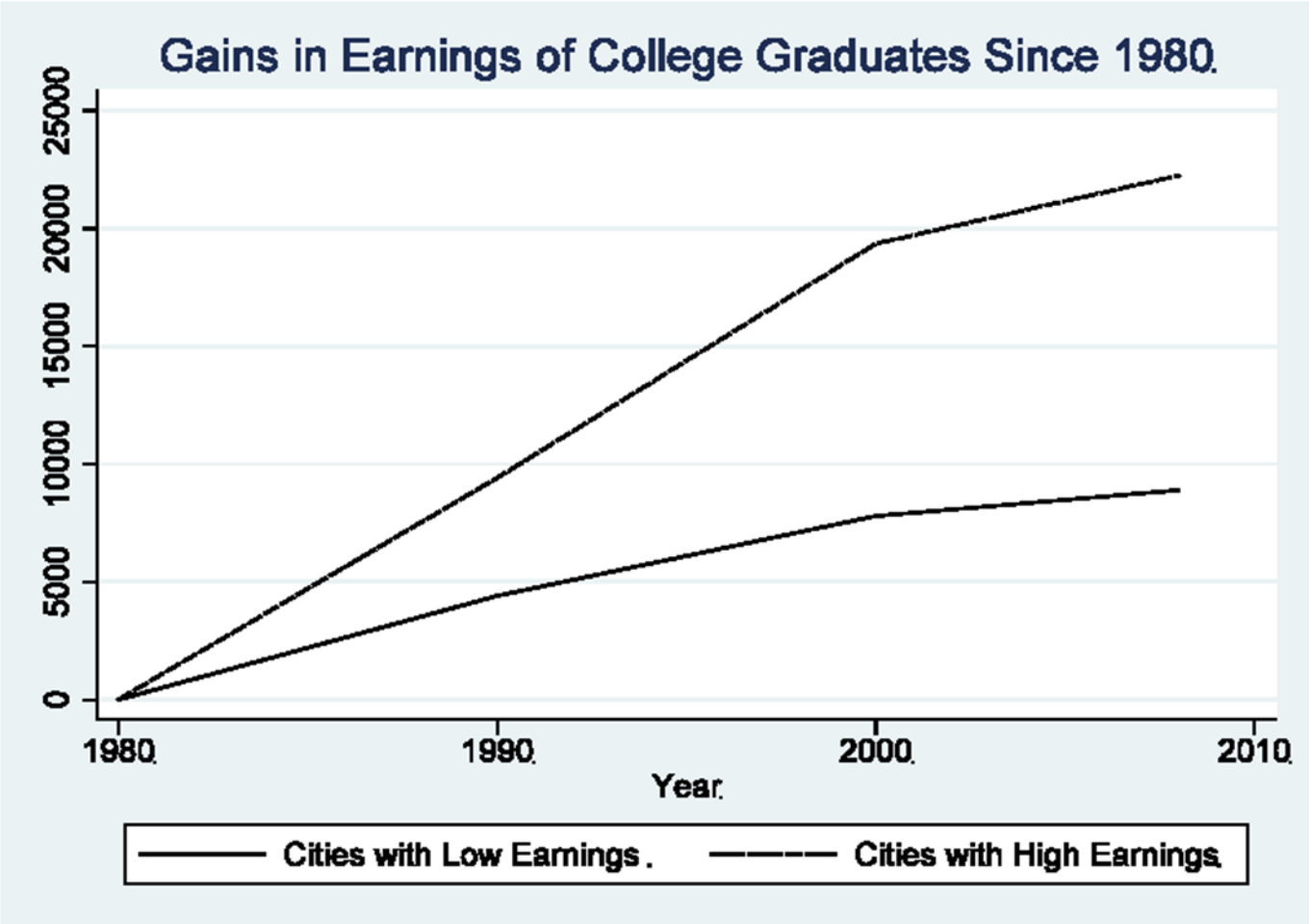
Examples of Cities with High Share of College Graduates

	Percent with College Degree	Salary of College Graduates	Salary of High-School Graduates
Washington, DC	49%	$80,872	$67,140
Boston	47%	$75,173	$62,423
San Francisco	47%	$77,381	$60,546
Raleigh	44%	$63,745	$50,853
Seattle	42%	$68,025	$55,001
Austin	41%	$62,289	$48,809

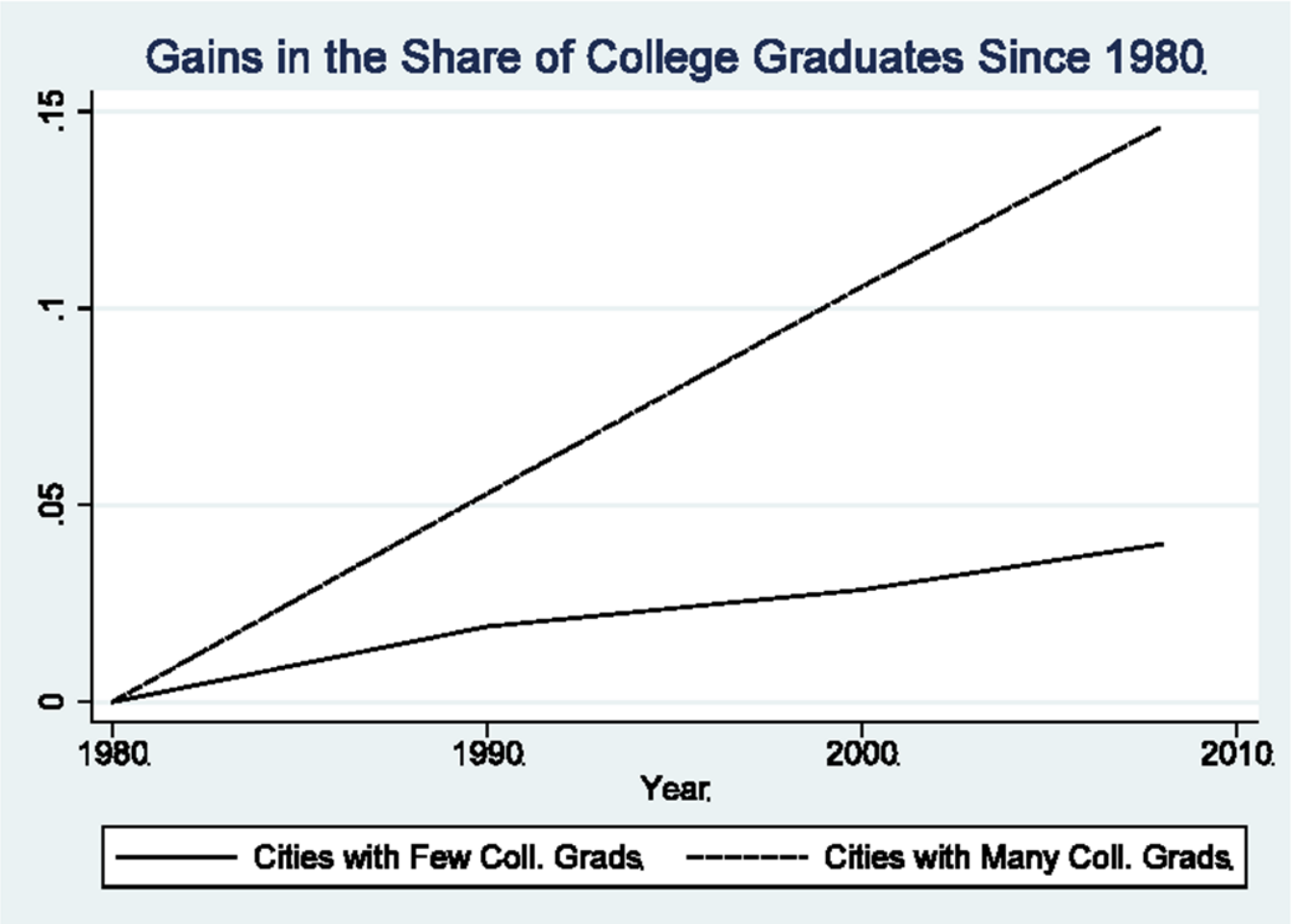
Examples of Cities with Low Share of College Graduates

	Percent with College Degree	Salary of College Graduates	Salary of High-School Graduates
Flint, MI	12%	$43,866	$28,797
Visalia, CA	12%	$55,848	$29,335
Yuma, AZ	11%	$52,800	$28,049
Merced, CA	11%	$62,411	$29,451

The Great Divergence in Earnings



The Great Divergence in Schooling



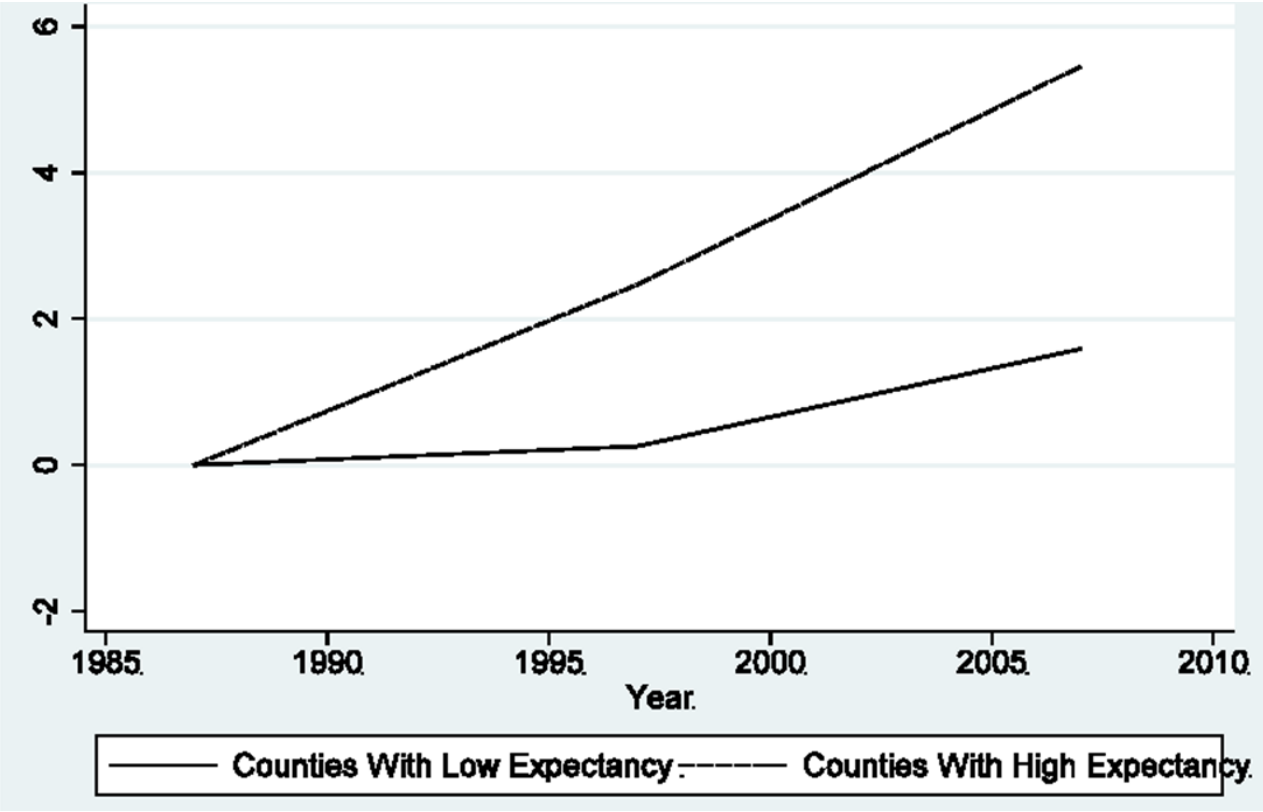
The Social Effects of the Great Divergence

- The divergence is caused by economic forces
- The effects extend to many social, cultural and political aspects of American society

Divergence in Health

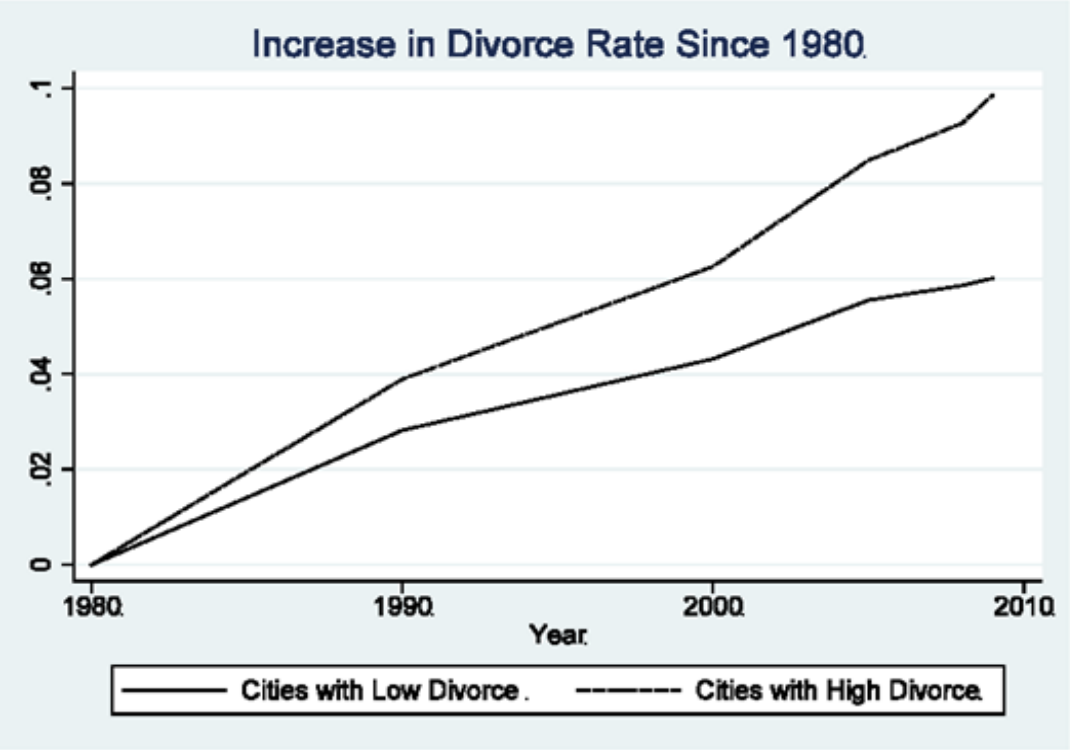
Male life expectancy: Fairfax, VA; Marin, CA: 81 years

Baltimore, MD: 66 years



Divergence in Divorce

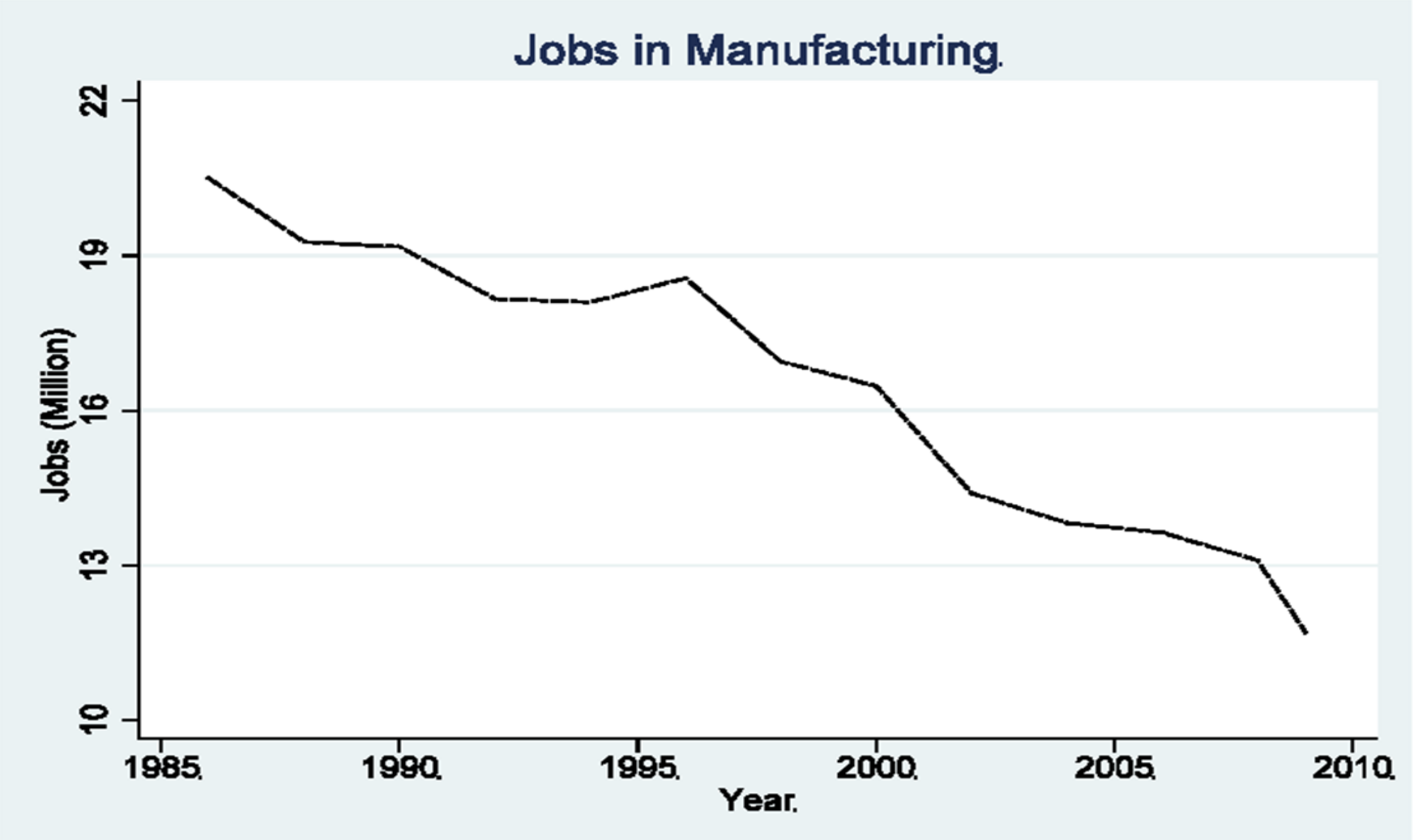
The city with the highest divorce rate is Flint, MI



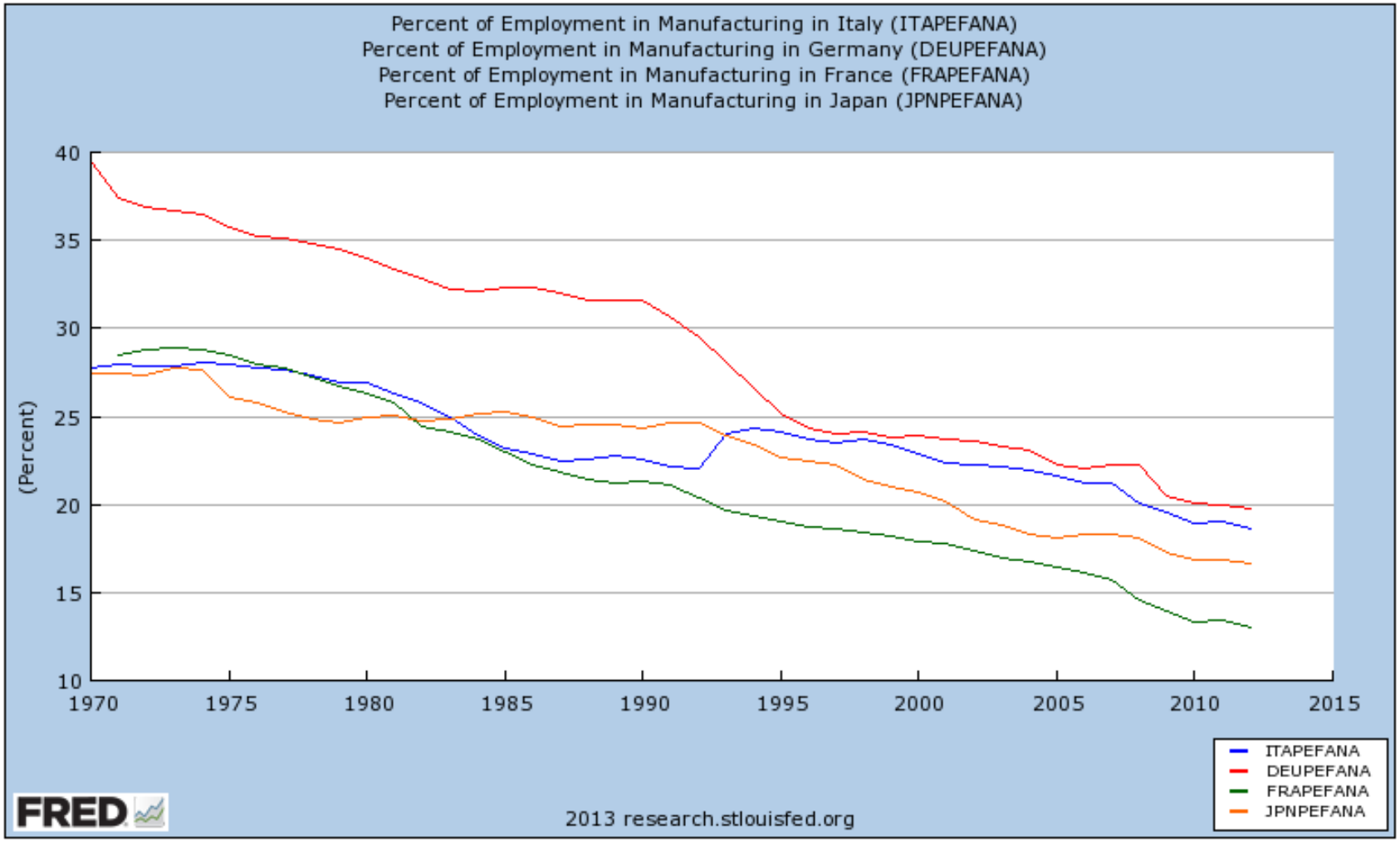
What Explains the Great Divergence?

- Over the past 30 years, the US economy has shifted from manufacturing to innovation
- The value of the output of US manufacturing companies has more than doubled in 1980-2012
- But the number of blue collar workers has plummeted

The Decline of Manufacturing



Manufacturing in Italy, France, Germany and Japan



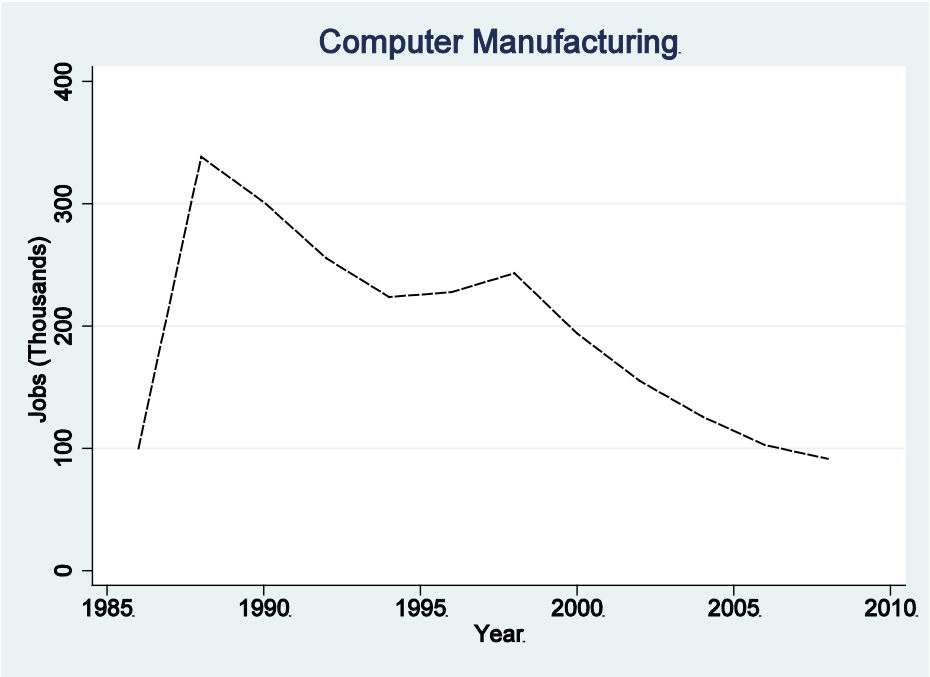
Reasons for the Decline

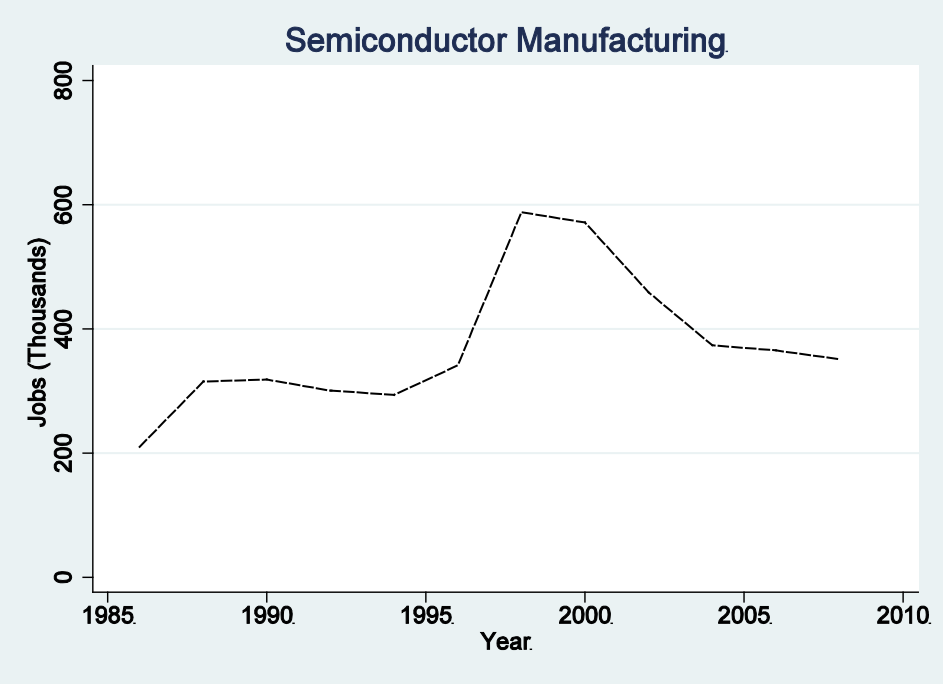
- Manufacturing employment has been decimated by:
  - Automation
  - Globalization

- These trends are unlikely to weaken
  → the decline will continue

- The myth of the “renaissance of US manufacturing”

Blue Collar Jobs Have Declined Even in High Tech





Important Exception

- Employment of highly educated workers has increased in US manufacturing
- Number of engineers employed in manufacturing has doubled in 1980-2012
- Example: Apple

The Rise of Innovation

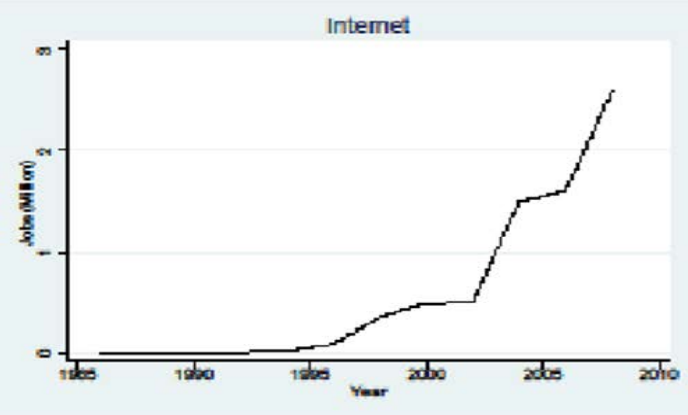
- The innovation sector is growing
  - Information technology, software, Internet services
  - Life science
  - Clean-tech, new materials, robotics
  - Digital entertainment
  - Parts of finance, marketing

What they have in common:

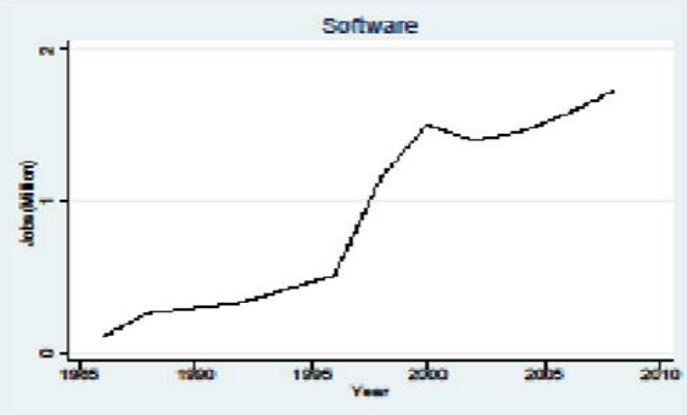
-Make intensive use of human capital

-Make products that are unique and can’t be reproduced elsewhere

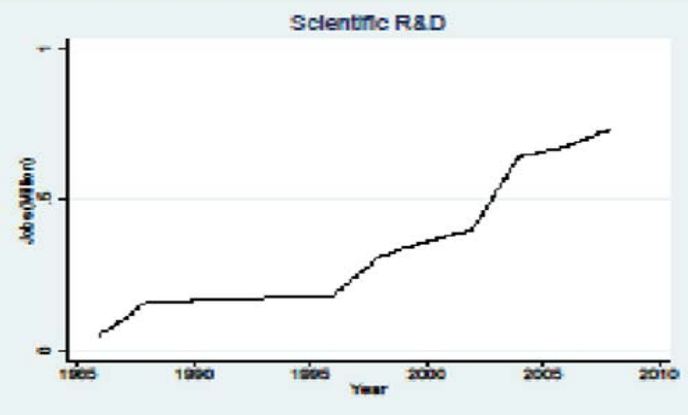
The Rise of Jobs in Innovation



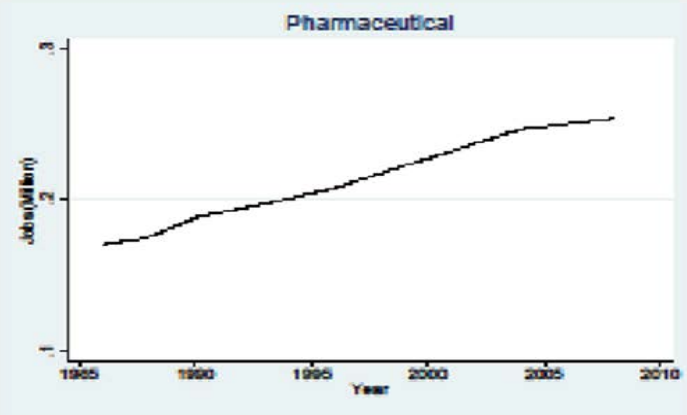
(a)



(b)



(c)



(d)

The Clustering Effect

- Cities with many college-educated workers and innovative employers tend to attract more
- It is a tipping-point dynamic
- This self-reinforcing trend inevitably magnifies the differences between winners and losers

What Drives the Clustering?

- Workers in innovation clusters are significantly more productive and more innovative

- They cost more, but produce much more

- Three competitive advantages:
  - Knowledge flows
  - Thick labor market
  - Intermediate services

The Power of Clusters

- A tale of two cities:

  Seattle vs. Albuquerque

What About the Average Worker?

- What if you are not a software engineer or computer scientist?

- US labor force
  - 65% in local services
  - 10% in innovation
  - 25% other

Jobs in Local Services Are an Effect of Growth (Not a Cause)

- Demand for local services depends on existing wealth in the community
- Job growth in high tech → job growth in local services
- If Google adds 1 software engineer in San Francisco
  → more jobs for waiters, taxi drivers, doctors, architects
  (but not viceversa)

The Multiplier Effect

- For each innovation job, 5 additional jobs are created outside the innovation sector in the same city
  - 2 professional jobs
  - 3 non-professional

Example: Twitter

- 900 employees in SF

- Indirect job creation: 4,500 jobs
  - 1,800 professional jobs
  - 2,700 non-professional jobs

- The most important impact of Twitter on SF labor market is outside high tech.

High Tech Has the Largest Multiplier

- High tech generates 3 times more service jobs than traditional manufacturing

- Reasons:
    1. High tech pays higher salaries
    2. High tech firms use more local services
    3. Clustering effect

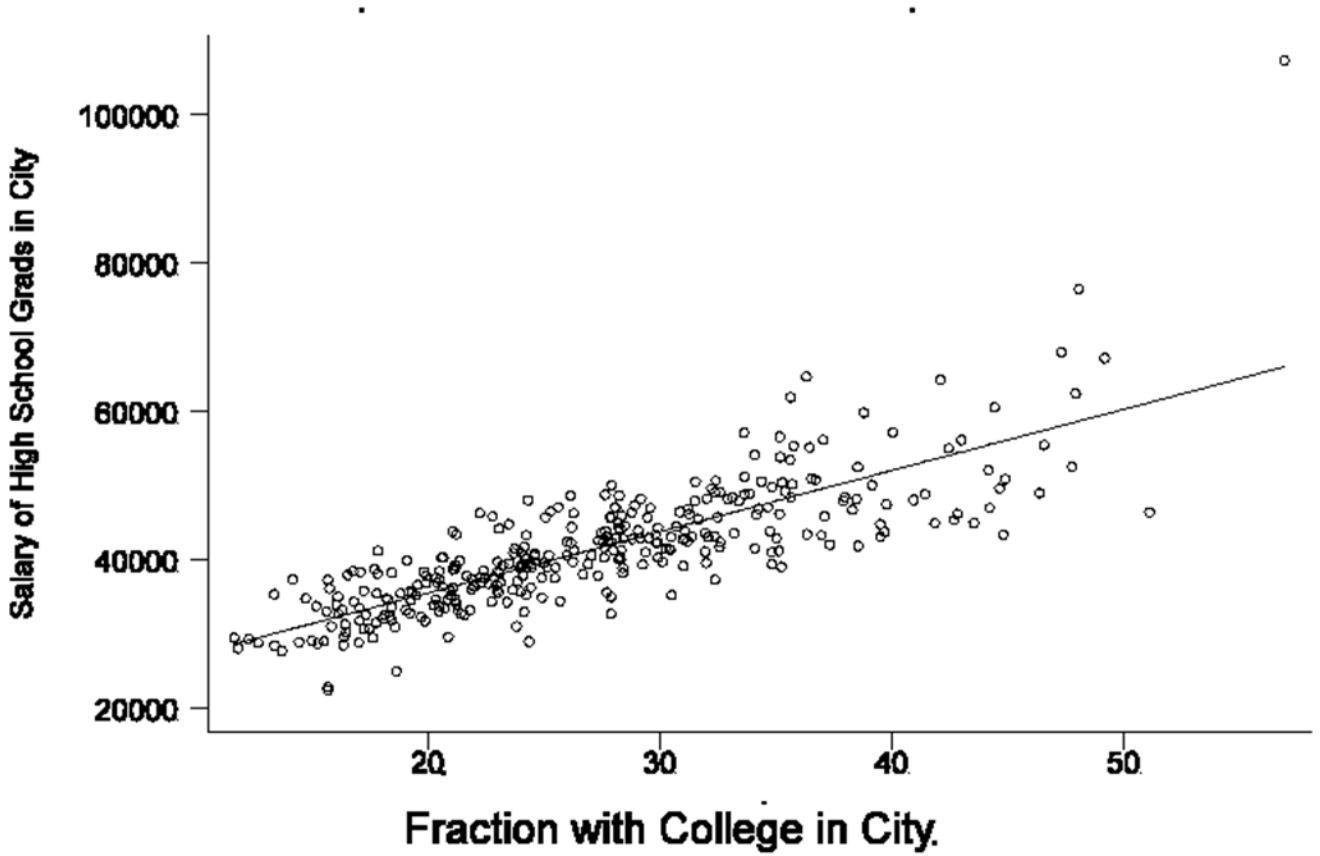
Implication 1

- Innovation jobs are and will be a small minority of total employment.
- The reason why the brain hubs are doing so well is not just that innovation is growing
- The real reason is that the growth of innovation generates wealth that supports the 65% of workers who are employed in local service sector.

Implication 2

- Today, one is that the best way for a city to generate jobs for less educated workers is to attract high-tech companies that hire highly educated ones

The Relation Between the Share of College Graduates in a City and the Wage of High School Graduates in that City



The Great Divergence in the World

- Similar dynamics are reshaping most developing countries

- Examples
  - China
  - India
  - Mexico

- Exception
  - Brazil

The Great Divergence in Europe

- Some cities and regions are creating innovation and attracting skilled workers
  - London
  - Stockholm
  - Munich
  - Amsterdam

- Italy is increasingly in the periphery.

  Few innovation clusters; none of European or global importance

Structural Weaknesses of the Italian Economy

- Firms are too small → Limited investment in R&D
- Limited investment in human capital; limited attraction of skilled immigrants
- Underdeveloped venture capital system
- Structural inability to respect and enforce rules of law

Conclusion

Two important structural shifts in Western countries

- 1900-1930: From agriculture to manufacturing
- 1980-2013: From manufacturing to innovation

- Causes:
  - globalization
  - technological progress

- All Western countries are facing the same forces

Conclusion

- The effects are profoundly different depending on location
    1) Brain Hubs benefit from these changes
    2) Other cities are hurt

- The gap between the first and the second group is growing

- The economics of clustering suggest that the gap will keep growing for decades

- Italy is increasingly in the second group