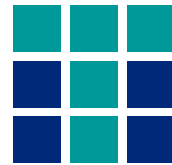


**מרכז טאוב**  
לחקר המדיניות החברתית בישראל



**TAUB CENTER**  
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# **Causes and Consequences of Inequality**

Herbert M. Singer Conference Series



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# Rising Inequality in Industrialized Nations: Causes, Concerns, and Policy Responses

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David H. Autor  
MIT and NBER

Taub Center for Social Policy Studies  
Jerusalem, 30 October 2013

# Rising Inequality in Industrialized Nations: Causes, Concerns, and Policy Responses

## 1. **Inequality – Causes**

- Technological revolutions
- International competition
- The 'education race'

## 2. **Inequality – Concerns**

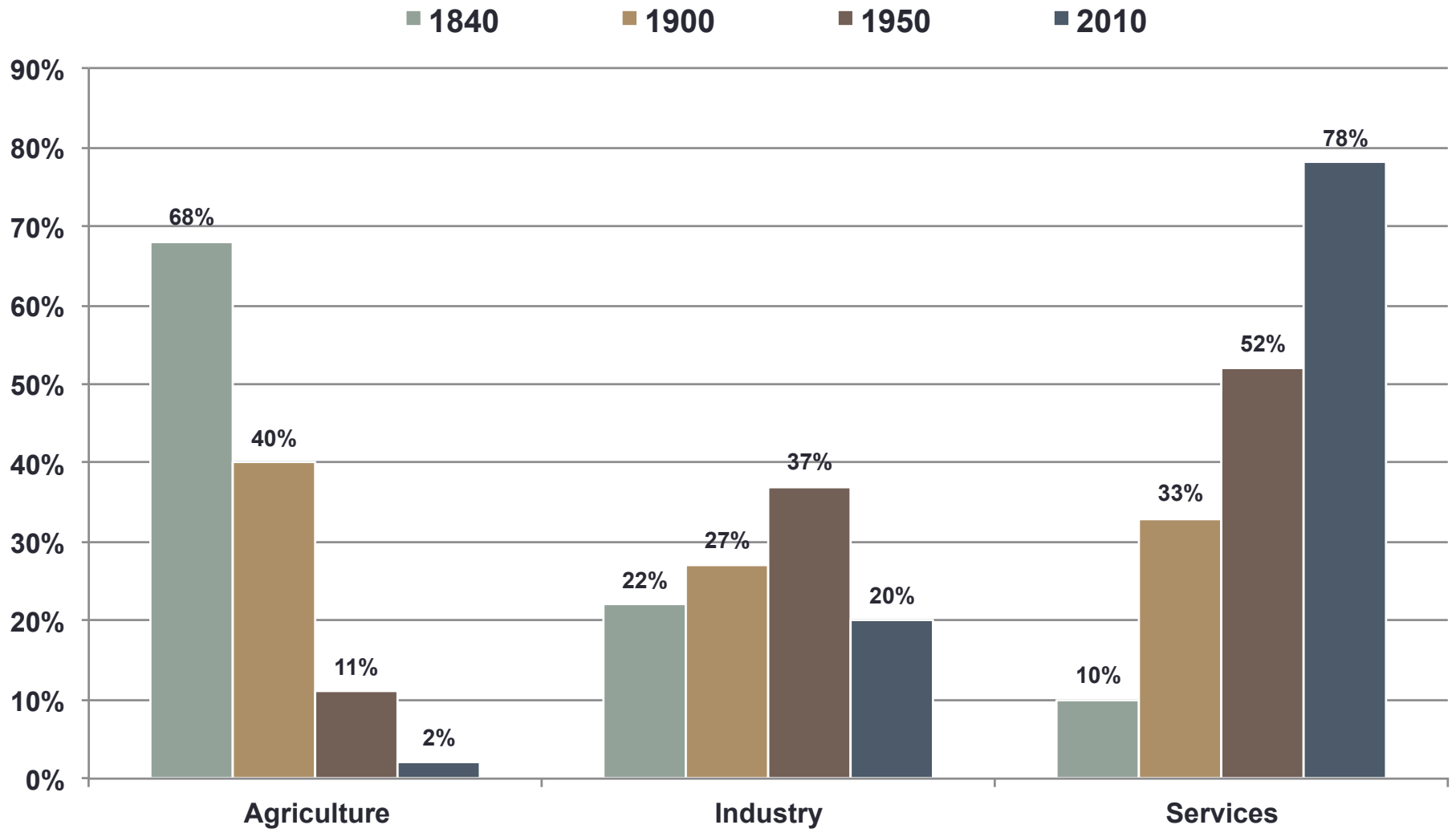
- Inequality and economic mobility
- Household structure and investments in children

## 3. **Inequality – Policy responses**

- Education
- Taxation
- Labor standards
- Macroeconomic policies

## 4. **Conclusions**

# Not One but Two Technological Revolutions: The Green Revolution and the Industrial Revolution



# Automation of 'Routine Tasks:' Jacquard Loom (1801)



Source: Collection, Science Museum, London. Photograph by George P. Landow, June 2000; downloaded from <http://65.107.211.206/technology/jacquard2.html> (8/27/2002).

# Two Centuries of Productivity Growth in Computing: 2+ Trillion Fold Decline in Cost of Computing v. Labor

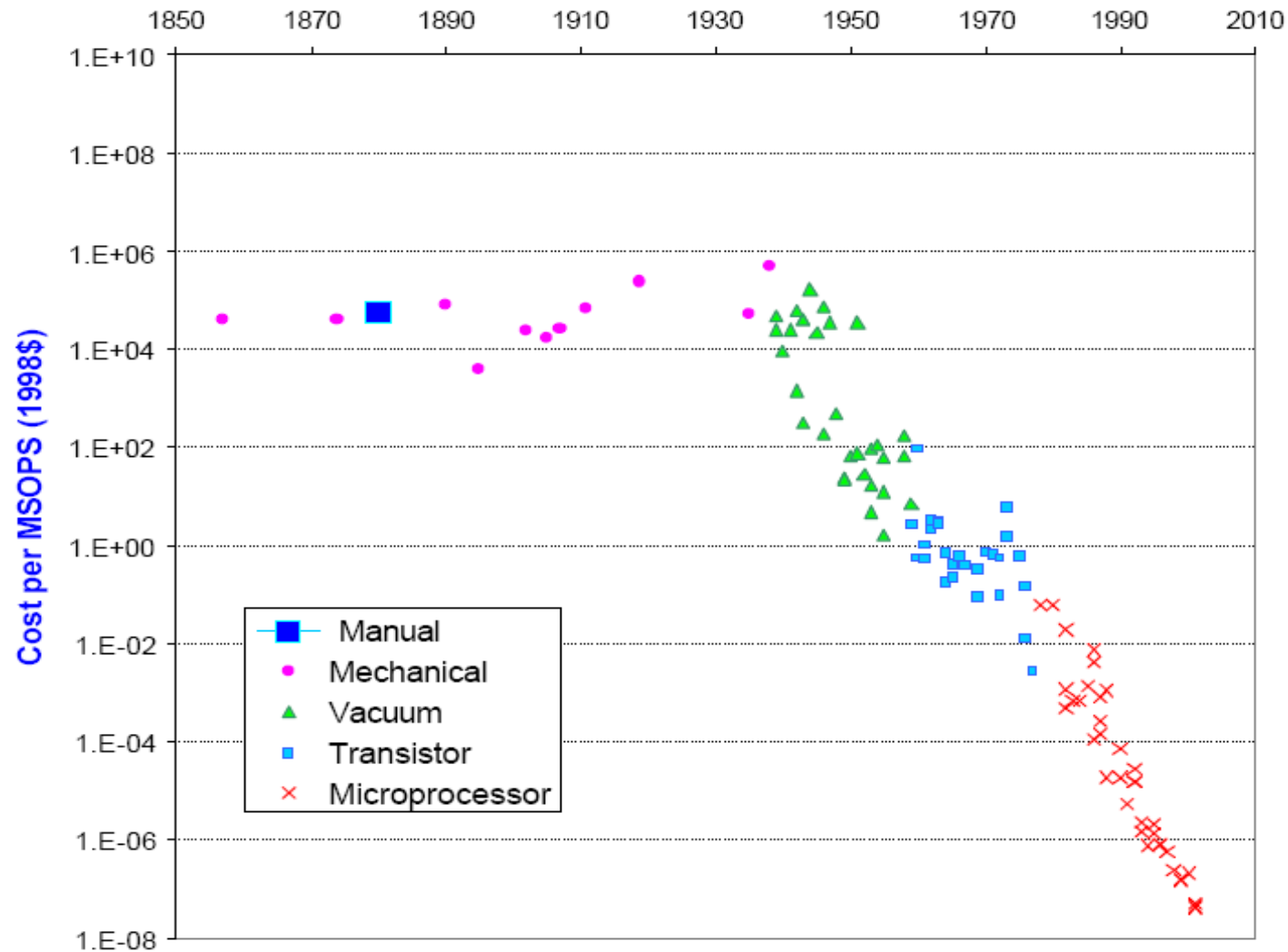
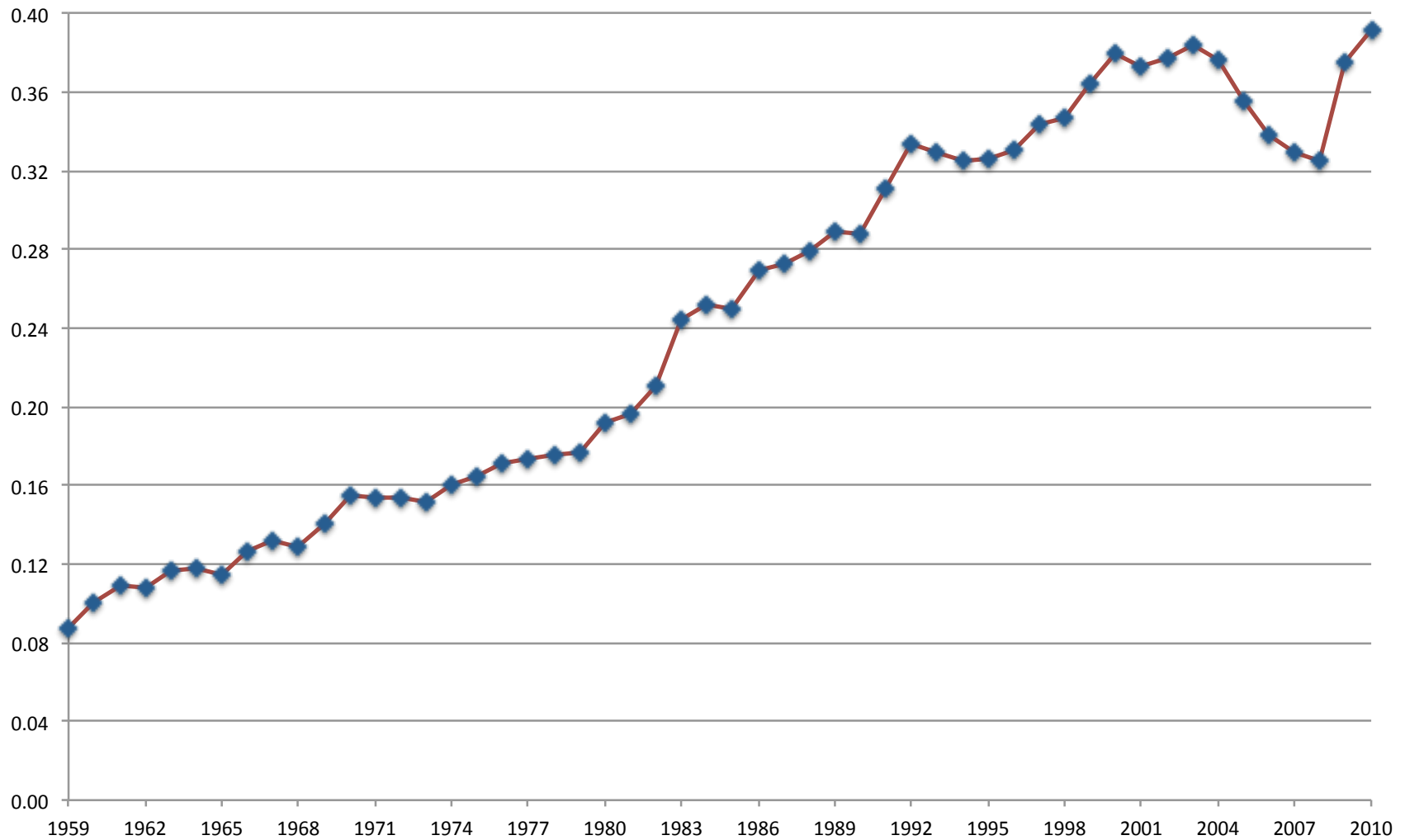


Figure 2. The cost of computer power for different technologies

# Information Technology Accounted for ~40% of Business Investment as of 2010

Information Processing Equipment + Software Share of All Private Non-Residential Investment, 1959 - 2010 (Source: BEA NIPA)

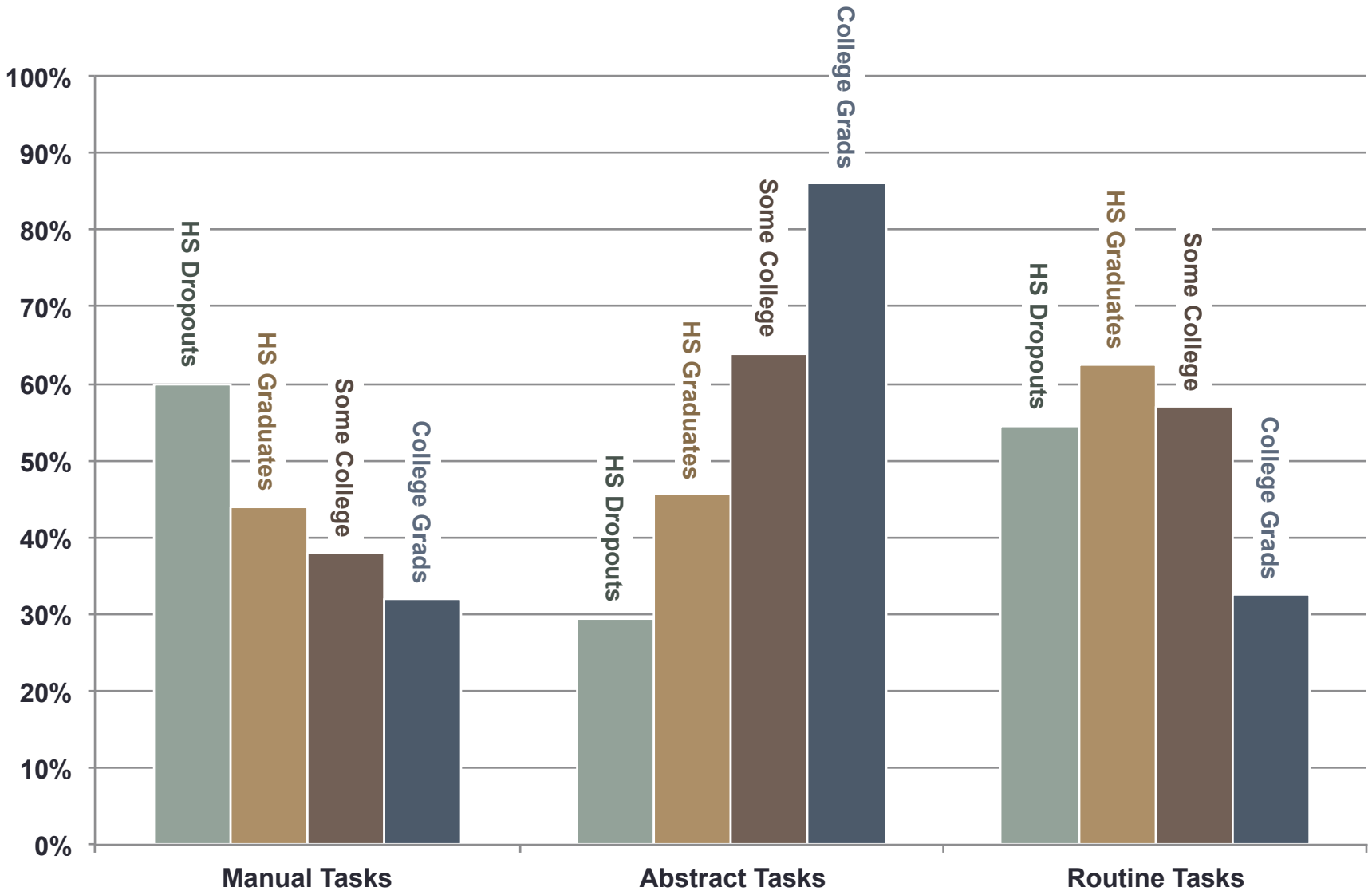


# Substitution, Complementarity: Tasks and Technology

	<b>Task Description</b>	<b>Example Occupations</b>	<b>Potential Impact of Computerization</b>
<b>Routine Tasks</b>	<ul style="list-style-type: none"><li>• 'Rules-based'</li><li>• Repetitive</li><li>• Procedural</li></ul>	<ul style="list-style-type: none"><li>• Bookkeepers</li><li>• Assembly line workers</li></ul>	<ul style="list-style-type: none"><li>• Direct Substitution</li></ul>
<b>Abstract Tasks</b>	<ul style="list-style-type: none"><li>• Abstract problem-solving</li><li>• Mental flexibility</li></ul>	<ul style="list-style-type: none"><li>• Scientists</li><li>• Attorneys</li><li>• Managers</li><li>• Doctors</li></ul>	<ul style="list-style-type: none"><li>• Strong Complementarity</li></ul>
<b>Manual Tasks</b>	<ul style="list-style-type: none"><li>• Environmental Adaptability</li><li>• Interpersonal Adaptability</li></ul>	<ul style="list-style-type: none"><li>• Truck drivers</li><li>• Security guards</li><li>• Flight attendants</li><li>• Home health aides</li><li>• Waiters</li><li>• Cleaners</li></ul>	<ul style="list-style-type: none"><li>• Limited Complementarity or Substitution</li></ul>

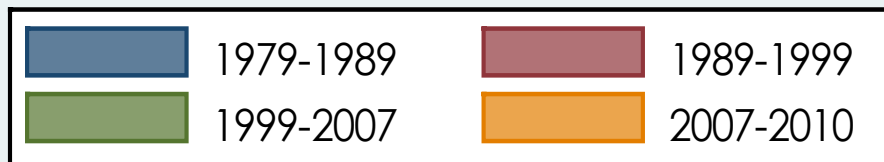
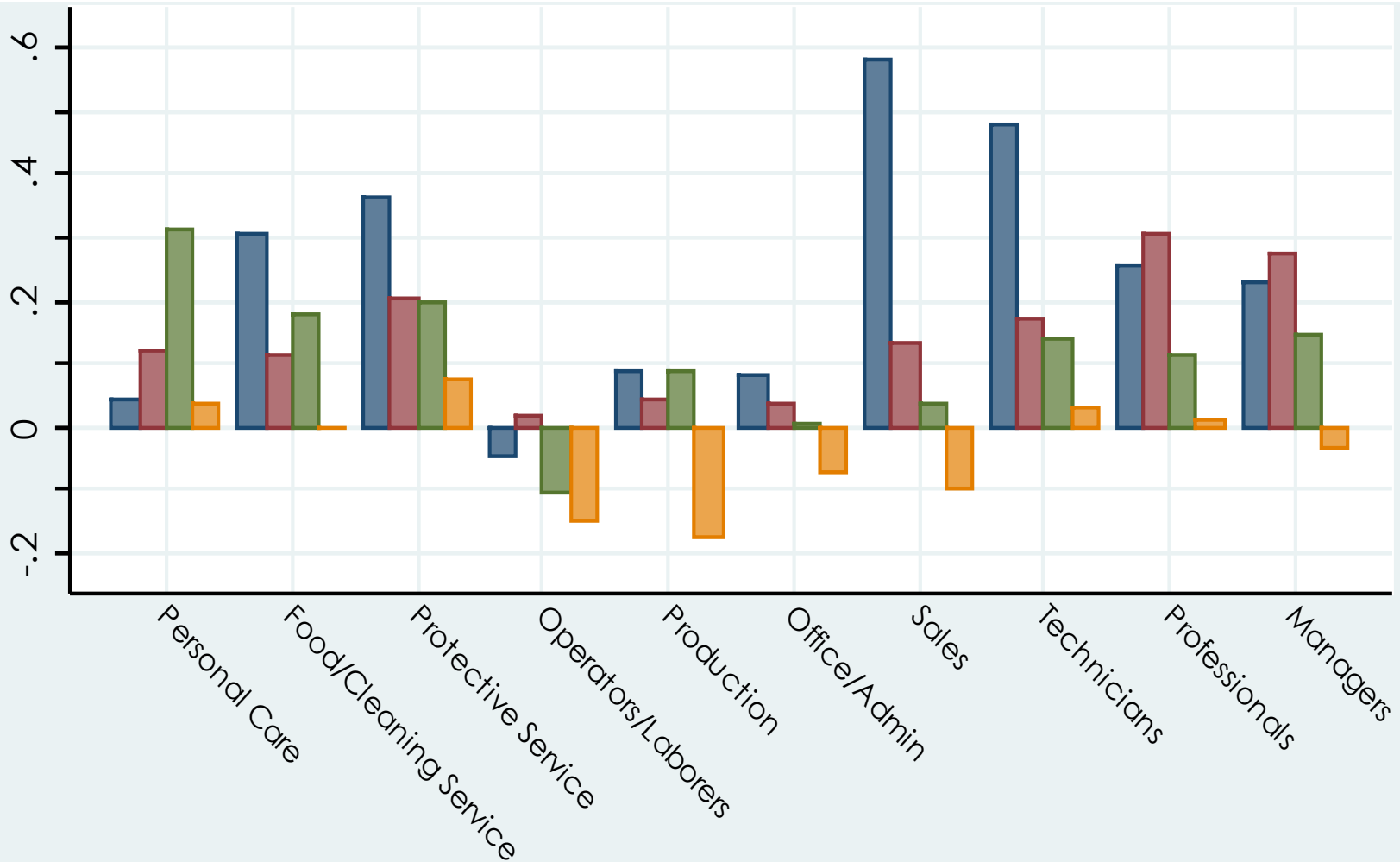


# U.S. Job Task Input by Education Group in 1980



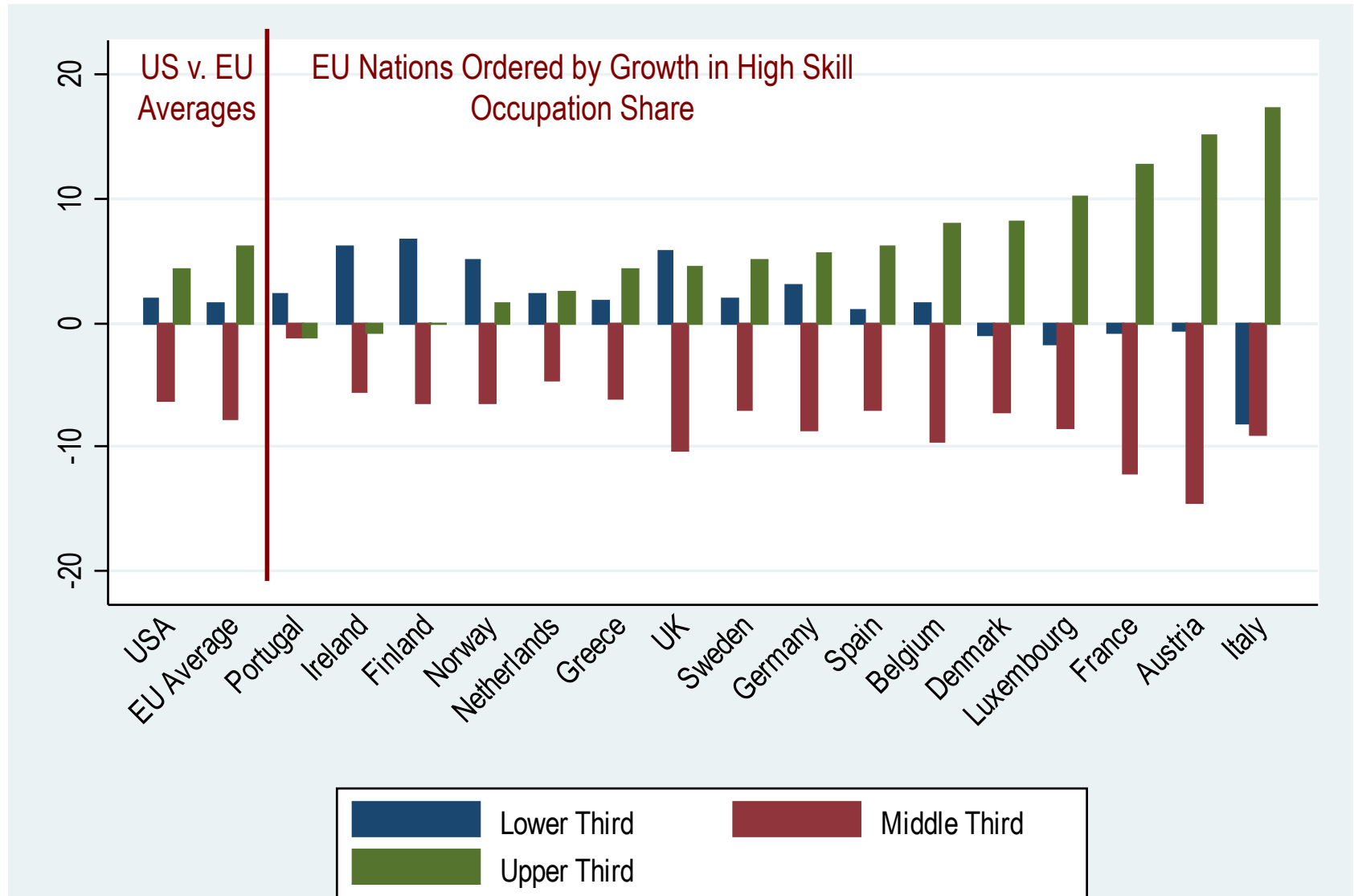
# Employment Polarization, 1979 – 2010

## Percent Growth in Employment by Occupation



# Changes in Employment Share by Job Skill Tercile, 1993-2006

## Comparison of U.S. and European Union Countries



Source: Goos, Salomons and Manning (2009)

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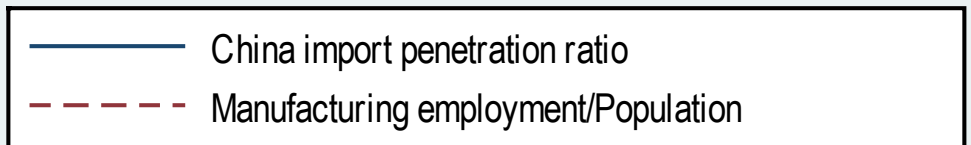
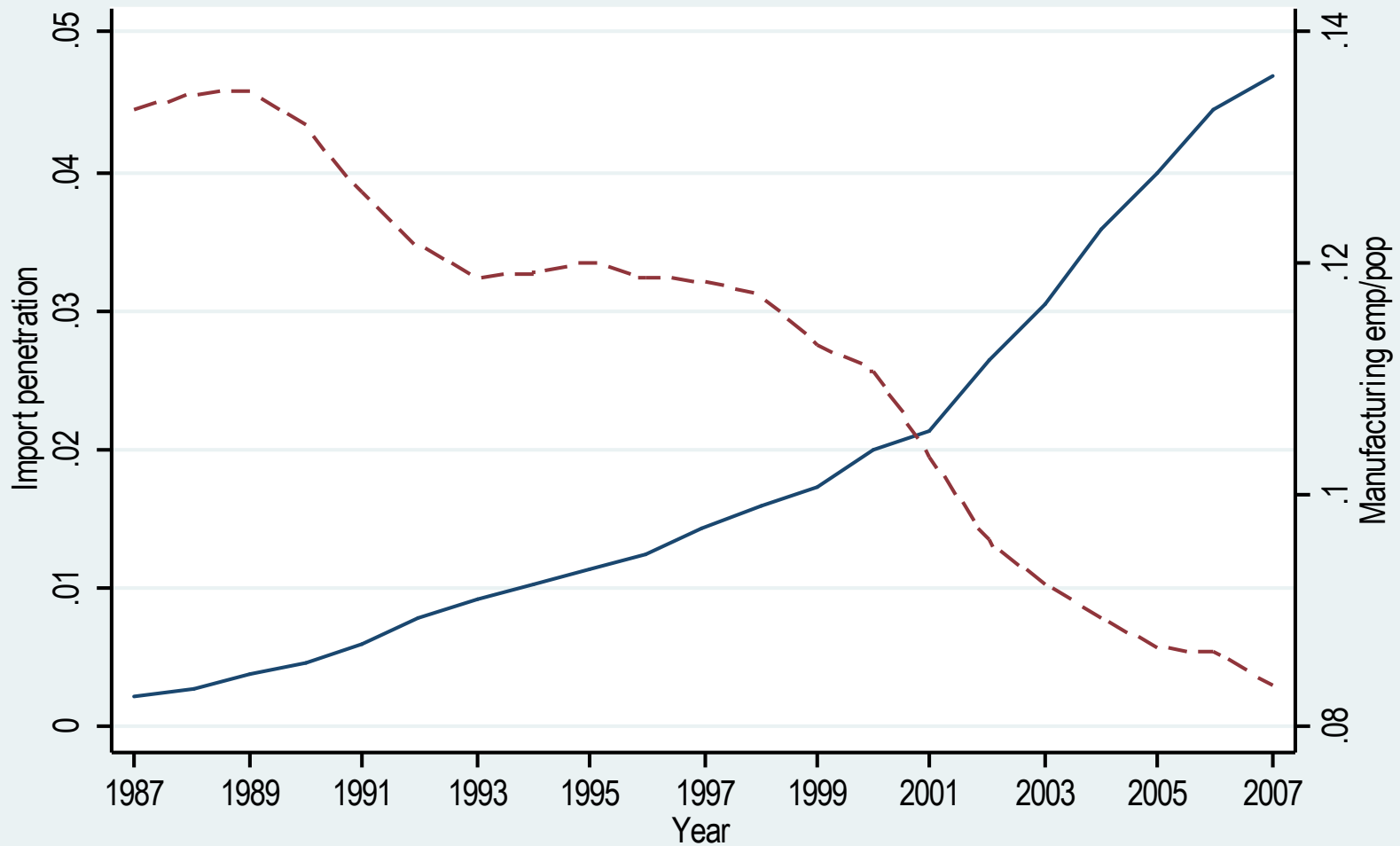
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## 3. **Inequality – Policy responses**

- Education
- Taxation
- Labor standards
- Macroeconomic policies

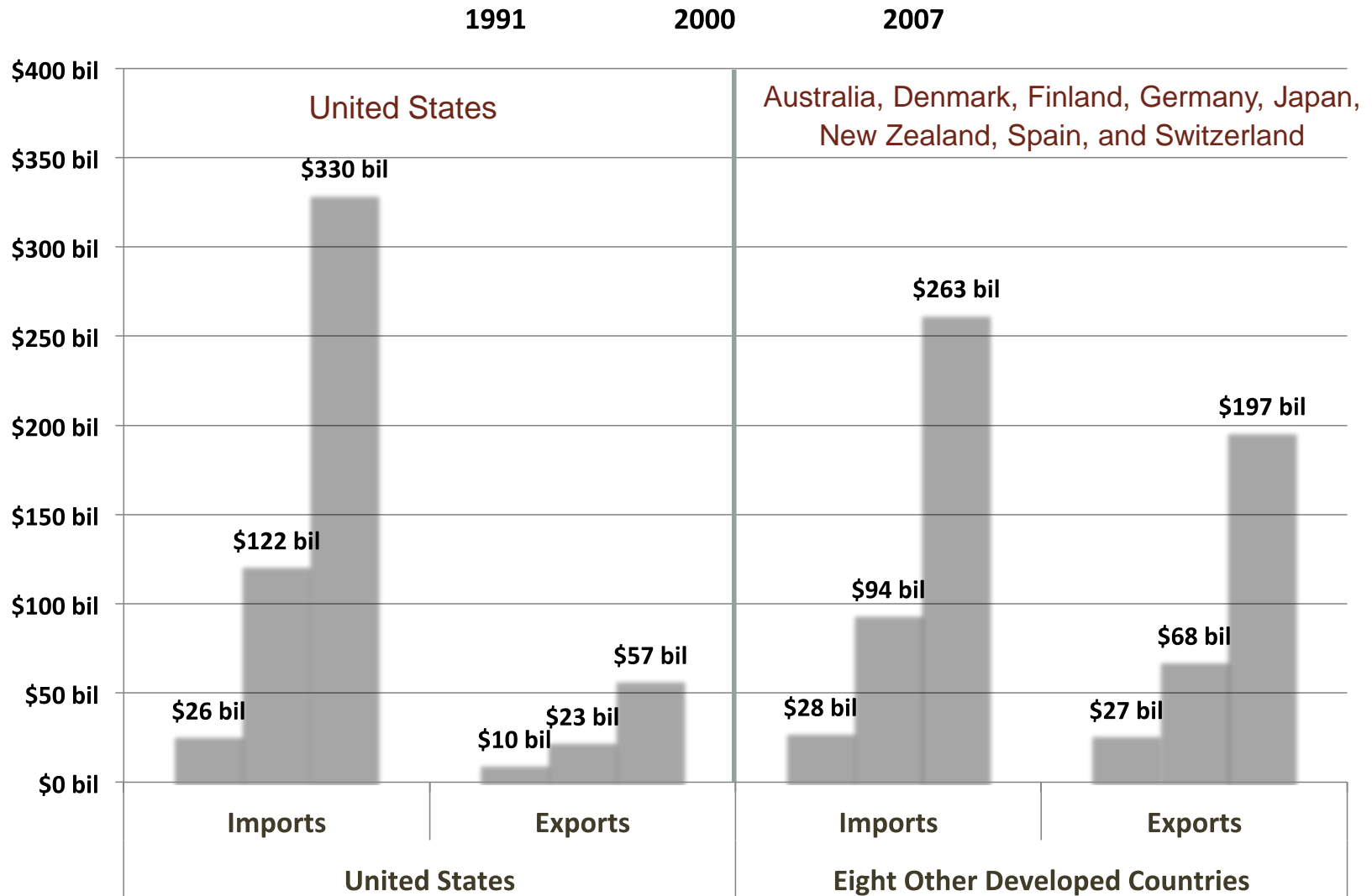
## 4. **Conclusions**

# Chinese Imports Surge Following its 2001 WTO Accession — U.S. Manufacturing Employment Declines Simultaneously



# Many High Income Countries Experience a “China Shock” in the Last Two Decades

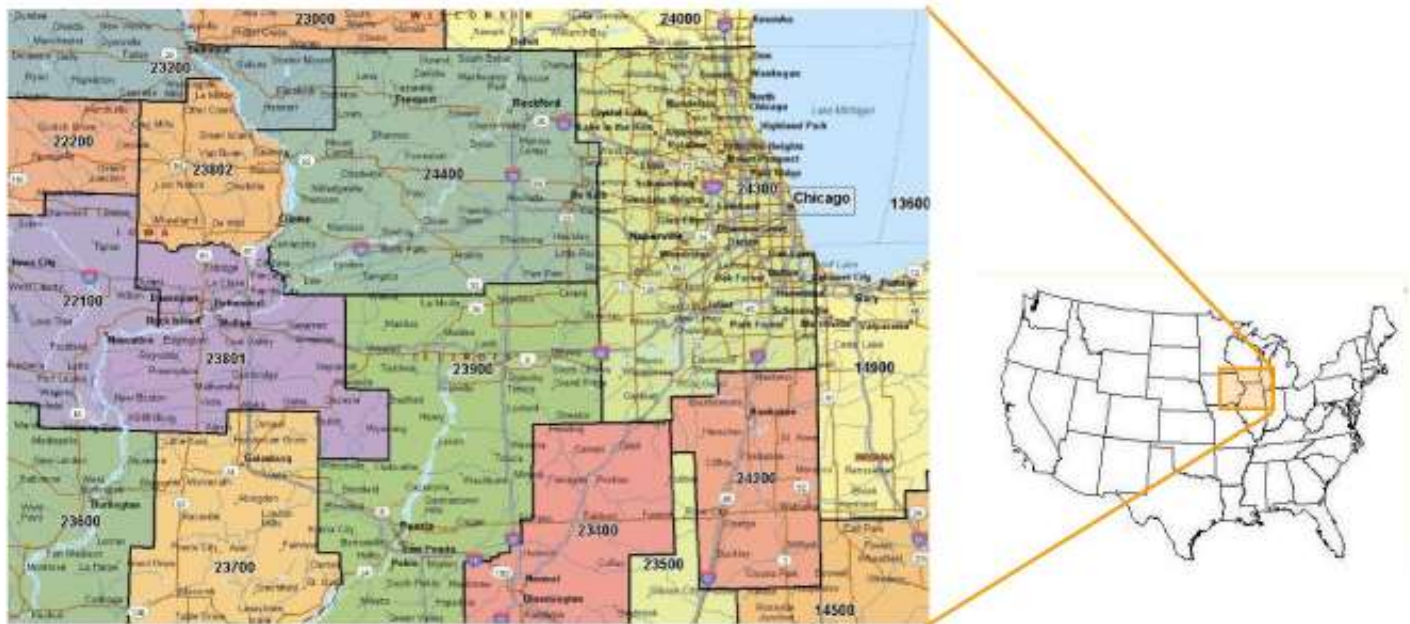
**Trade Flows: China ↔ US, Other High Income Countries**  
(Billions of 2007 US Dollars)



# Defining Local Labor Markets: “Commuting Zones”

Based on commuting patterns among countries in 1990

- Cluster all mainland U.S. counties in 722 commuting zones (CZ), characterized by strong commuting ties within a CZ and weak commuting across CZs
- Can map Census Public Use Micro Areas to CZs



# Impact of China Exposure on U.S. Manufacturing Employment per Adult: Commuting Zone Level Estimates

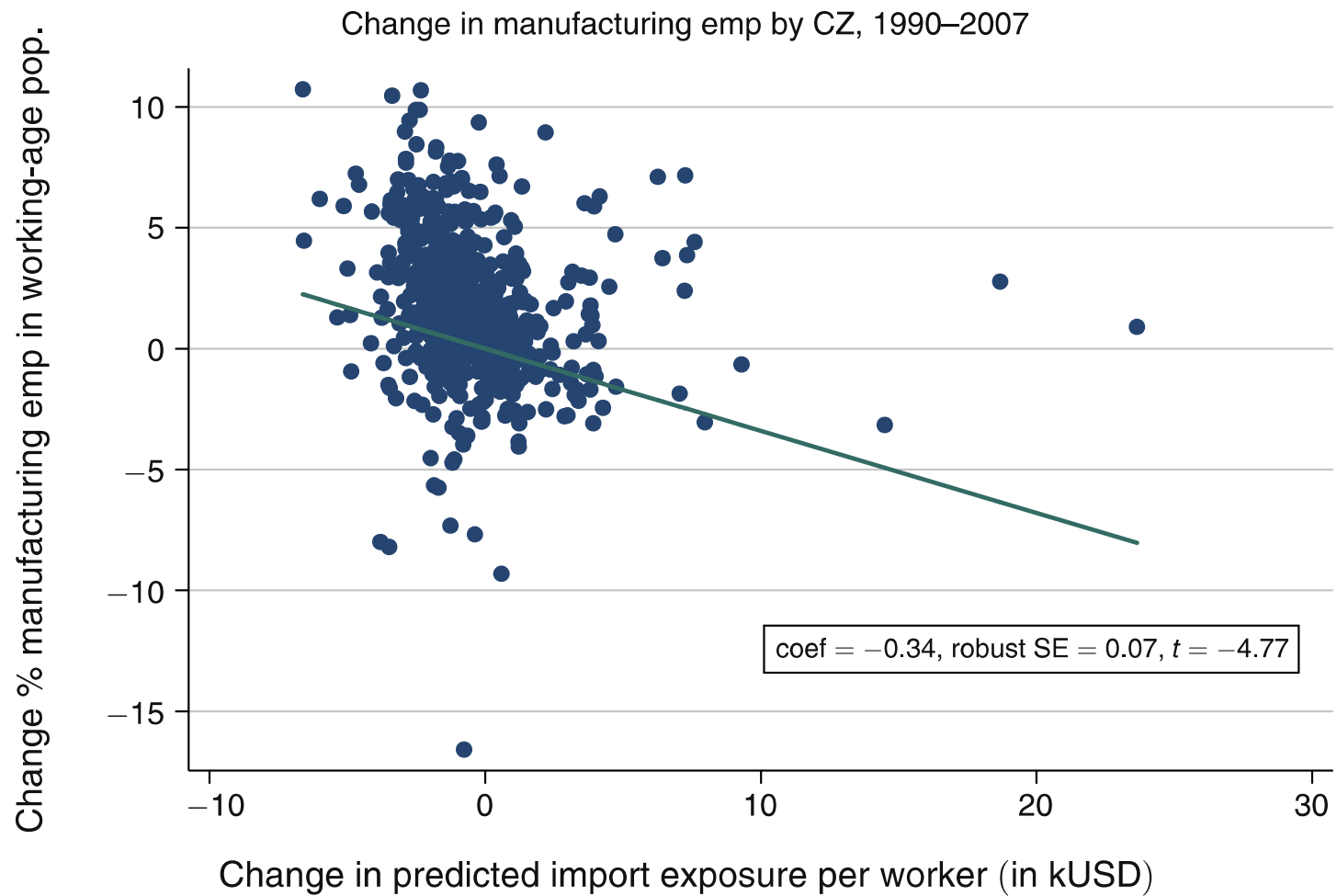


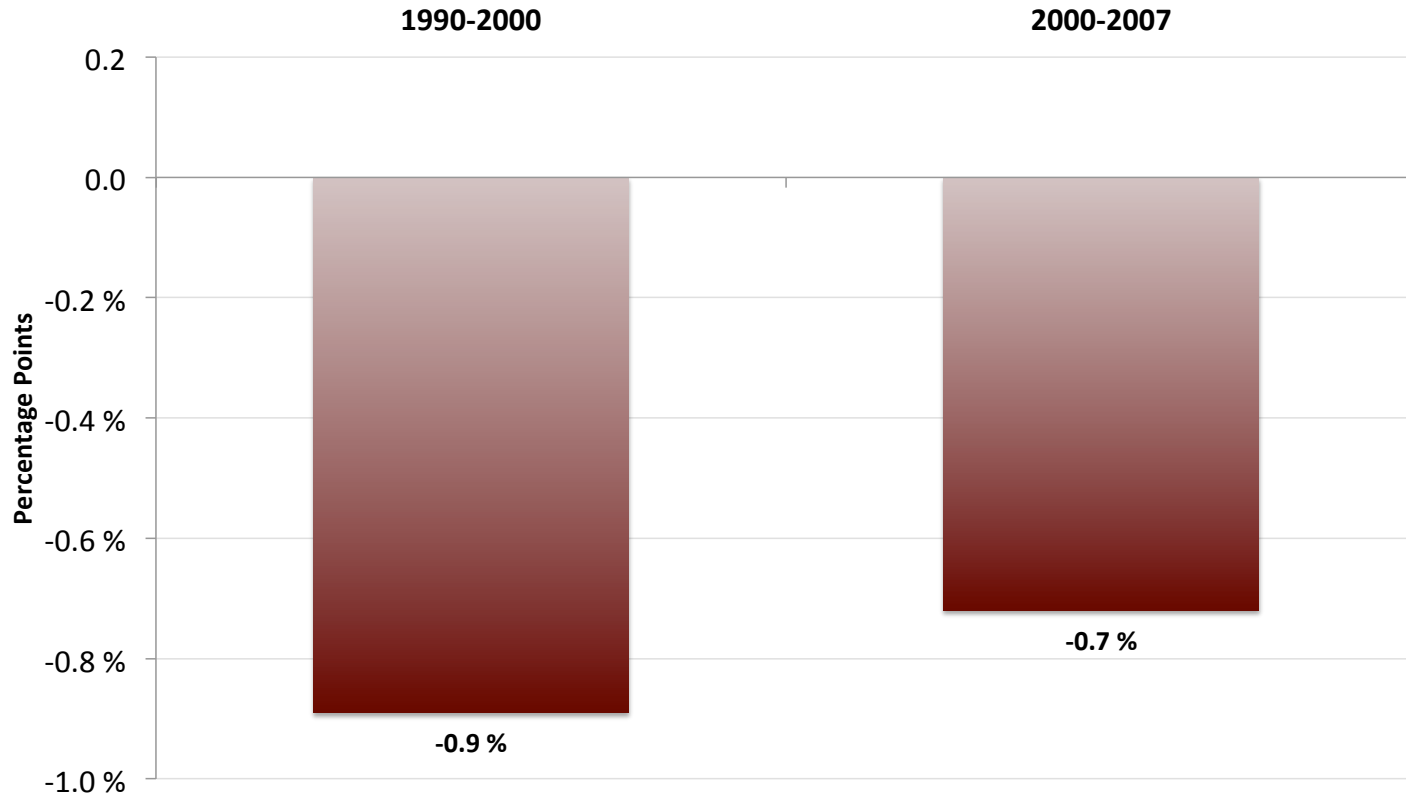
FIGURE 2. CHANGE IN IMPORT EXPOSURE PER WORKER AND DECLINE OF MANUFACTURING EMPLOYMENT: ADDED VARIABLE PLOTS OF FIRST STAGE AND REDUCED FORM ESTIMATES



# Imports on U.S. Manufacturing Employment per Capita for a \$1,000/Worker Increase in Exposure

## Imports From China and Change of Manufacturing Employment in Commuting Zones, 1970-2007

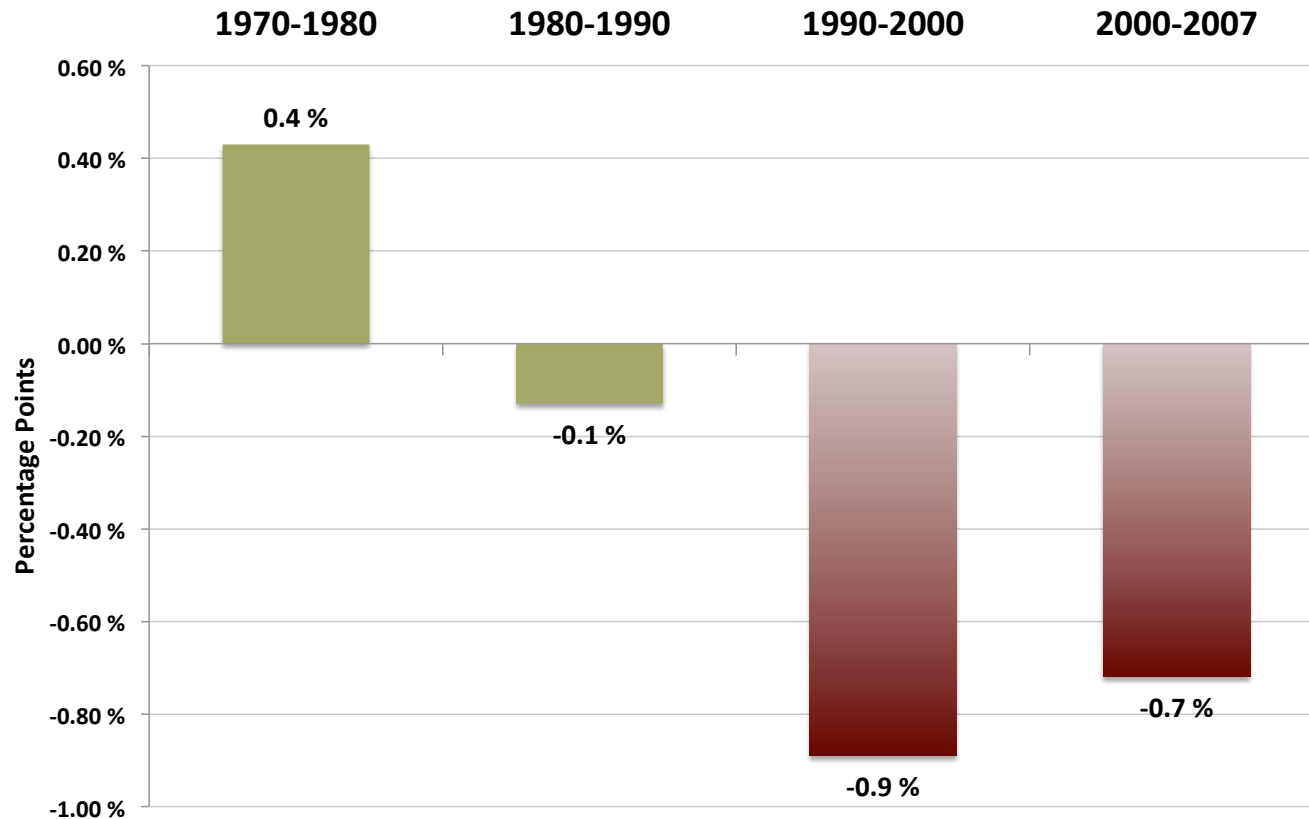
*Effect of an \$1000 Per Worker Increase in Imports from China during 1990-2007 on the Change in Manufacturing Employment as a Percentage of the Working age Population*



# Negative Impacts Begin with China's Rise in the 1990s

## Imports From China and Change of Manufacturing Employment in Commuting Zones, 1970-2007

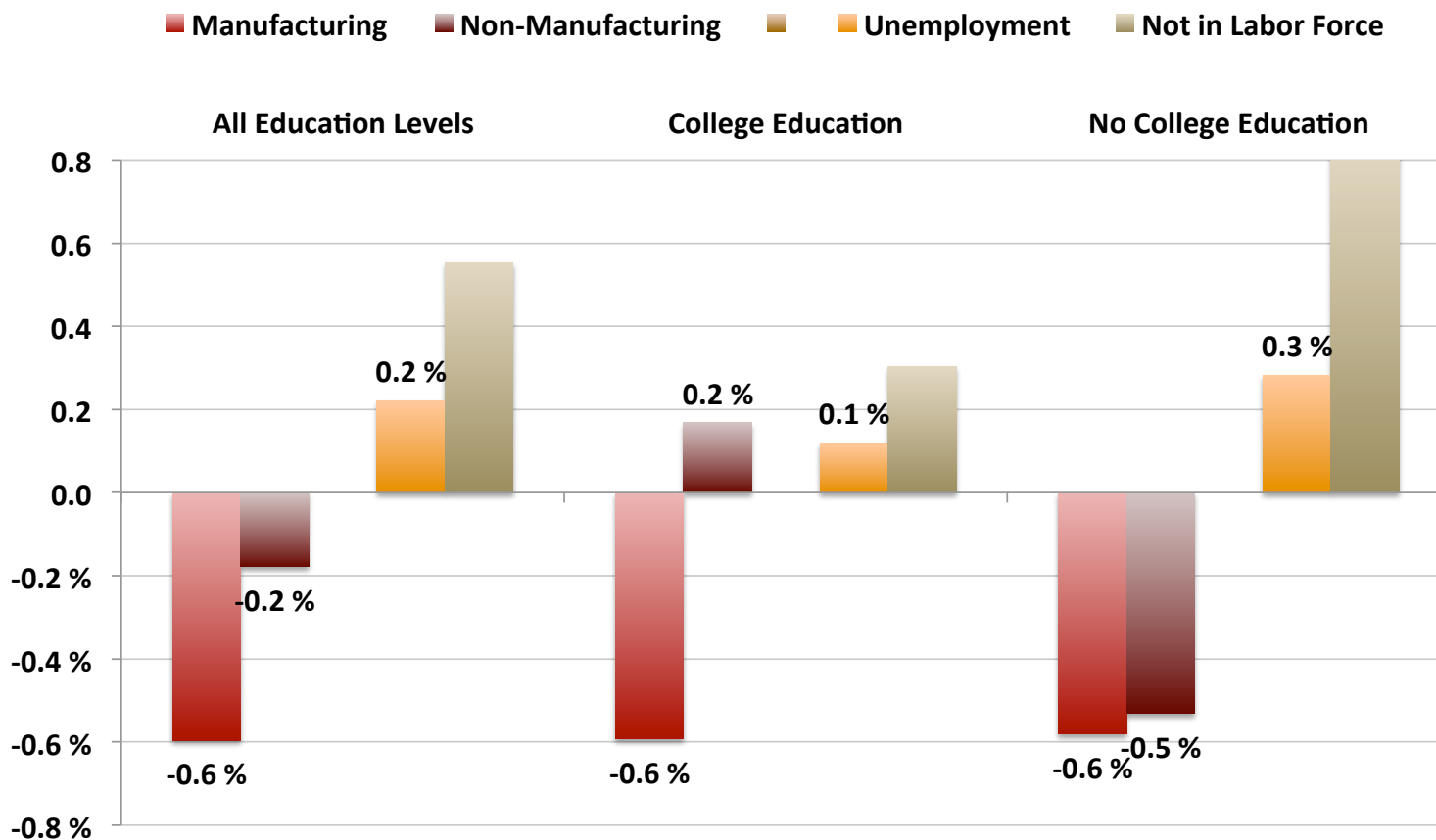
*Effect of an \$1000 Per Worker Increase in Imports from China during 1990-2007 on the Change in Manufacturing Employment as a Percentage of the Working age Population*



# Impacts on Manufacturing Emp, Non-Manufacturing Emp, Unemployment, Non-Participation

## Imports from China and Employment Status of Working Age Population within Commuting Zones (1990-2007)

*Effect of an \$1000 Per Worker Increase in Imports from China during 1990-2007 on Share of Population in Employment Categories*



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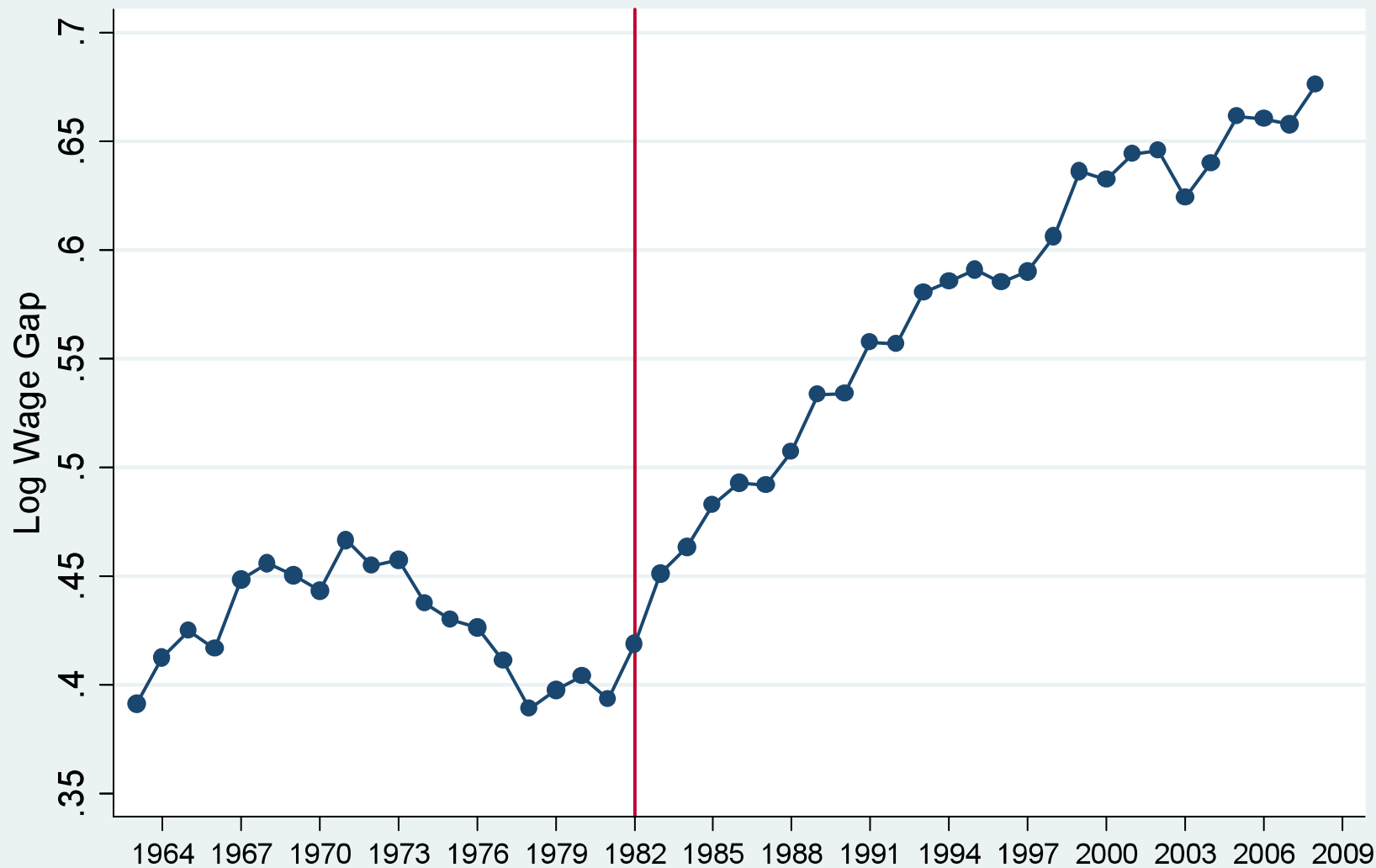
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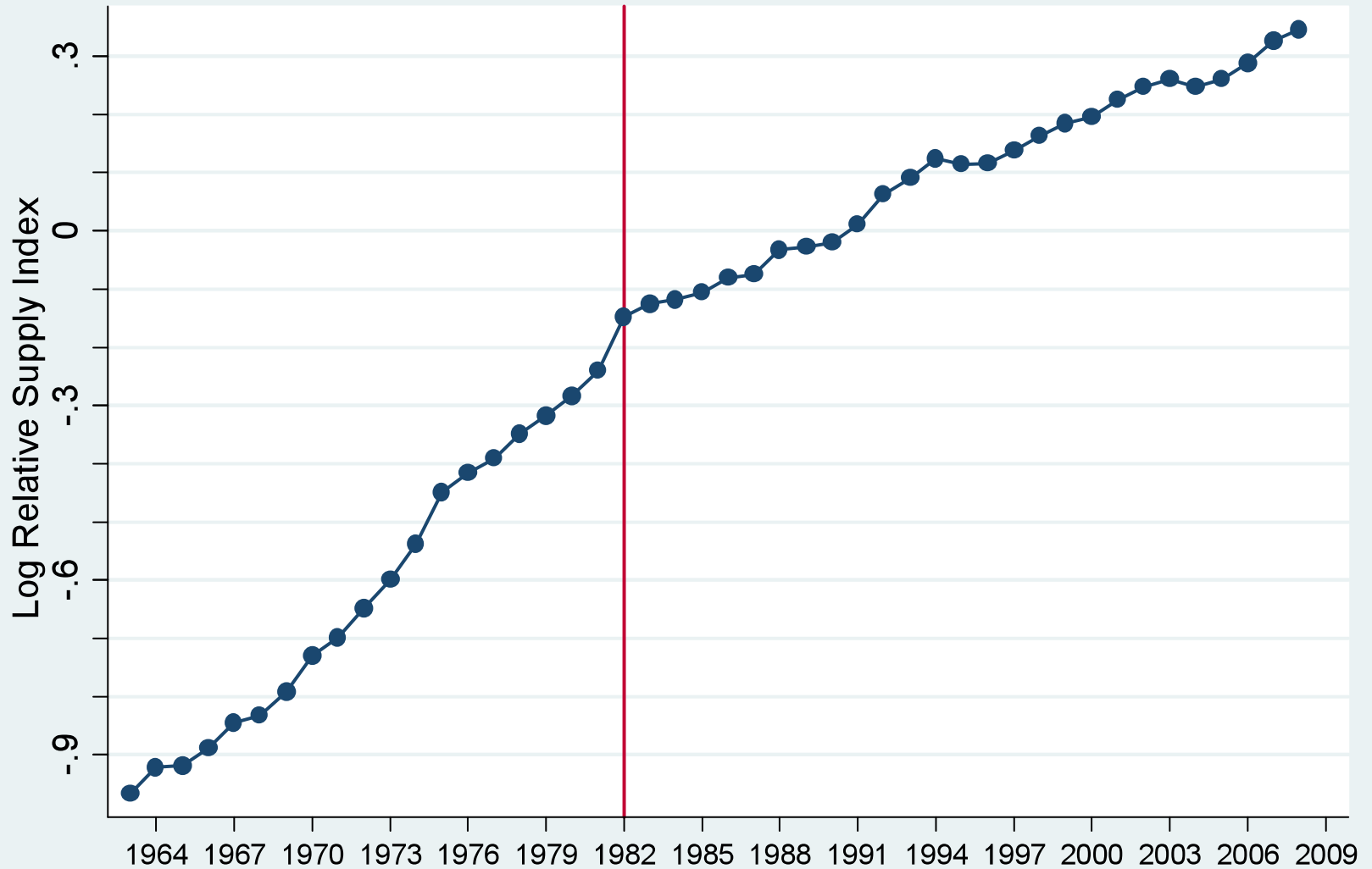
# Composition Adjusted College/High-School Weekly Wage Ratio, 1963-2008

Composition Adjusted College/High-School Log Weekly Wage Ratio, 1963-2008

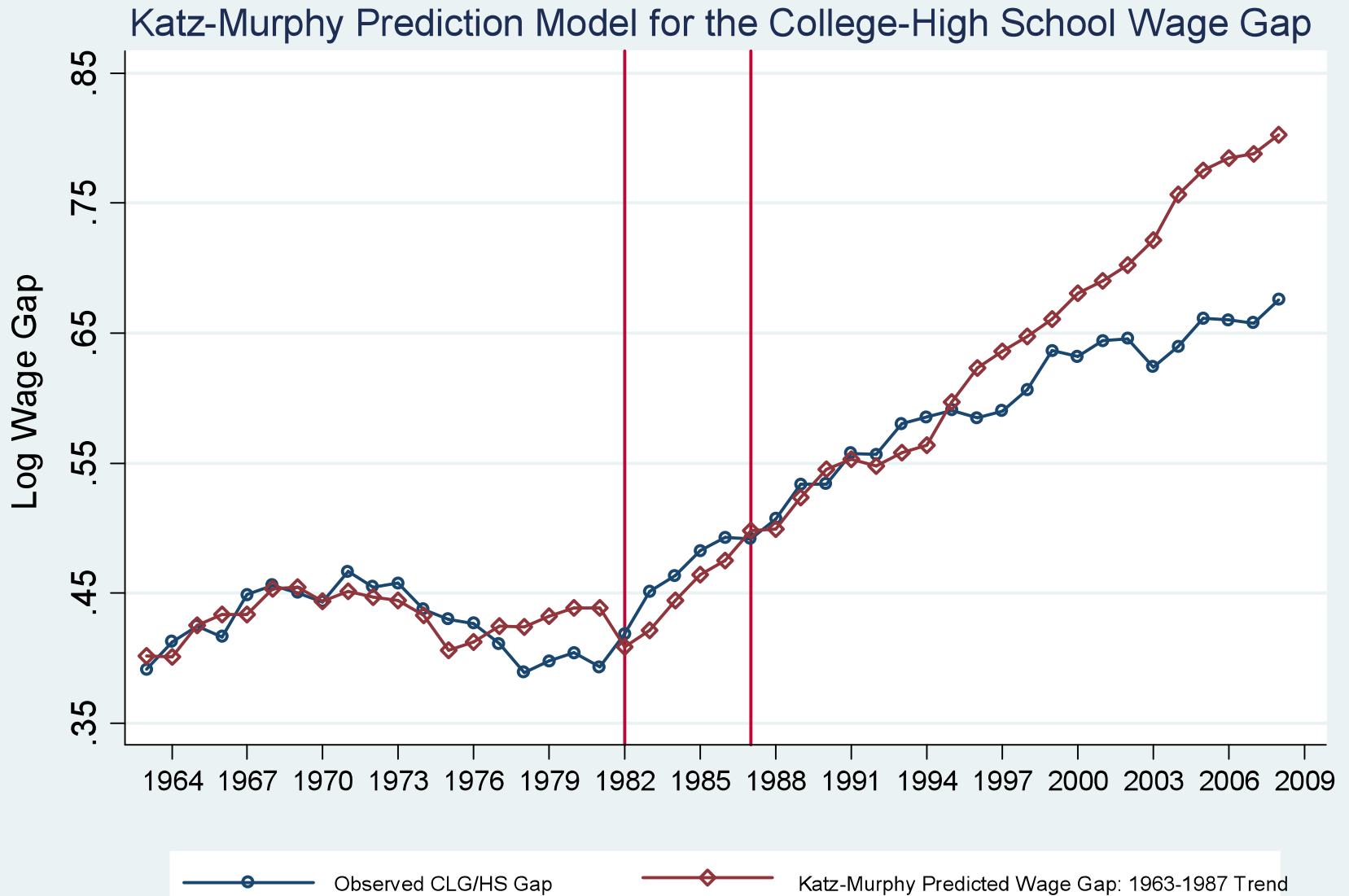


# Composition Adjusted College/High-School Relative Labor Supply, 1963-2008

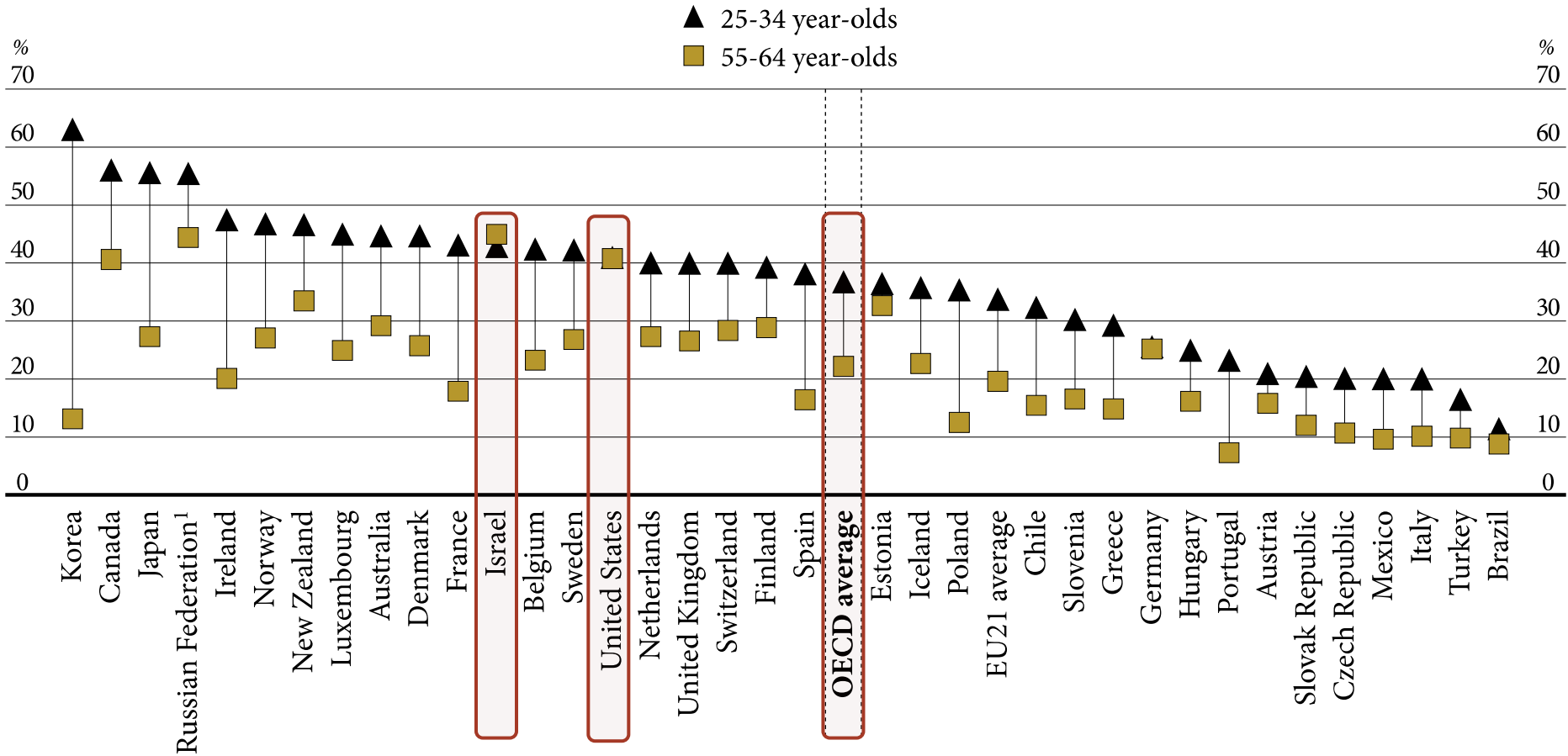
College/High-School Log Relative Supply, 1963-2008



# Predicted and Actual College/High-School Wage Gap, 1963 - 2008



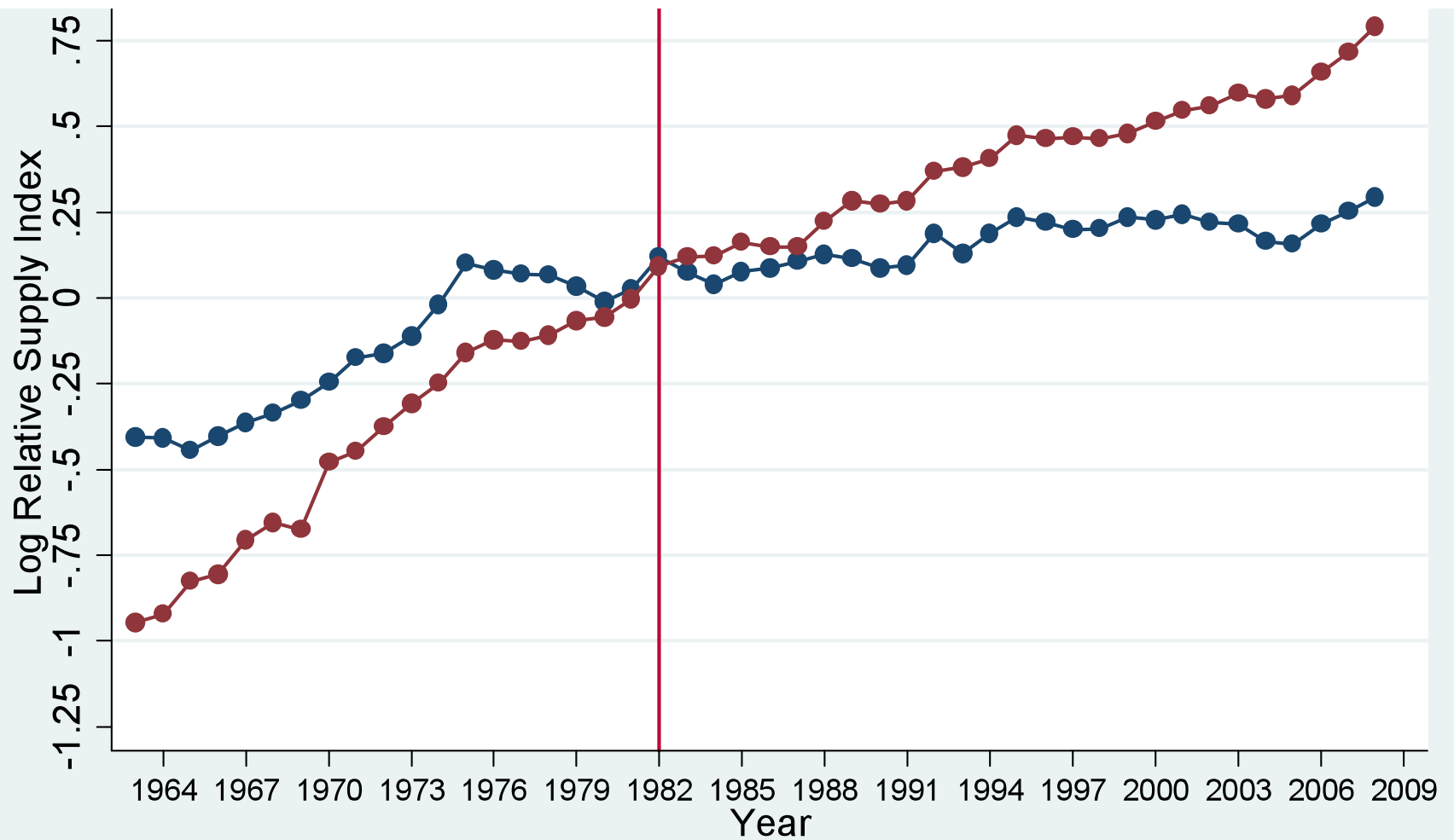
# Gains in Post-Secondary Education over 30 Years: Fraction of Adults with 'Tertiary' Education in 2009



Source: OECD 2011



# Educational Attainment by Sex: Supply of Young College v. High School Workers, 1963-2008



● Male 0-9 Yrs Experience

● Female 0-9 Yrs Experience

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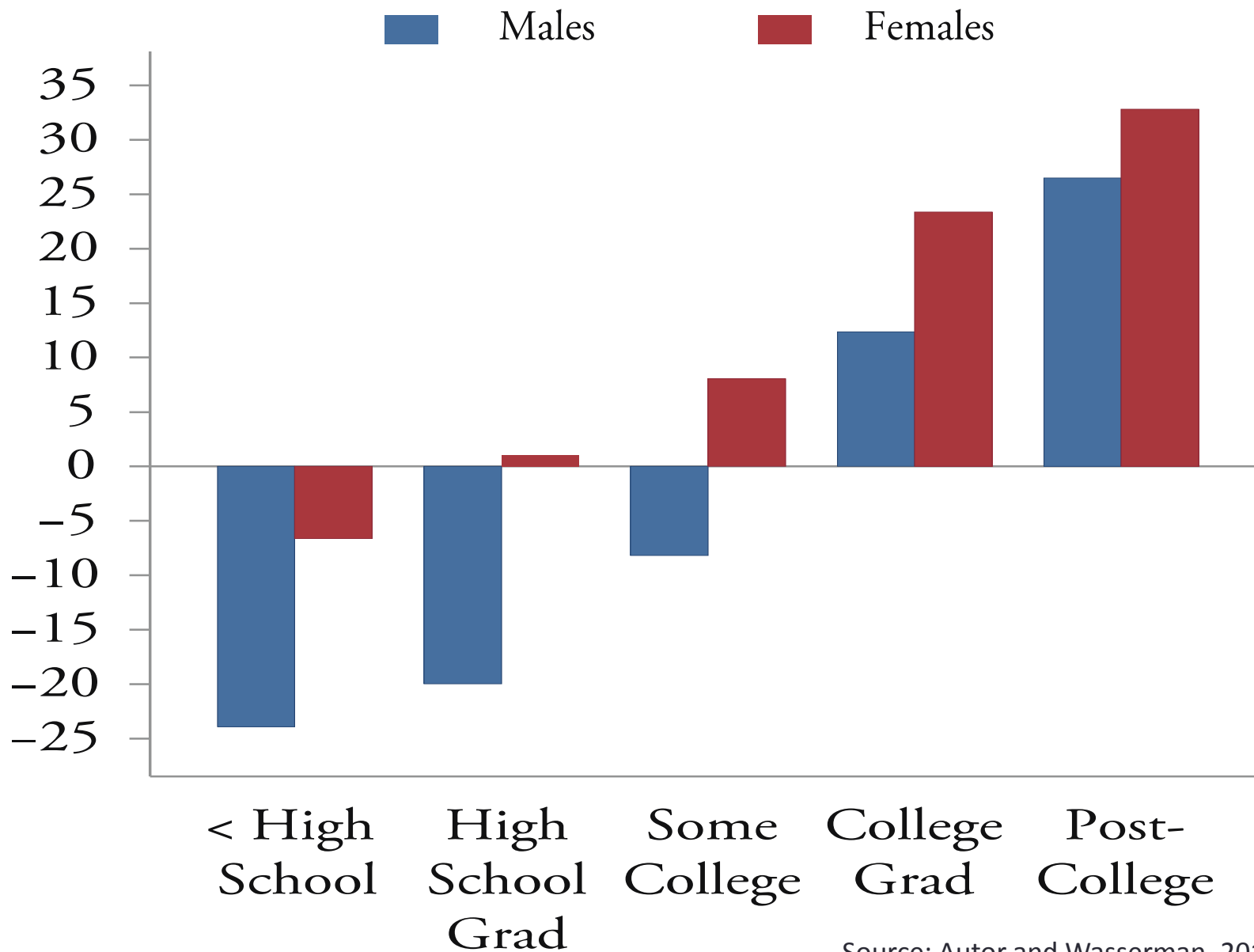
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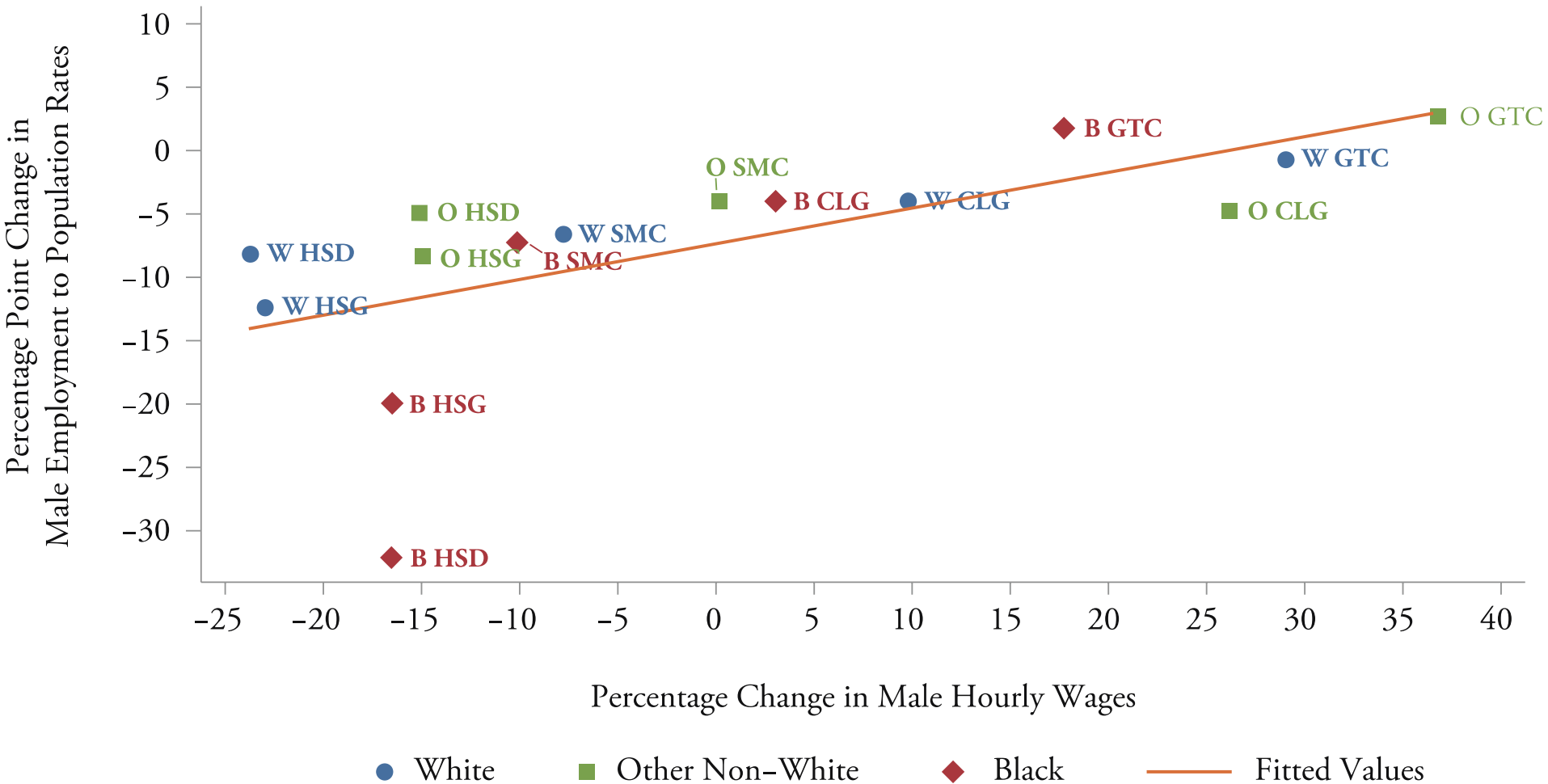
## 4. **Conclusions**

# Changes in Real Hourly Wage Levels 1979-2010, by Education and Sex (Ages 25 – 39)



Source: Autor and Wasserman, 2013

# Δ Real Earnings and Δ Emp/Pop, 1979 – 2008: U.S. Males by Education and Race (Ages 25-39)



Source: Autor and Wasserman, 2013

# Top 1% Income Share: English-Speaking Countries

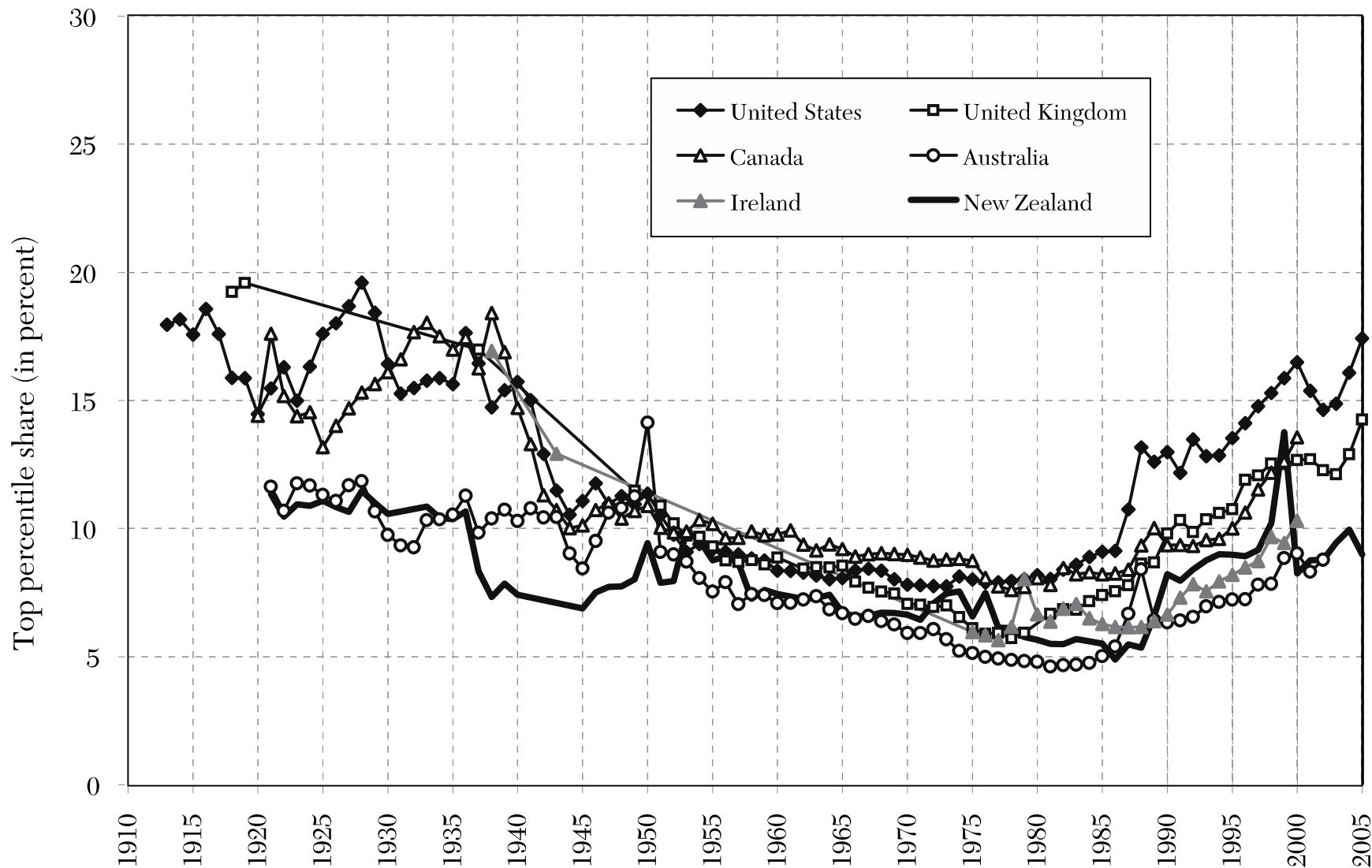


Figure 8. Top 1 Percent Share: English Speaking Countries (U-shaped), 1910–2005

# Top 1% Income Share: Nordic Countries and Southern Europe

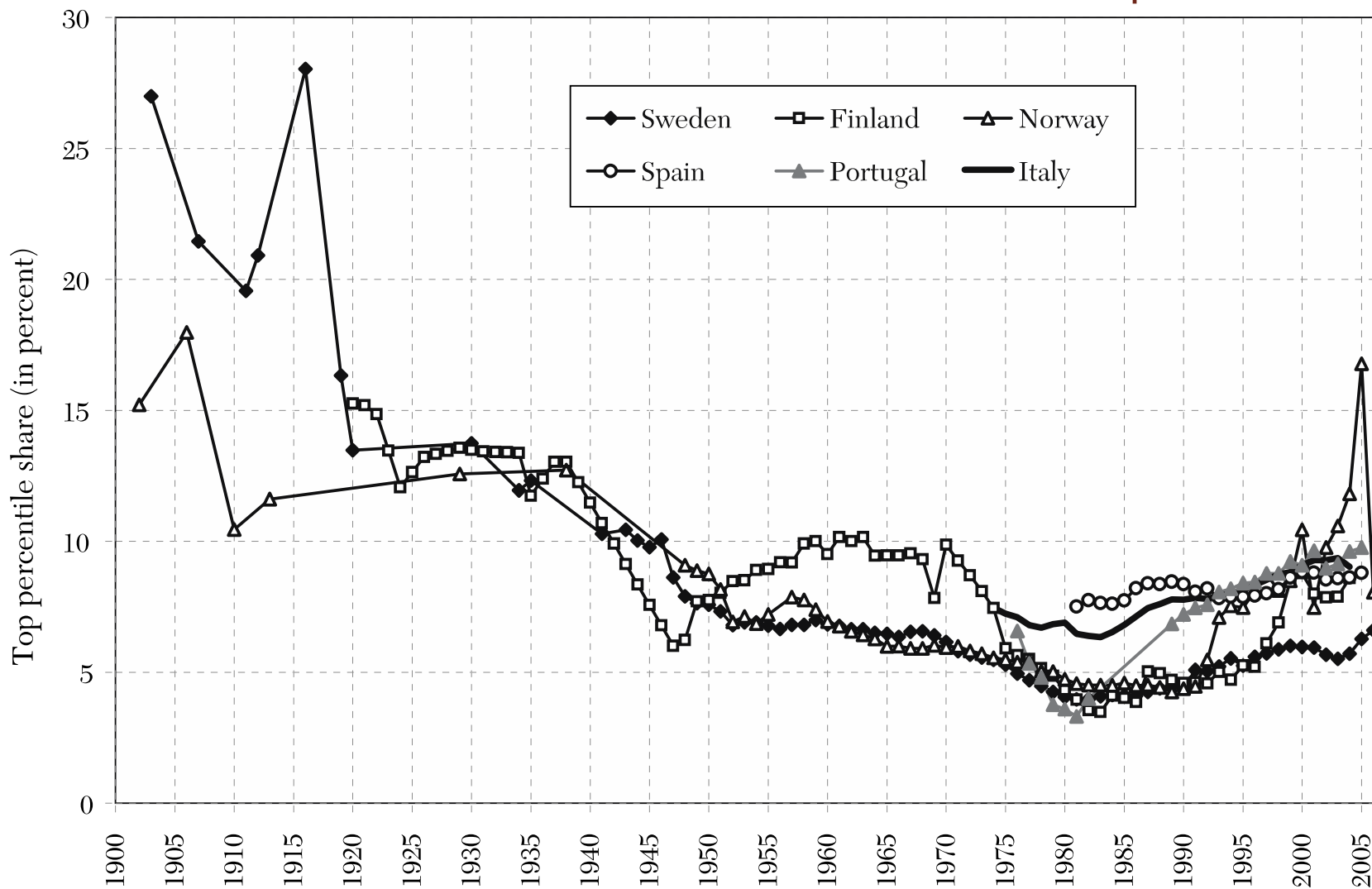


Figure 10. Top 1 Percent Share: Nordic and Southern Europe (U/L-shaped), 1900–2006

# Top 1% Income Share: Middle Europe and Japan

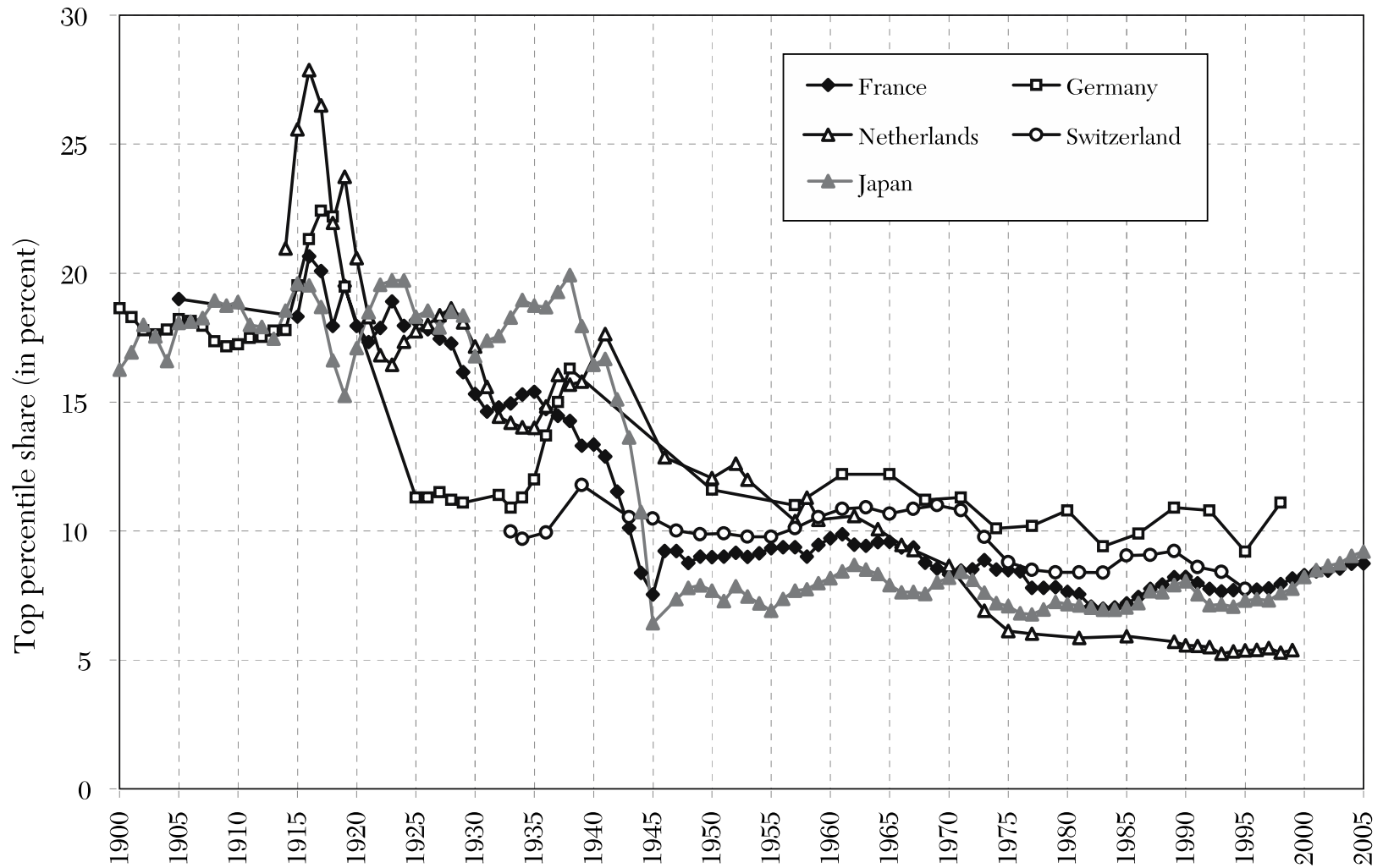


Figure 9. Top 1 Percent Share: Middle Europe and Japan (L-shaped), 1900–2005

# Top 1% Income Share: 'Developing Countries'

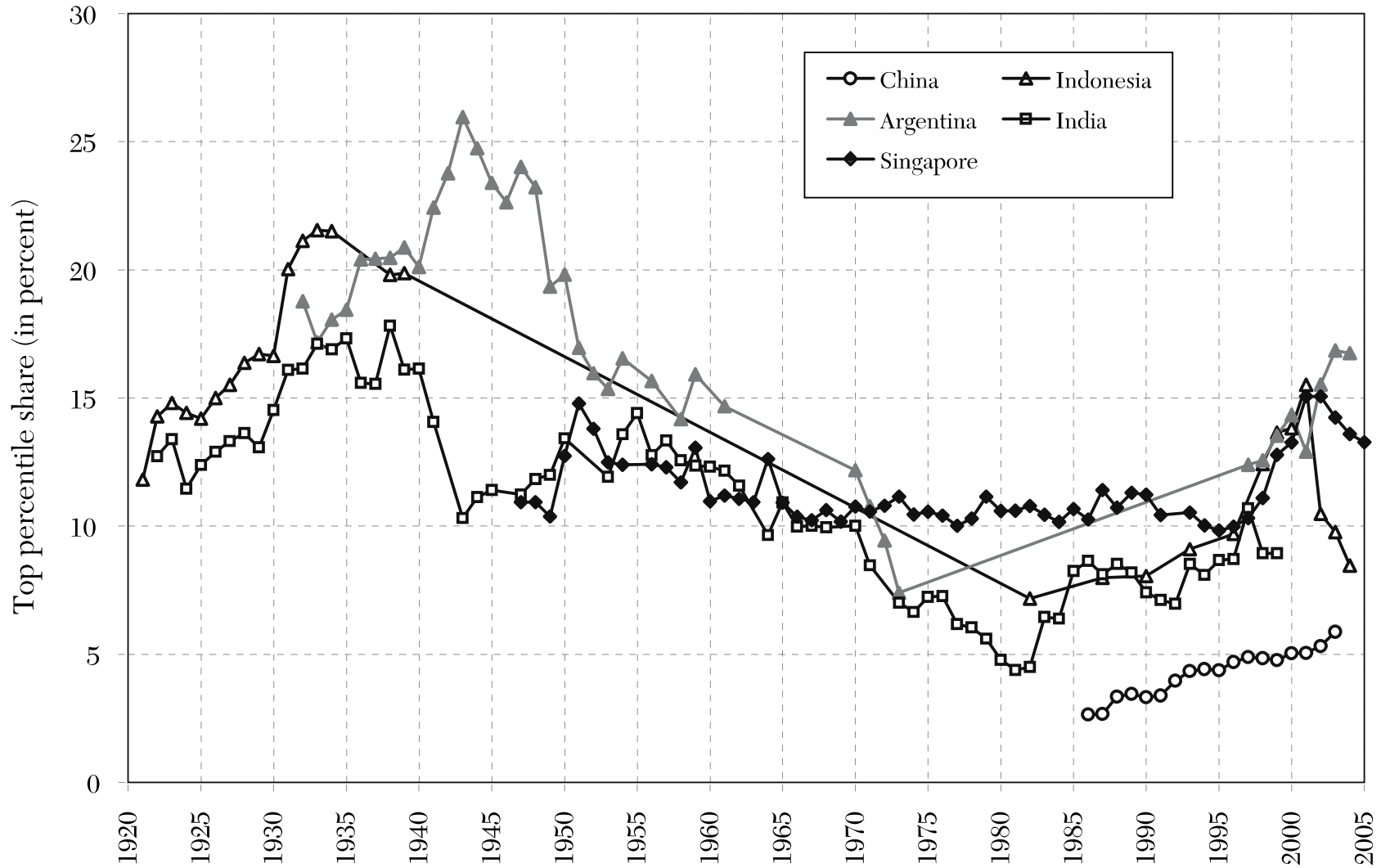


Figure 11. Top 1 Percent Share: Developing Countries, 1920–2005

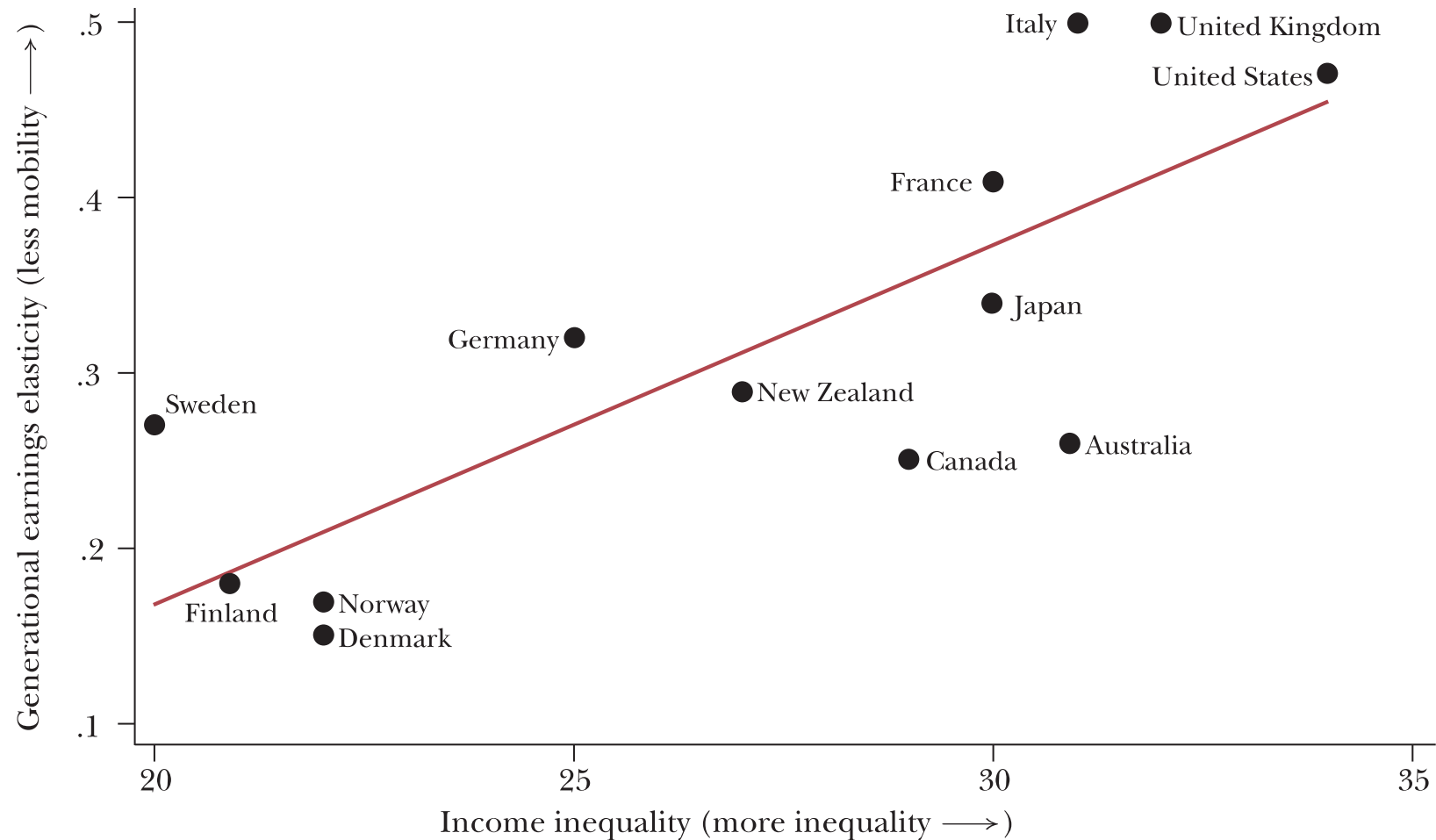


# Analogy by Dutch Economist Jan Pen (1921 – 2010)

- Imagine people's height being proportional to their income, so that someone with an average income is of average height.
- Now imagine that the entire adult population of America is walking past you in a single hour, in ascending order of income.
- The first passers-by, the owners of loss-making businesses, are invisible: their heads are below ground.
- Then come the jobless and the working poor, who are midgets.
- After half an hour the strollers are still only waist-high, since America's median income is only half the mean.
- It takes nearly 45 minutes before normal-sized people appear.
- But then, in the final minutes, giants thunder by.
- With six minutes to go they are 12 feet tall.
- When the 400 highest earners walk by, right at the end, each is more than two miles tall.

# Cross-Sectional Income Inequality and Intergenerational Earnings Elasticity

**The Great Gatsby Curve: More Inequality is Associated with Less Mobility across the Generations**



Source: Corak (2013) and OECD.

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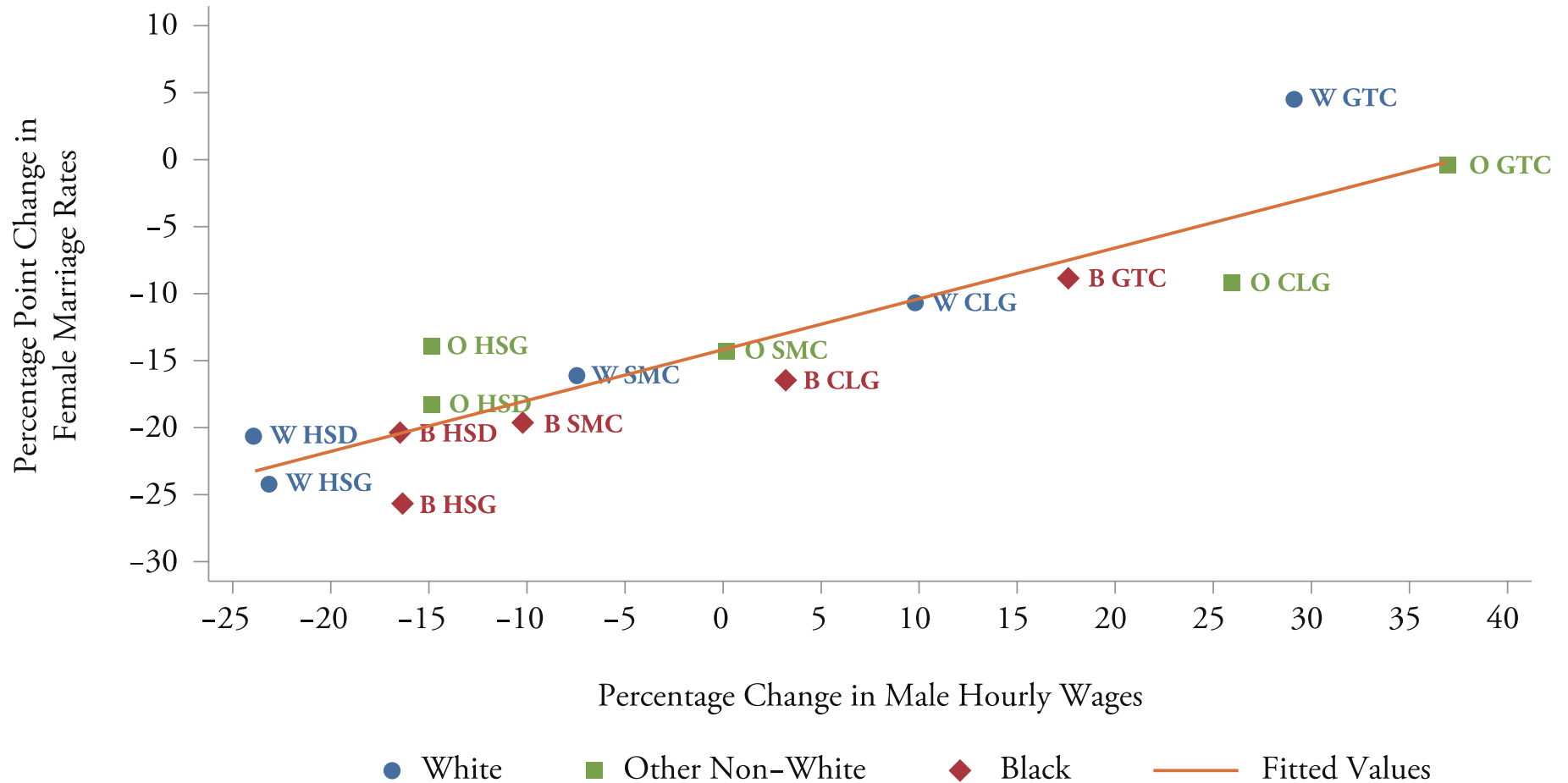
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- Macroeconomic policies

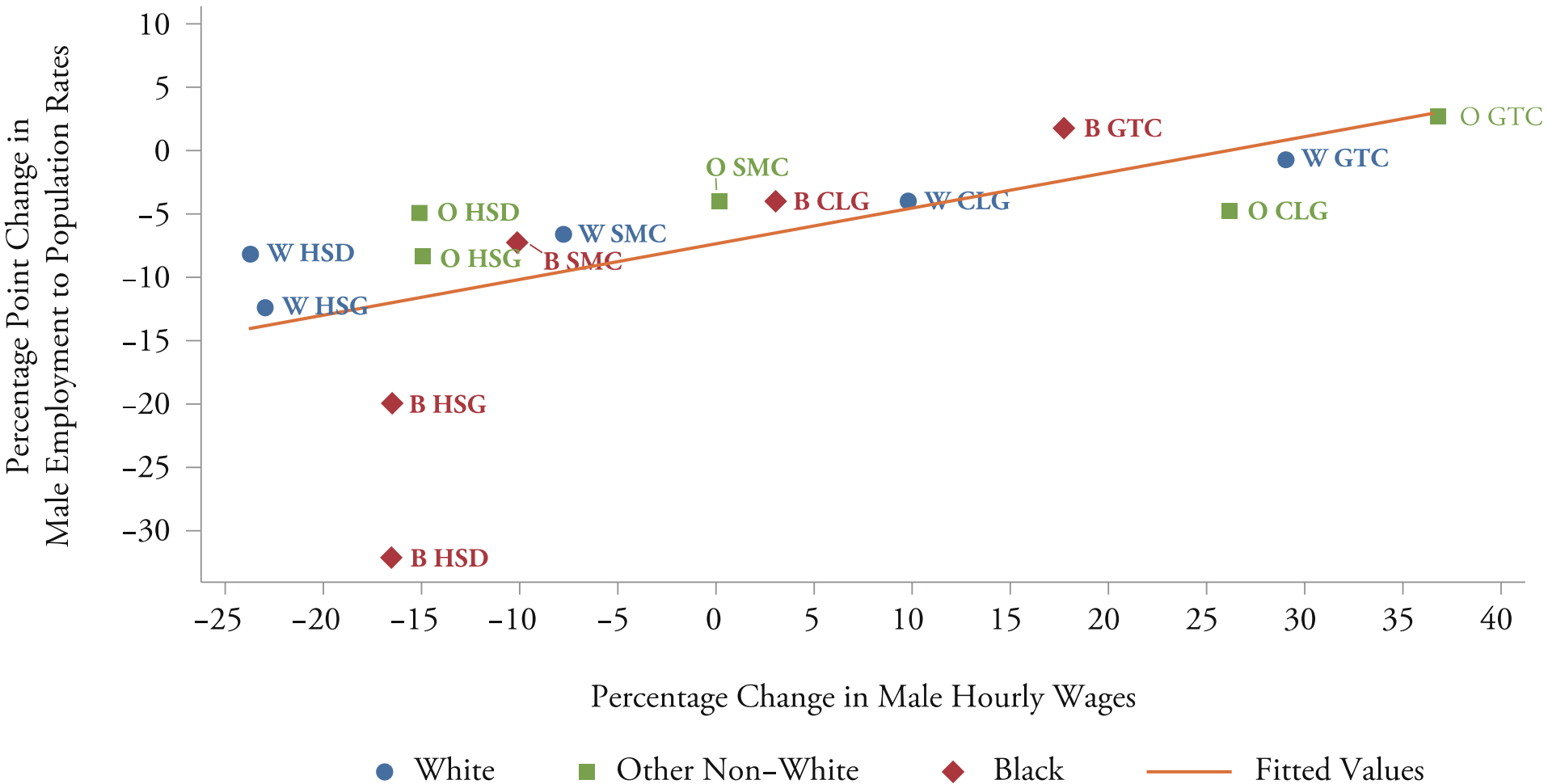
## 4. Conclusions

# Δ Female Marriage Rates vs. Δ Male Earnings, Ages 25 – 39, 1979-2008



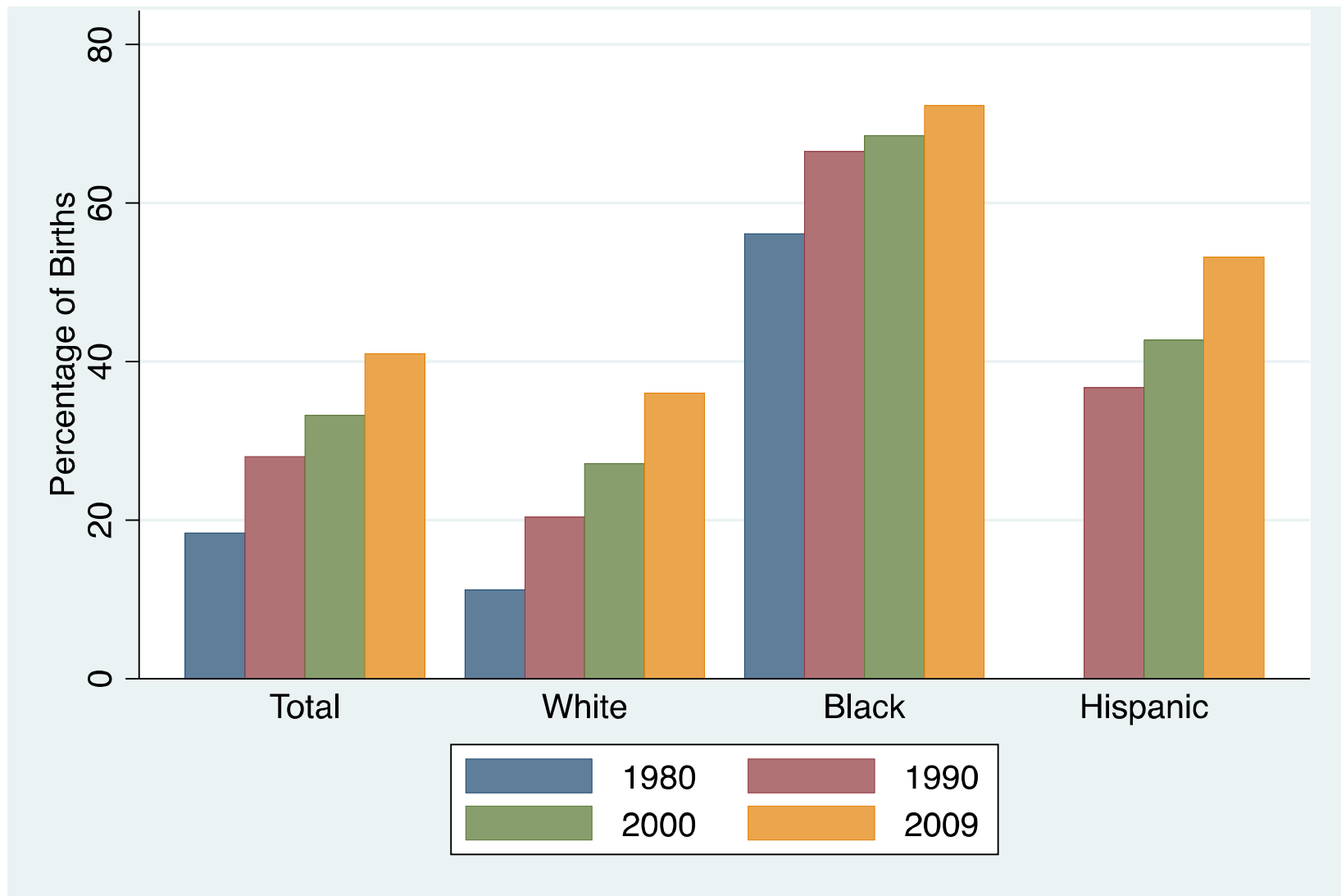
Source: Autor and Wasserman, 2013

# Δ Real Earnings and Δ Emp/Pop, 1979 – 2008: U.S. Males by Education and Race (Ages 25-39)



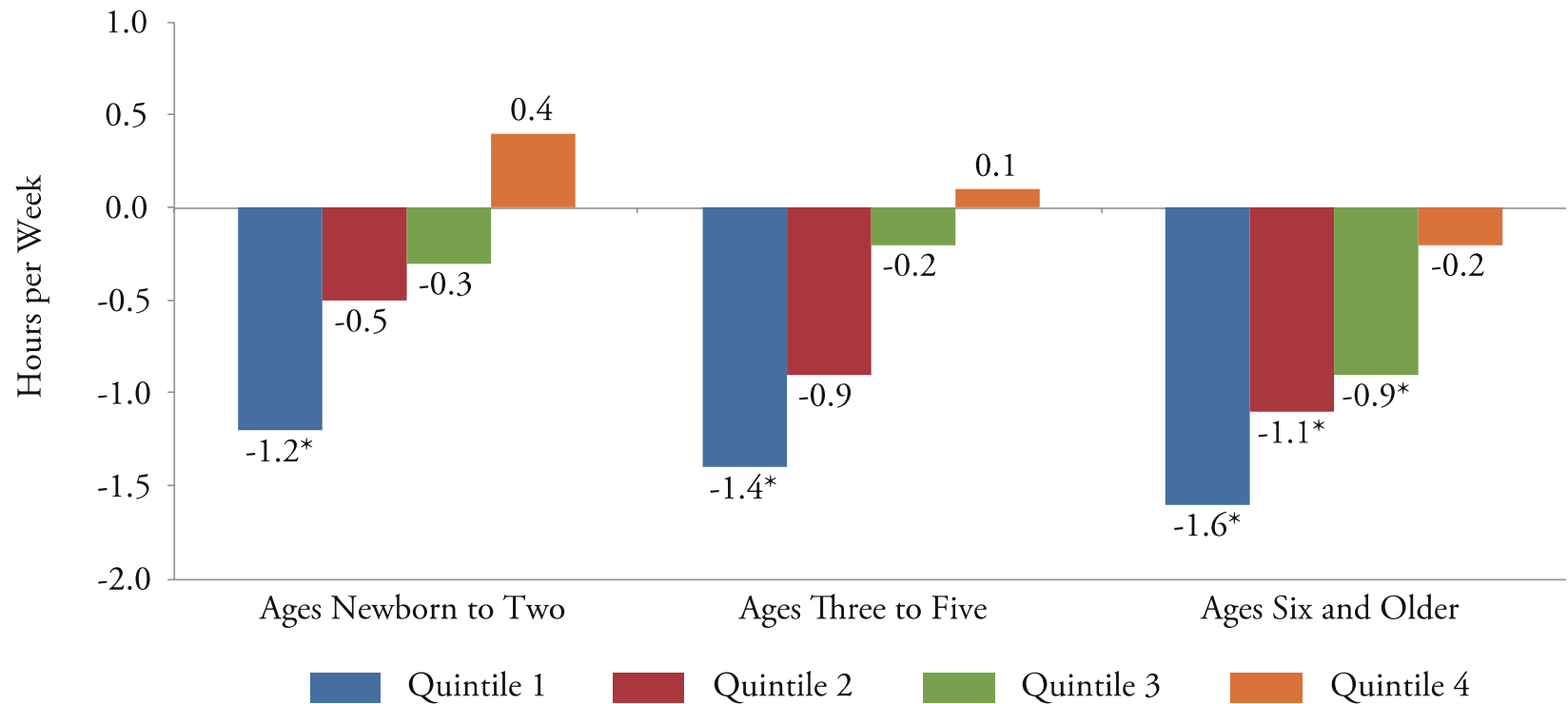
Source: Autor and Wasserman, 2013

# Percentage of Births to Unmarried Women by Race, 1980 - 2009



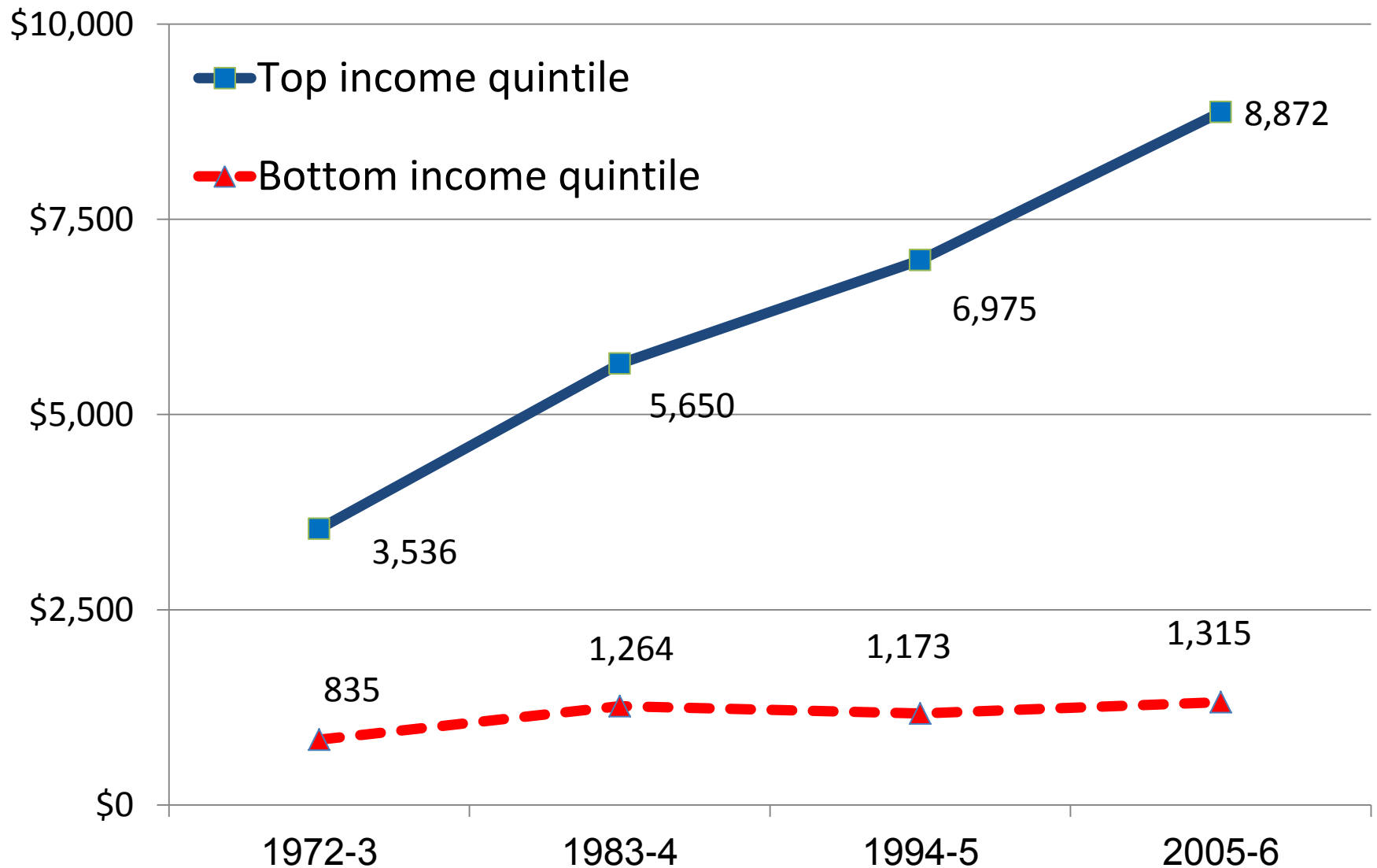
Source: Autor and Wasserman, 2013

# Disparities in Weekly Time Spent in Literacy Activities by Age and Household Income Quintile 101



Source: Meredith Phillips, based on Panel Study of Income Dynamics, 2009. Bars show difference relative to children whose family is in the top quintile, adjusted for child's age in month and gender. \*Denotes statistically significant difference at the  $p < 0.05$  level.

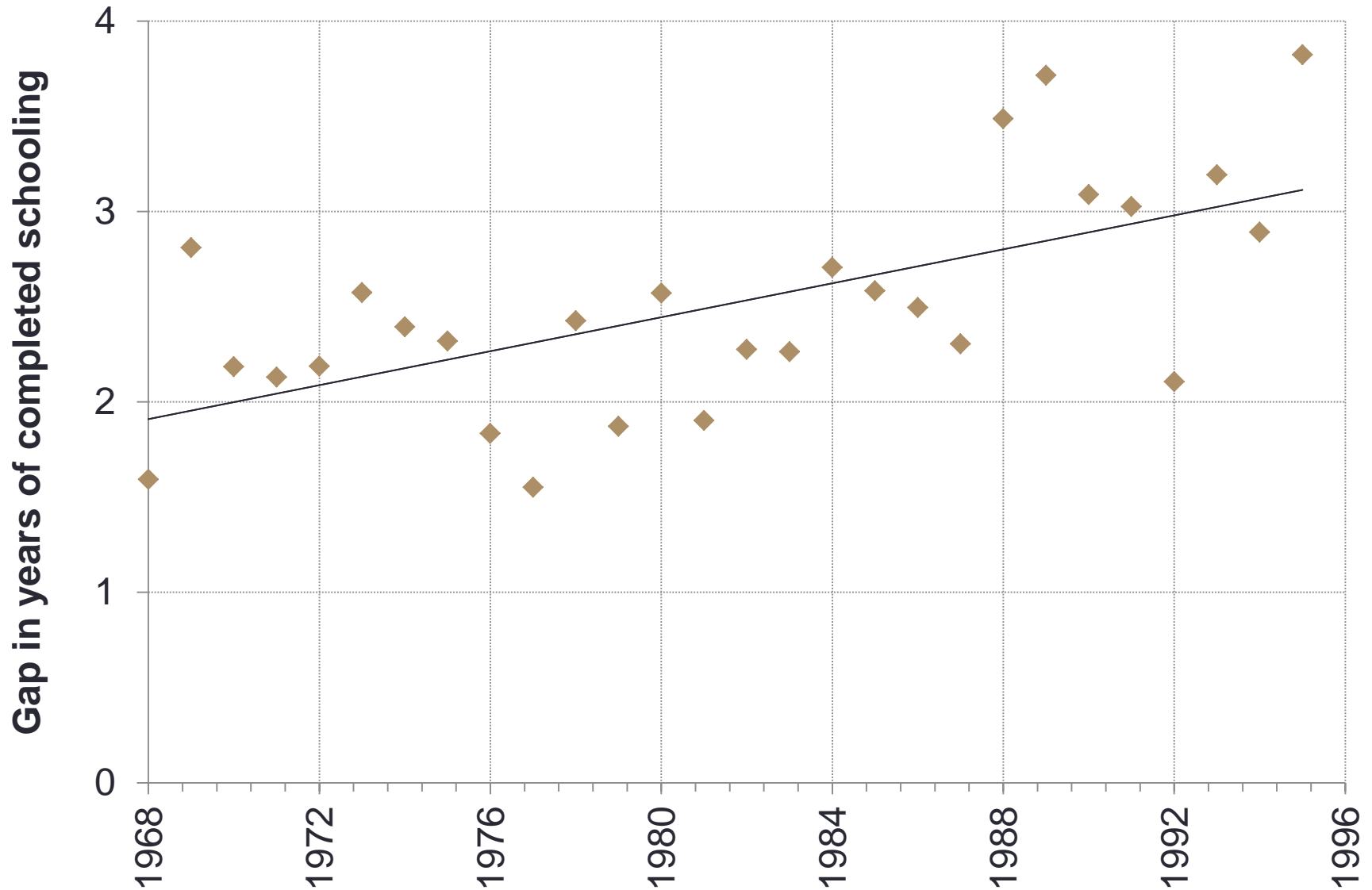
# Per Capita Enrichment Expenditures on Children (\$2008) Top versus Bottom Quintile of Households



Source: Duncan and Murnane, 2011

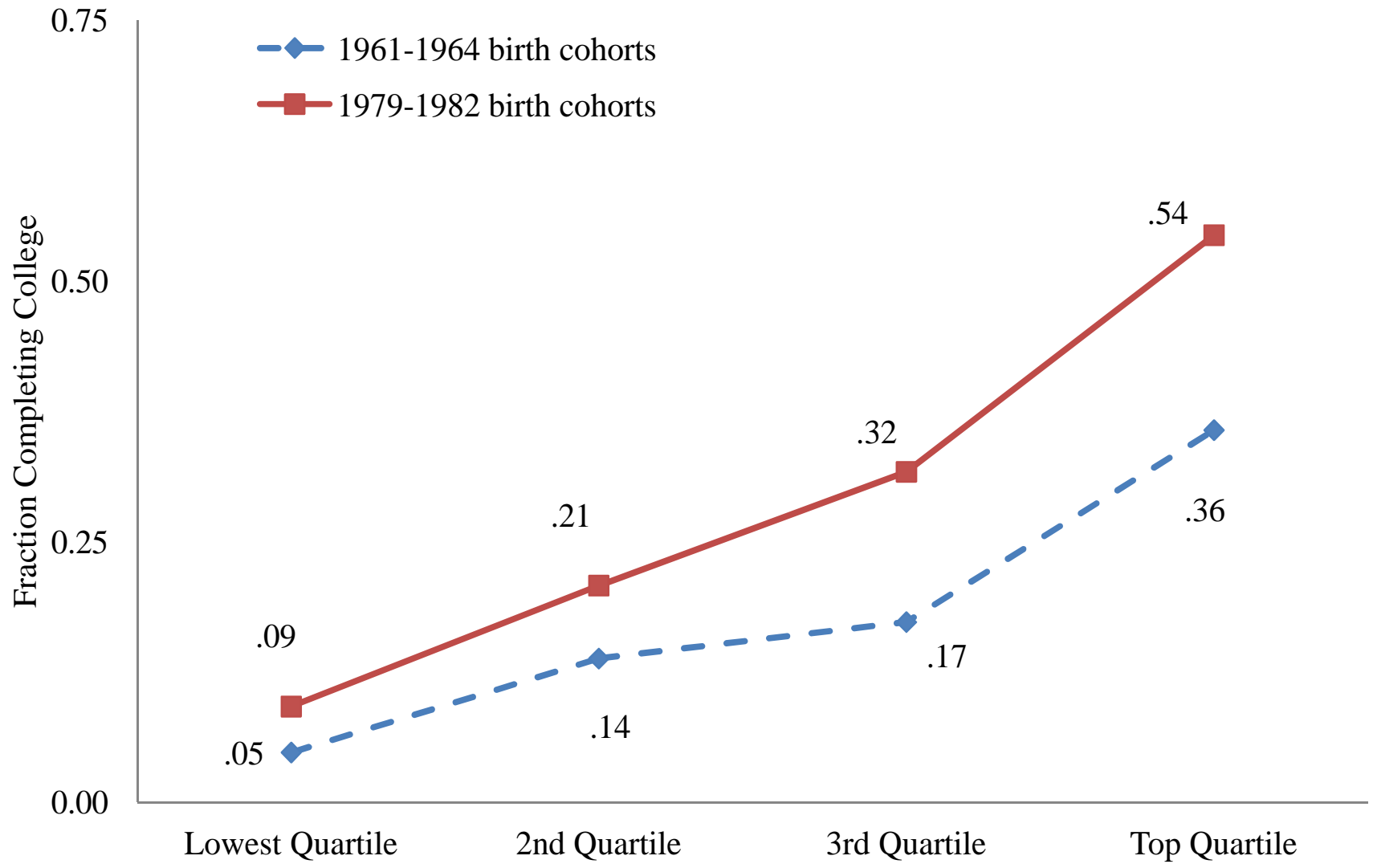


# Gap in years of Completed Schooling: Students with family Income in the Top vs. Bottom quintiles (by Year of Birth-14)



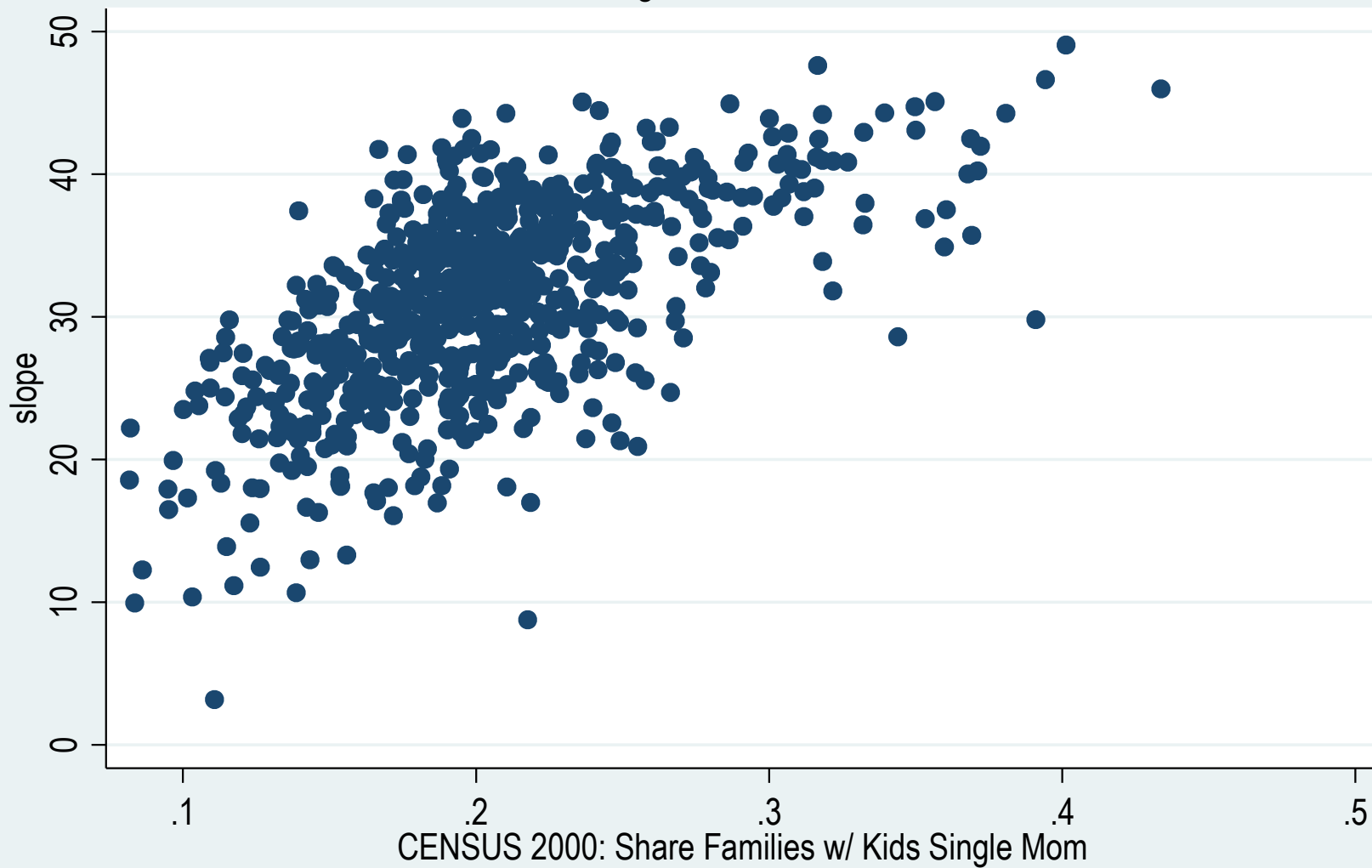
Source: Duncan and Murnane, 2011

# Fraction of Students Completing College by Income and Quartile and Birth Year



# Commuting Zones with Higher Fraction of Mother-Headed HH's Have Lower Mobility

Fraction of Kids w/Single Mom and Income Immobility  
Commuting Zone Level Correlation



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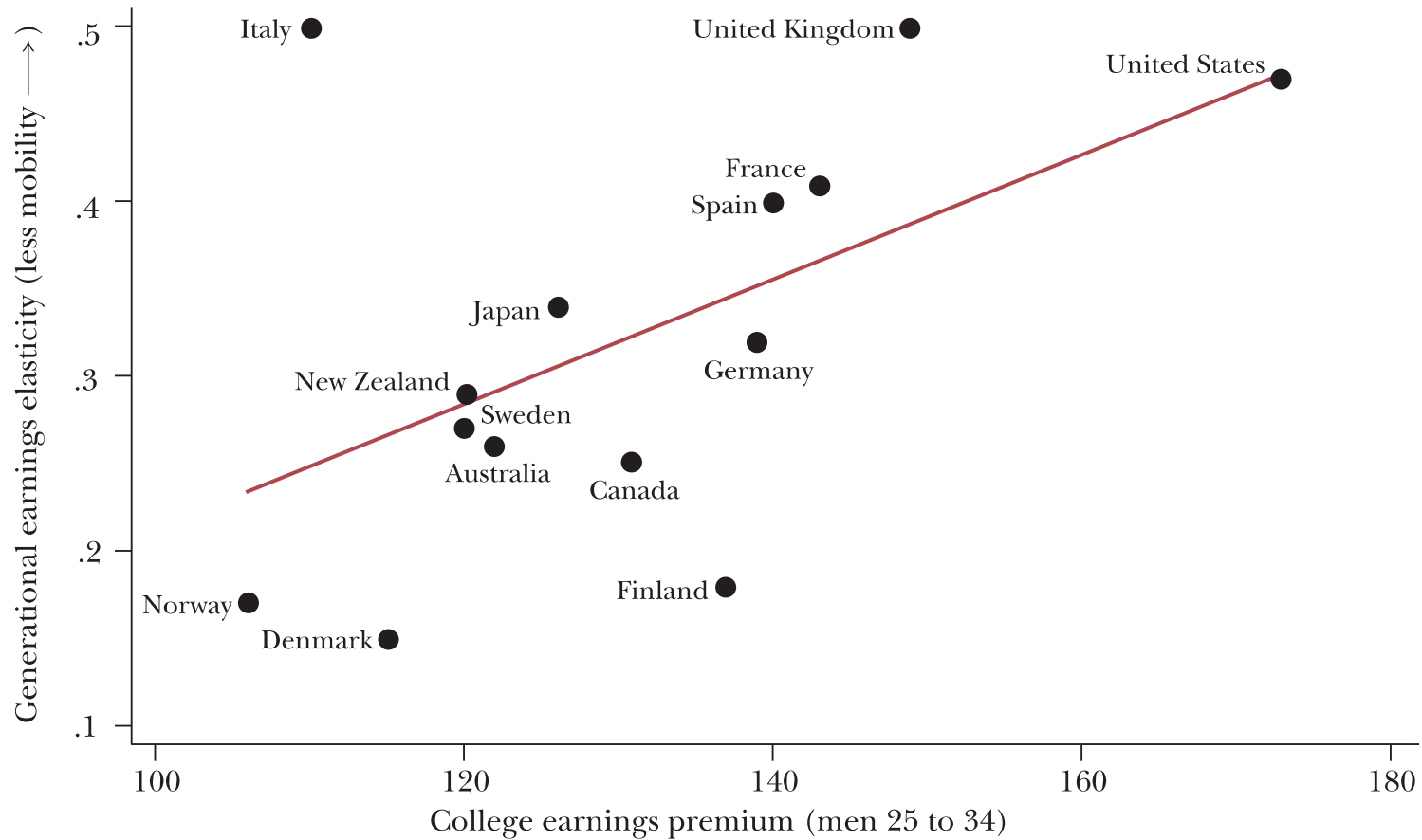
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## 4. **Conclusions**

# High Returns to Education $\leftrightarrow$ Low Mobility

## Higher Returns to Schooling are Associated with Lower Intergenerational Earnings Mobility

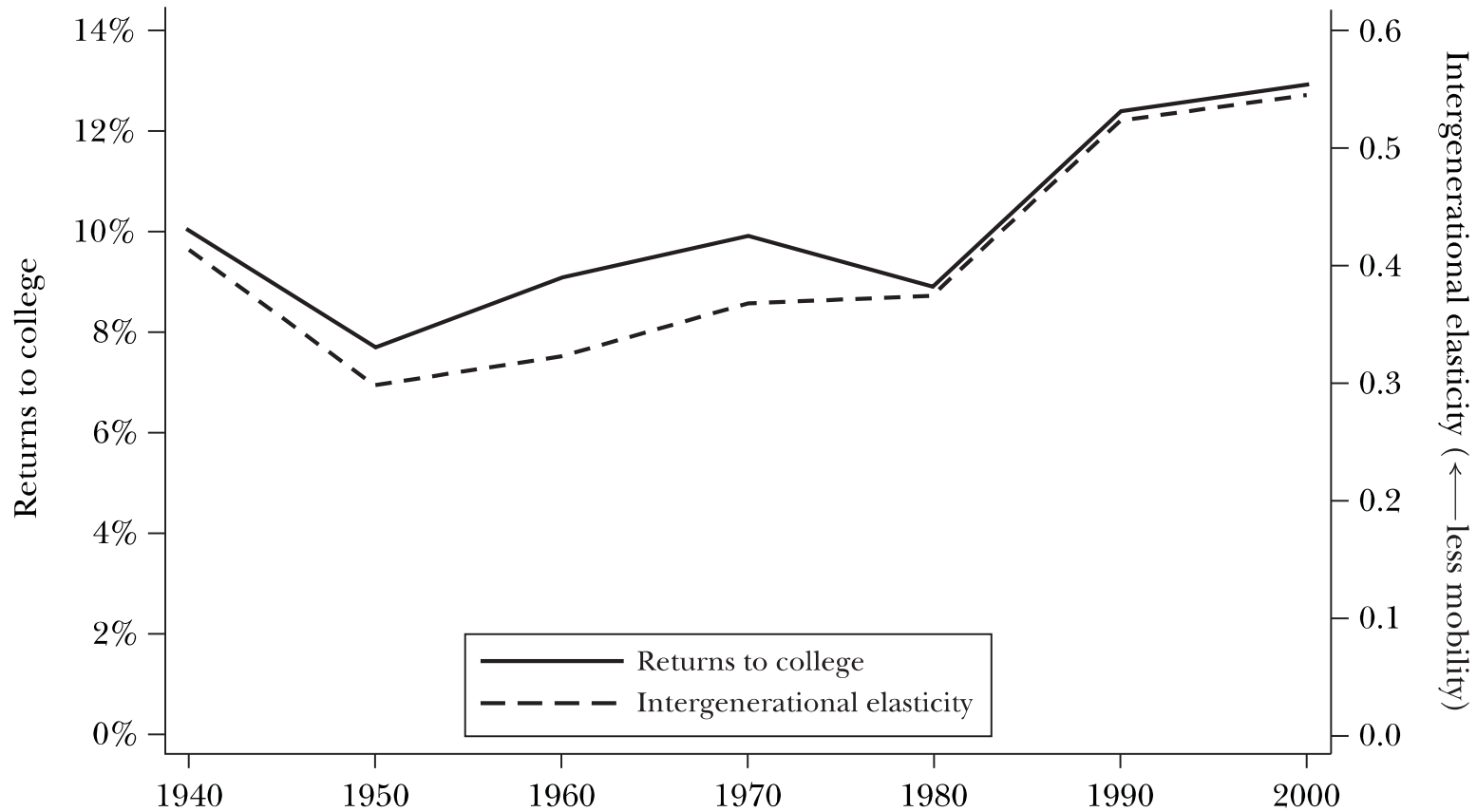


Source: Author using data from OECD (2011b, table A8.1), and Corak (2013).

Source: Corak, 2013

# High Returns to Education $\leftrightarrow$ Low Mobility

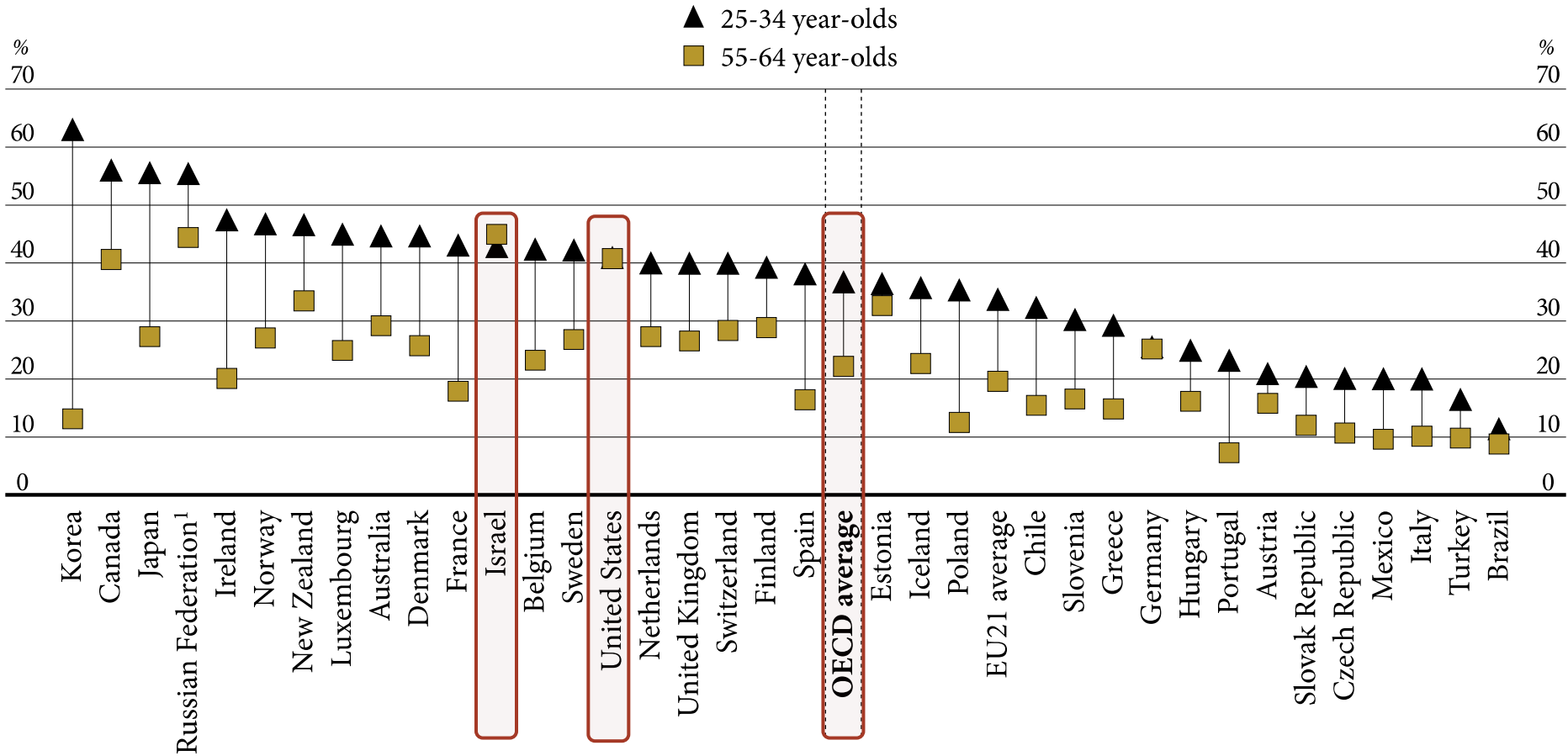
**The Higher the Return to College, the Lower the Degree of Intergenerational Mobility: United States, 1940 to 2000**



Source: Adapted by the author from Mazumder (2012, Figure 1).

Source: Corak, 2013

# Gains in Post-Secondary Education over 30 Years: Fraction of Adults with 'Tertiary' Education in 2009



Source: OECD 2011

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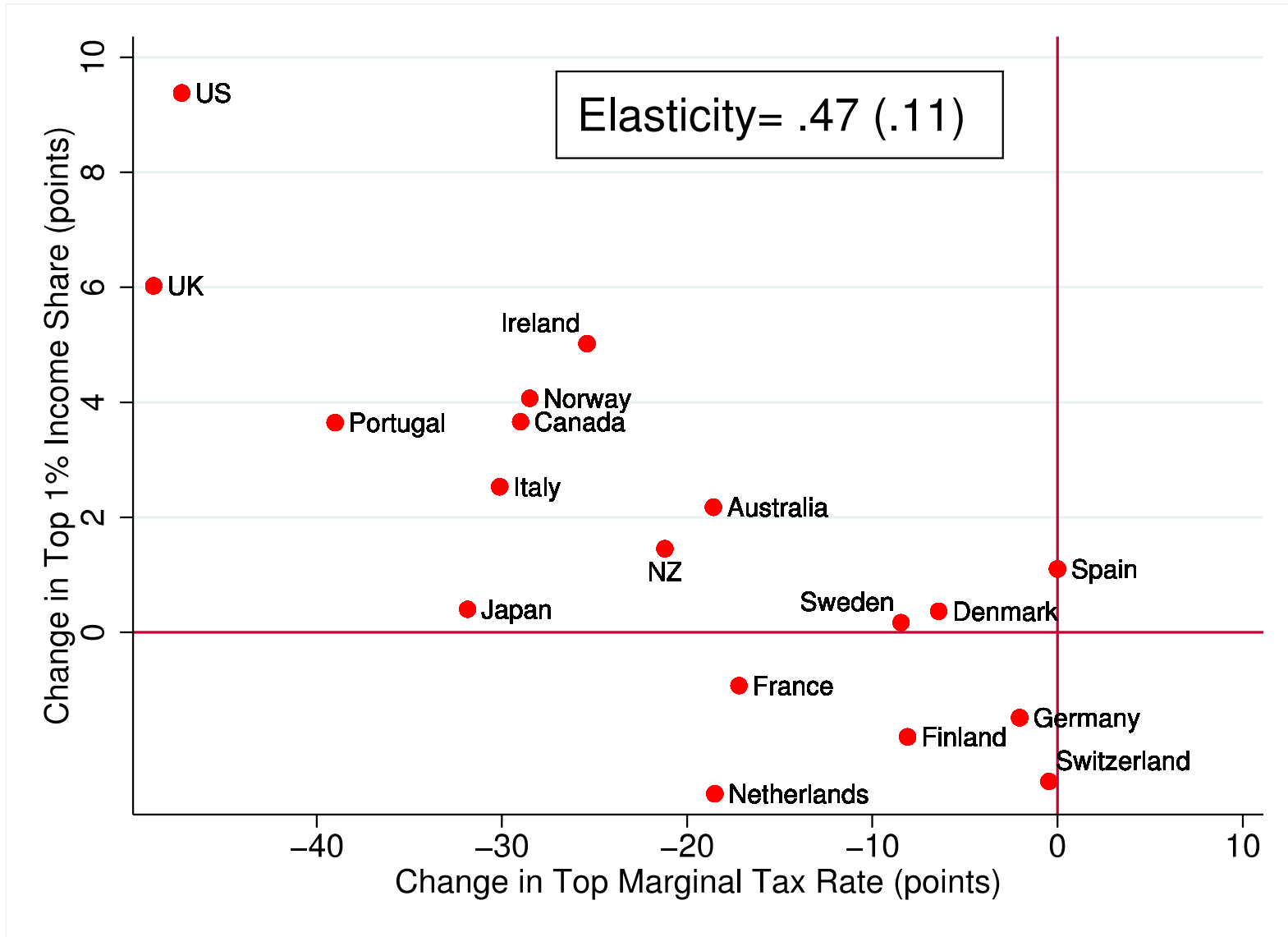
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# Changes in Top Marginal Tax Rates and Changes in Top Income Shares, 1960/64 – 2005/09



Source: Piketty, Saez and Stantcheva, forthcoming

# Changes in Top Marginal Rates and GDP per Capita Growth Rates, 1960/64 – 2006/10



Source: Piketty, Saez and Stantcheva, forthcoming

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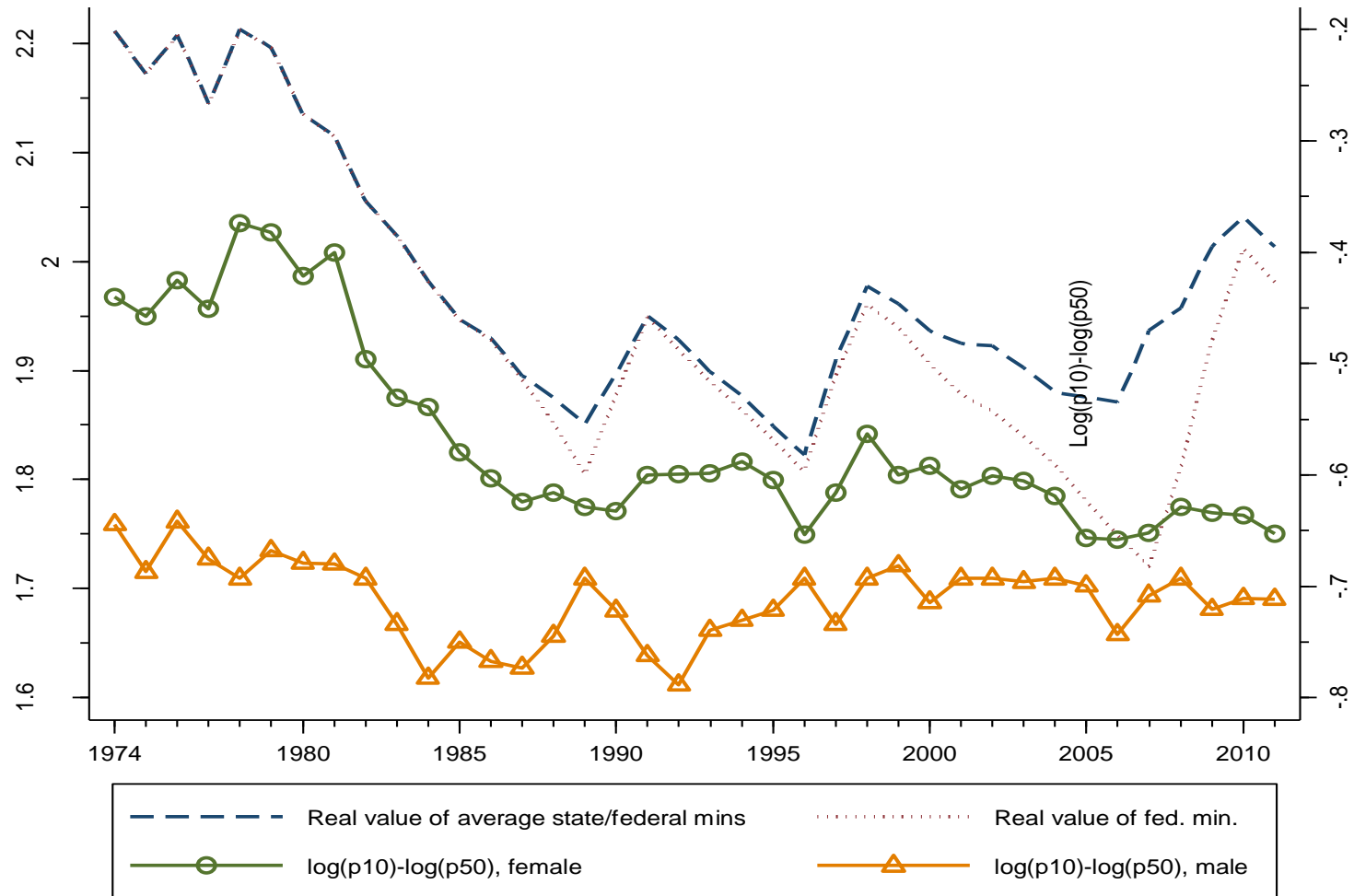
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# Real U.S. Minimum Wage and 10/50 Inequality, 1974 – 2011



Note: Annual data on state and federal minimum wages and log percentiles. Minimum wages are in 2011 dollars.

# No Compelling Evidence that Modest Minimum Wages Reduce Employment

## Decades of study and debate

- Remarkably little evidence of adverse employment impacts of minimum wages
- Yet minimum wages **do** reduce inequality
- Polarization of occupations provides *greater* opportunities for labor standards to “work” effectively

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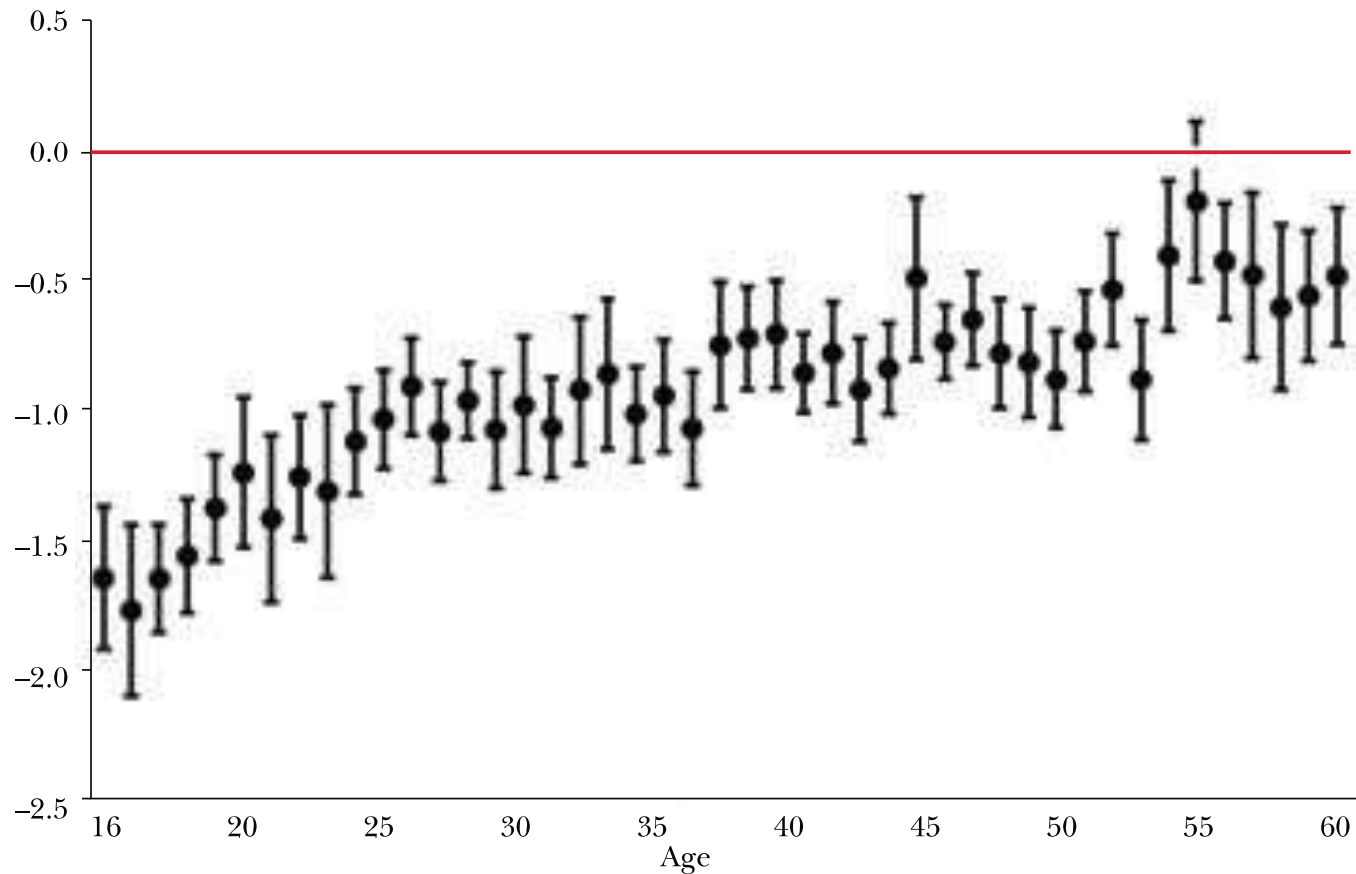
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## 4. **Conclusions**

# Minorities, Youth and Low Education Adults Suffer Most in a Recession

## Effect of State Unemployment Rate on Group Employment Rate, by Single Year of Age

(percentage points)



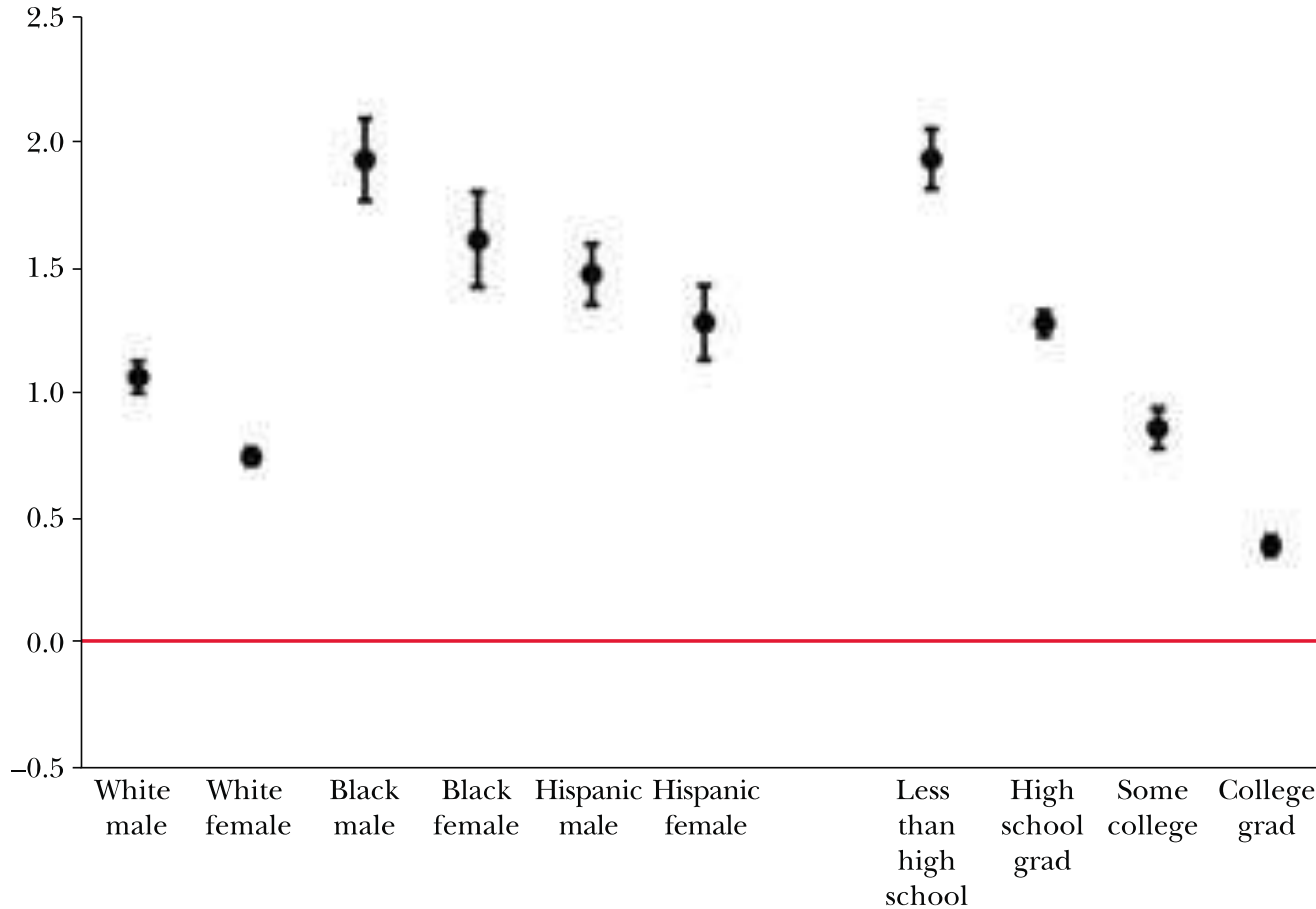
Source: Authors' tabulations of the Current Population Survey, Merged Outgoing Rotation Group (CPS-MORG) for 1/1979–12/2011.

Source: Hoynes, Miller and Schaller 2012

# Minorities, Youth and Low Education Adults Suffer Most in a Recession

## Effect of State Unemployment Rate on Group Unemployment Rate, by Race/Sex and Education

(percentage points)



Source: Authors' tabulations of the Current Population Survey, Merged Outgoing Rotation Group (CPS-MORG) for 1/1979-12/2011.

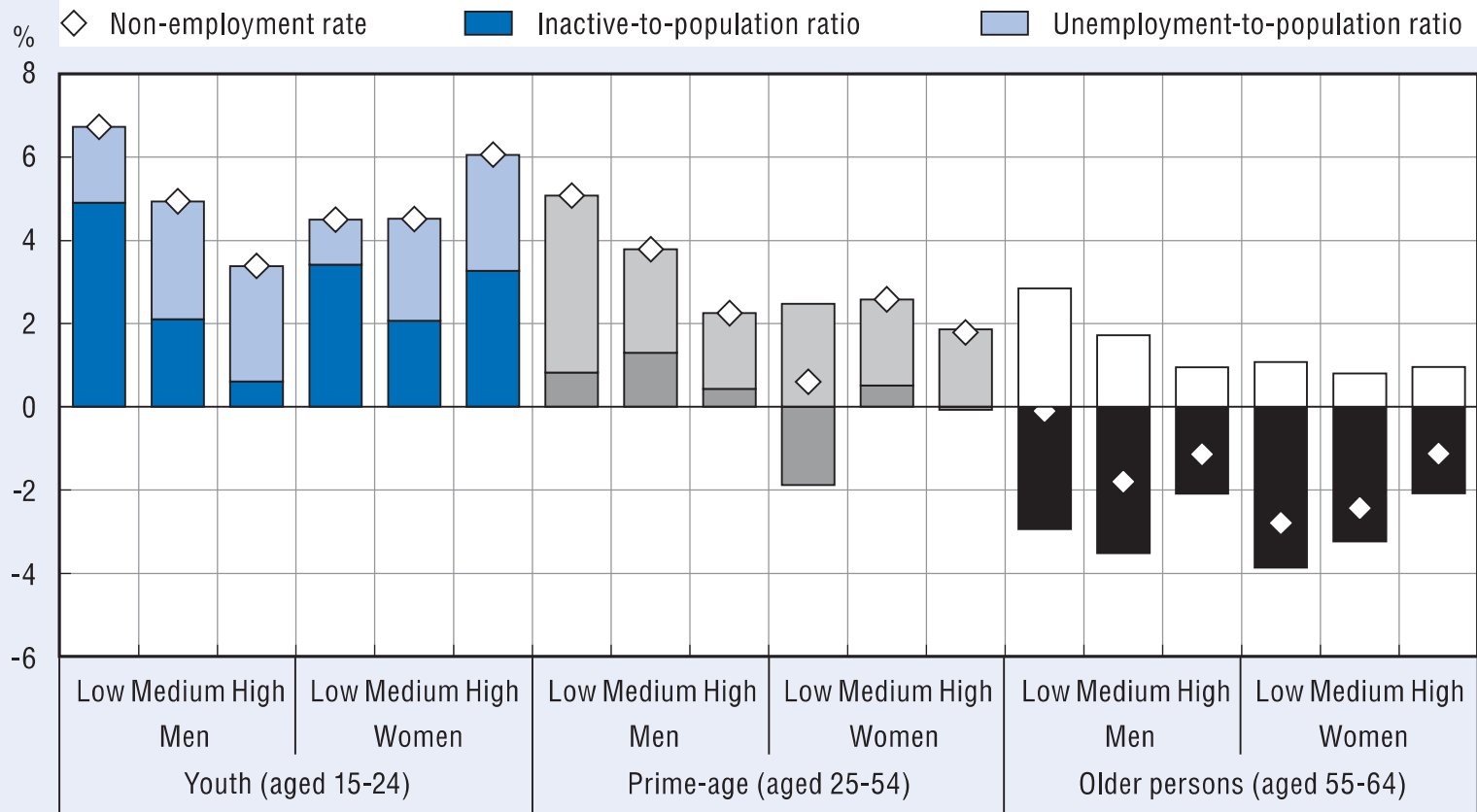
Source: Hoynes, Miller and Schaller 2012



# Minorities, Youth and Low Education Adults Suffer Most in a Recession

## Decomposition of labour market slack in unemployment and inactivity by detailed socio-demographic groups

Percentage-points change in the number of persons in a given labour market status as a share of population of the indicated group, OECD average,<sup>a</sup> Q4 2007-Q4 2012



a) OECD is the weighted average of 28 countries: Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Mexico, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

Source: OECD calculations based on national labour force surveys.

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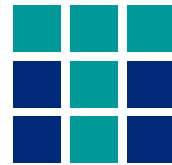
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# Conclusions

- Many forces contributing to rising inequality in industrialized nations
- Countries can have too little inequality – and can also probably have too much
- Policy options available that push back against inequality without imposing large economic costs
- Short and medium run policies: Taxation, labor standards, macro policy
- Long run responses: Investment in education, infrastructure, good governance

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