



SECOND MACHINE AGE

**WORK, PROGRESS, AND PROSPERITY
IN A TIME OF
BRILLIANT TECHNOLOGIES**

**BY BRYNJOLFSSON
AND MCAFEE**

A FAQ on tech,
jobs, and wages

Andrew McAfee, MIT
amcafee@mit.edu
@amcafee

What's going on?

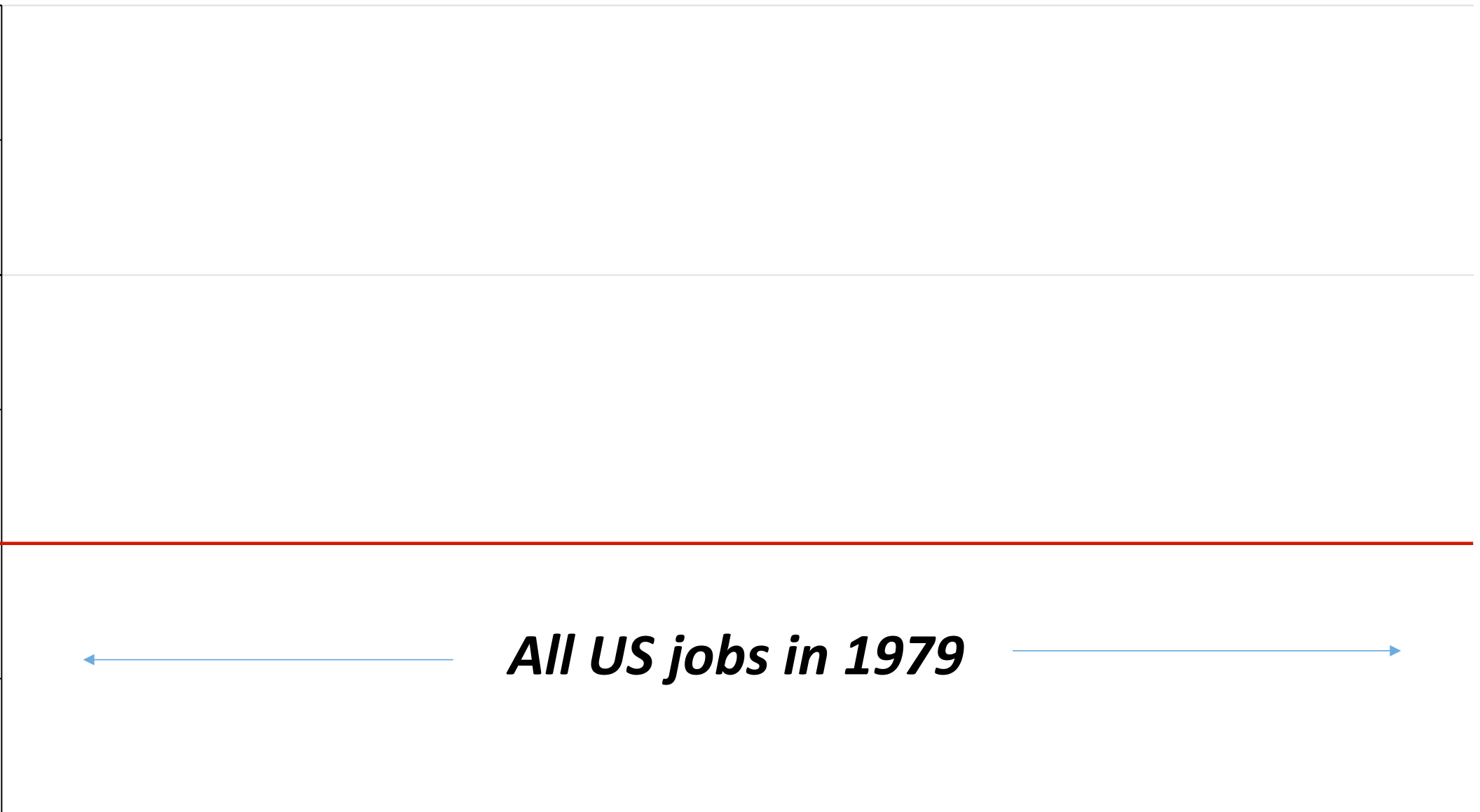
What's going on?

*The polarization or “hollowing out”
of the workforce*

Journal of Economic Perspectives—Volume 29, Number 3—Summer 2015—Pages 3–3

Why Are There Still So Many Jobs? The History and Future of Workplace Automation[†]

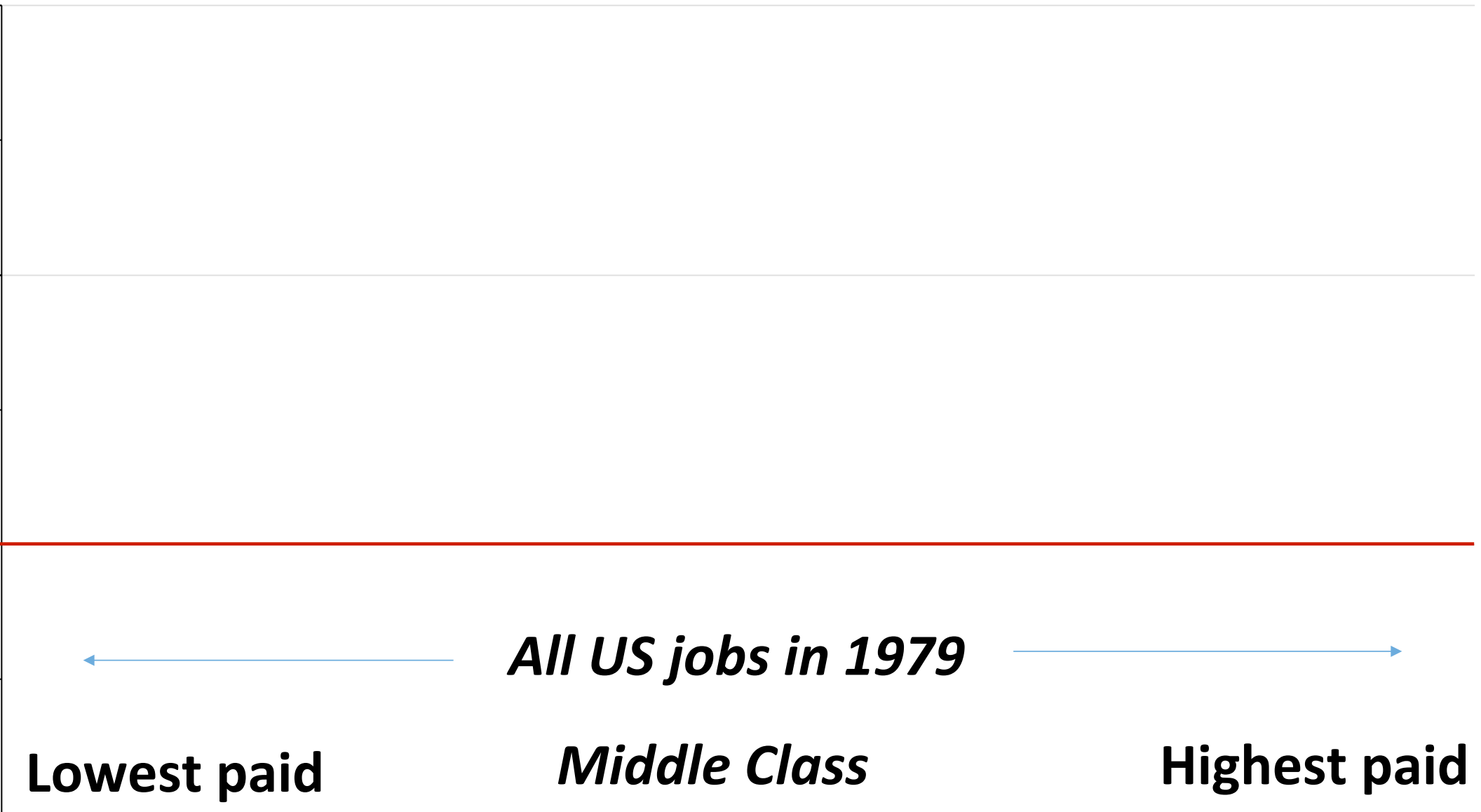
David H. Autor



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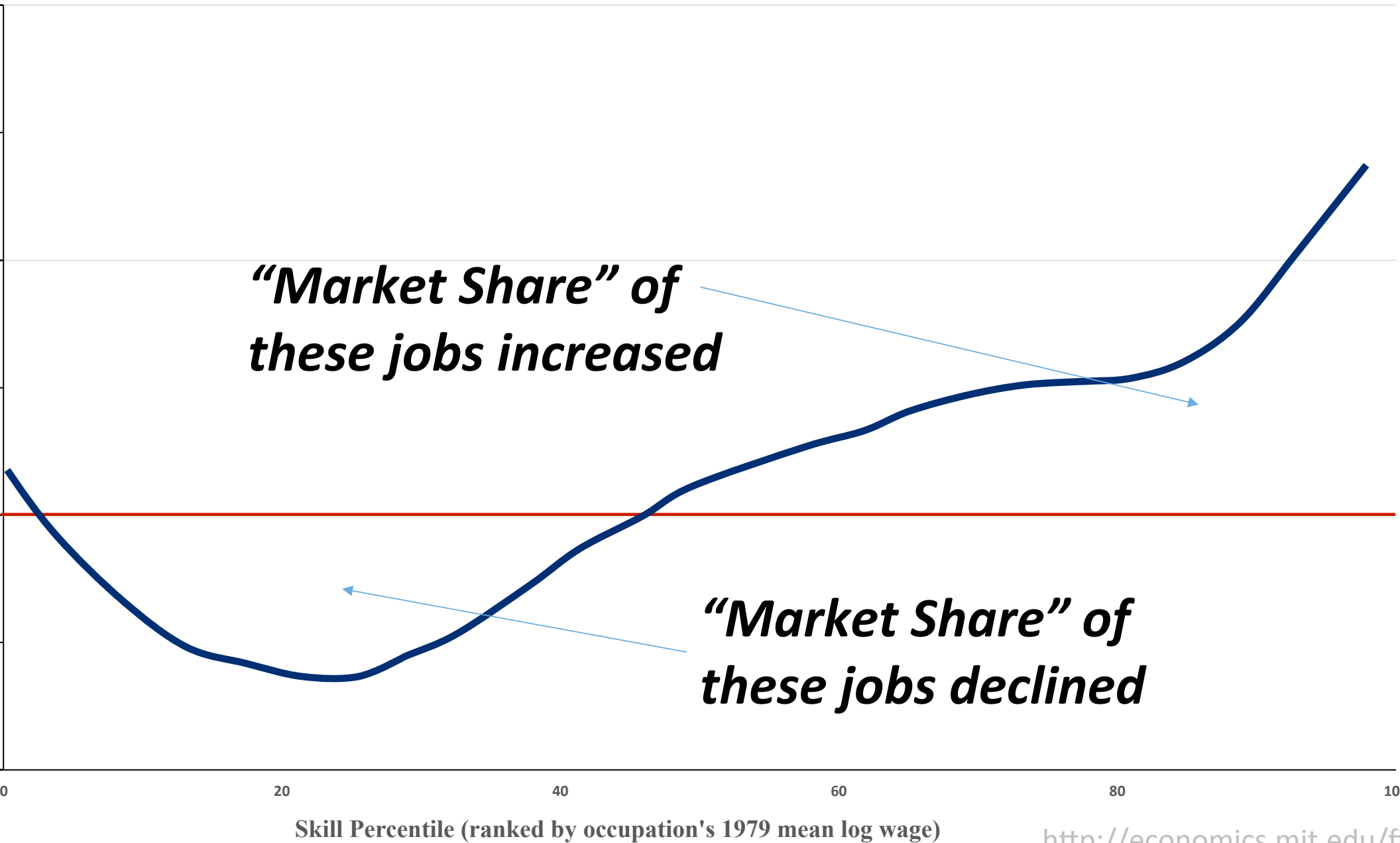
Skill Percentile (ranked by occupation's 1979 mean log wage)

<http://economics.mit.edu/f>

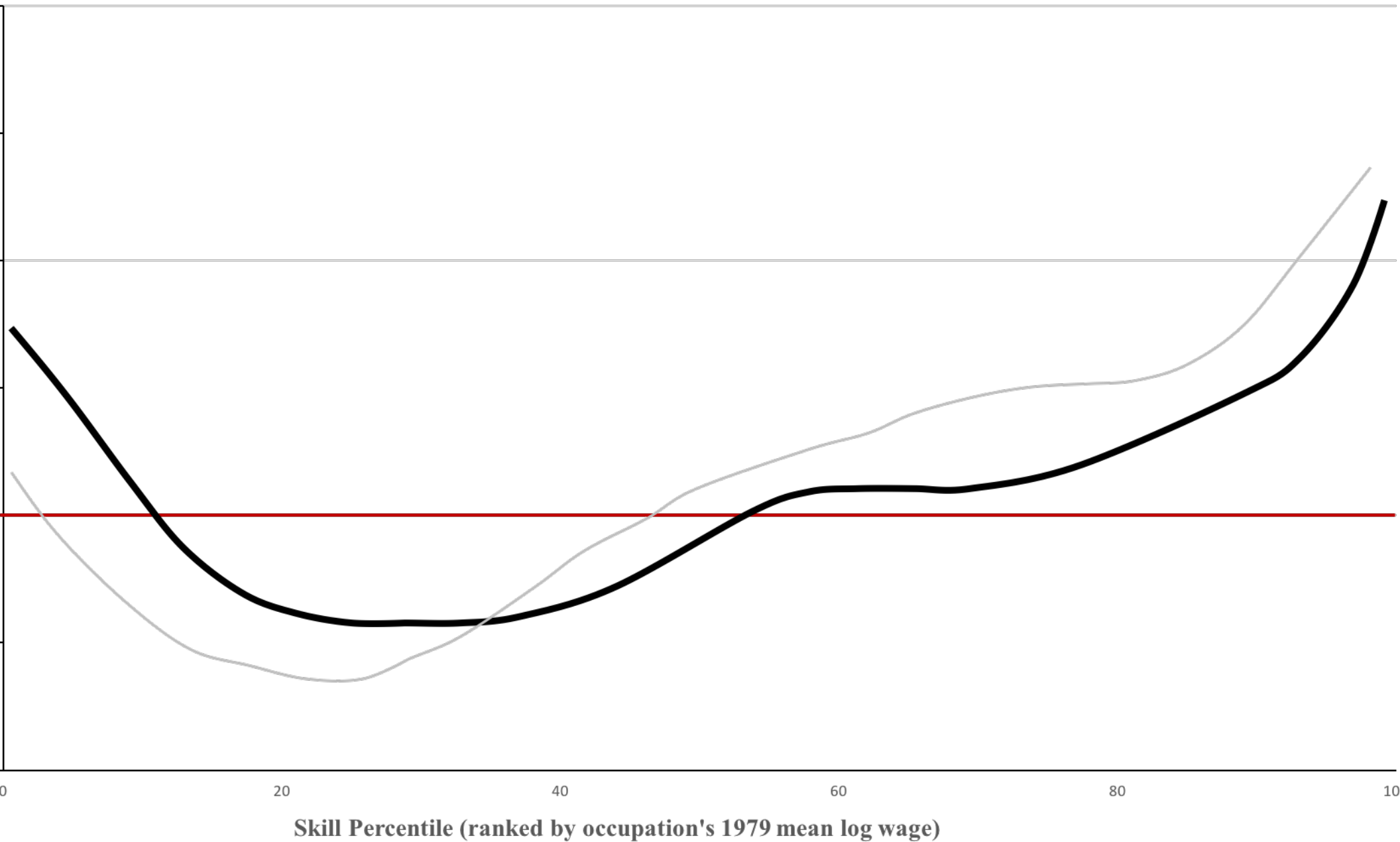


Skill Percentile (ranked by occupation's 1979 mean log wage)

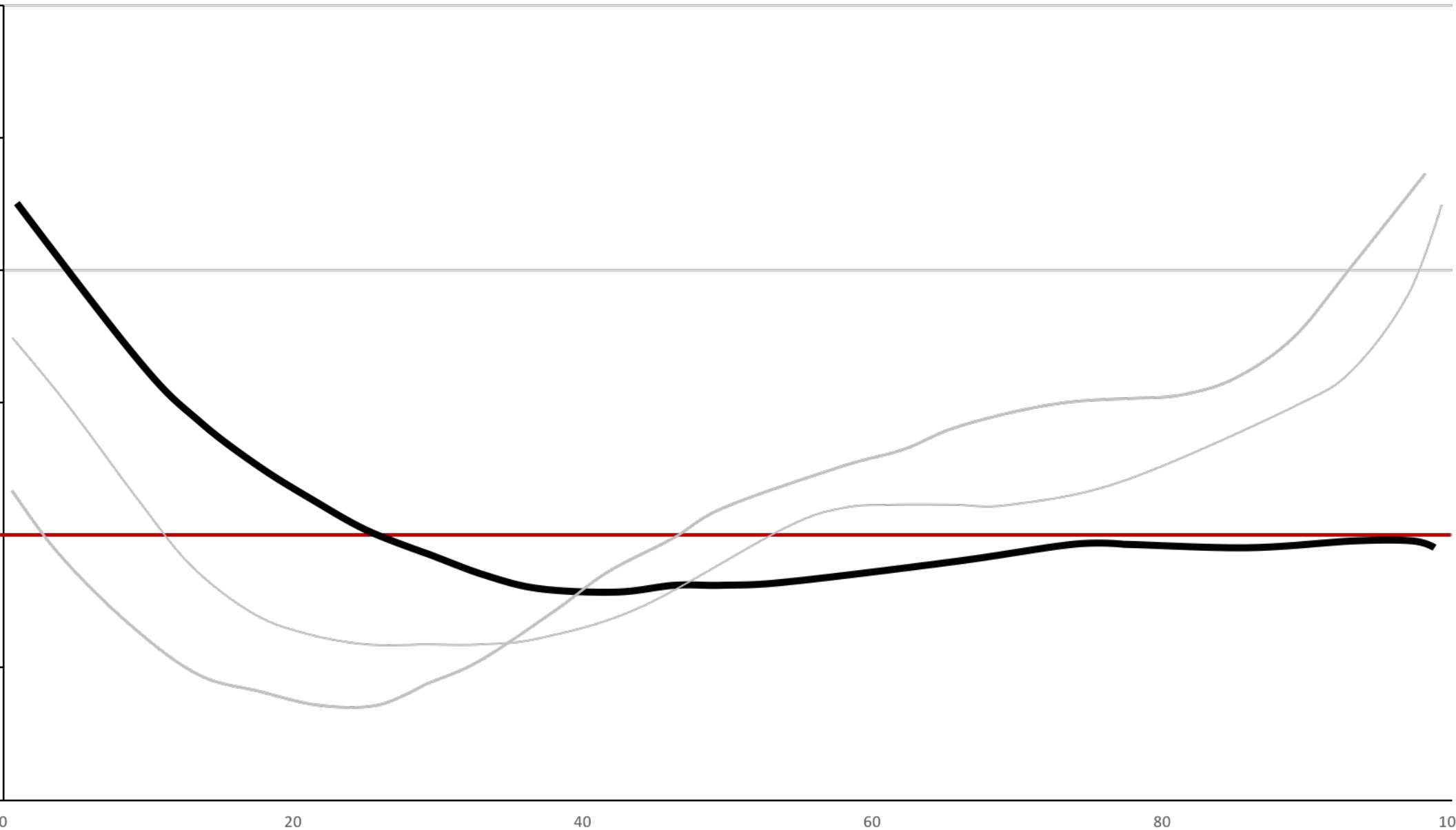
Smoothed Employment Changes, 1979-1989



Smoothed Employment Changes, 1989-1999



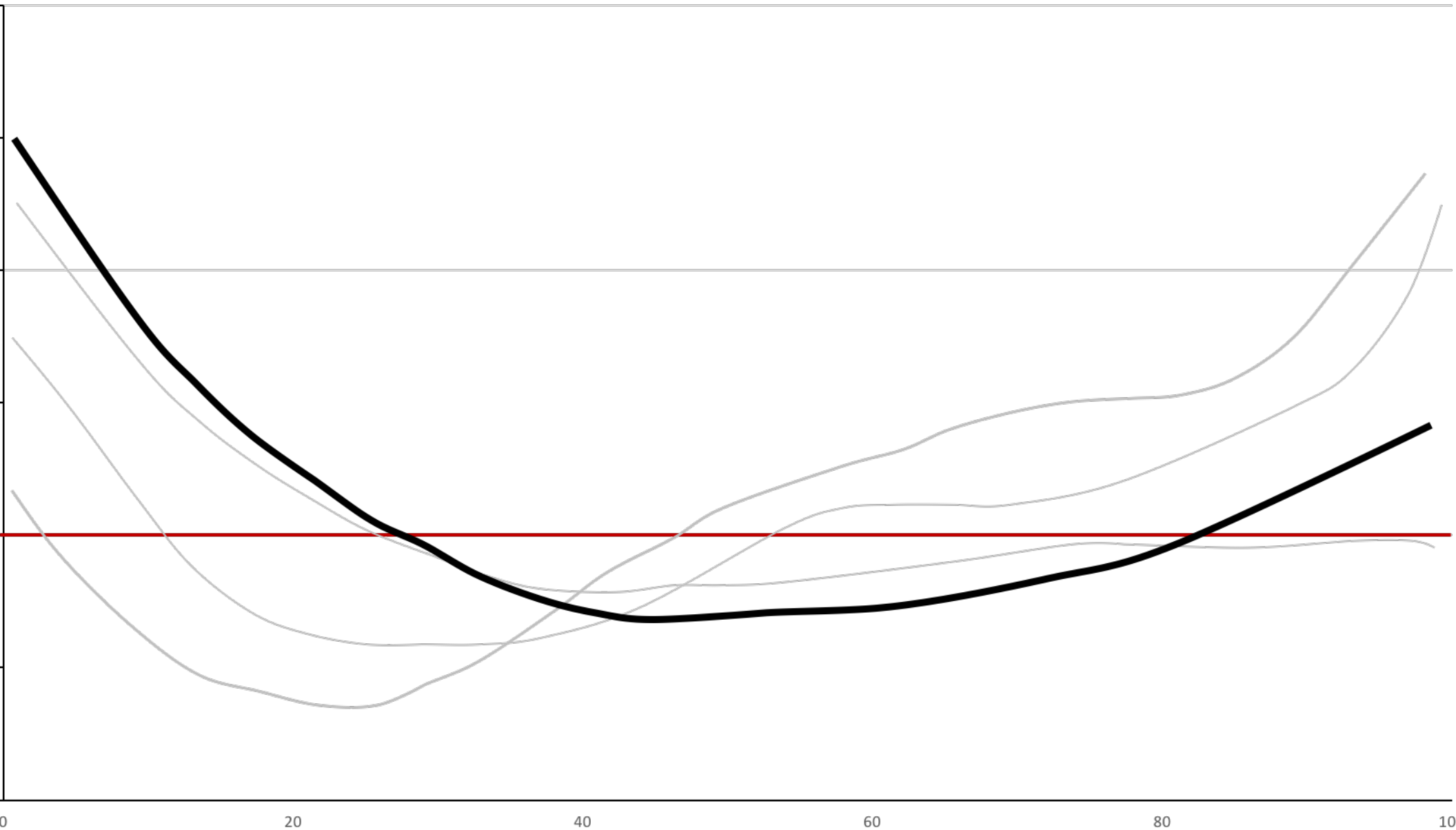
Smoothed Employment Changes, 1999-2007



Skill Percentile (ranked by occupation's 1979 mean log wage)

<http://economics.mit.edu/f>

Smoothed Employment Changes, 2007-2012



Skill Percentile (ranked by occupation's 1979 mean log wage)

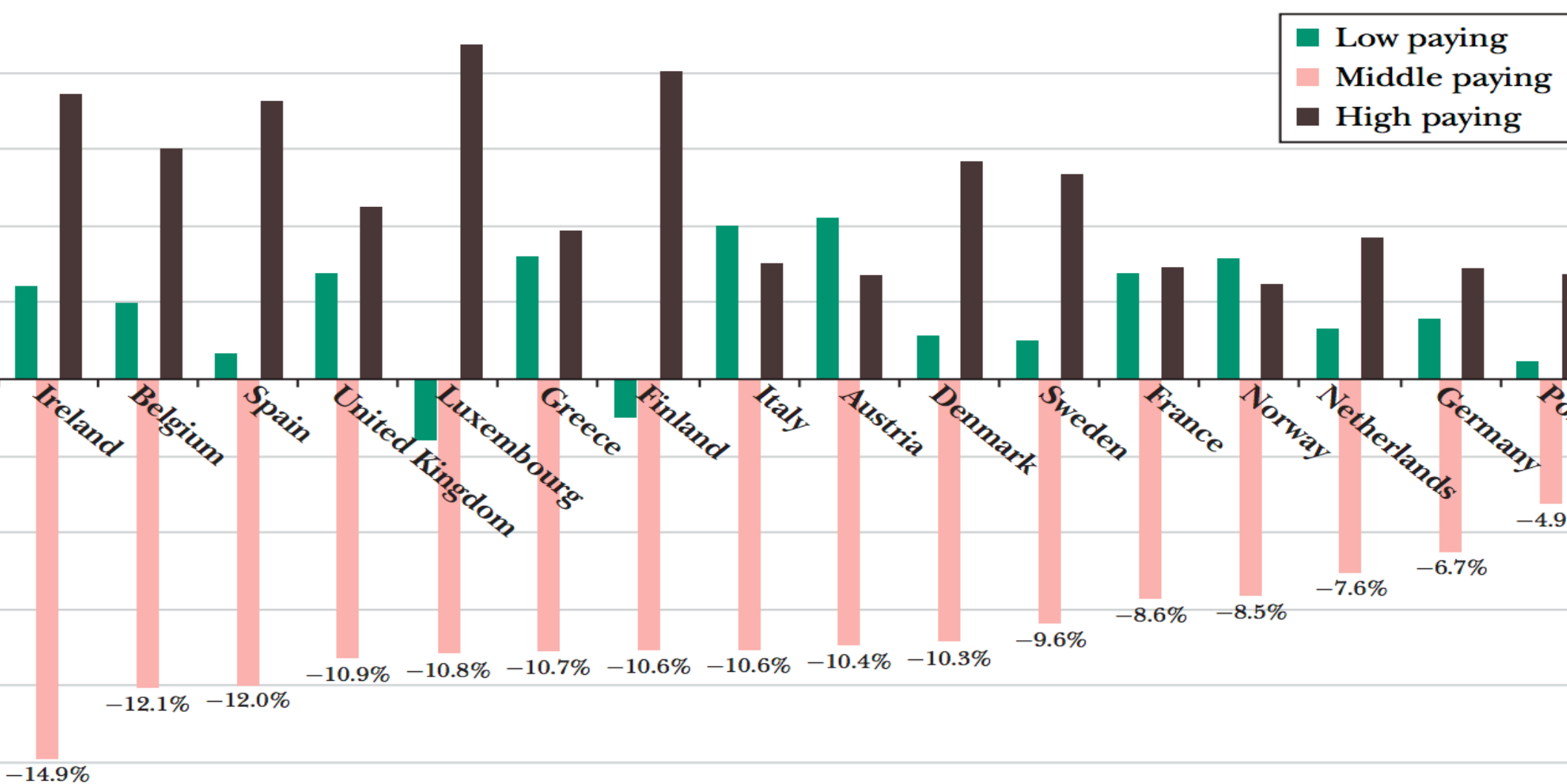
<http://economics.mit.edu/f>

s this a US-only phenomenon?

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No

Change in Occupational Employment Shares in Low, Middle, and High-Wage Occupations in 16 EU Countries, 1993–2010



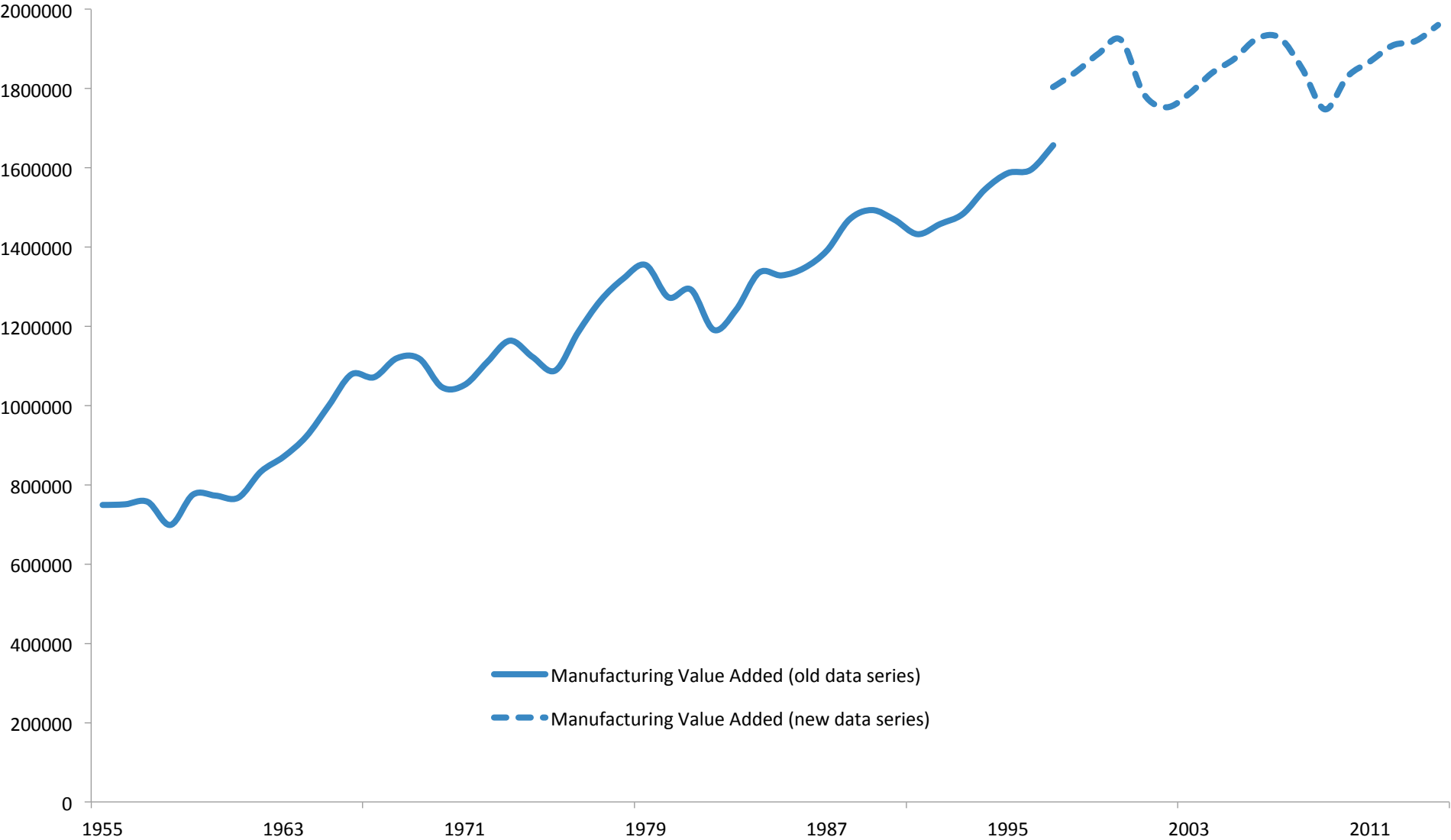
Source: Goos, Manning, and Salomons (2014)

Isn't this mainly because of
globalization / China?

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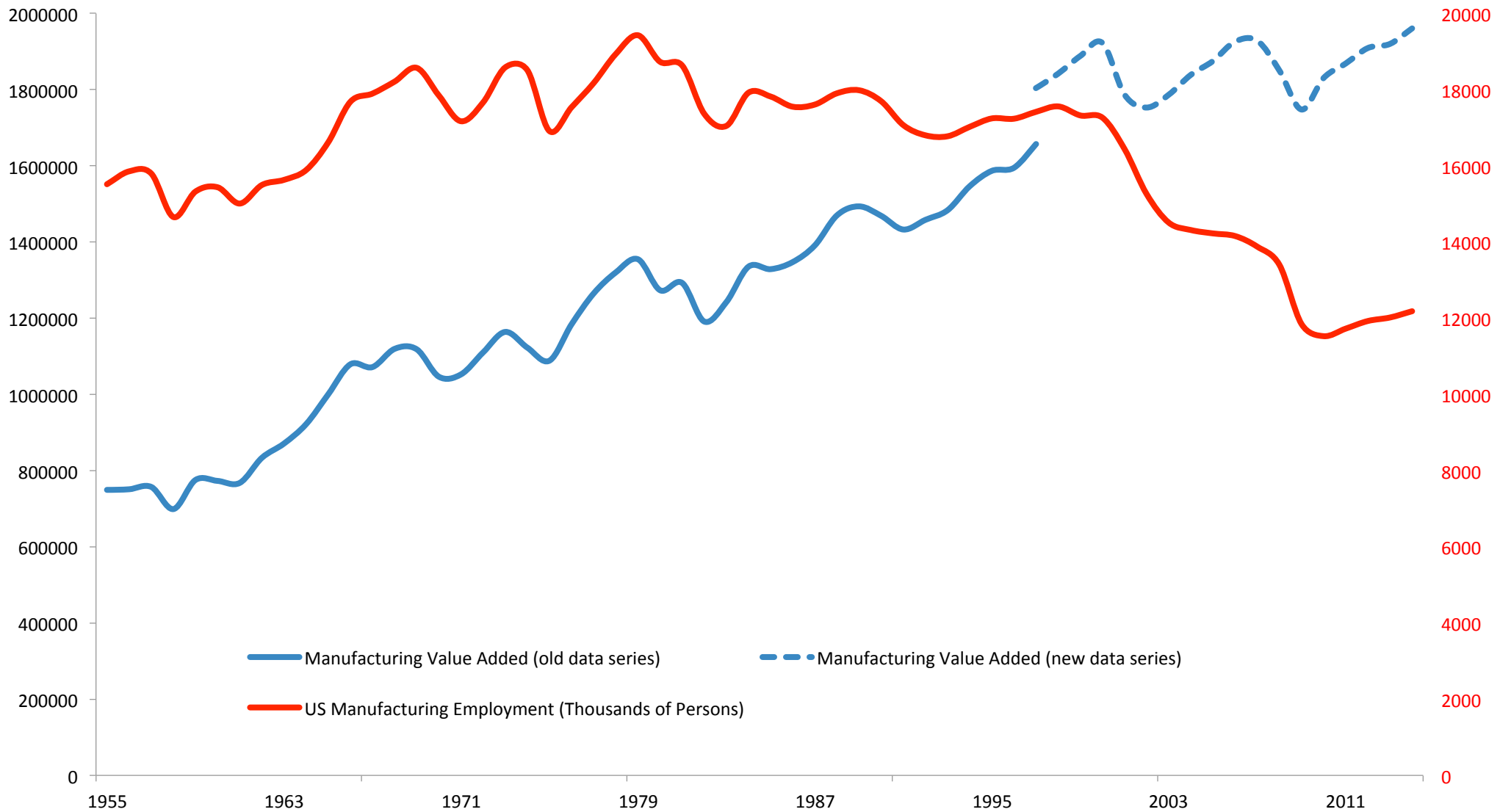
No

US Manufacturing Value Added, 1955-2015



Source: Federal Reserve Bank of St. Louis, Bureau of Economic Analysis

US Manufacturing Employment vs. Value Added, 1955-2015



Source: Federal Reserve Bank of St. Louis, Bureau of Economic Analysis

So what *is* the cause?

So what *is* the cause?

Automation of routine work

The adoption of computers substitutes for... workers performing routine tasks—such as bookkeeping, clerical work, and repetitive production and monitoring activities—which are readily computerized because they follow precise, well-defined procedures.”

Author and Dorn, 2013

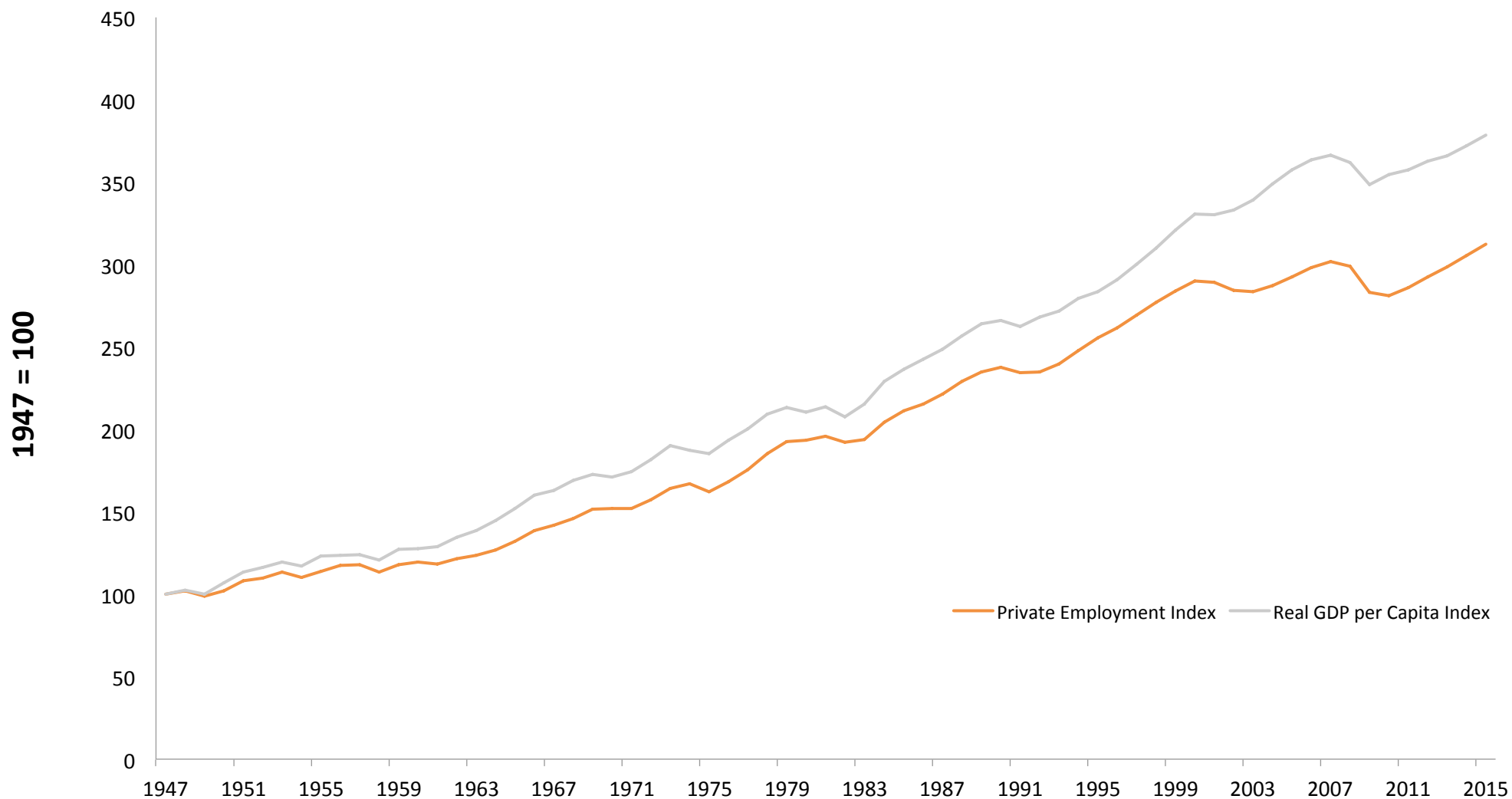
We evaluate numerous alternative explanations for the pronounced differences in wage and employment polarization... including deindustrialization, offshoring and growing low-skill immigration. None of these alternatives appears central to our findings.”

Autor and Dorn, 2013

Then why isn't there mass
unemployment?

*Economic growth + Labor force
flexibility + + “downward mobility”*

US Real GDP per Capita and Employment, 1947-2015



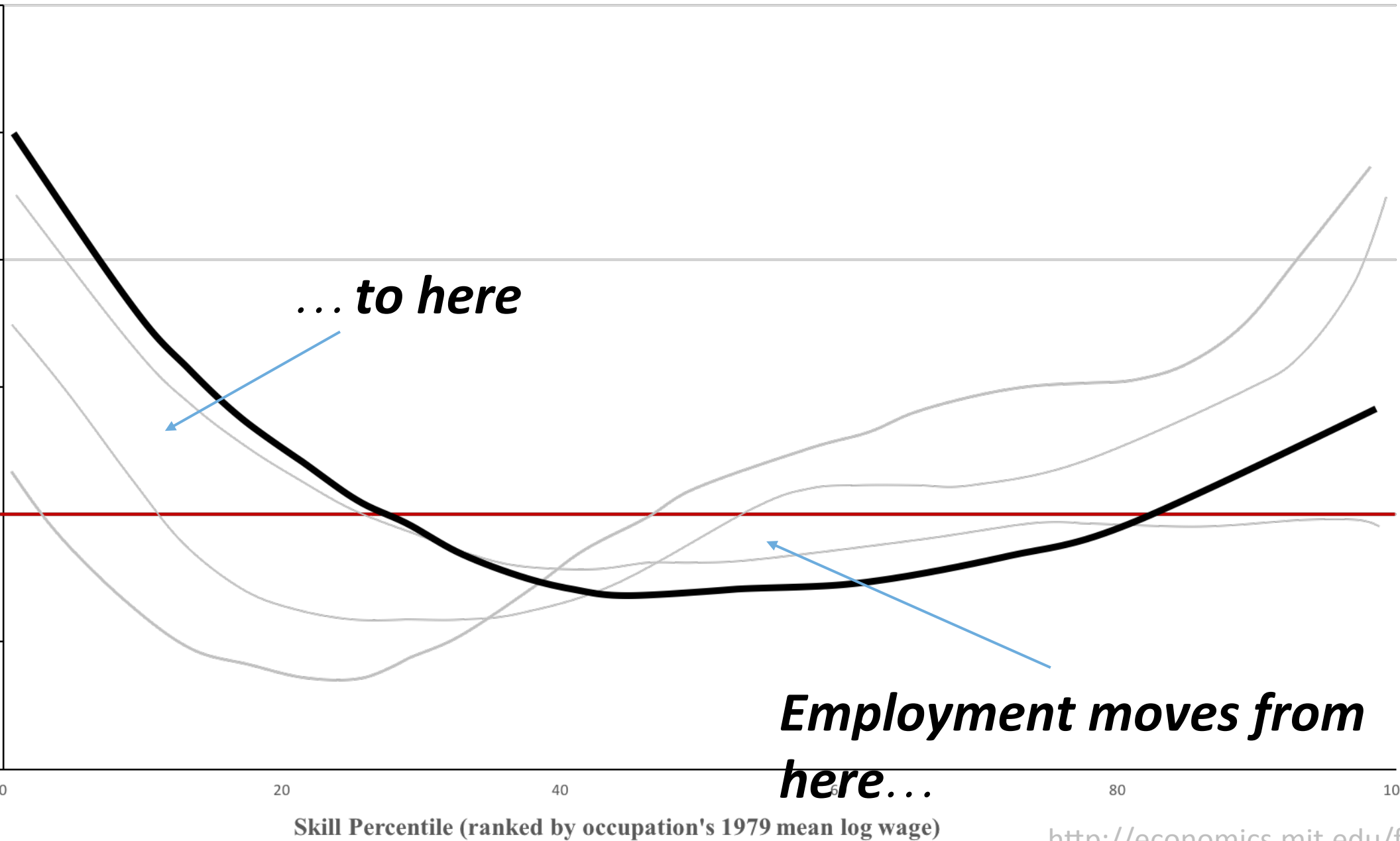
Sources: US Census Bureau, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis.

Table 3: Labor Market Flexibility

OECD Measures of Labor Market Flexibility	U.S. Percentile Rank (100 = Most Flexible)
Barriers to Entrepreneurship	62
Labor Taxation	71
Coverage of Collective Bargaining Agreements	90
Minimum Cost of Labor	92
Scope of State Intervention	94
Employment Protection for Regular Employment	100
Overall Labor Market Regulation	100

Source: OECD 2015; CEA calculations.

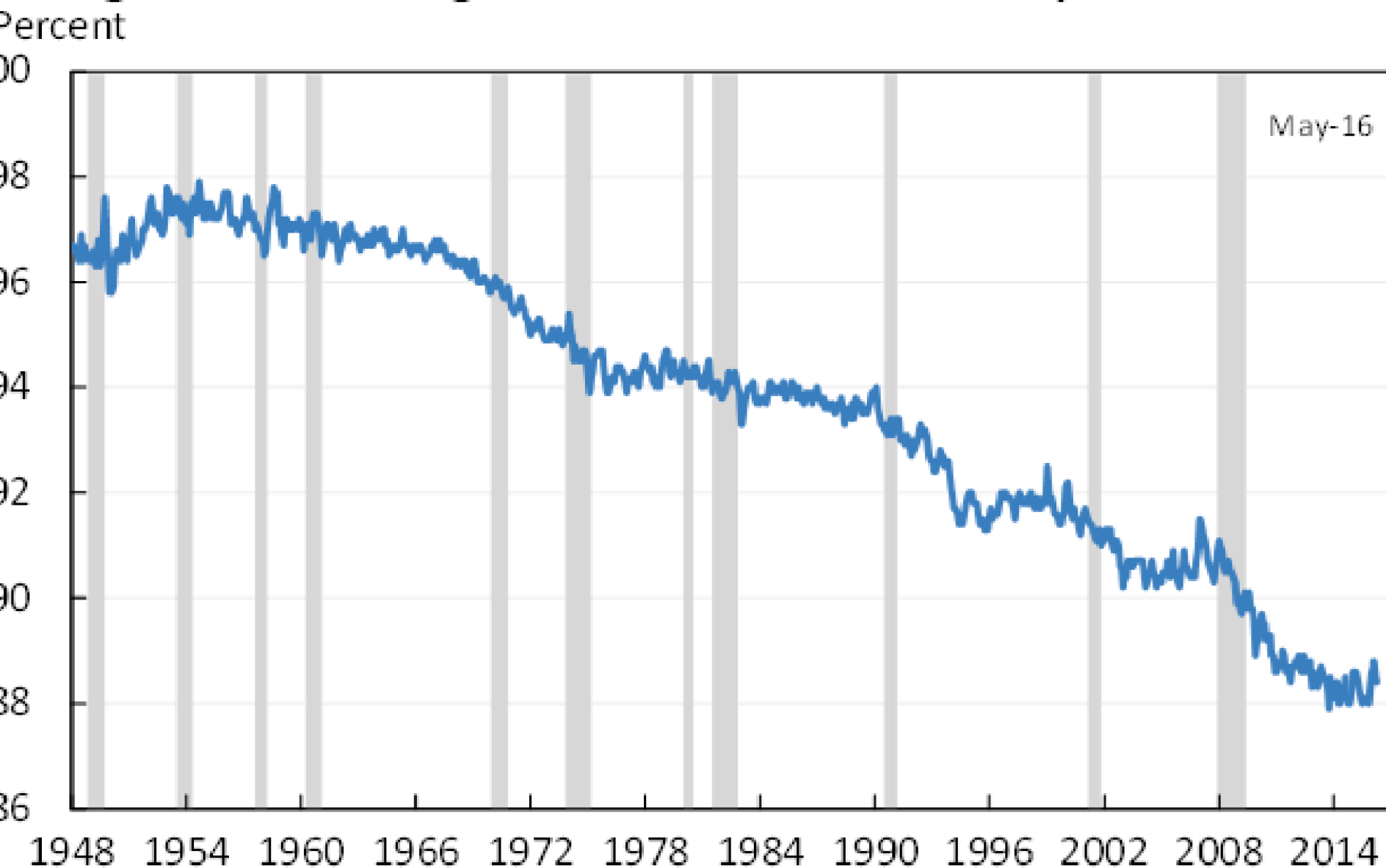
Smoothed Employment Changes, 2007-2012



Then why isn't there mass
unemployment?

*Also, there is concentrated high
unemployment*

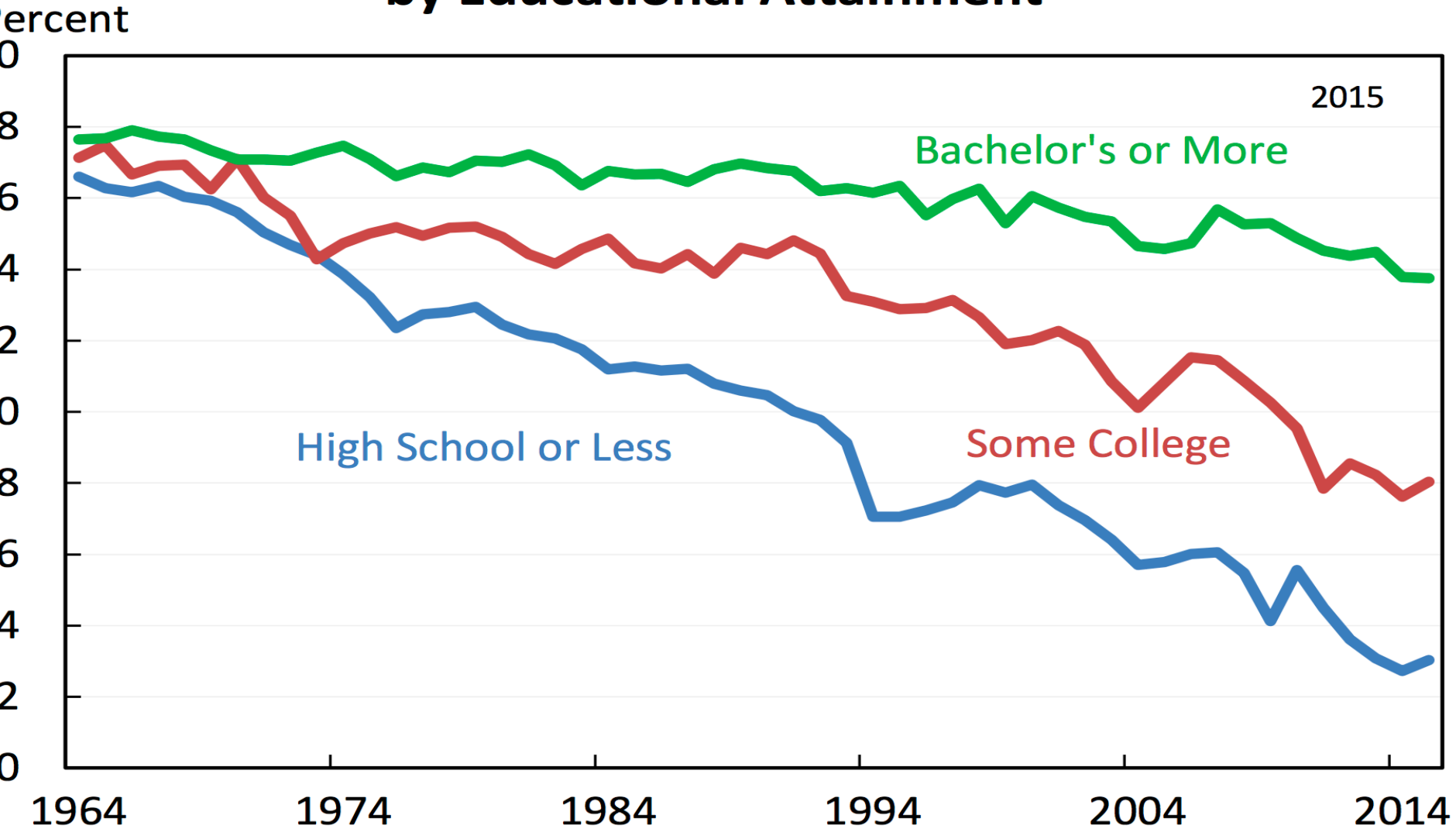
Figure 1: Prime-Age Male Labor Force Participation Rate



Source: Bureau of Labor Statistics, Current Population Survey; CEA calculations.

https://www.whitehouse.gov/sites/default/files/page/files/20160620_cea_primeage_ma

**Figure 9: Prime-Age Male Labor Force Participation
by Educational Attainment**



Source: Bureau of Labor Statistics, Current Population Survey (Annual Social and Economic Supplement); CEA calculations.

https://www.whitehouse.gov/sites/default/files/page/files/20160620_cea_primeage_ma

What are the consequences?

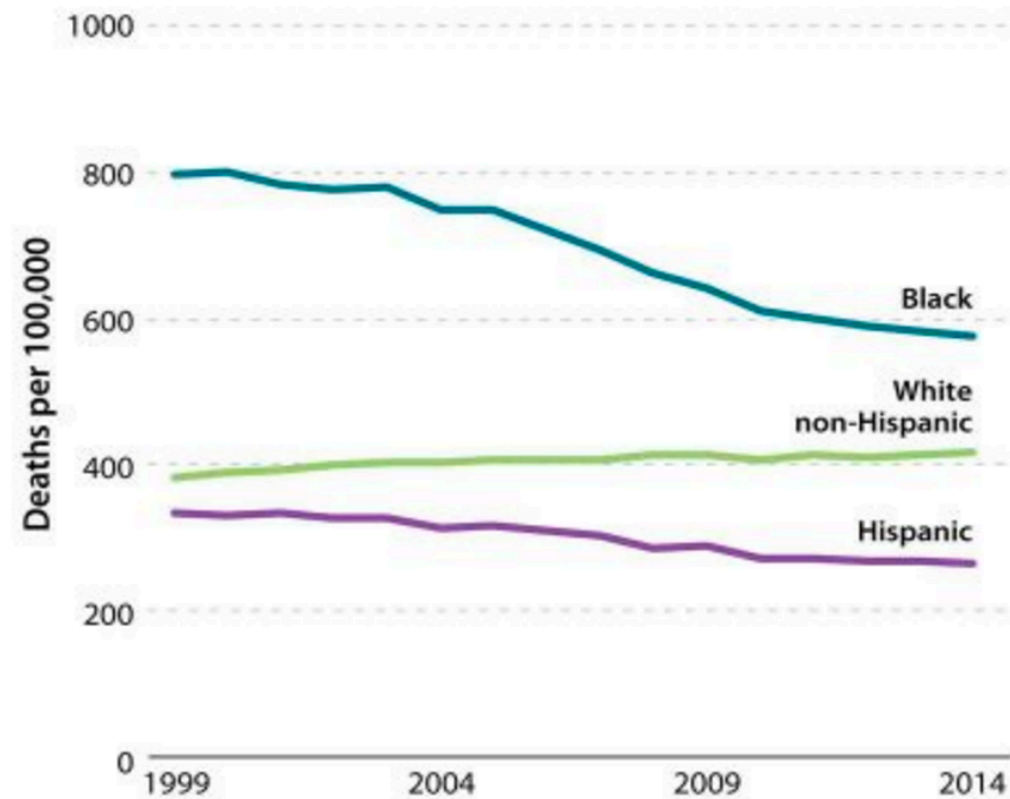
What are the consequences?

Hard to say, precisely. Here are a few other things that are going on...

Mortality

FIGURE 5B.

Mortality, Age 45–54



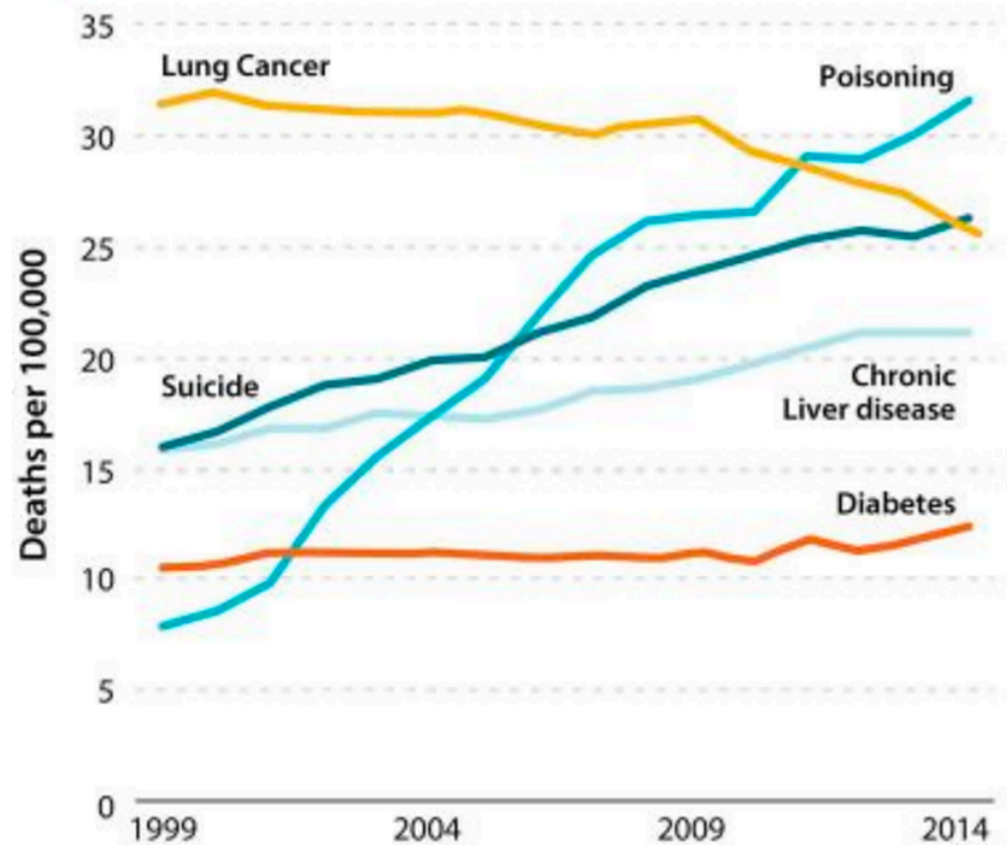
Source: Centers for Disease Control and Prevention 1999–2014.

Note: Mortality data are for all-cause mortality. Figure is adapted from Case and Deaton (2015) figure 1.

Mortality

FIGURE 5A.

Mortality by Cause, White Non-Hispanics Age 45–54



Source: CDC 1999–2014.

Note: Figure is adapted from Case and Deaton (2015) figure 2. Chronic liver diseases include alcoholic liver diseases and cirrhosis. Poisonings include drug and alcohol poisoning, both accidental and with undetermined intent.

Mortality

By DEAN REYNOLDS / CBS NEWS / June 6, 2017, 8:00 PM

Overdoses now leading cause of death of Americans under 50

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CLEVELAND, Ohio -- **Overdoses** are now the leading cause of death of Americans under the age of 50.

According to preliminary data compiled by **The New York Times**, deaths likely topped 59,000 -- 19 percent more than the year before.

In Ohio, they were up even more.

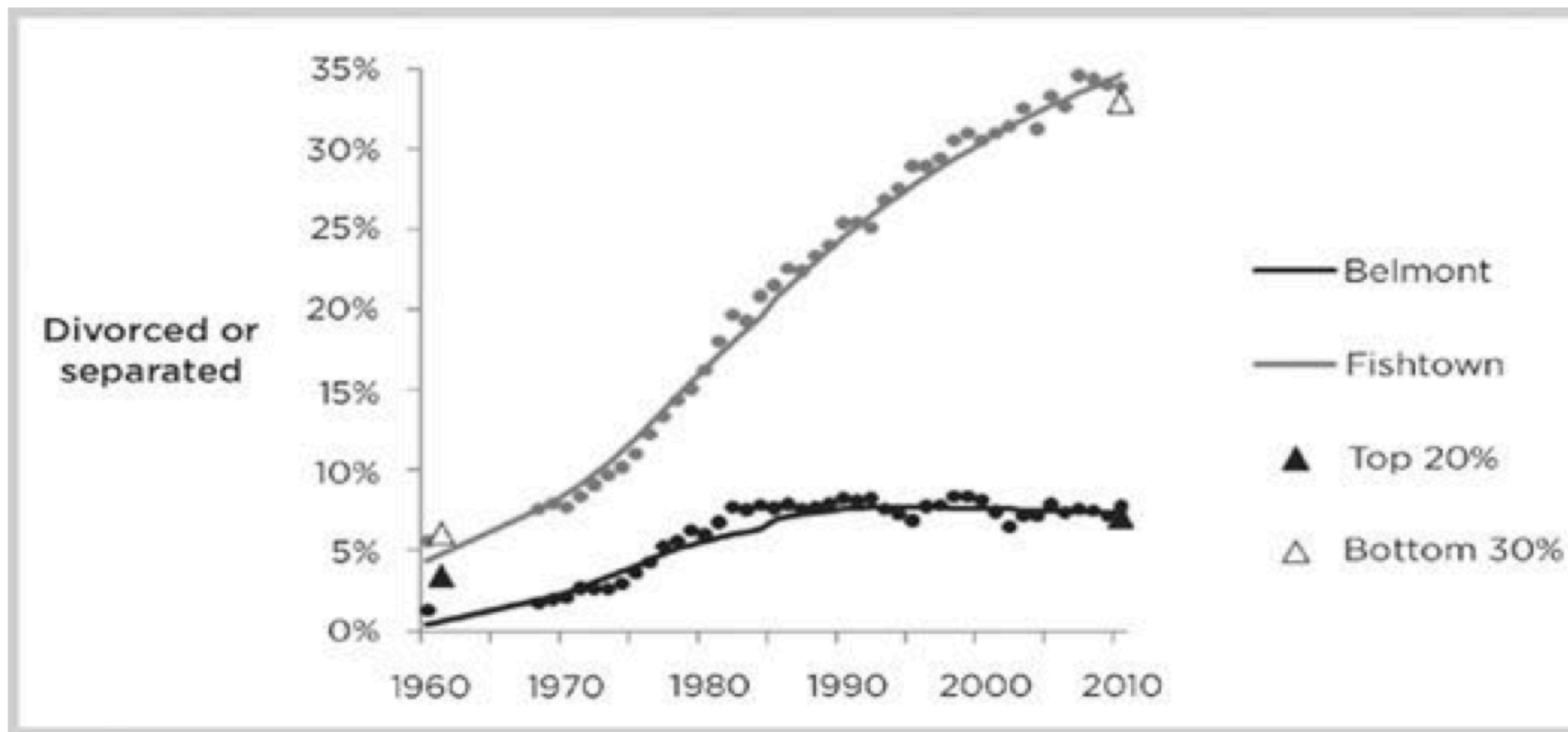
On May 26, Cleveland Police Sgt. Timothy Maffo-Judd's body camera captured him as he approached a man slumped in his car. It turned out that the man had died minutes from a fatal drug overdose.

Three applications of Narcan -- the anti-overdose drug -- and the victim started coming around.

Maffo-Judd says it's become a grim routine, and he's even encountered a person twice. "That's pretty common," he says.

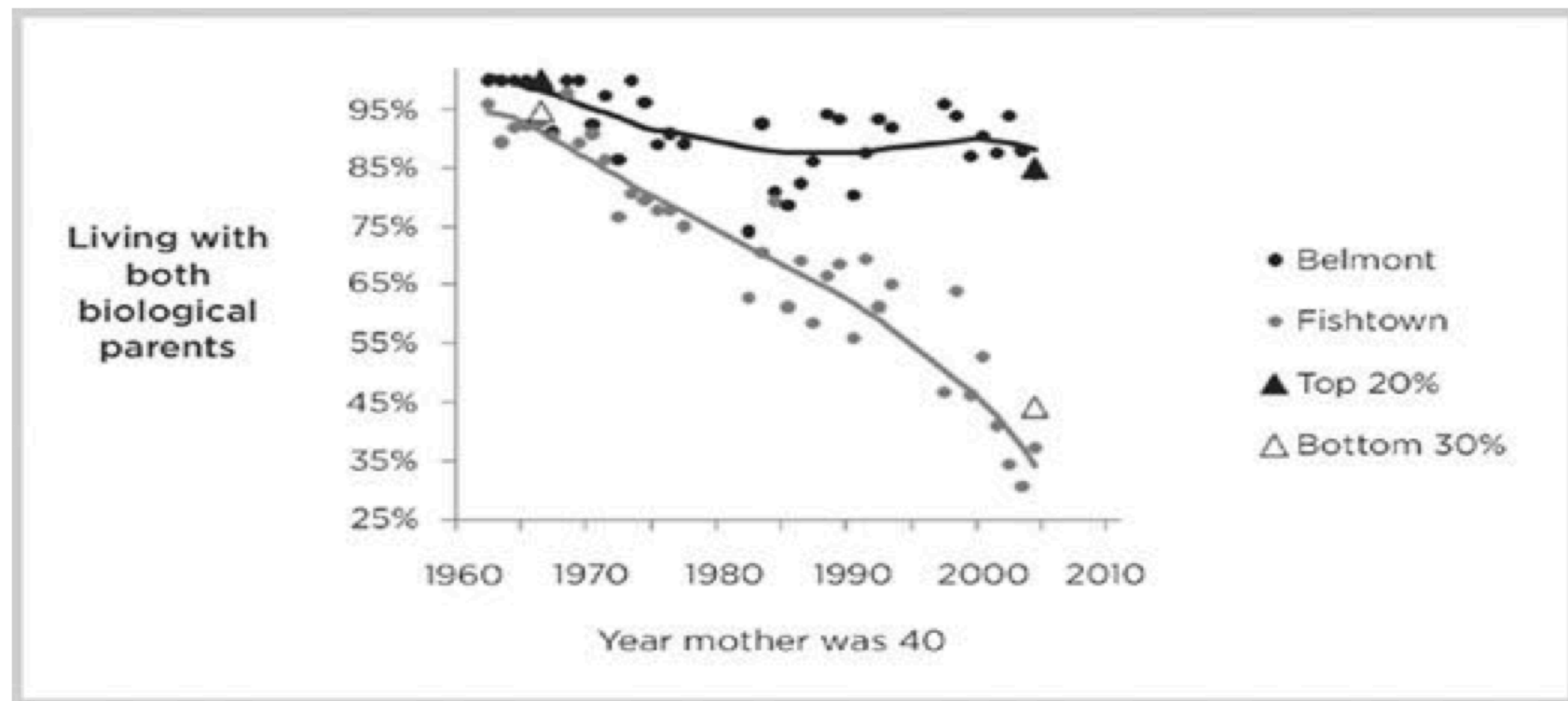
Social Decay

FIGURE 8.5. DIVORCE



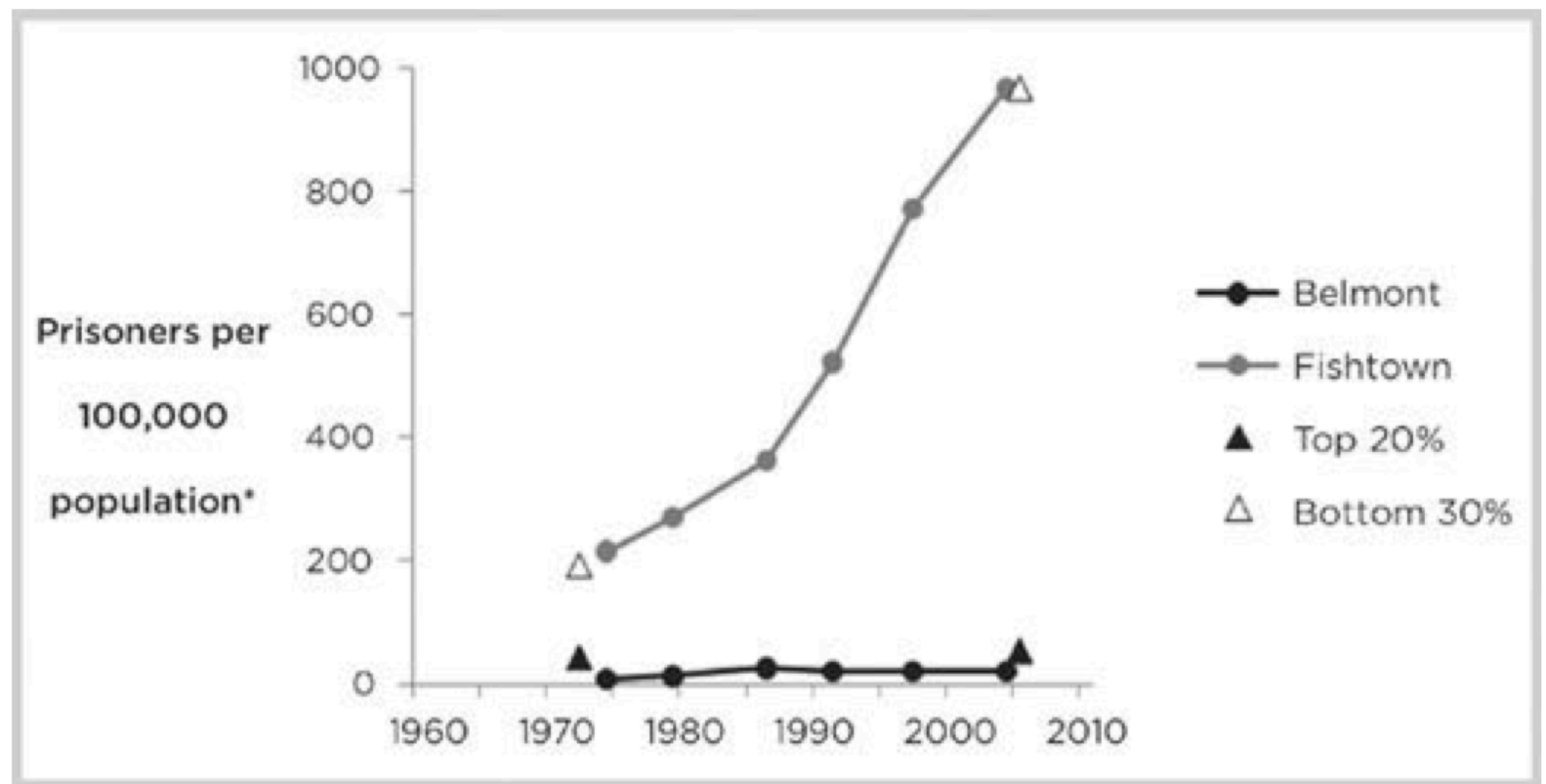
Social Decay

FIGURE 8.11. PERCENTAGE OF CHILDREN LIVING WITH BOTH BIOLOGICAL PARENTS WHEN THE MOTHER WAS AGE 40



Social Decay

FIGURE 10.2. WHITE PRISONERS

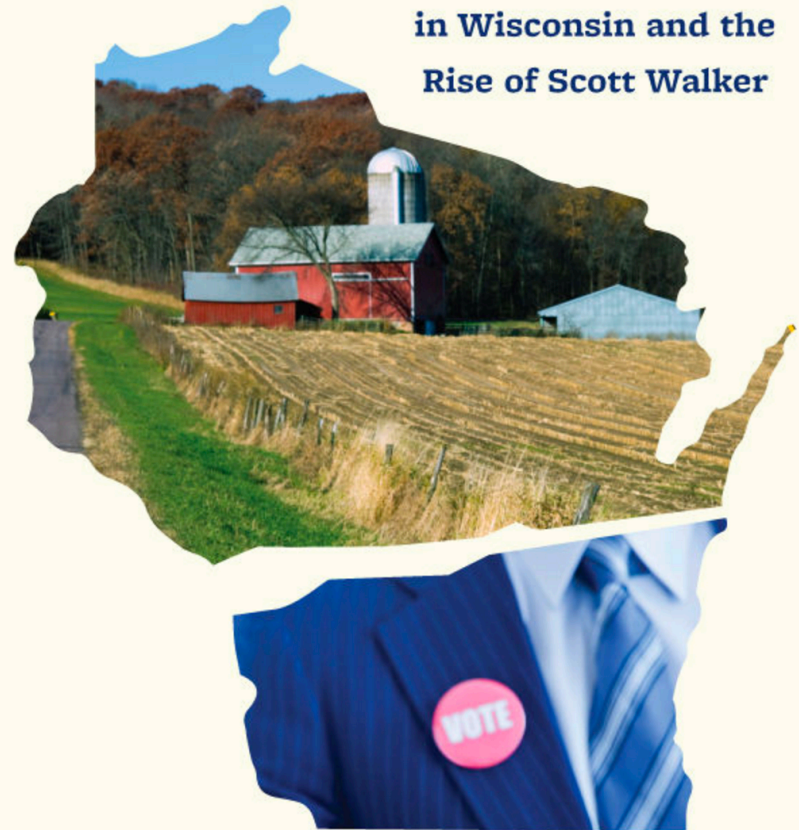


“The Politics of Resentment”

KATHERINE J. CRAMER

THE POLITICS OF RESENTMENT

Rural Consciousness
in Wisconsin and the
Rise of Scott Walker



McAfee's caution:

*"If current trends continue, the people
will rise up before the machines do."*



Are things going to get better?

Are things going to get better?

Two views here:

1) YES. We're underestimating the power of capitalism. History will repeat itself.

Are things going to get better?

Two views here:

2) NO. We're underestimating the power of modern technology. This time is different.

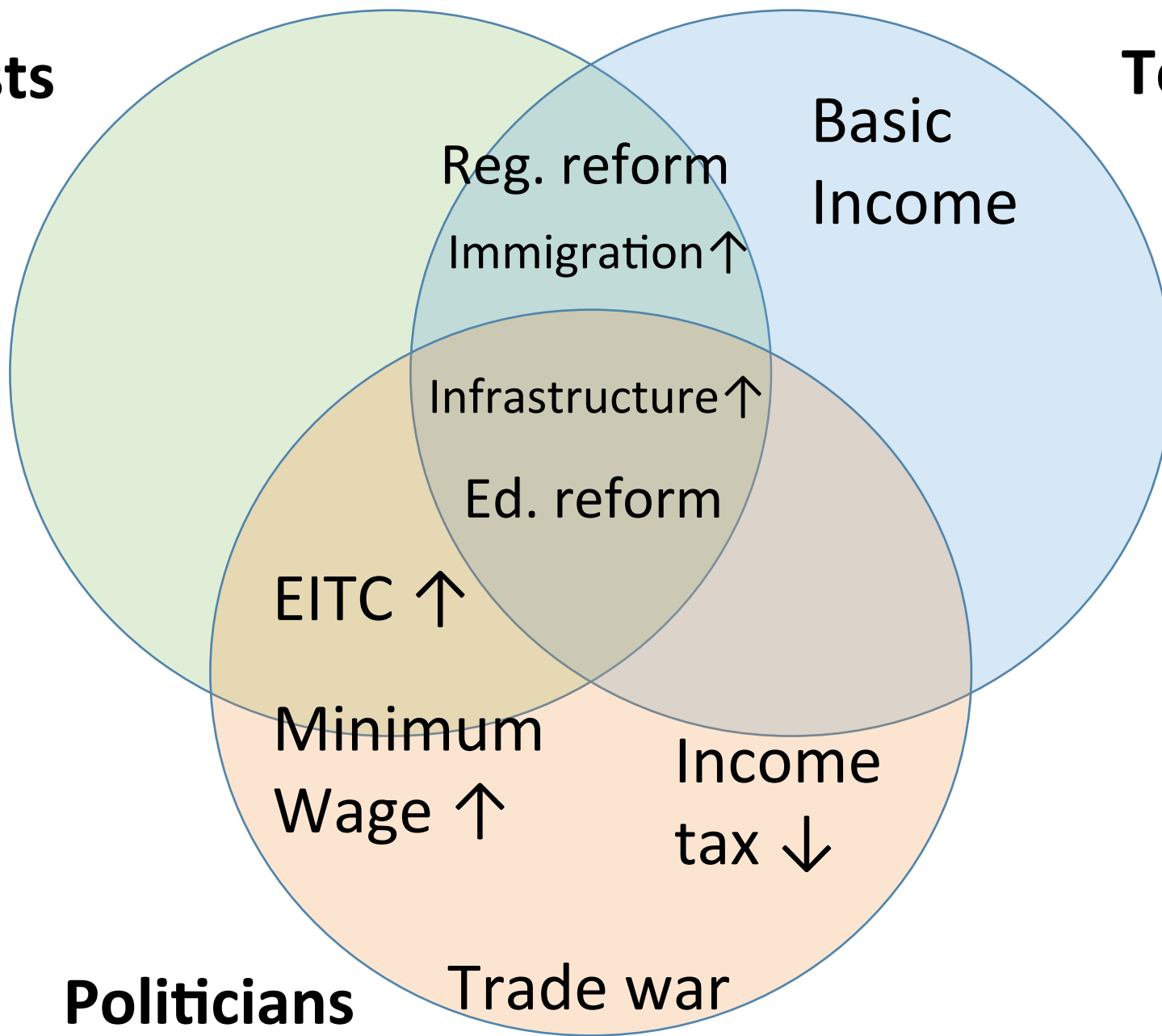
What should we do?

What should we do?

Depends on who you talk to.

Economists

Technologists



Politicians

The book cover features a blue background with a grid of white dots. A bright, glowing light source from the upper right creates a lens flare effect, with rays of light and a gradient of blue and white. The title 'SECOND MACHINE AGE' is printed in large, bold, black capital letters.

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Thank you!

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