INTERNATIONAL ECONOMICS advanced

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The world-wide rise of within inequality

(mainly because of globalization and technology)

Outline of this presentation

1 - Inequality trends:

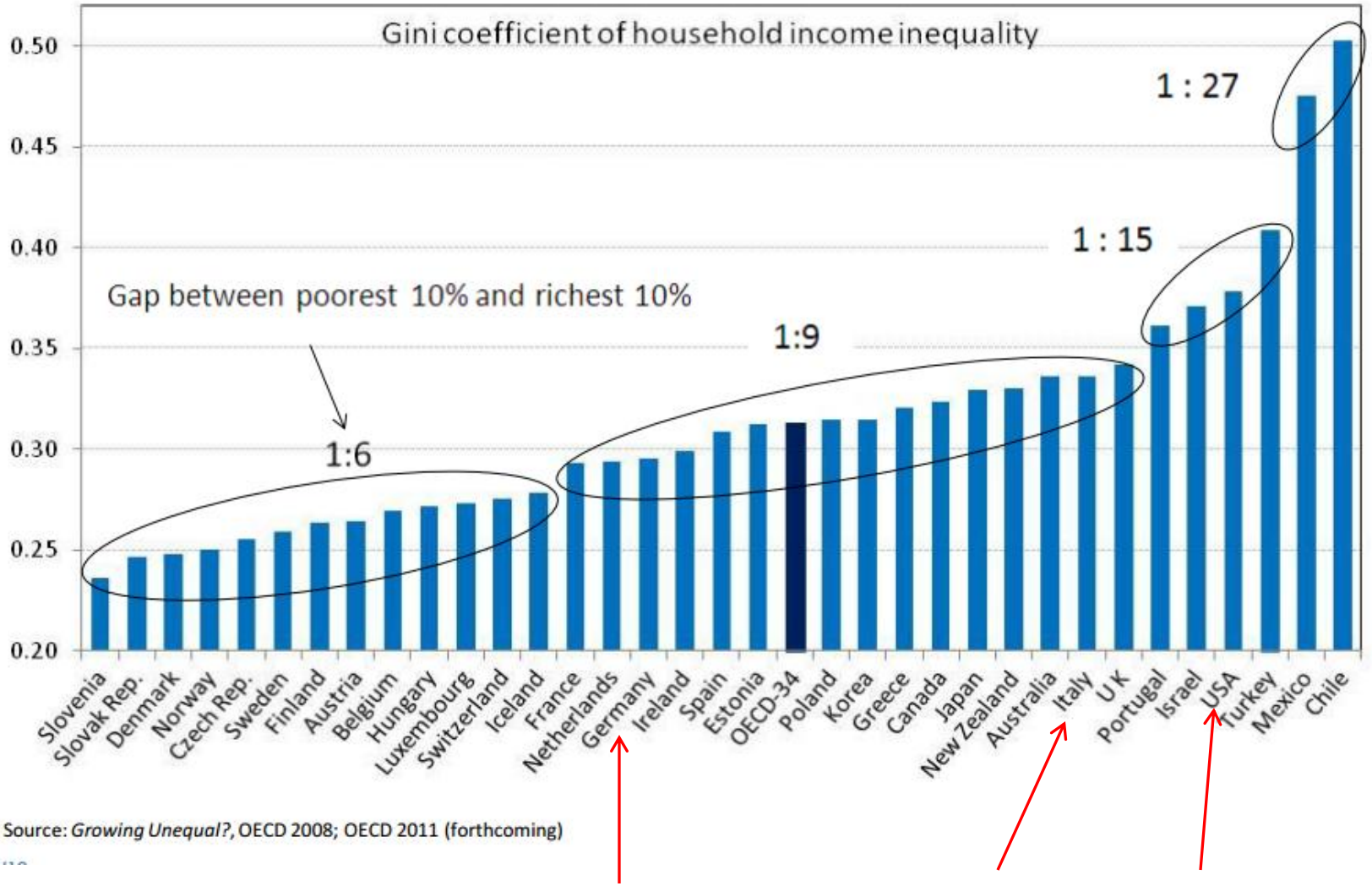
- 1.1 - general evidence
- 1.2 - polarization
- 1.3 - extreme inequality

2 - Possible causes of inequality:

- 2.1 - social mobility
- 2.2 - demography
- 2.3 - technology
- 2.4 - globalization

Inequality trends: general evidence

Inequality levels are different in OECD countries, in some of them very high



Source: *Growing Unequal?*, OECD 2008; OECD 2011 (forthcoming)

The "Kuznets world" (?):

In many developed countries inquality was falling after WW II

Table 1

Interdecile ratio [a of pre-tax or post-tax income distribution in selected OECD countries

Country	Canada (pre)	France (pre)	Germany (post)	Italy (post)	Japan (pre)	Holland (post)	UK (pre)	USA (pre)
Around 1950	19.6	–	13.9	–	–	17.6	–	23.8
Around 1960	16.6 [b	40.1	11.2	19.1 [c	8.5	12.5	11.5	25.0
Around 1970	26.5	26.6	11.7	15.8	6.6	10.6	11.8	23.4

Source: Authors' elaboration on data in Sawyer (1976).

Notes: [a ratio of the income shares of the top and bottom deciles; [b 1965; [c 1967.

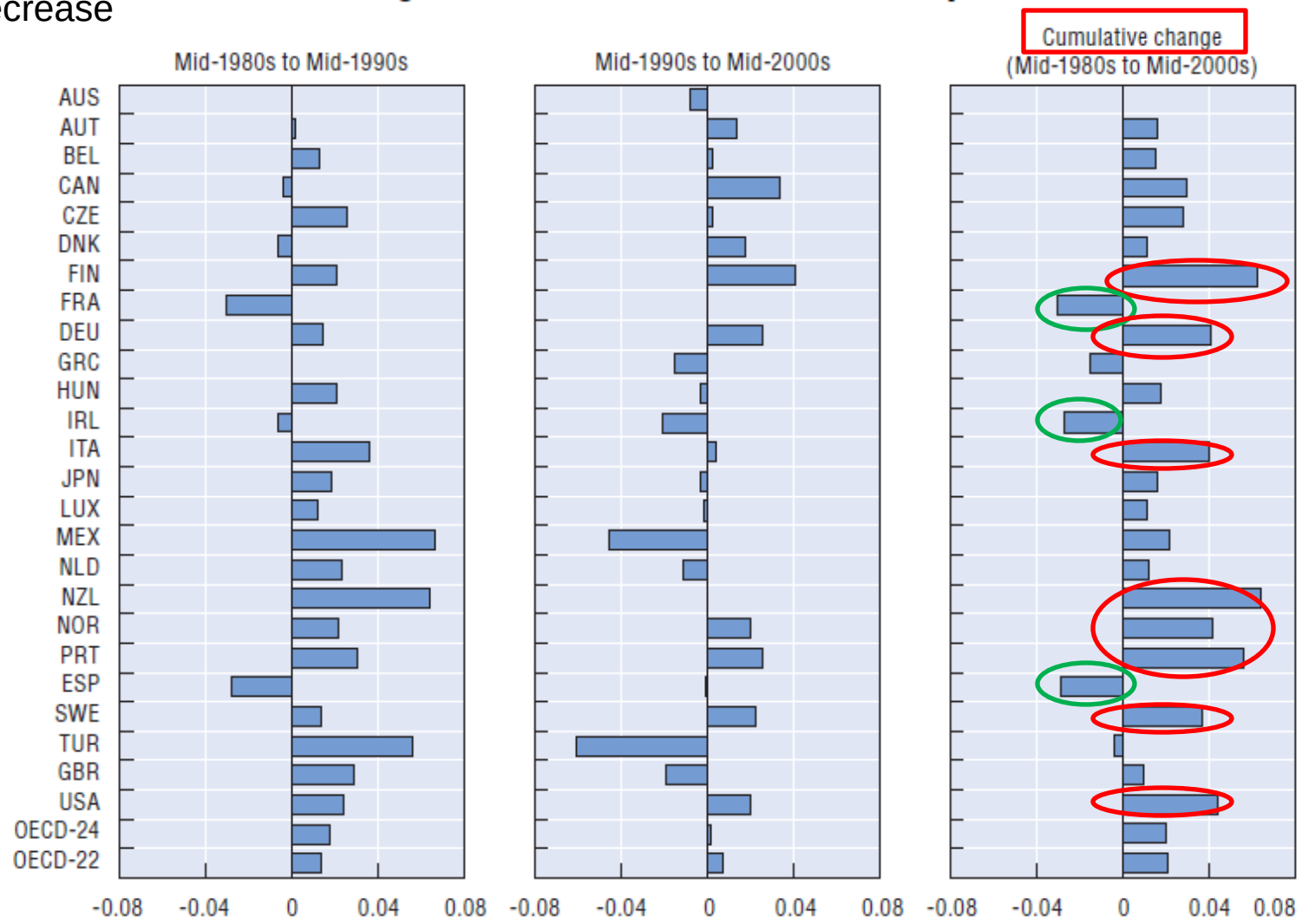
Source: Cornia, Addison, Kiiski (2003), *Income distribution changes and their impact in the post-war II period,* UNU WIDER discussion paper 2003/28

… but recently we have seen an opposite trend: inequality is growing

red: increase
green: decrease

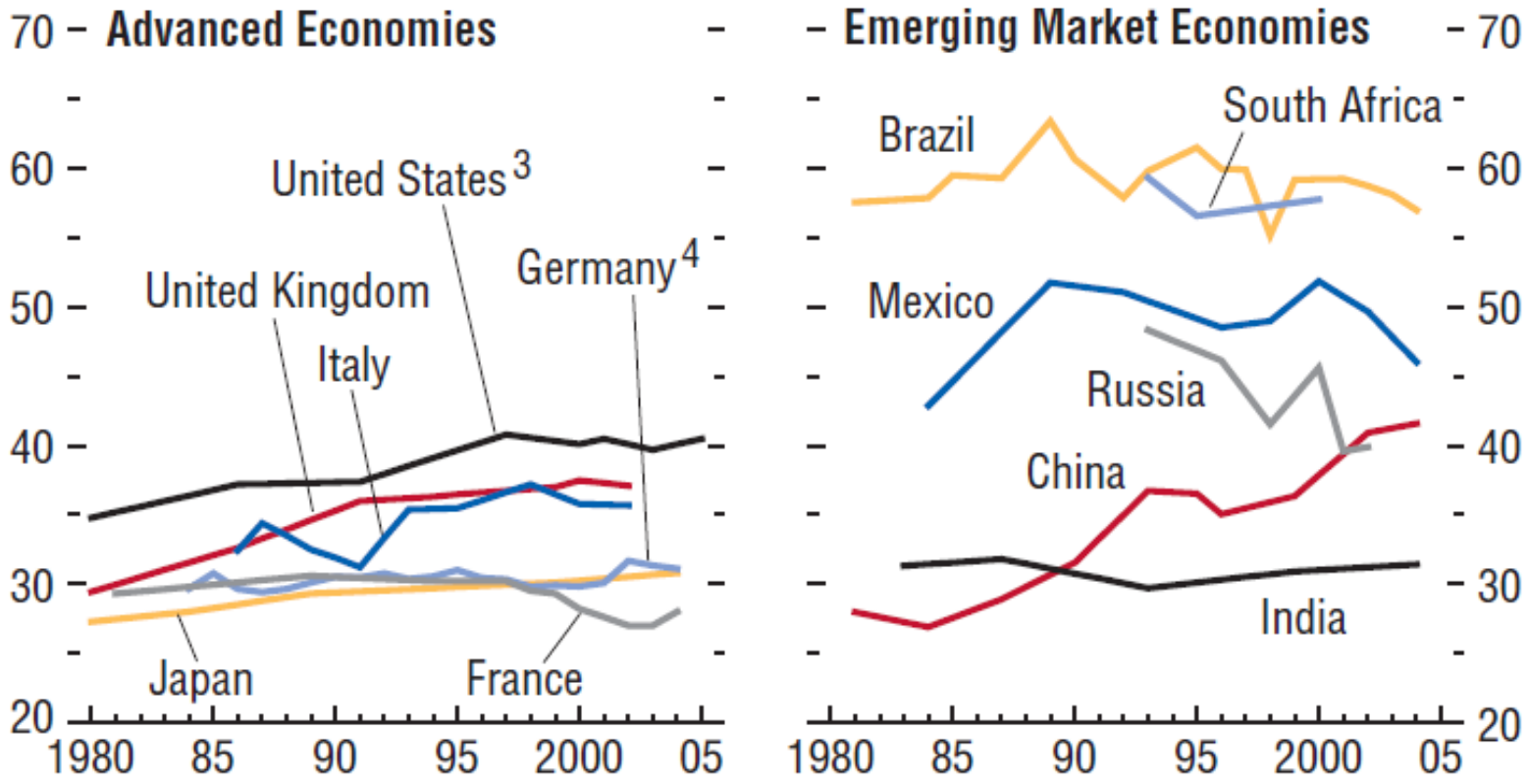
Figure 1.2. **Trends in income inequality**

Point changes in the Gini coefficient over different time periods

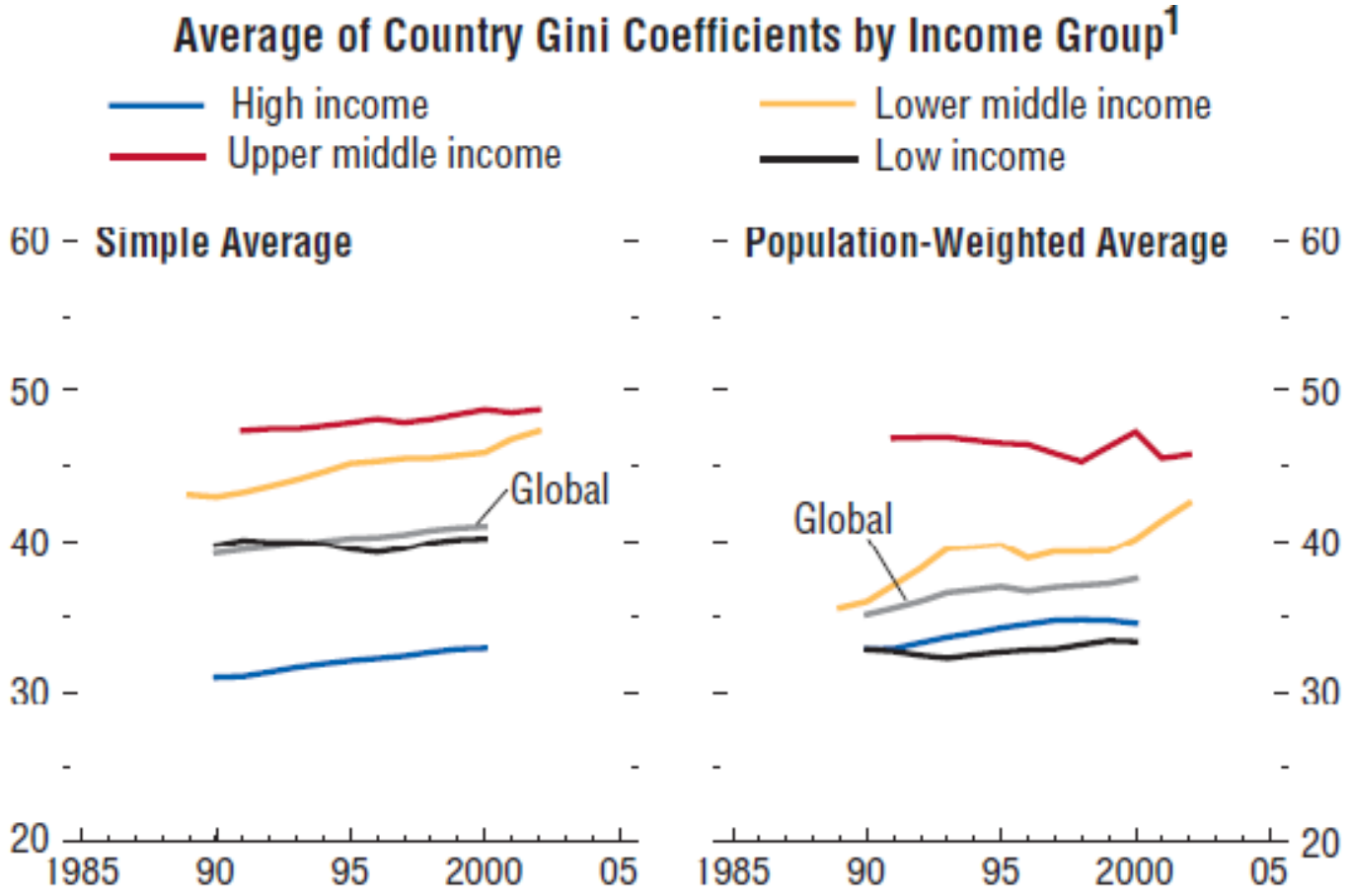


Source: Oecd (2008), Growing unequal?

Gini Coefficients in Selected Countries

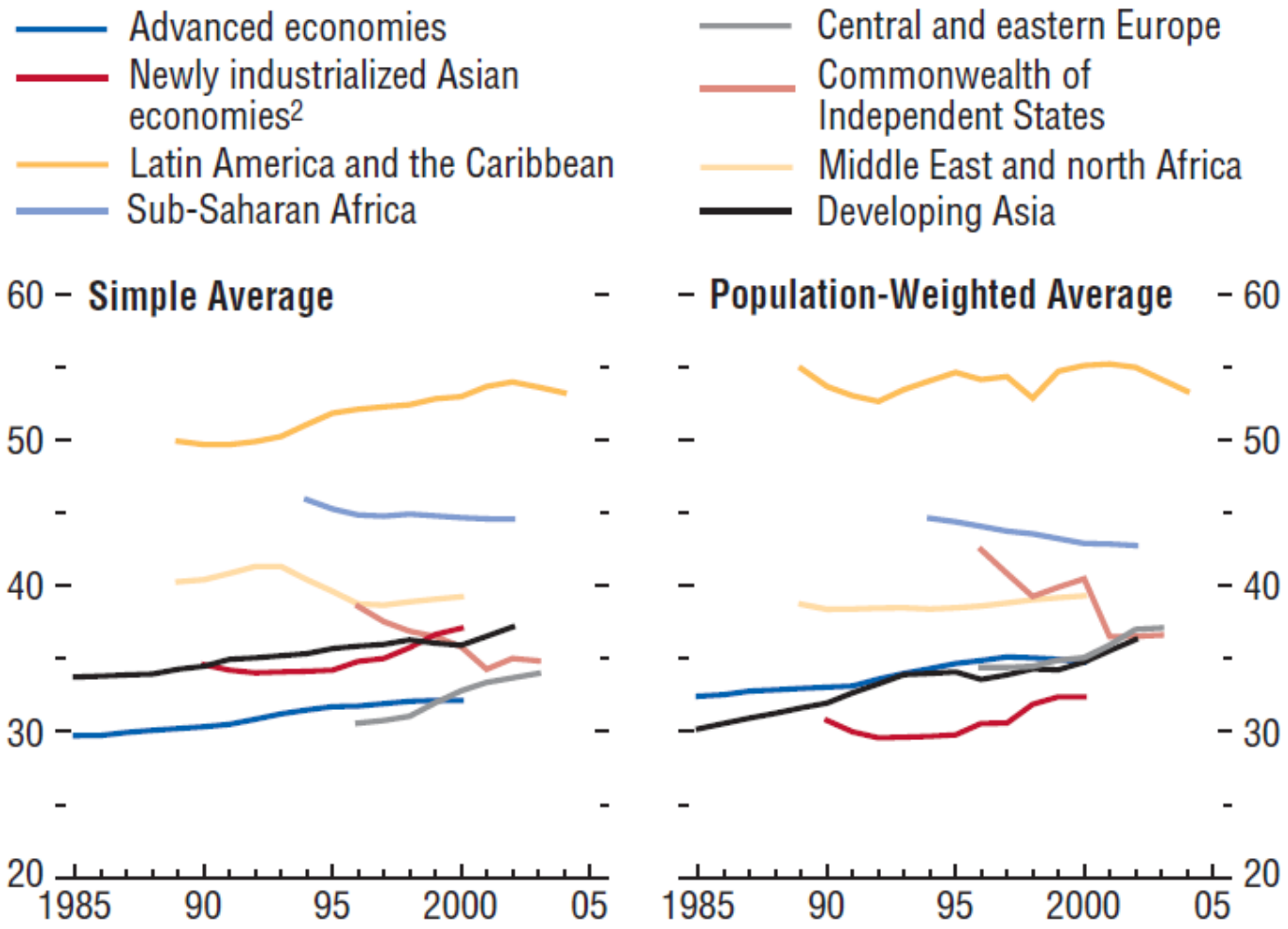


Source: IMF World Economic Outlook, Oct. 2007



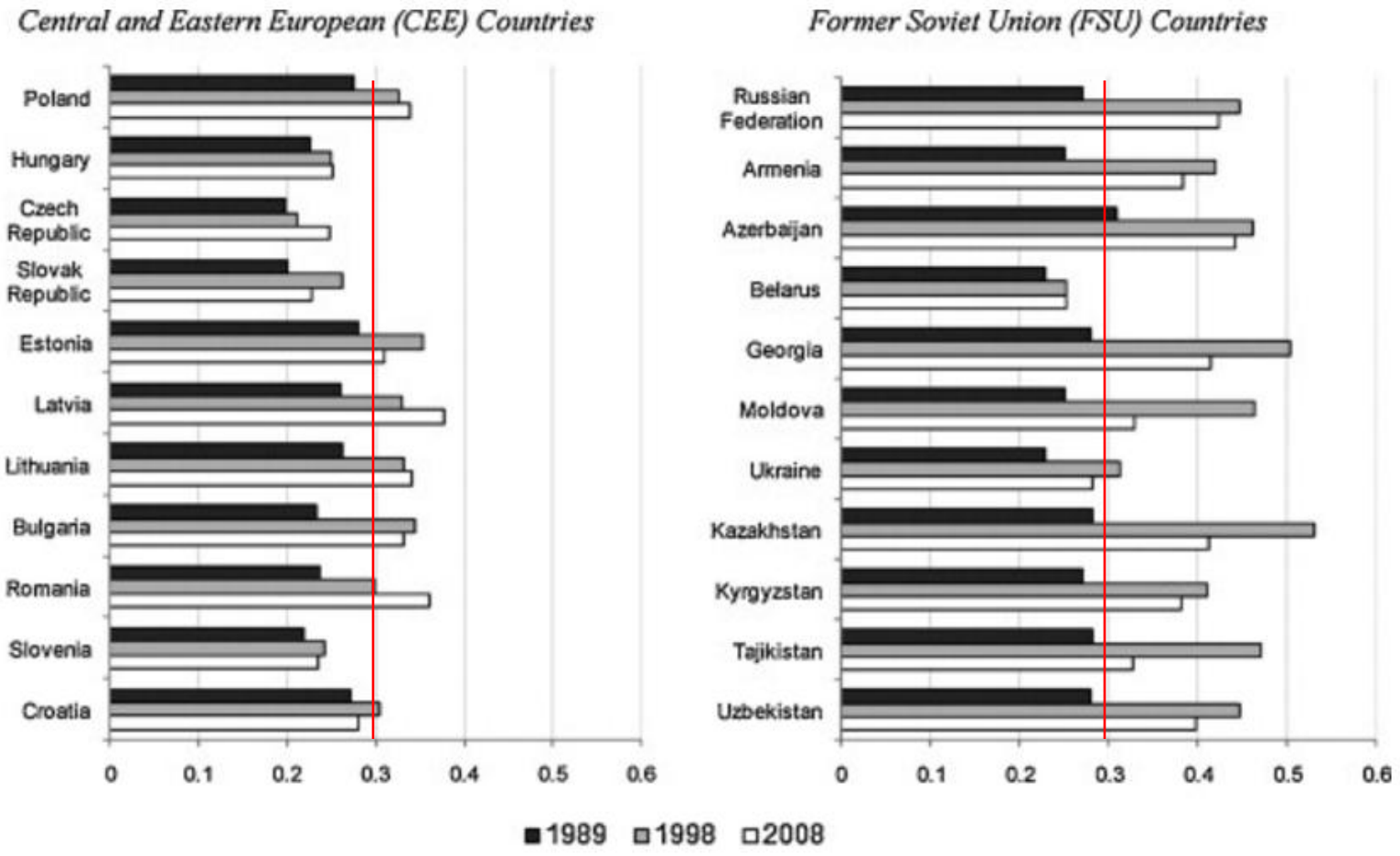
Source: IMF World Economic Outlook, Oct. 2007

Average of Country Gini Coefficients by Region[1]



Source: IMF World Economic Outlook, Oct. 2007

Gini coefficients in transition countries 1989-1998-2008



Source: Aristei D., Perugini C.(2012), Inequality and reforms in transition countries, Economic Systems, vol. 36, n. 12, pp. 2–10

Evolution of the Gini coefficients and the income gap in China, 1953-95

	Gini coefficients				Inter-provincial income gap		
Year	Overall	Urban	Rural	Income gap, U/R [a]	Rural [b]	Urban [b]	Total [b]
1953	0.56 [c]	–	–	–	–	–	–
1964	0.31 [c]	–	–	–	–	–	–
1978	0.32	0.16	0.21	2.37	–	–	–
1981	–	0.15	0.24	2.05	2.80	1.81	12.62
1984	0.28 [d]	0.16	0.26	1.71	3.16 [e]	1.59 [e]	9.22 [e]
1988	0.38	0.23	0.30	2.05	–	–	–
1990	–	0.23	0.31	2.02	4.17	2.03	7.50
1995	0.43	0.28	0.34	2.47	4.82	2.34	9.79
1998	0.41 [c]	–	–	–	–	–	–

Source: Cornia, Addison, Kiiski (2003), *Income distribution changes and their impact in the post-war II period,,* UNU WIDER discussion paper 2003/28

Trends in the Gini coefficients of the distribution of income [a] from the 1950s to the 1990s for 73 developed, developing and transitional economies

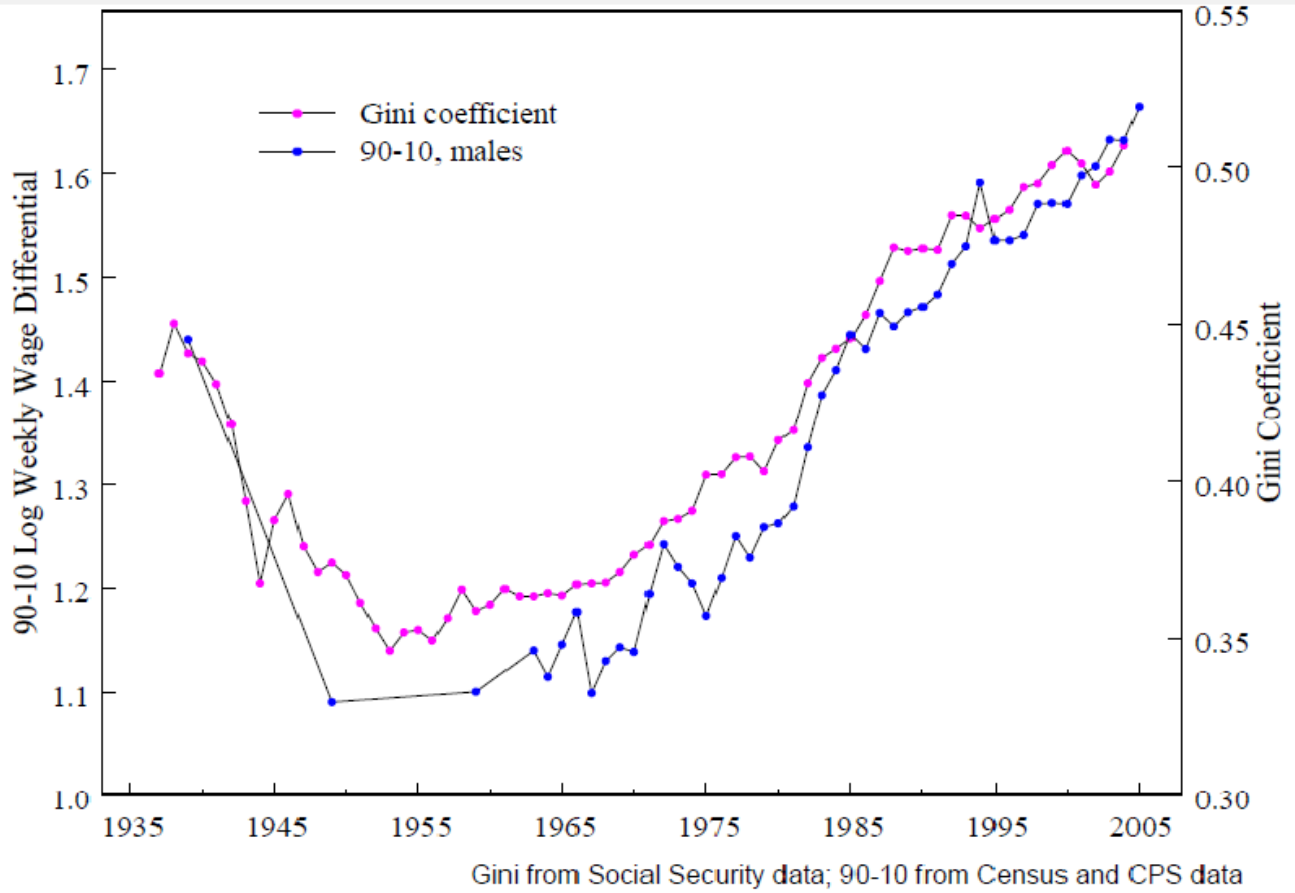
	Sample countries in each group	Share of population of sample countries	Share of world population	Share of GDP-PPP of sample countries	Share of world GDP-PPP
Rising inequality, of which:	**48**	**59**	**47**	**78**	**71**
Continuously rising	17	4	3	5	5
U-shaped	29	55	44	73	66
Rising-stable	2	0	0	0	0
Falling inequality, of which:	**9**	**5**	**4**	**9**	**8**
Continuously falling	6	3	3	7	7
Inverted U-shape	3	2	1	2	1
No trend	**16**	**36**	**29**	**13**	**12**
Not included in sample	–	–	20	–	9
Total	**73**	**100**	**100**	**100**	**100**

Source: Cornia, Addison, Kiiski (2003), *Income distribution changes and their impact in the post-war II period,* UNU WIDER discussion paper 2003/28

A specific perspective: wage inequality

In USA ….

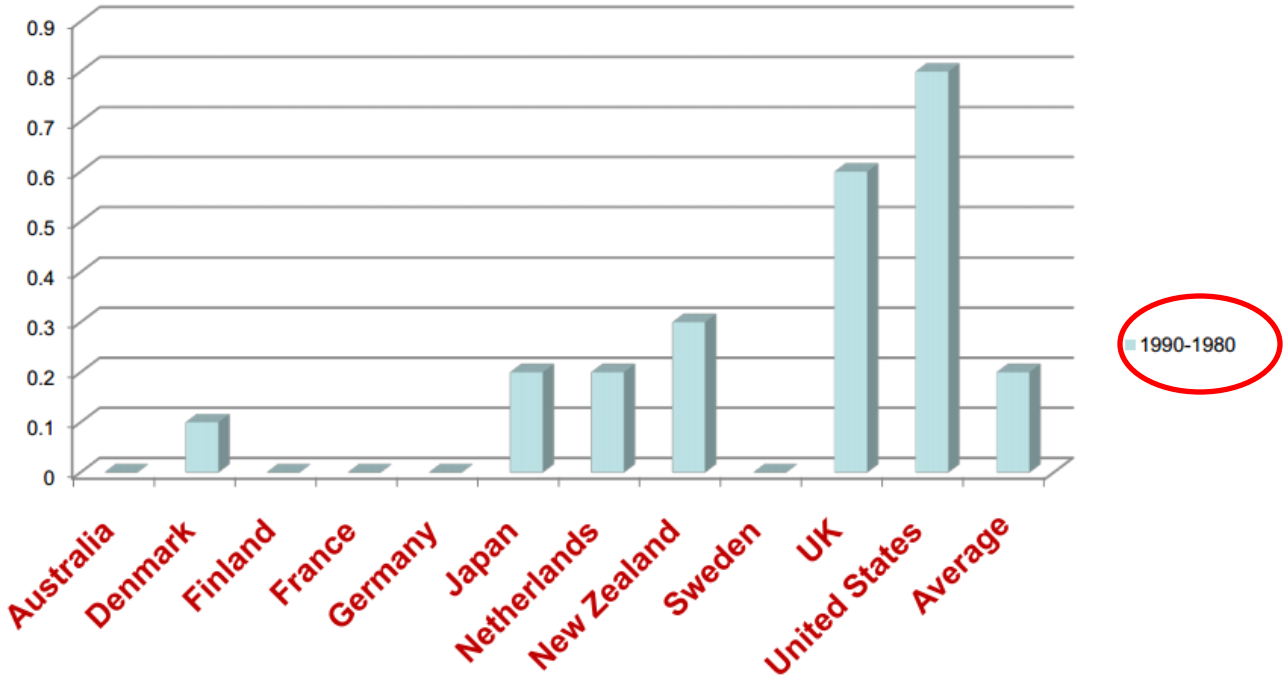
FIGURE 1: US MALE WAGE INEQUALITY, 1937-2005



Source: Goldin and Katz (2008)

… and in OECD countries

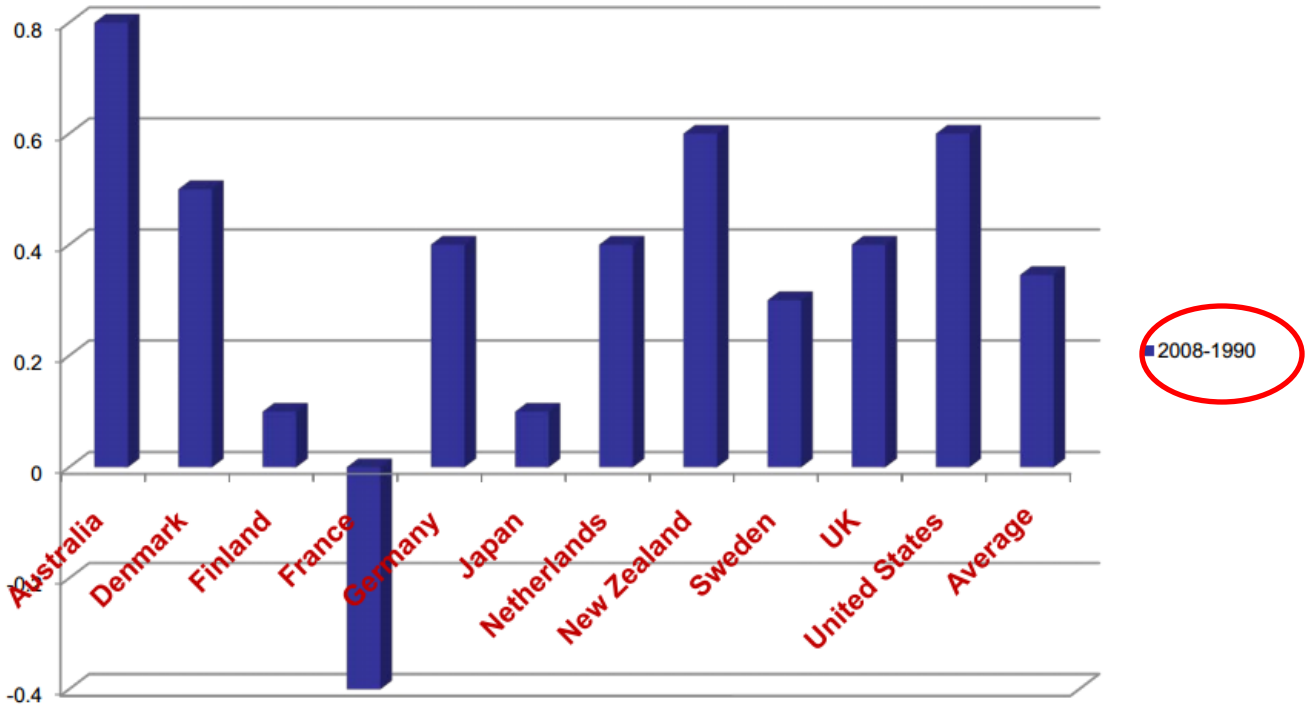
FIGURE 3, PANEL A: CHANGE IN MALE WAGE INEQUALITY (90-10) OECD COUNTRIES IN THE 1980s



Note: This is the changes in the 90-10, so a value of 0.6 for UK indicates that the ratio rose from 2.7 in 1980 to 3.3 in 1990.
Source: Machin and Van Reenen (2010), OECD

Growing (wage) inequality: a generalized feature in recent years

FIGURE 3, PANEL B : CHANGE IN MALE WAGE INEQUALITY (90-10) OECD COUNTRIES IN THE 1990's & 2000's

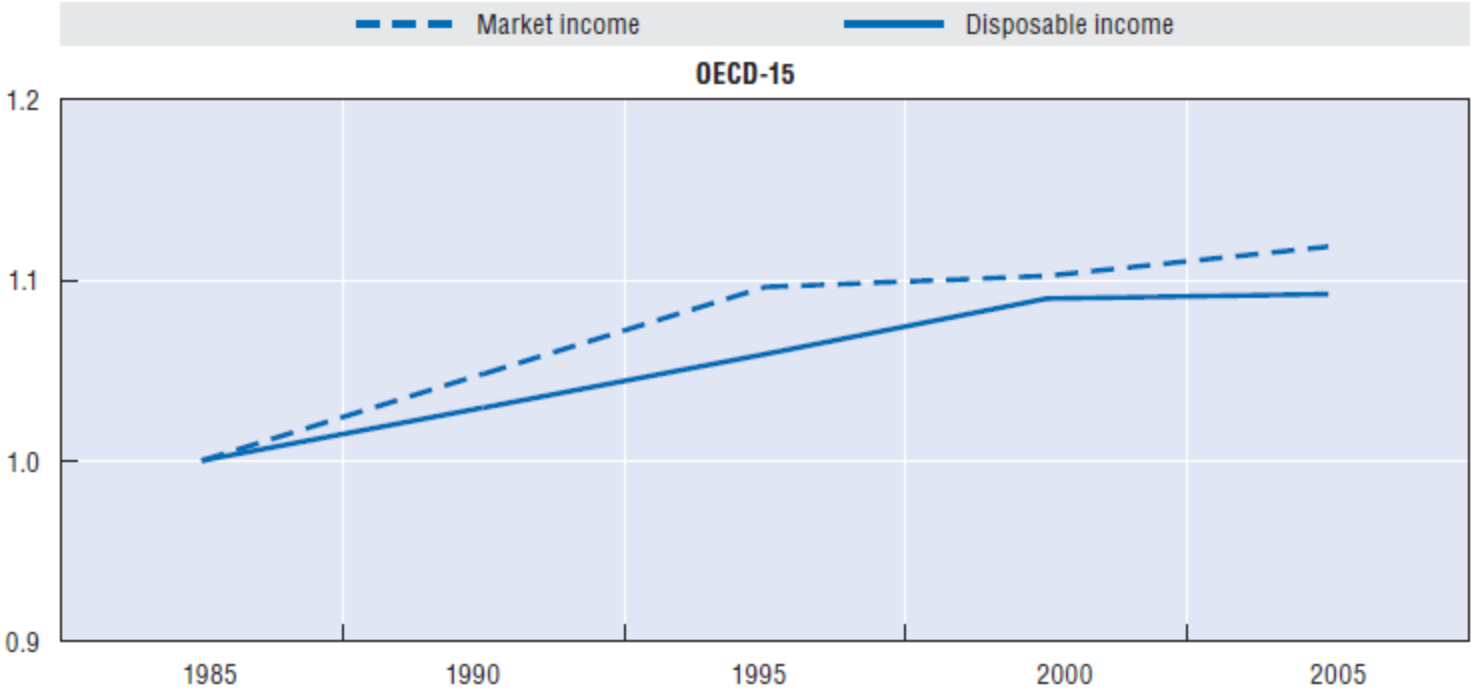


Source: Machin and Van Reenen (2010), OECD
Note: Netherlands has a break in series in 1993

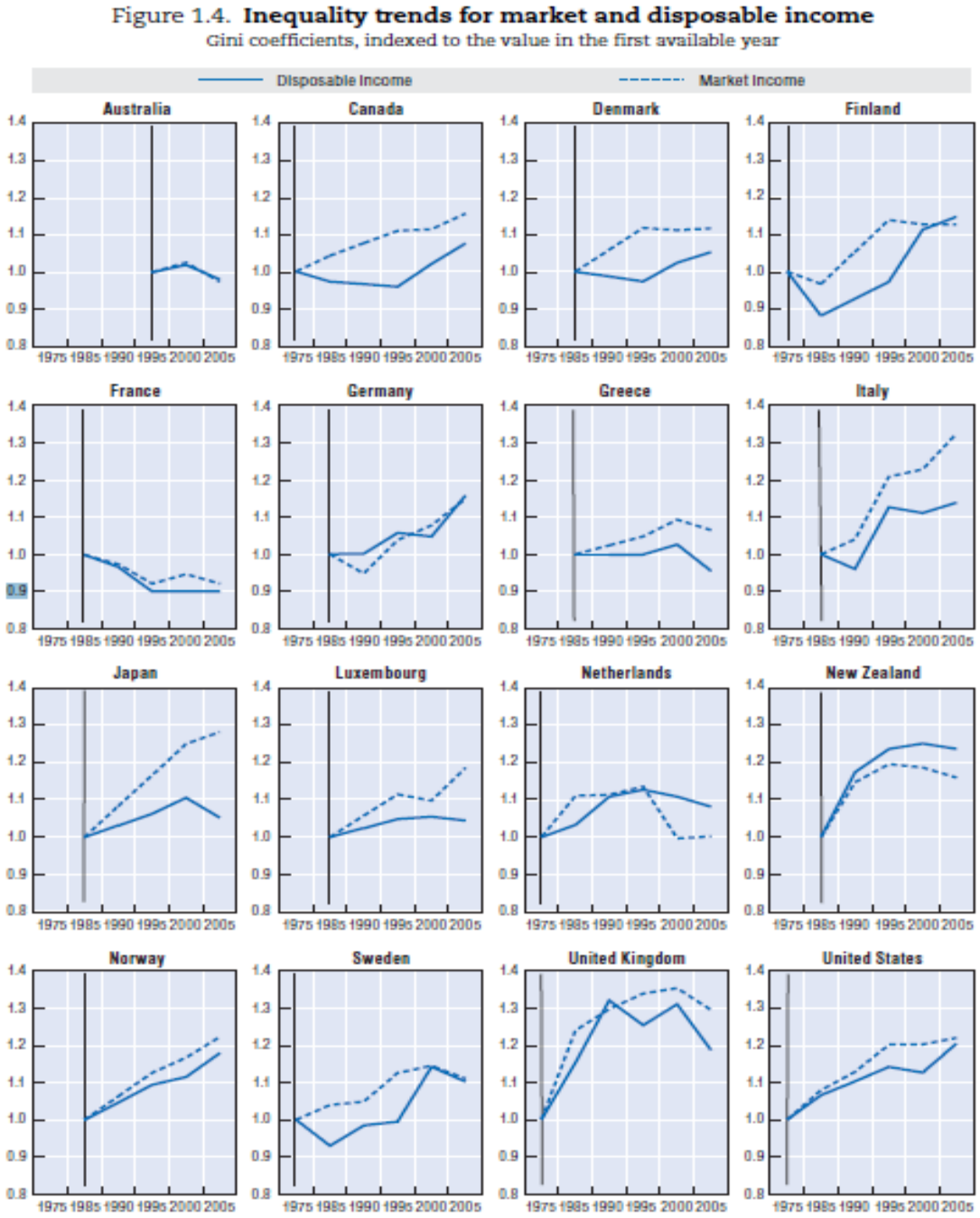
the impact of the state (redistribution): in general …

Figure 1.5. **Trends in market and disposable income inequality, OECD average**

Gini coefficients, mid-1980s = 1.0



Source: Oecd (2008), Growing unequal

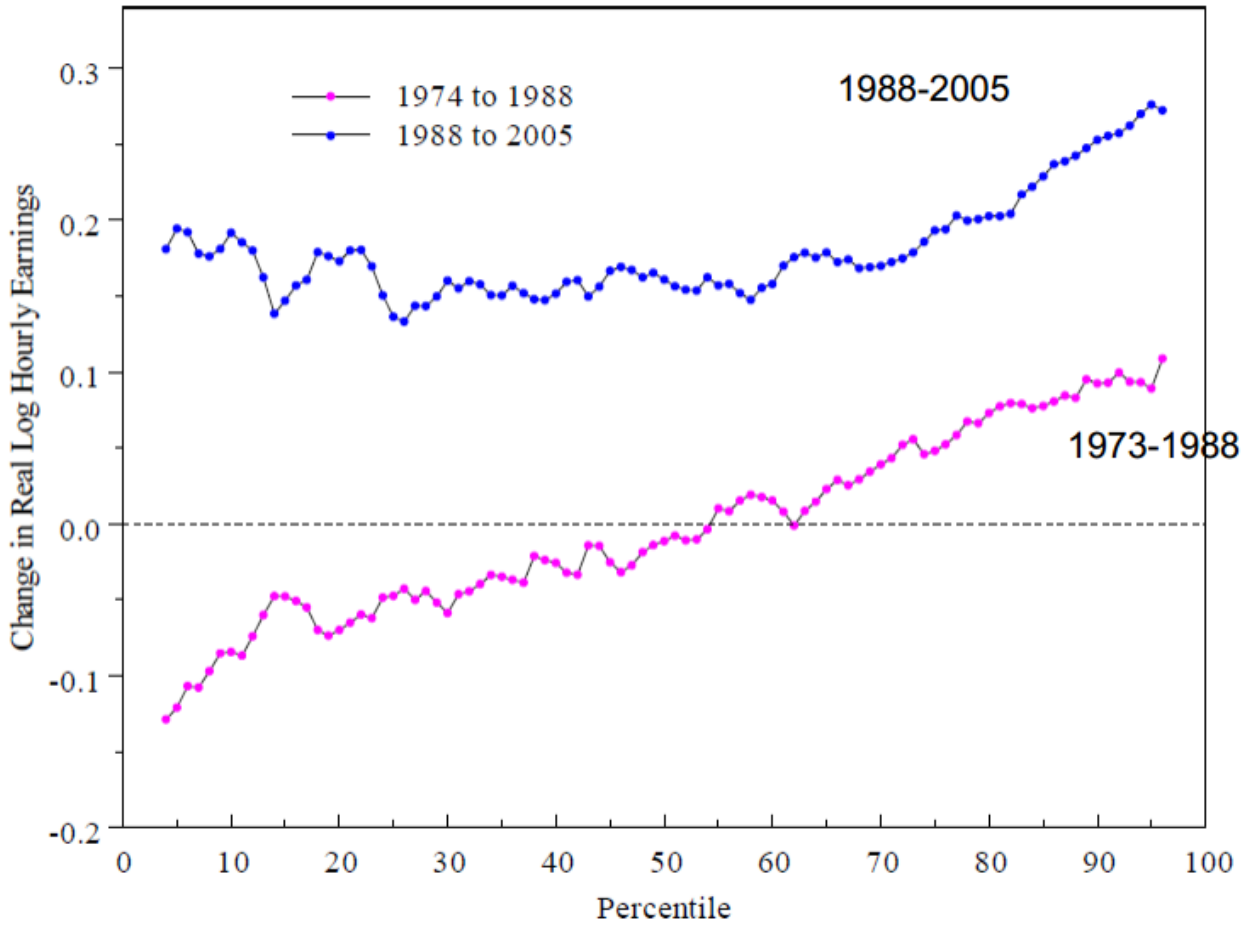


… and in specific countries (OECD)

Source: Oecd (2008), Growing unequal

Recent inequality trends: the “Polarization” feature

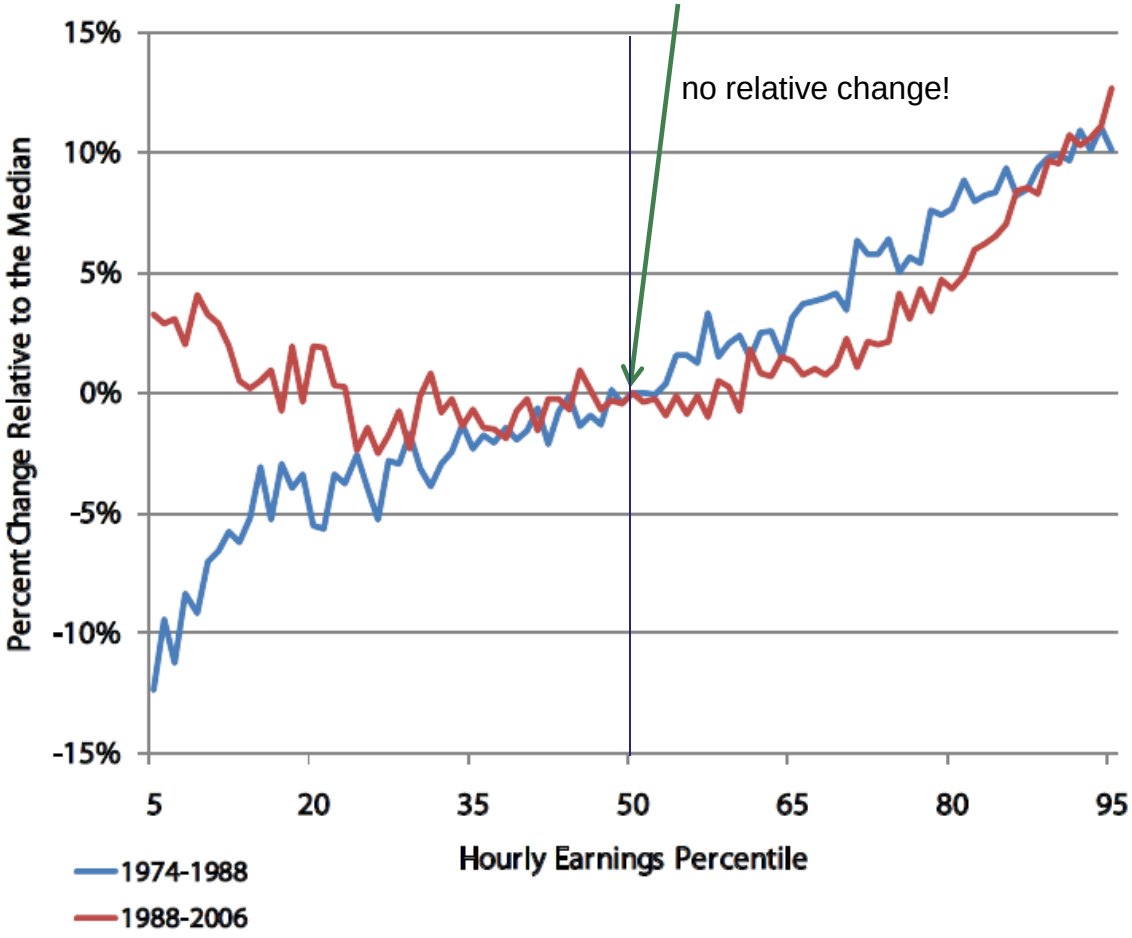
FIGURE 4: FROM MONOTONIC WIDENING TO POLARISATION? US DATA



Source: Autor, Katz & Kearney (2008)

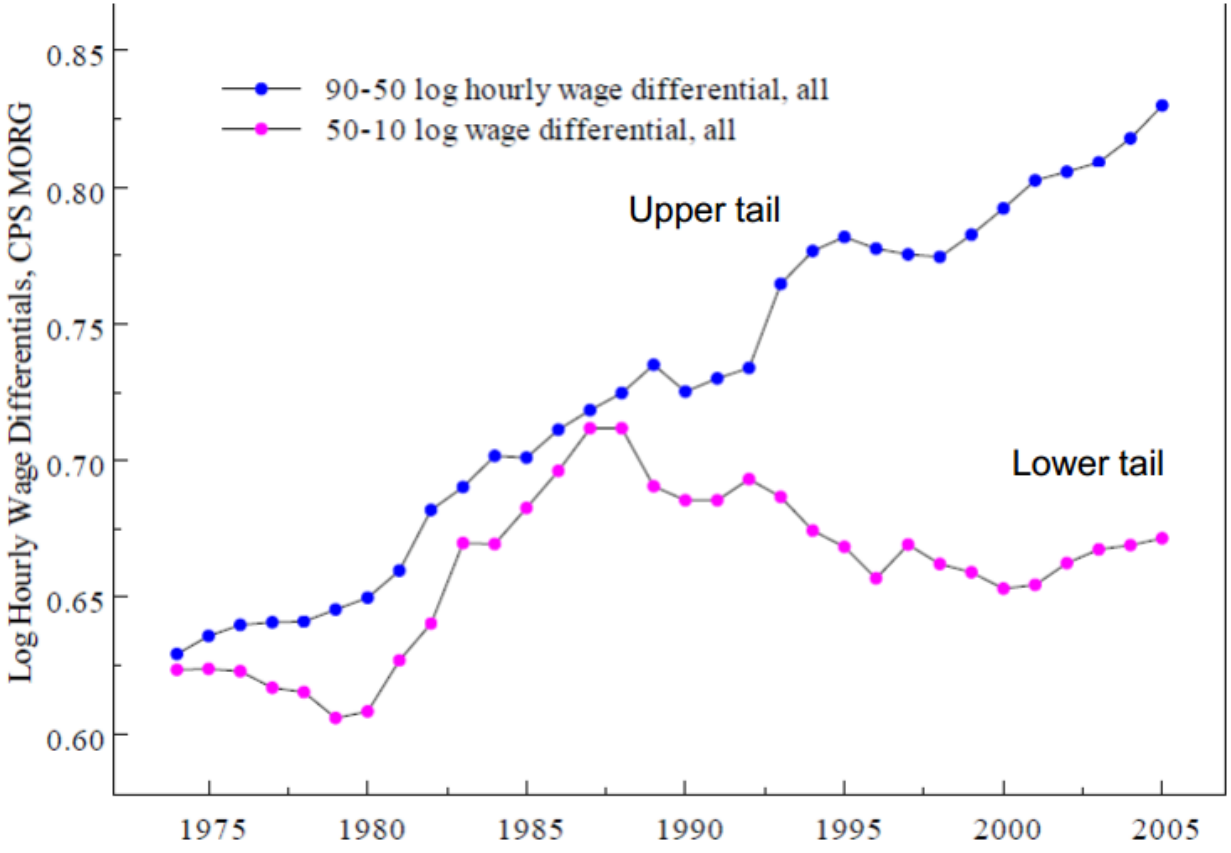
Source: Van Reenen …

Figure 2. *Percent Changes in Male and Female Hourly Wages Relative to the Median*



Source: Autor (2011) The Polarization of Job Opportunities in the U.S. Labor Market: *Implications for Employment and Earnings,* Community Investments, Fall 2011 – Volume 23, Issue 2

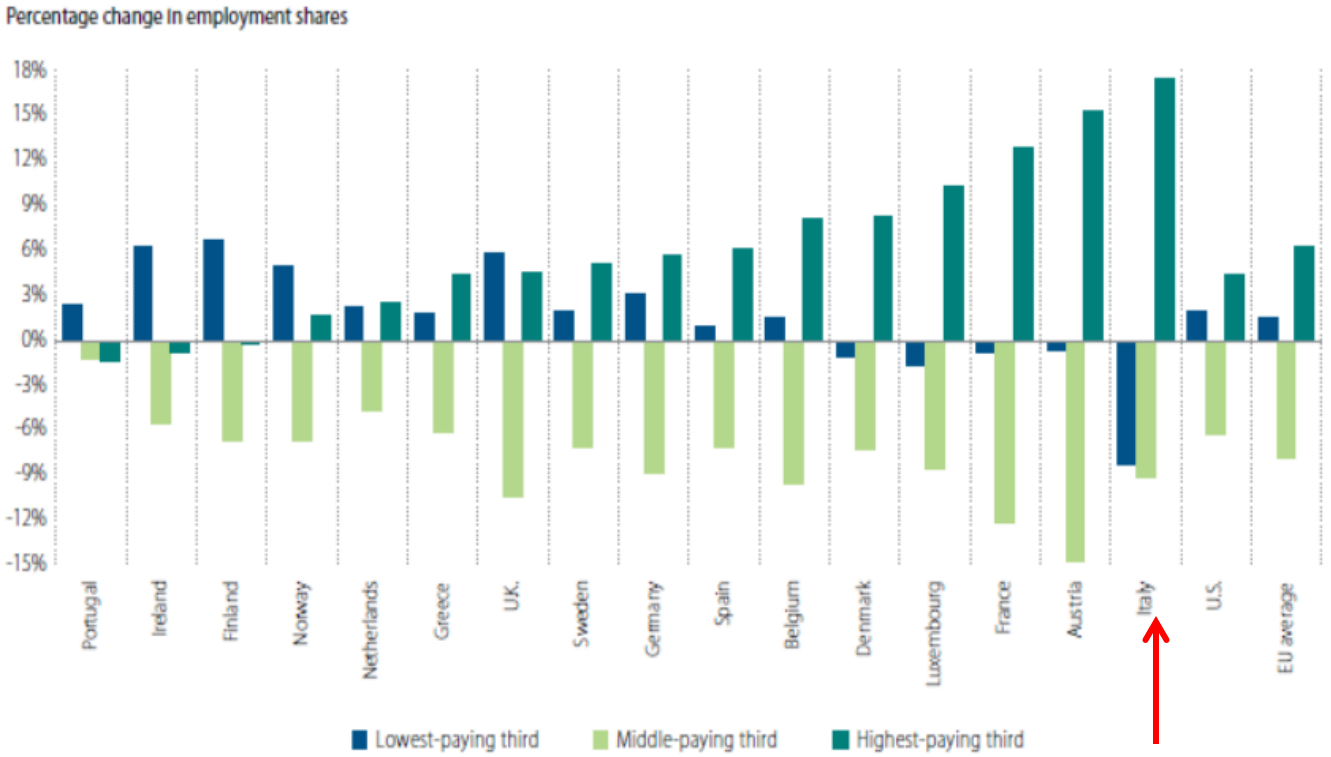
FIGURE 5, PANEL A: DIVERGENCE OF UPPER HALF (90-50 LOG HOURLY WAGE) & LOWER HALF (50-10) INEQUALITY, 1975-2005, US DATA



Note: US CPS MORG; **Source:** Goldin and Katz (2008)

Source: Van Reenen …

FIGURE 7: CHANGE IN EMPLOYMENT SHARES BY OCCUPATION IN 16 EU COUNTRIES, OCCUPATIONS GROUPED BY WAGE TERCILE, 1993-2006



Source: Autor (2010) based on data in Goos, Manning & Salomons (2010)

To be stressed: the generalized fall of employment in the central tercile

Source: Van Reenen …

Fall of employment and wages in the central part of the distribution:

the crisis of the middle income class

Inequality trend: extreme inequality

US economy

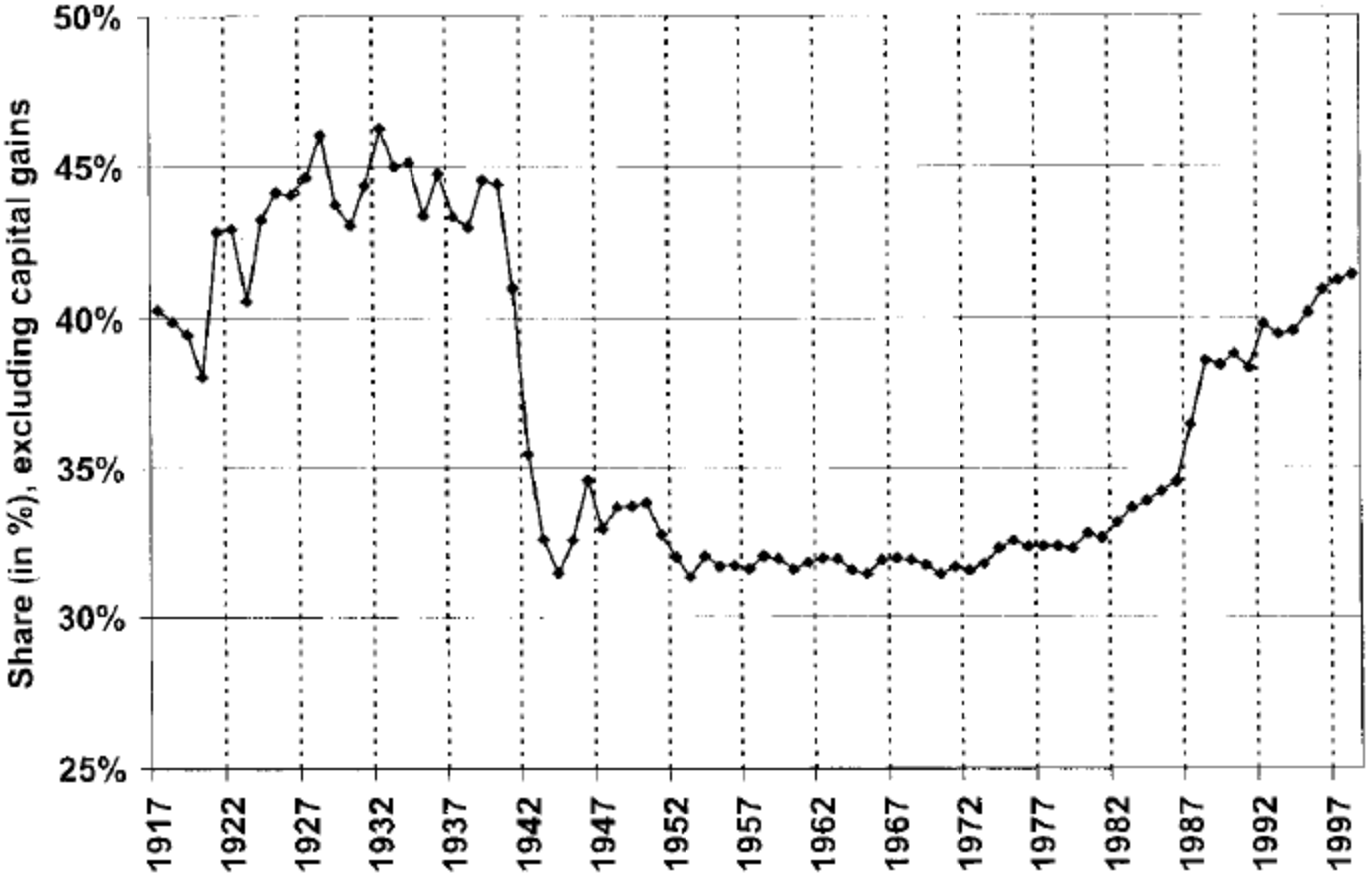


FIGURE I
The Top Decile Income Share, 1917–1998

Source: Piketty Saez (2003), *Income inequality in the United States*, 1913–1998, QJE

US economy

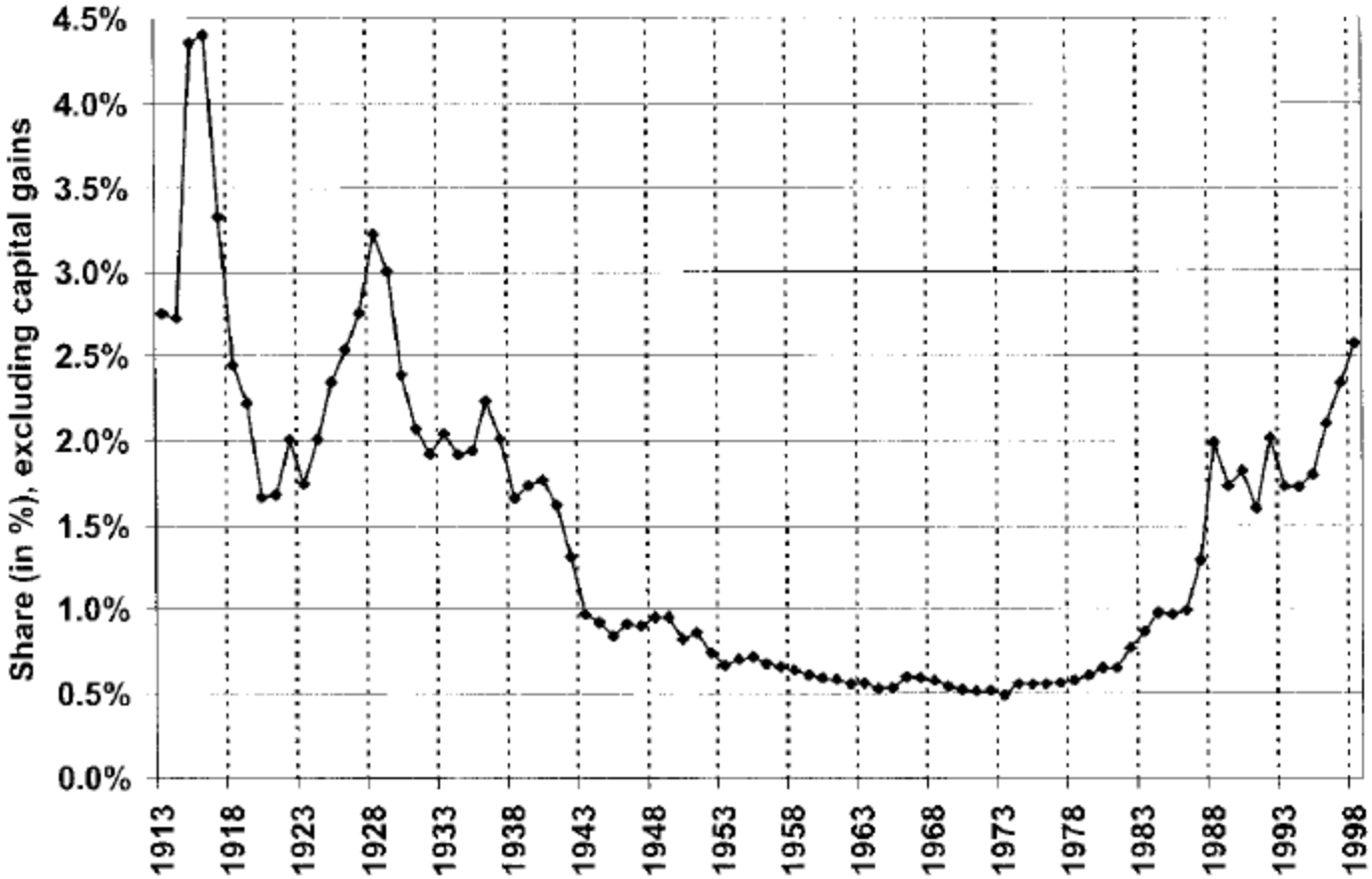


FIGURE III
The Top 0.01 Percent Income Share, 1913–1998

Source: Piketty Saez (2003), *Income inequality in the United States*, 1913–1998, QJE

US economy

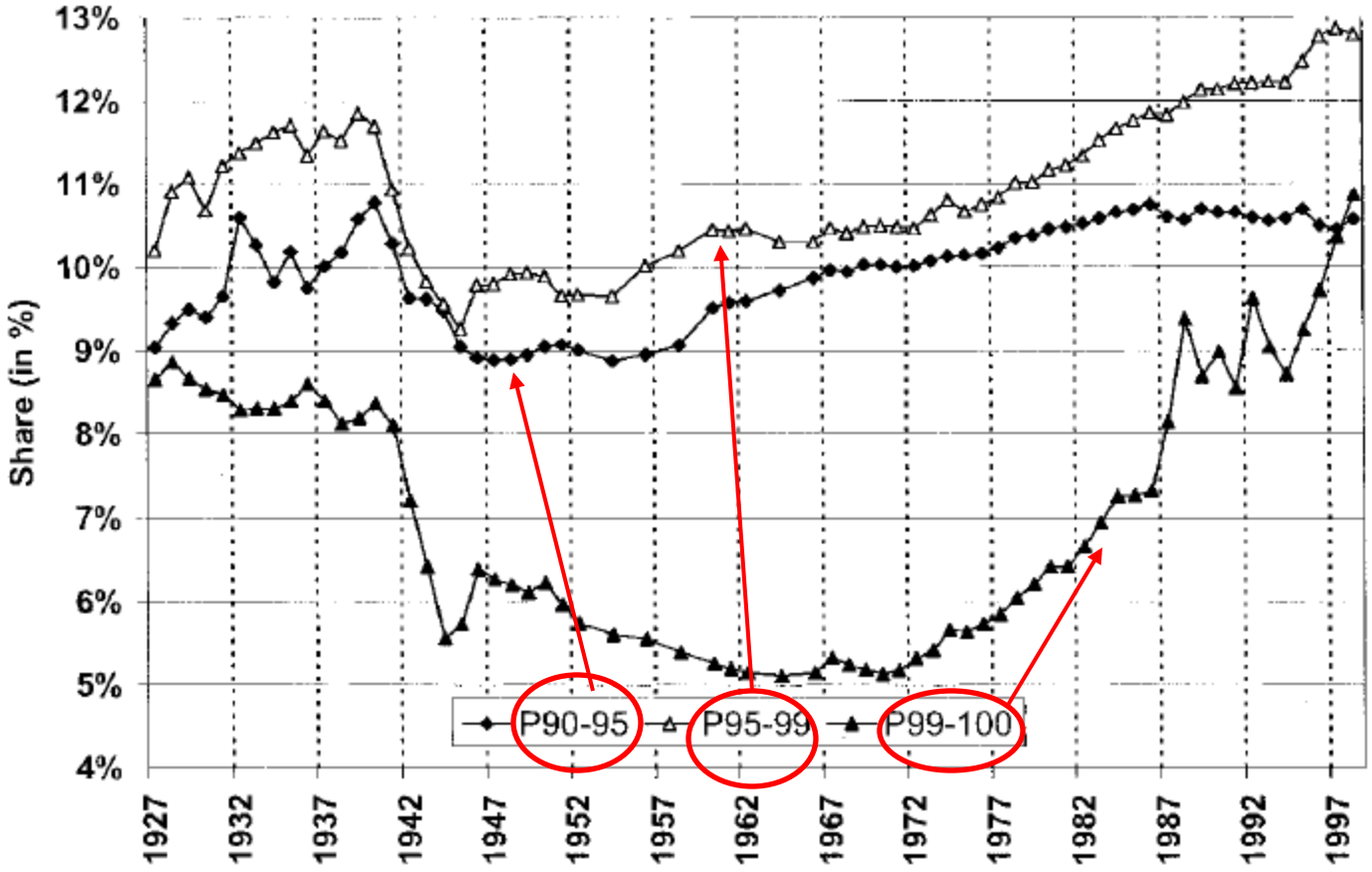


FIGURE IX

Wage Income Shares for P90–95, P95–99, and P99–100, 1927–1998

Source: Piketty Saez (2003), *Income inequality in the United States*, 1913–1998, QJE

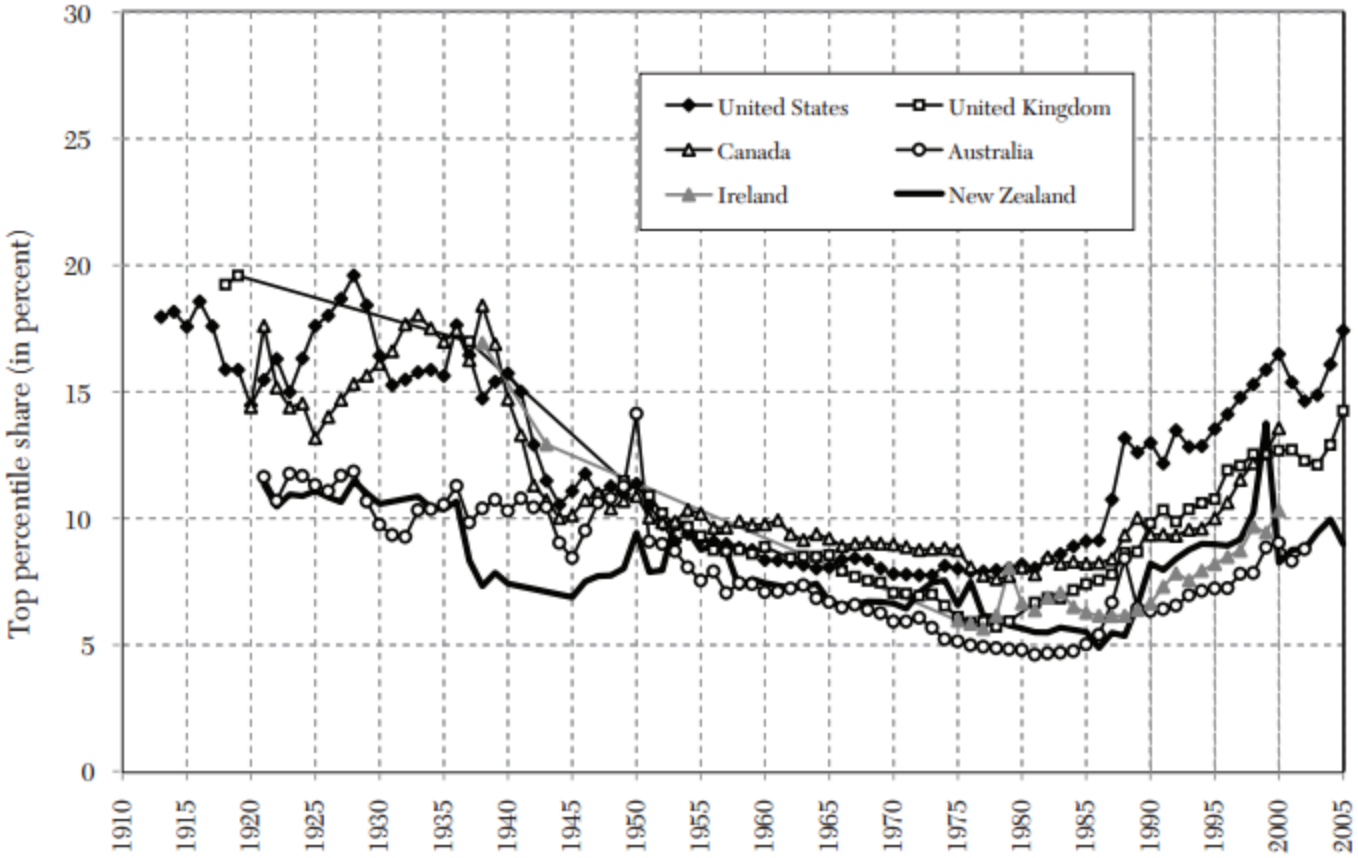
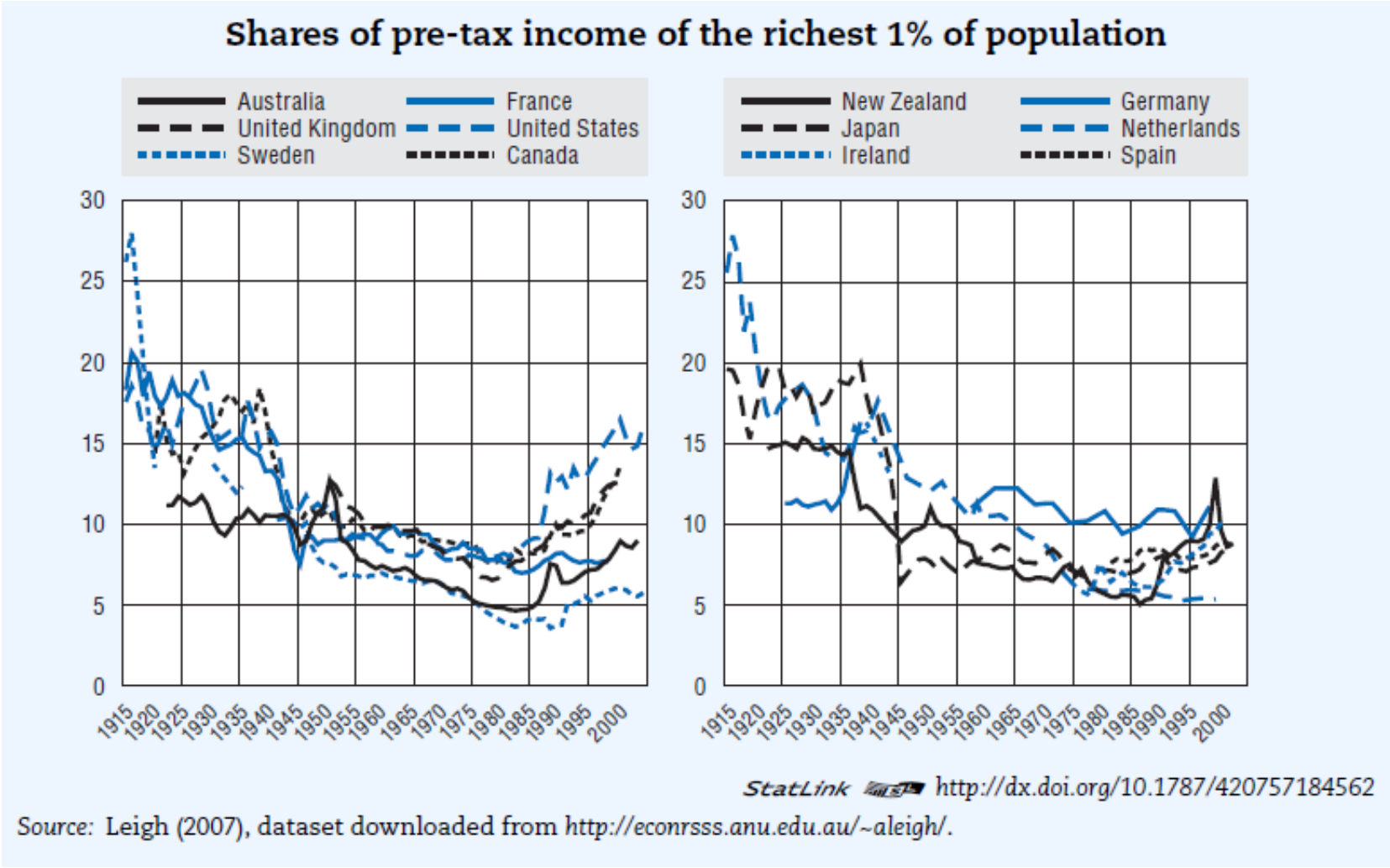
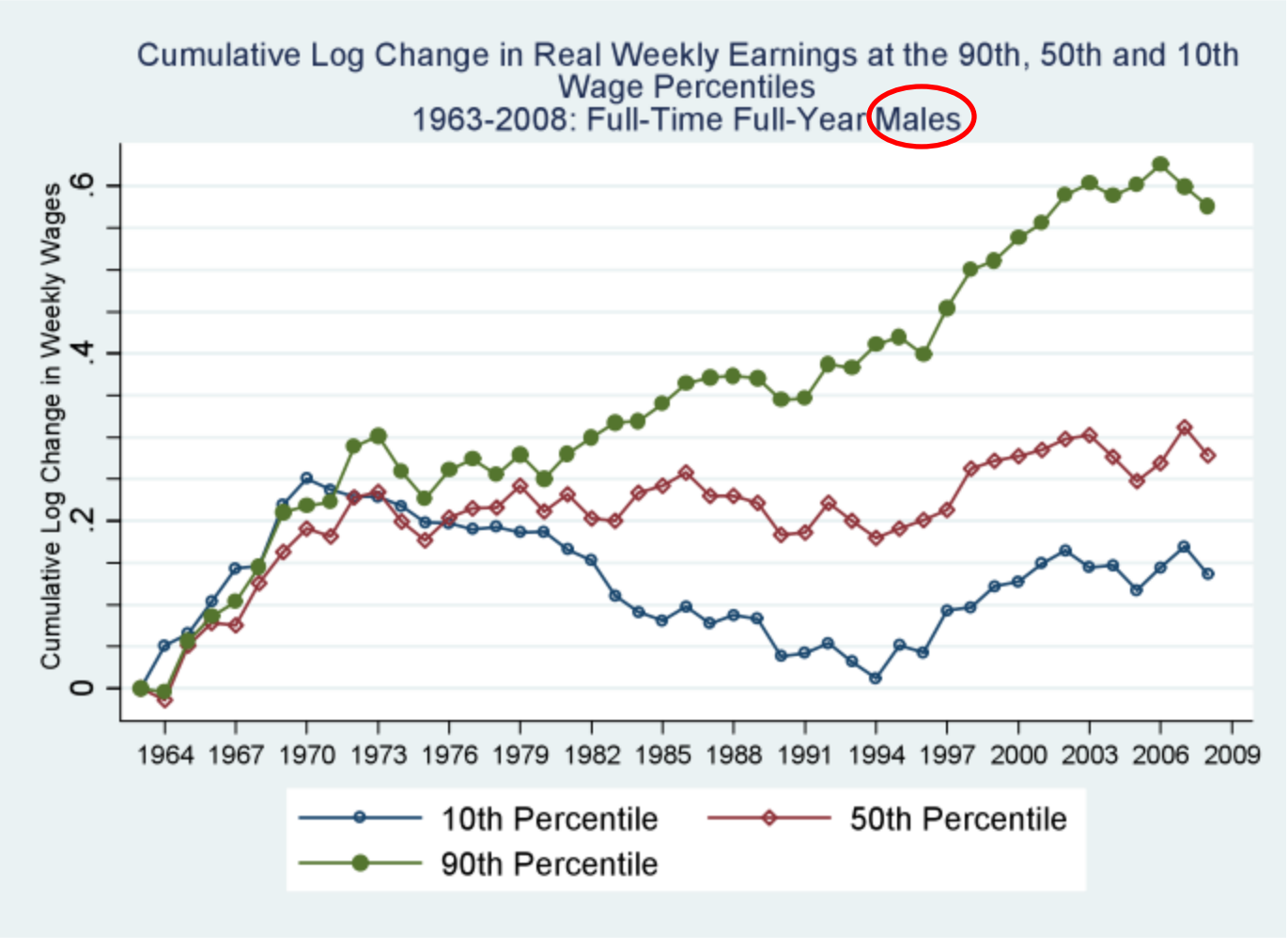


Figure 8. Top 1 Percent Share: English Speaking Countries (*U*-shaped), 1910–2005

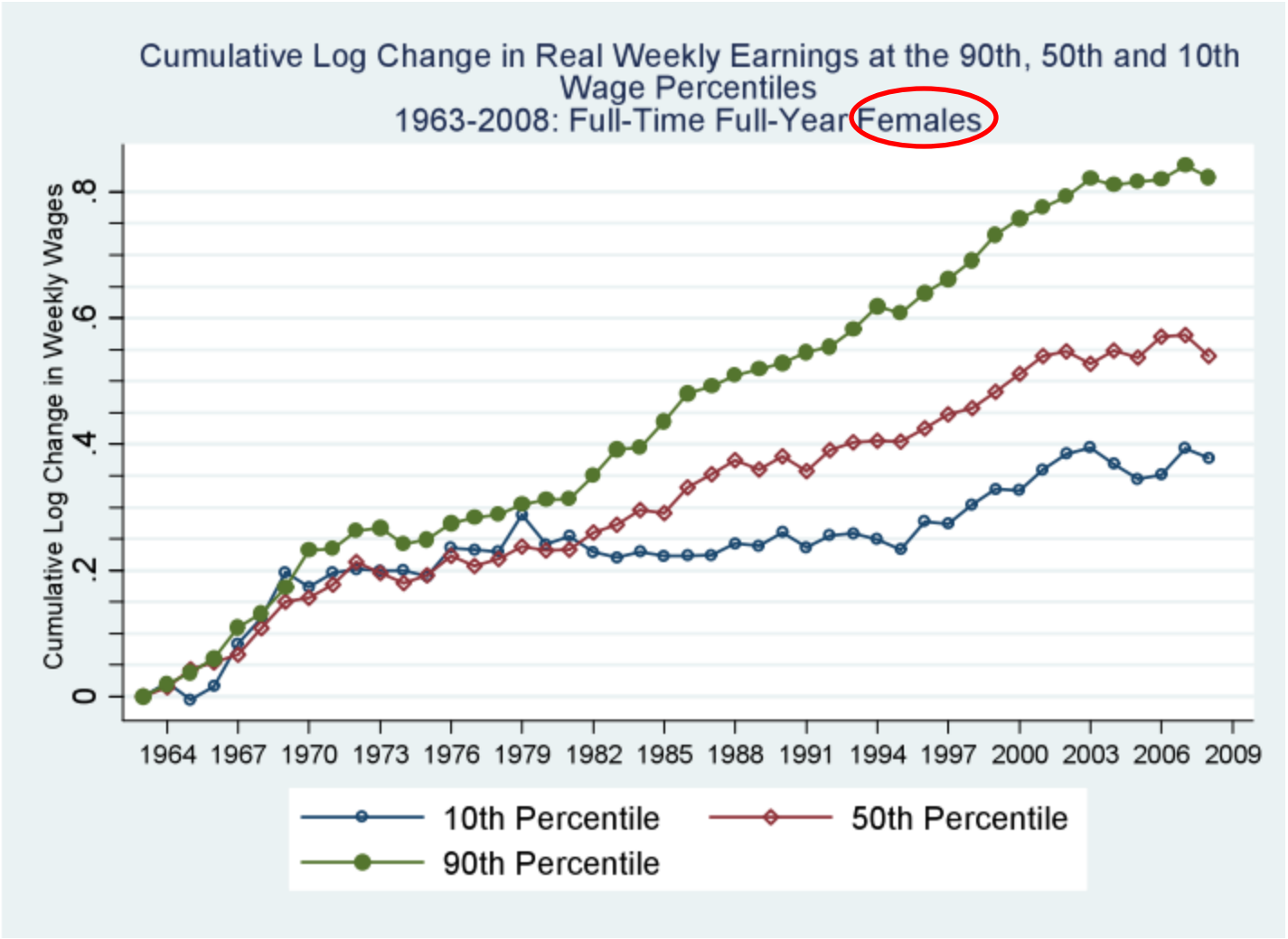
Source: Atkinson and Piketty (2007, 2010).



Source: Oecd (2008), Growing unequal

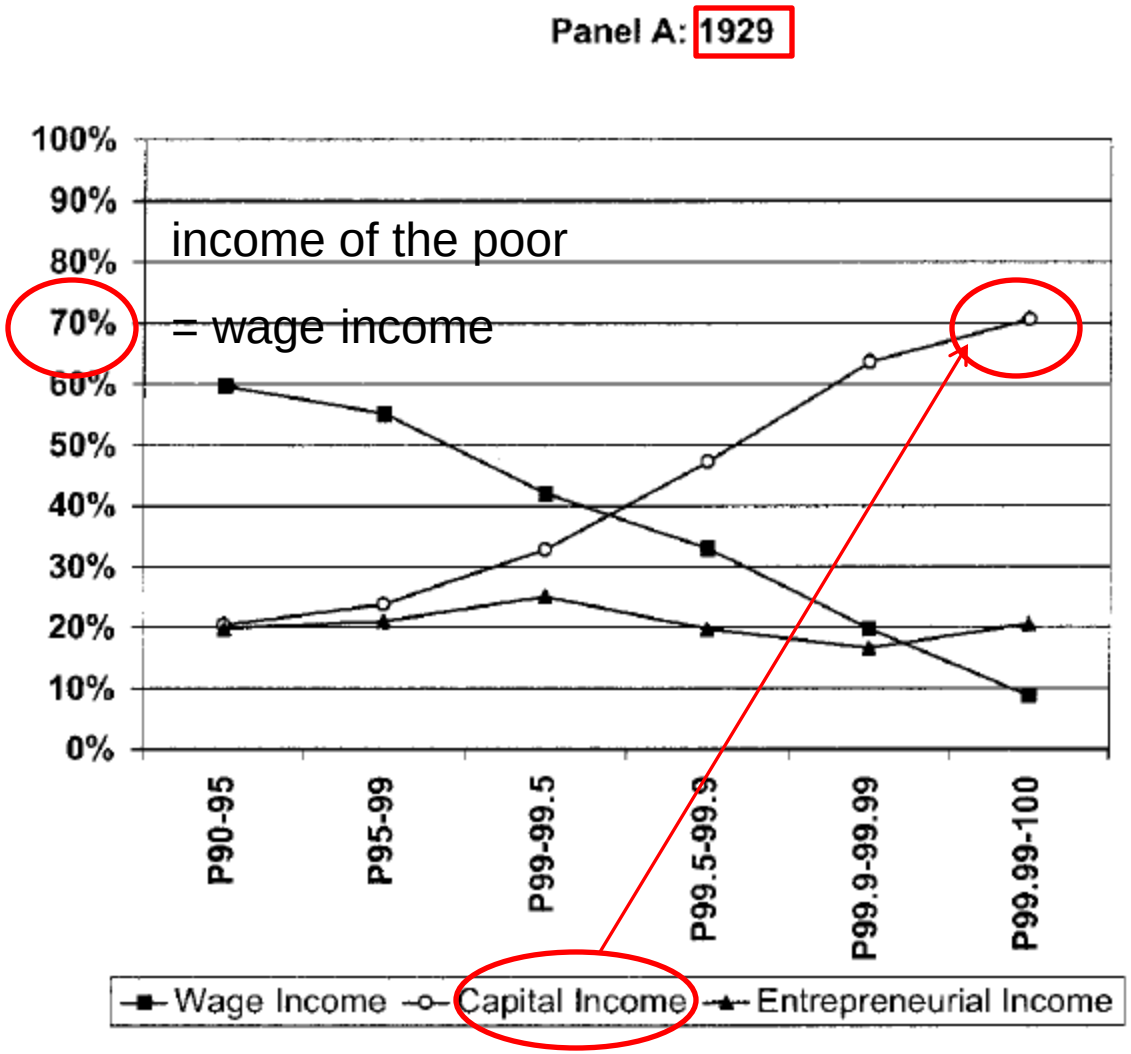


Source: Acemoglu, Autor(2010), Skills, Tasks and Technologies: Implications for Employment and Earnings, MIT



Source: Acemoglu, Autor(2010), Skills, Tasks and Technologies: Implications for Employment and Earnings, MIT

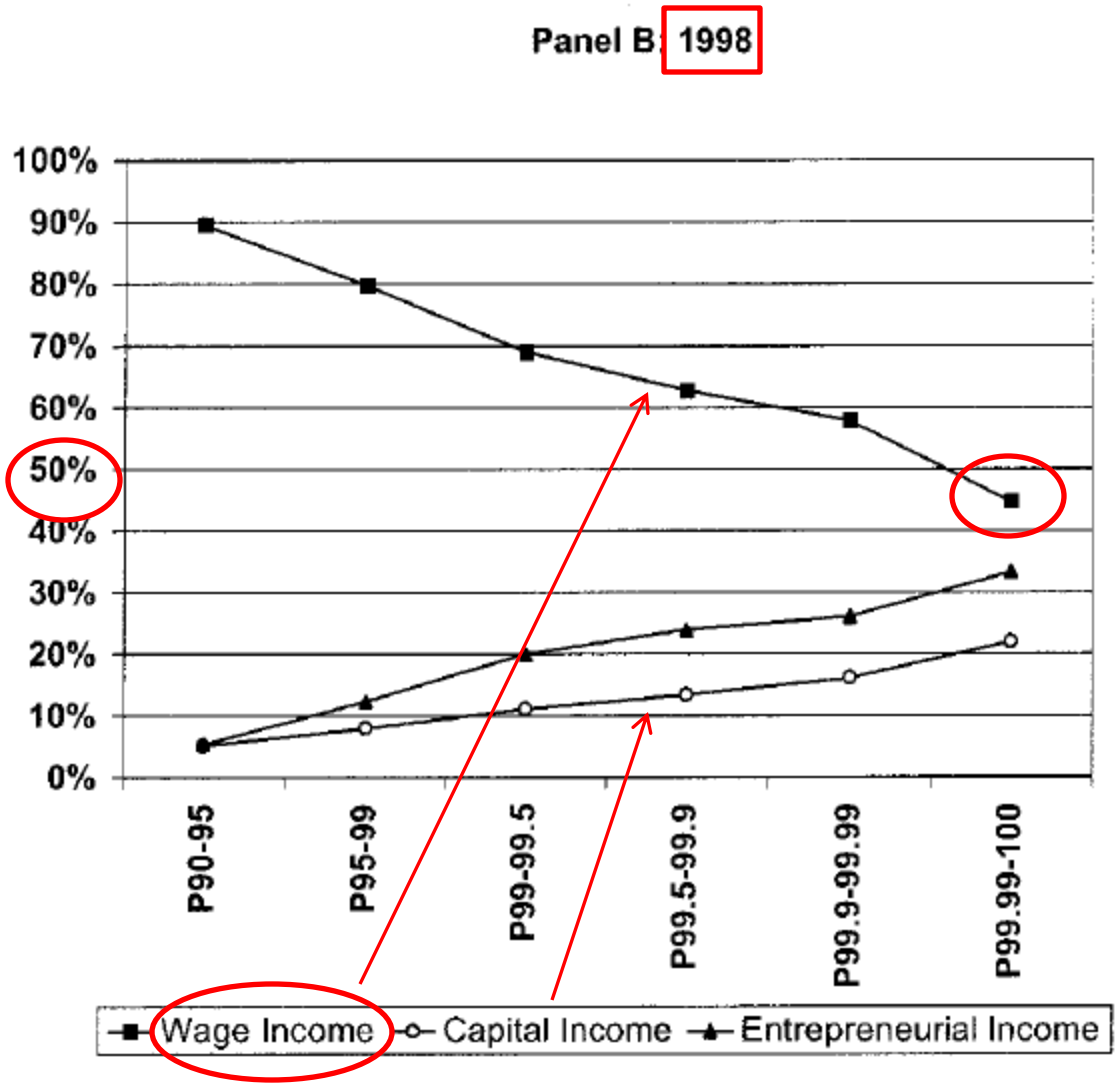
US economy



income of the rich
=
capital income

Source: Piketty Saez (2003), *Income inequality in the United States*, 1913–1998, QJE

US economy



Income of the rich

=

(still?)

mainly wage income

Source: Piketty Saez (2003), *Income inequality in the United States*, 1913–1998, QJE

… and from income to wealth …..

income and wealth distribution in Italy

(% of income/wealth to quintiles, about 2010)

	quintiles		
	bottom	3 middle	top
wealth%	0,5	17,0	82,5
income%	7,4	54,0	38,6

source:
OECD for wealth EUROSTAT for income

Much higher inequality in wealth than in income

Two possible causes:

- the return on capital is higher than the real economy growth

- only rich people can save

income and wealth distribution in USA

(% of income/wealth to quintiles, about 2010)

	quintiles		
	bottom	3 middle	top
wealth%	-1,0	4,7	96,4
income%	4,8	49,3	46,0

source:
OECD for wealth Luxembourg Incme Study for income

A partially different story: Europe

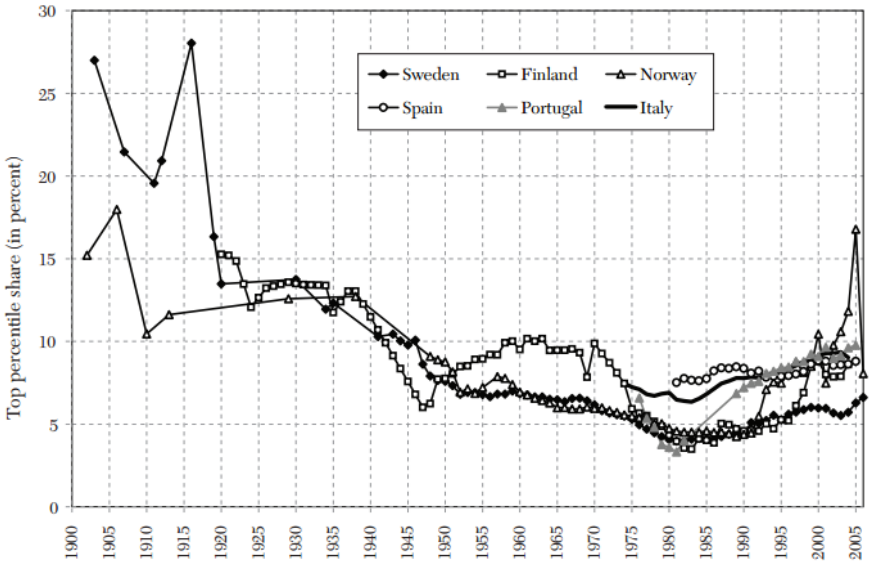


Figure 10. Top 1 Percent Share: Nordic and Southern Europe (*U/L*-shaped), 1900–2006

Source: Atkinson and Picketty (2007, 2010).

Less evident final increase

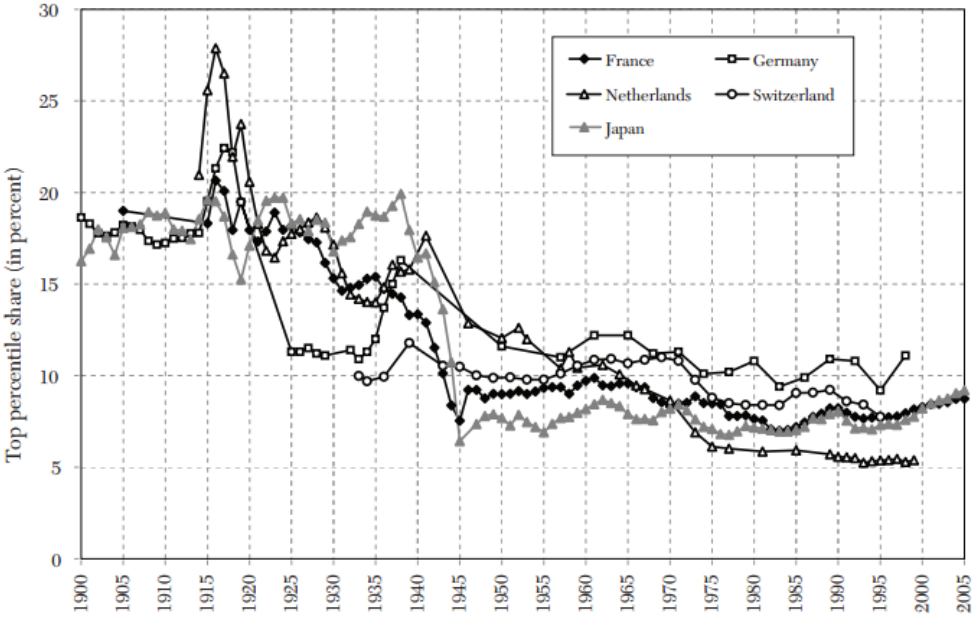


Figure 9. Top 1 Percent Share: Middle Europe and Japan (*L*-shaped), 1900–2005

According to Piketty:

We're going back to a nineteenth-century situation

(consider that wealth is not accumulated, it is inherited)

Solution (according to Piketty):

- progressive taxation of large estates

-fight against tax havens

- ***strict rules on tax evasion***

Possible causes of (within) inequality:

- social mobility
- demography
- technology
- globalization

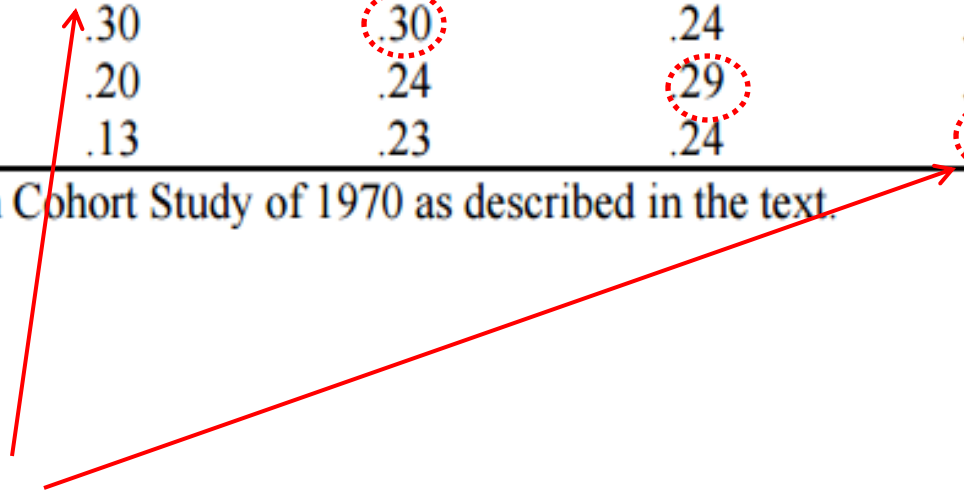
social mobility

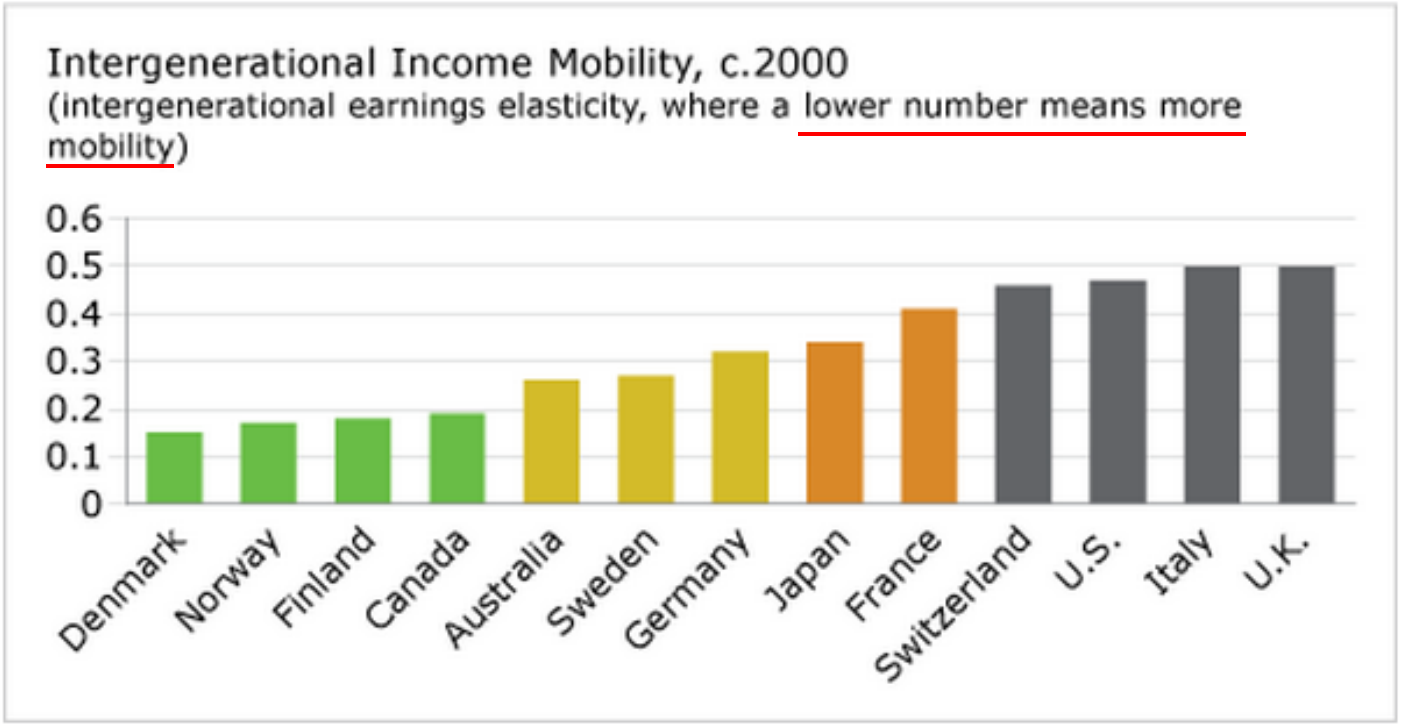
Social mobility and equality of opportunity
have become issues of
political and social concern
in the recent past

Table 1: Transition Matrix for Britain, Sons Born in 1970

	Sons' earnings quartile aged 30 in 2000			
Parental average income quartile (average of incomes measured when son aged 10 and 16)	Bottom	2nd	3rd	Top
Bottom	.37	.23	.23	.16
2nd	.30	.30	.24	.16
3rd	.20	.24	.29	.27
Top	.13	.23	.24	.40

Data drawn from the British Cohort Study of 1970 as described in the text.



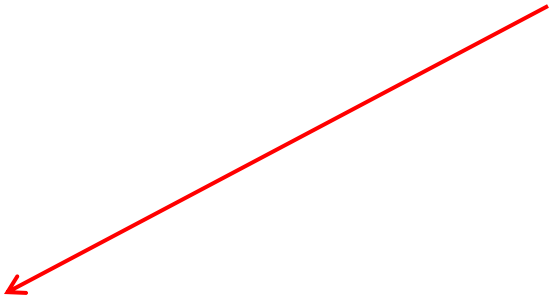


EXAMPLE: if intergenerational earnings elasticity is 0.20, this means that if an individual in that country earns $10,000 less income than the average, 20 per cent of that difference (or, $2,000) will be passed on to the individual's children. In other words, the children will earn $2,000 less than the average (other things being equal).

SOURCE:
http://www.conferenceboard.ca/hcp/details/society/intergenerational-income-mobility.aspx

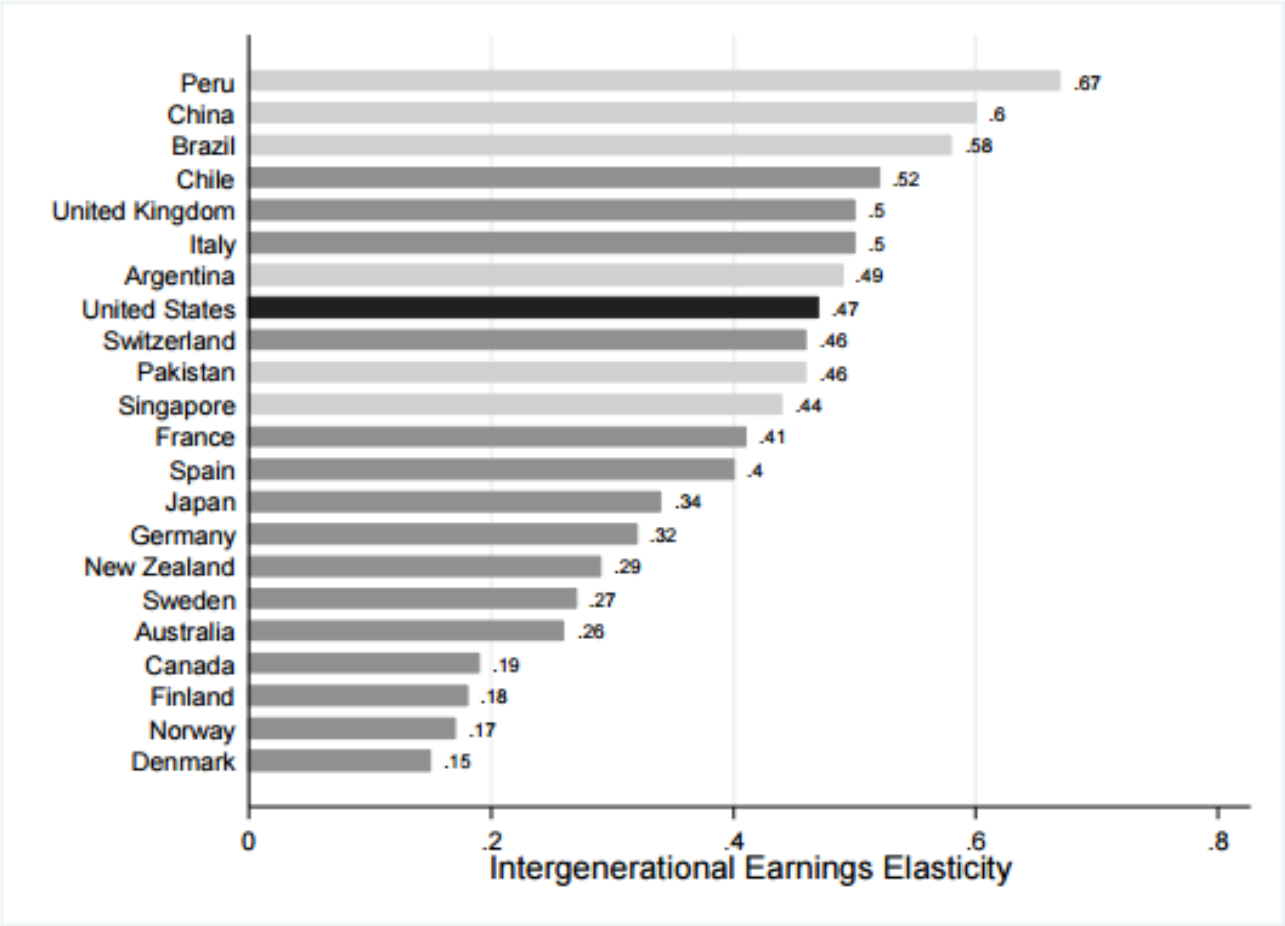
What is “intergenerational income elasticity”? running a regression of this kind …

$$\ln(Y_{child}) = \alpha + \beta_1 \ln(Y_{parent}) + \varepsilon$$



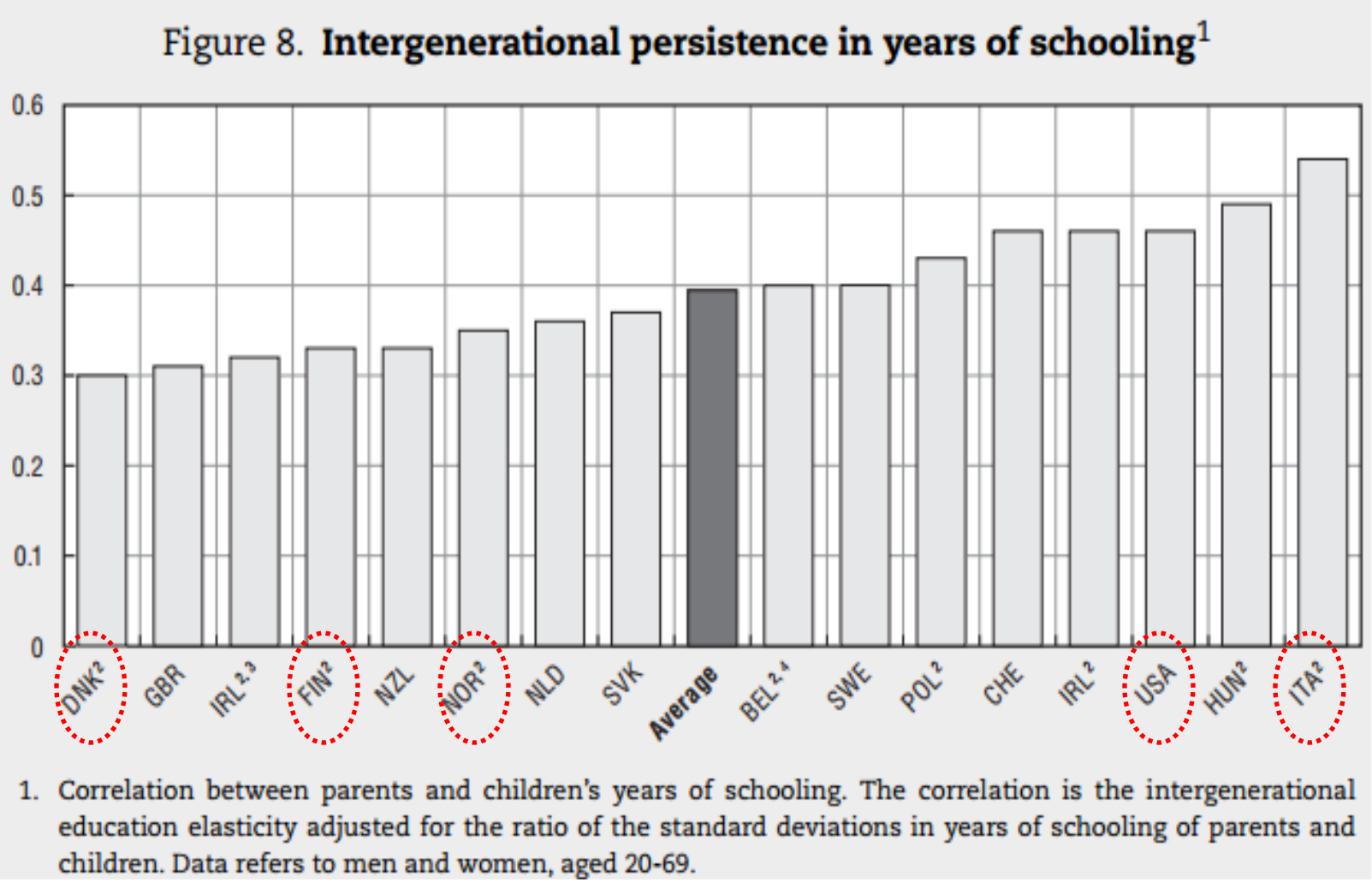
β_1 is the “elasticity” between Y_{child} and Y_{parent}

Comparable estimates of the intergenerational elasticity between father and son earnings for the United States and twenty one other countries



Corak M. (2012), Inequality from generation to generation: the United States in Comparison

Is it linked to education?



1. Correlation between parents and children's years of schooling. The correlation is the intergenerational education elasticity adjusted for the ratio of the standard deviations in years of schooling of parents and children. Data refers to men and women, aged 20-69.

The Inheritance of Educational Inequality: International Comparisons and Fifty-Year Trends (2013) Hertz, Jayasundera, Piraino, ecc)

TABLE 2

COUNTRIES RANKED BY AVERAGE PARENT-CHILD SCHOOLING CORRELATION, AGES 20-69

Country	Coefficient	Rank	Correlation	Rank
Peru	0.88	6	0.66	1
Ecuador	0.72	12	0.61	2
Panama	0.73	11	0.61	3
Chile	0.64	18	0.60	4
Brazil	0.95	4	0.59	5
Colombia	0.80	8	0.59	6
Nicaragua	0.82	7	0.55	7
Indonesia	0.78	9	0.55	8
Italy†	0.67	17	0.54	9
Slovenia†	0.54	27	0.52	10
Egypt	1.03	2	0.50	11
Hungary†	0.61	20	0.49	12
Sri Lanka	0.61	19	0.48	13
Pakistan	1.00	3	0.46	14
USA	0.46	33	0.46	15
Switzerland†	0.49	30	0.46	16
Ireland†	0.70	15	0.46	17
South Africa (KwaZulu-Natal)	0.69	16	0.44	18
Poland†	0.48	31	0.43	19
Vietnam	0.58	23	0.40	20
Philippines	0.41	36	0.40	21
Belgium (Flanders)	0.41	35	0.40	22
Estonia	0.54	28	0.40	23
Sweden	0.58	26	0.40	24
Ghana	0.71	13	0.39	25
Ukraine	0.37	40	0.39	26
East Timor	1.27	1	0.39	27
Bangladesh (Matlab)	0.58	25	0.38	28
Slovakia	0.61	21	0.37	29
Czech Republic†	0.44	34	0.37	30
The Netherlands	0.58	24	0.36	31
Norway	0.40	38	0.35	32
Nepal	0.94	5	0.35	33
New Zealand†	0.40	37	0.33	34
Finland	0.48	32	0.33	35
Northern Ireland	0.59	22	0.32	36
Great Britain†	0.71	14	0.31	37
Malaysia	0.38	39	0.31	38
Denmark	0.49	29	0.30	39
Kyrgyzstan	0.20	42	0.28	40
China (Rural)	0.34	41	0.20	41
Ethiopia (Rural)	0.75	10	0.10	42

Surveyed between 1994 and 2004, except Peru (1985), Malaysia (1988) and Pakistan (1991).
† Ages 20 to 64 or 65 only.

why are poor children in some countries more likely as adults to end up poor than children in other countries)? ...

… three factors determine the ability of children to move into a higher economic class:

- ***family background and resources***
- ***labour market inequalities***
- ***government policies***

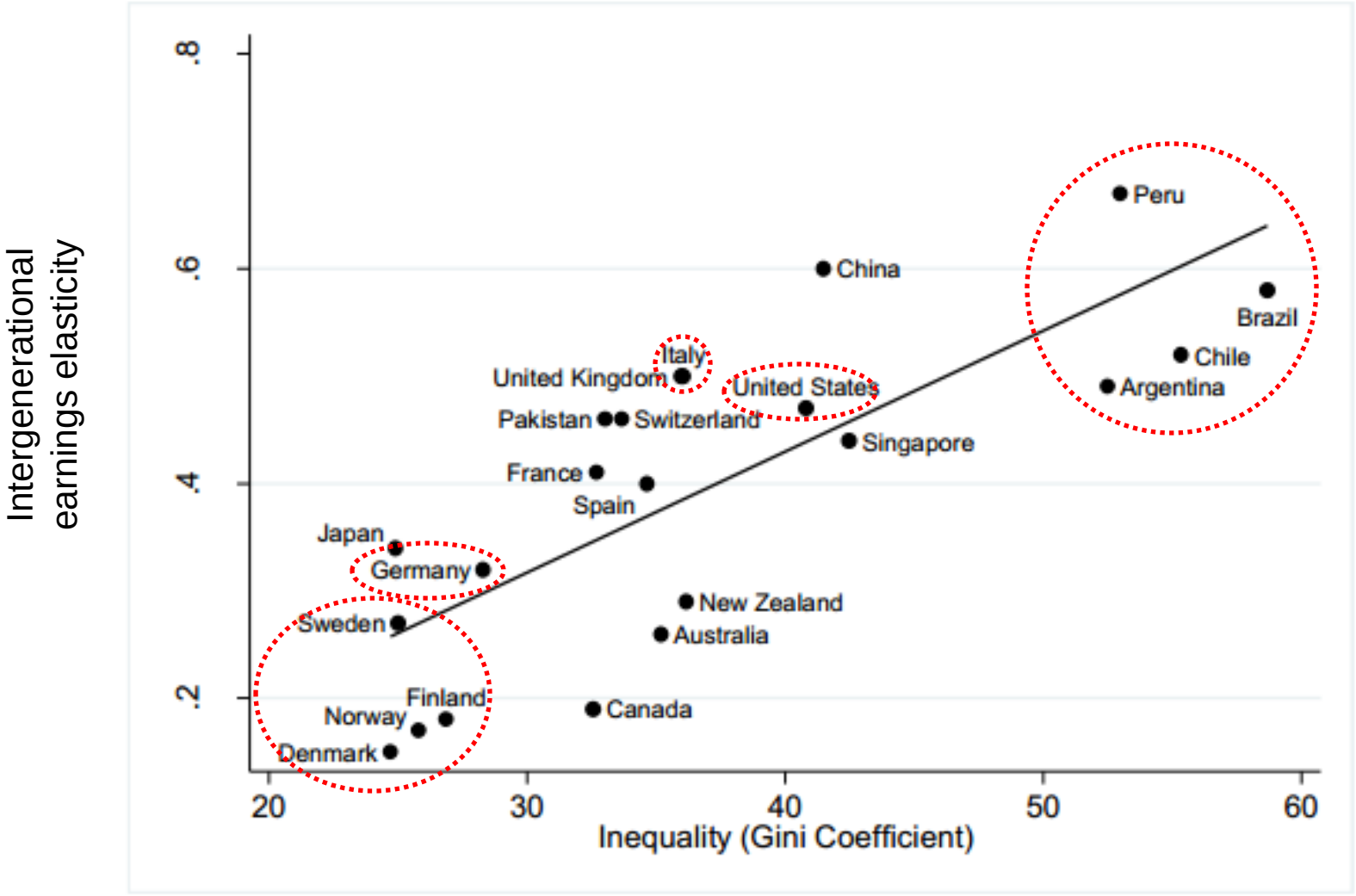
“in many countries, parental wealth has substantial effect on children’s educational education, occupational status, consumption and wealth later in life”

UN (2013), Inequality Matters, chapter 3 (the impact of inequality)

“the more unequal a society is, the more difficult it is to move up the social ladder, simply because children have a greater gap to make up.”

OECD, *Growing Unequal? Income Distribution and Poverty in OECD Countries* (Paris: OECD, 2008), 204

THE GREAT GATSBY CURVE



Source: Miles Corak, (2012) Inequality from generation to generation: the United States in Comparison

Education is an important channel for socioeconomic mobility.

Countries with higher overall levels of education tend to have higher intergenerational mobility

Example:

In Latin America,
a region with very high inequalities,
a main determinant of the fall in wage inequality over the 2000s was

the increase in secondary enrolment and completion rates
(begun in the early 1990s and accelerated during the 2000s)

This trend benefitted children from low income families in particular

… even if …

recent researches (UK and USA) have shown that **the relationship between family income and children's higher education attainment has grown**

This implies that the
big expansion in university participation
has benefitted children from affluent families more
thus
reinforced immobility across generations

Possible role for public education

(see the “Scandinavian model” and outcomes!)

demography

Income distribution depends also on the distribution of people by age (if they have different level of income)

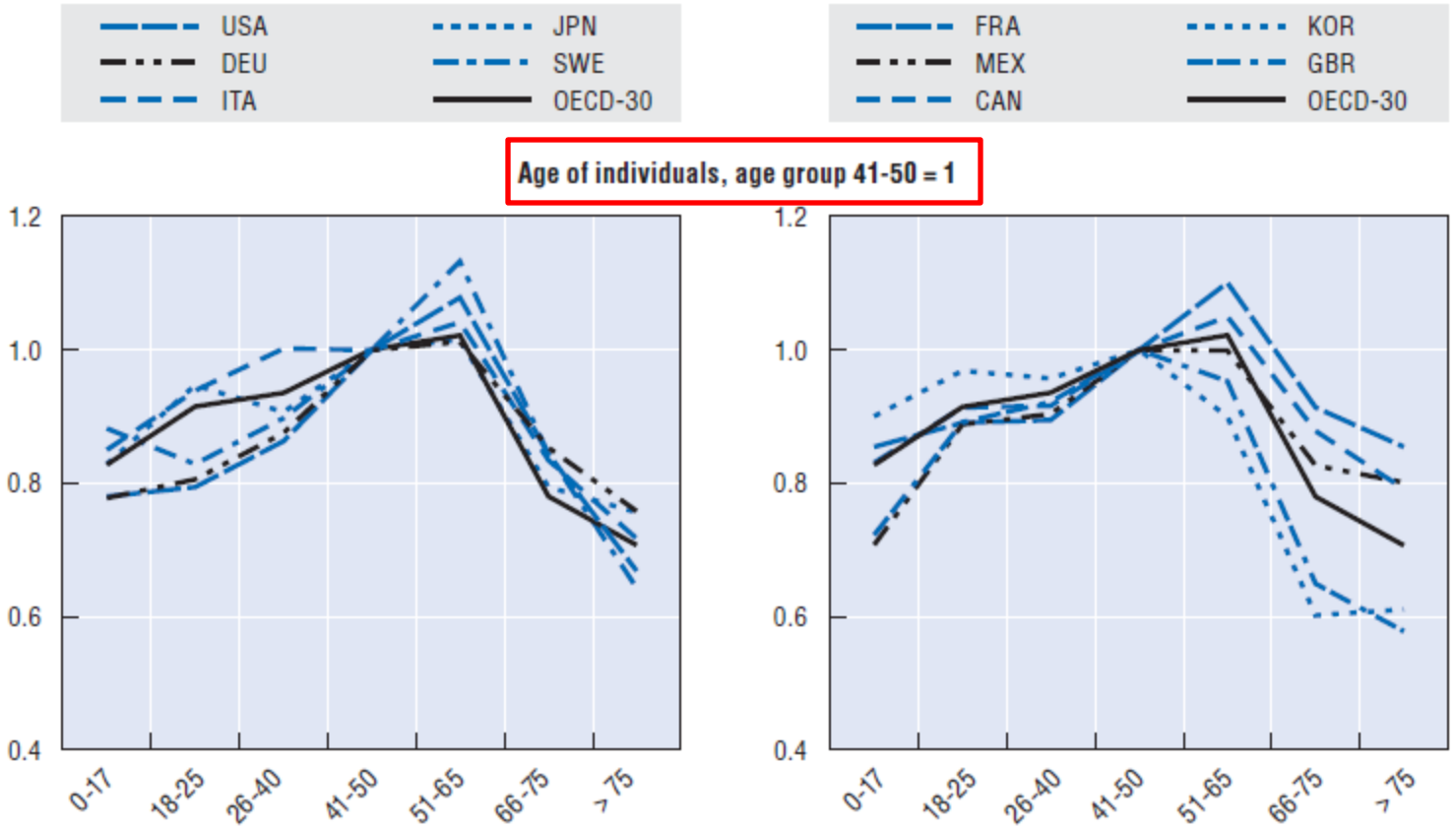
All OECD countries have experienced radical changes in their demographic profiles

These changes have implications for income inequality

This is because these changes alter the size of different demographic groups and the ways income is shared within households

Relative Income by age of individuals selected OECD countries

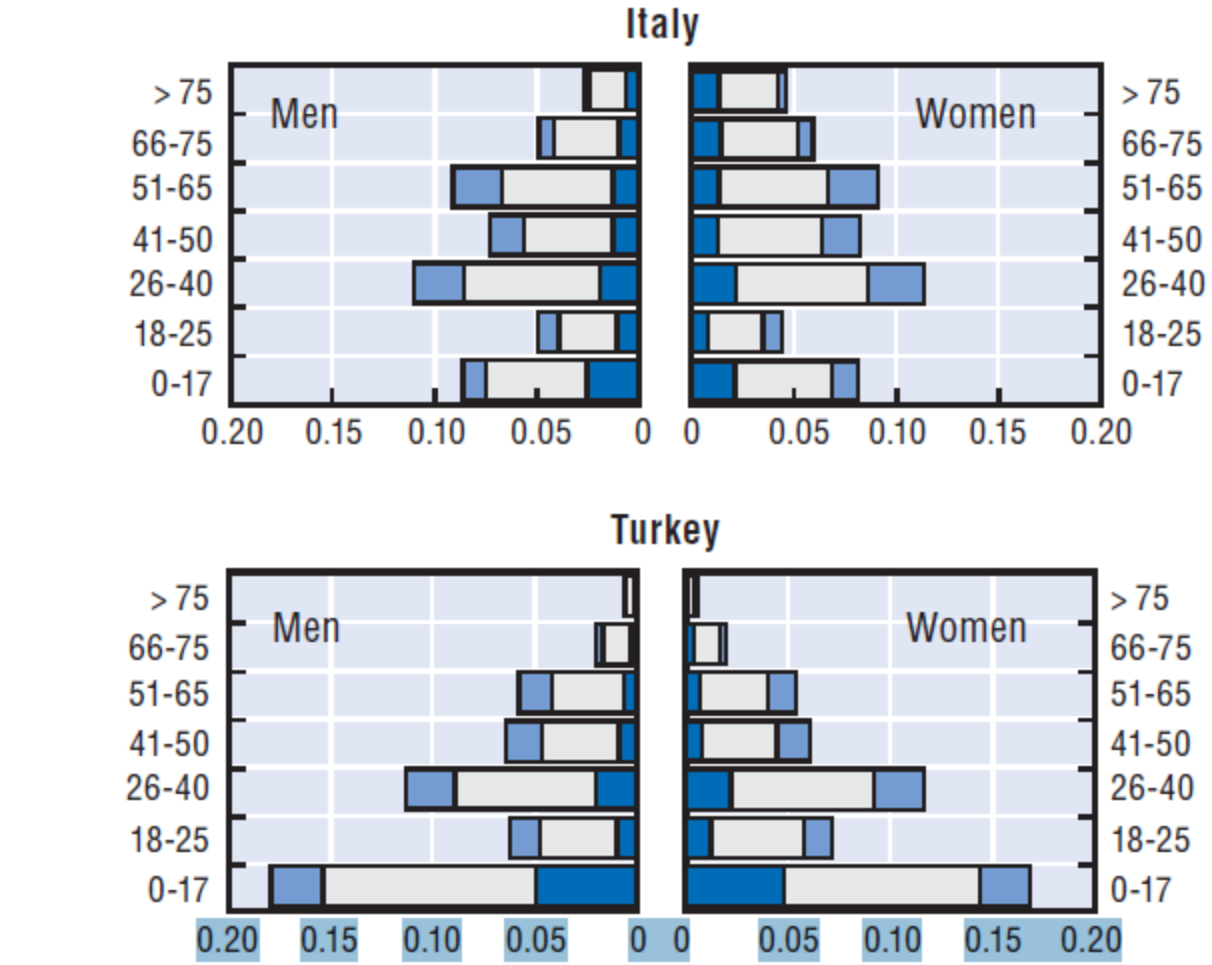
Equivalised household disposable income, mid-2000s



Higher wages in around age 50 (or more)

OECD (2008), Growing unequal? …

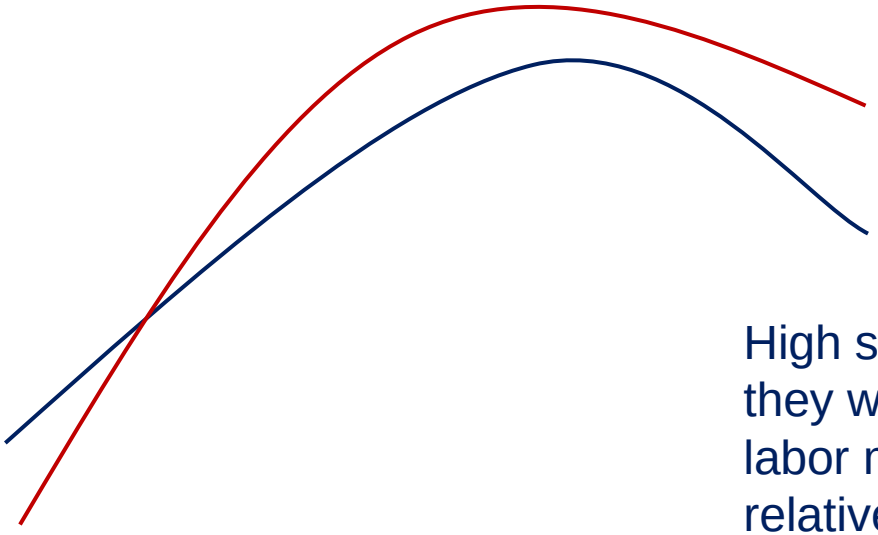
Population pyramids in mid-2000s
by gender, age and income quintiles



About 50% of people in age 41-65 (m + f)

About 25% of people in age 41-65

A possible factor offsetting this:
curves of relative income by age of individuals can change when age structure change

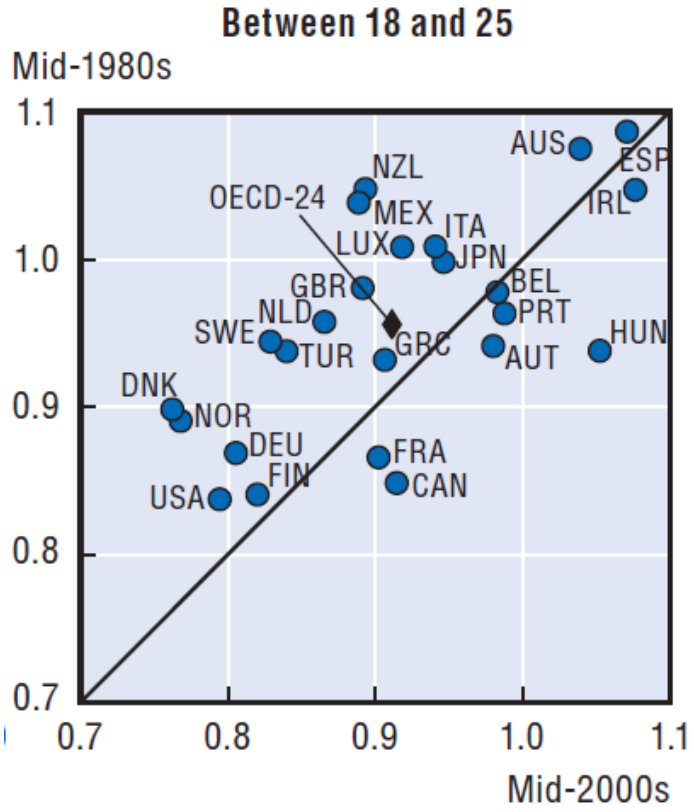


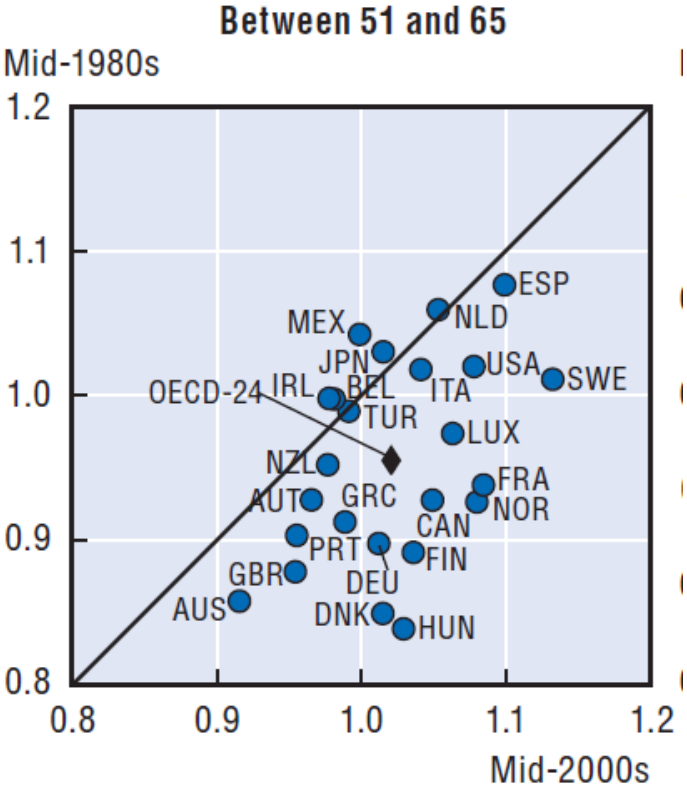
High share of aged people:
they will compete in the
labor market lowering their
relative income

High share of young people:
they will compete in the
labor market lowering their
relative income

Relative Income of individuals by age

Average household disposable income of two age groups (examples)
relative to that of people aged 41 to 50,
mid-1980s and mid-2000s





better in the 80s

better in the 2000s

OECD (2008), Growing unequal? …

Changes in income inequality assuming a constant age structure

	Period	Total change in Gini coefficient	Change in Gini coefficient at constant age structure	
				Share of total change (%)
Australia	1995-2004	–0.008	–0.011	–31.8
Austria[1]	1987-2000	0.028	0.029	–2.0
Belgium[1]	1985-2000	0.053	0.049	8.8
Canada	1985-2005	0.027	0.026	4.1
Denmark[1]	1987-2004	–0.024	–0.024	2.6
Finland	1986-2004	0.062	0.058	7.1
France[1]	1984-2000	–0.008	–0.008	–2.9
Germany	1985-2005	0.044	0.045	–2.5
Italy	1984-2004	0.063	0.069	–10.3
Luxembourg	1986-2004	0.011	0.011	2.7
Mexico	1984-2004	0.021	0.021	0.6
Netherlands[1]	1985-1999	–0.003	–0.002	51.4
Norway	1986-2004	0.046	0.048	–5.1
Spain[1]	1980-2000	0.018	0.020	–8.9
Sweden	1983-2004	0.019	0.018	9.4
United Kingdom	1985-2005	0.051	0.049	3.3
United States[1]	1986-2000	0.037	0.035	3.3
Average		0.026	0.026	0.9

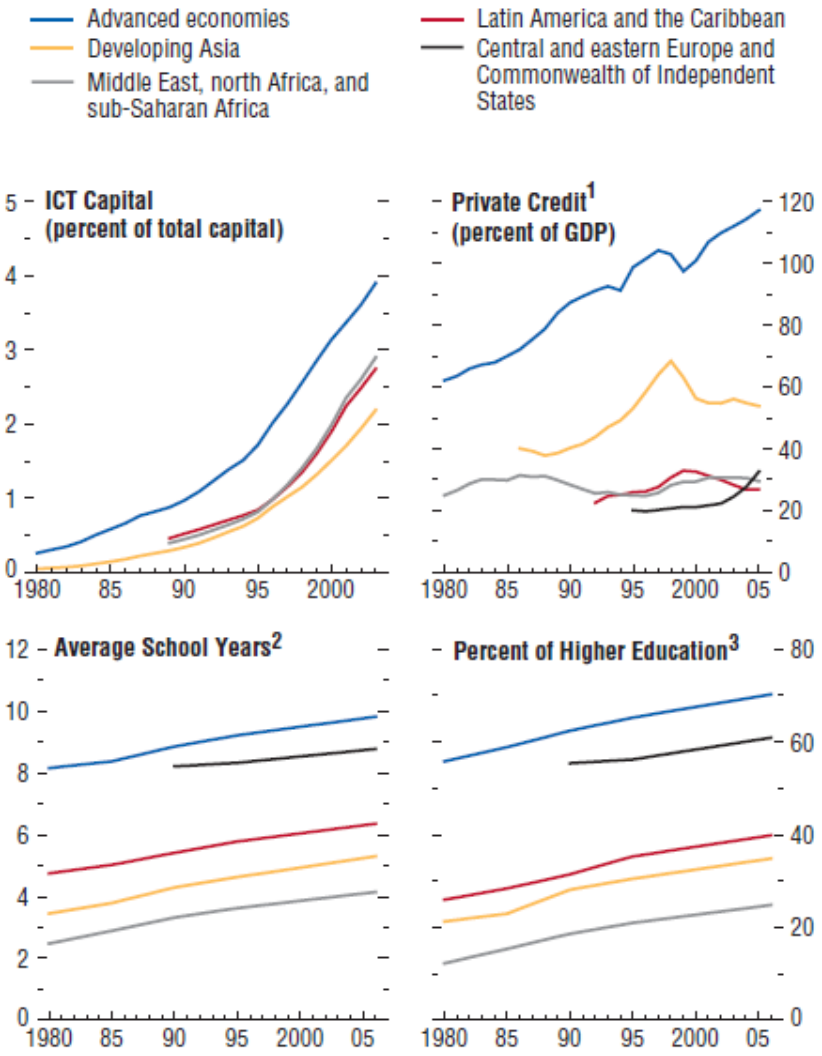
demographic shifts have widened the income distribution in most countries

but In most countries these demographic factors account for only a minor part of the observed change in income distribution.

Technology:
Inequality and the labor market

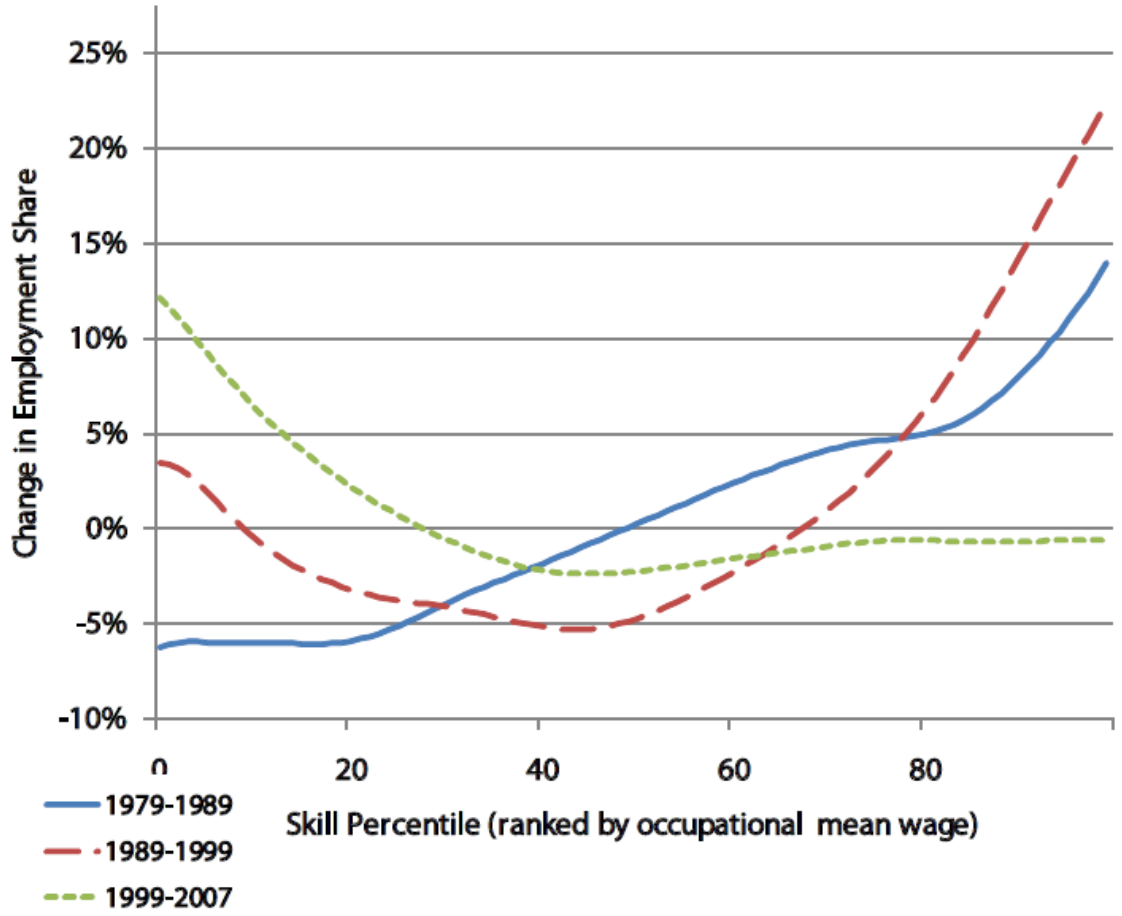
Figure 4.8. Information and Communications Technology (ICT) Capital, Private Credit, Education, and Sectoral Employment Shares

Globalization is only one of the factors that have affected inequality. Rapid technological change, financial deepening, improvements in education, and the shift of employment away from agriculture are other significant developments with potentially important implications for inequality.



Source:
IMF WEO
Oct. 2007

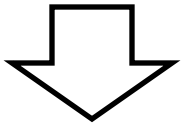
Figure 1. *Smoothed Changes in Employment by Occupational Skill Percentile, 1979–2007*



Source: Autor (2011) The Polarization of Job Opportunities in the U.S. Labor Market: *Implications for Employment and Earnings,* Community Investments, Fall 2011 – Volume 23, Issue 2

“wage gains in the middle of the distribution were smaller than wage gains at either the upper or lower reaches of the wage distribution”

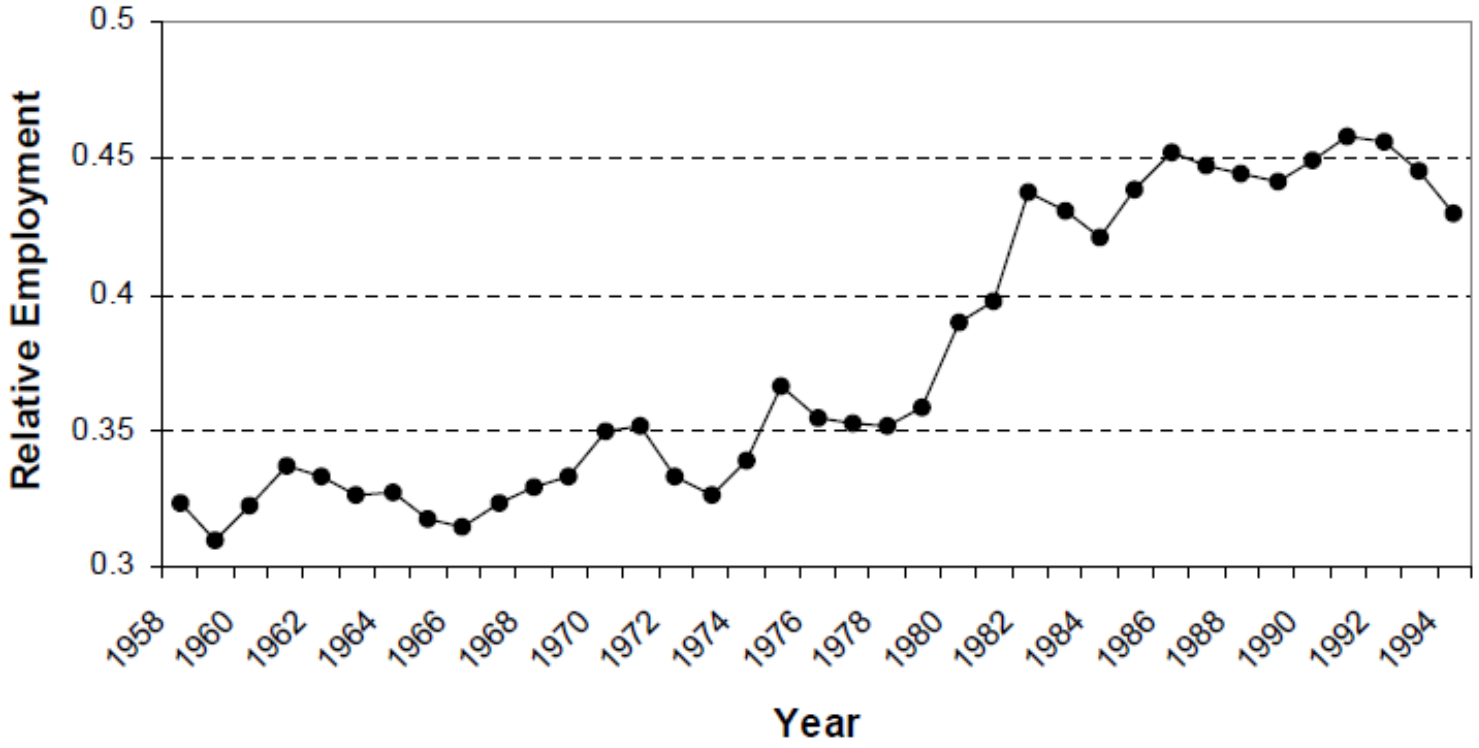
The “simultaneous polarization of U.S. employment and wage growth suggests an important theme ….



… ***labor demand*** appears to be rising for both high-skill, high-wage jobs and for traditionally low-skill, low-wage jobs”

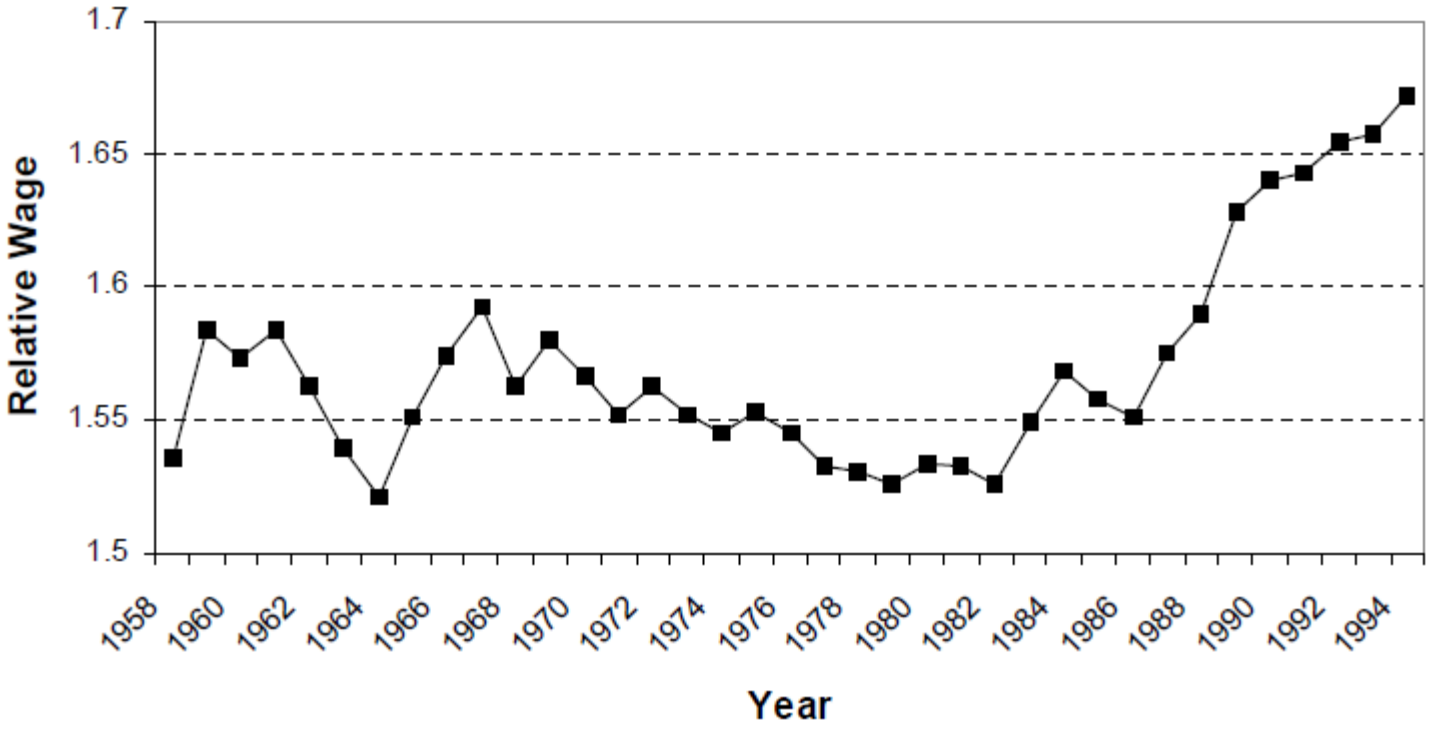
(Autor)

Figure 2: Relative Employment of Nonproduction/Production Workers, U.S. Manufacturing



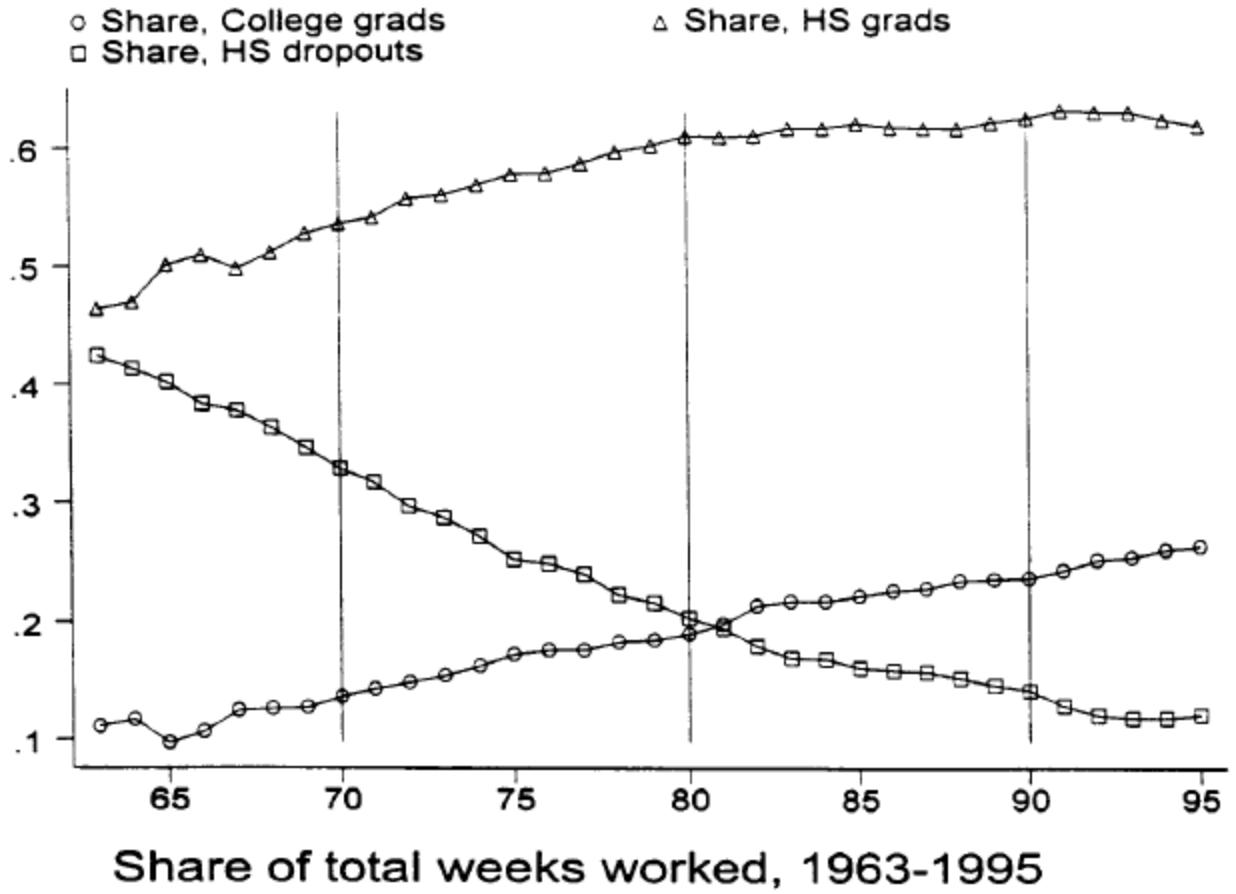
Source: Feenstra, Hanson, (2001), *Global production sharing and rising inequality: a survey of trade and wages*, Davis University

Figure 1: Relative Wage of Nonproduction/Production Workers, U.S. Manufacturing

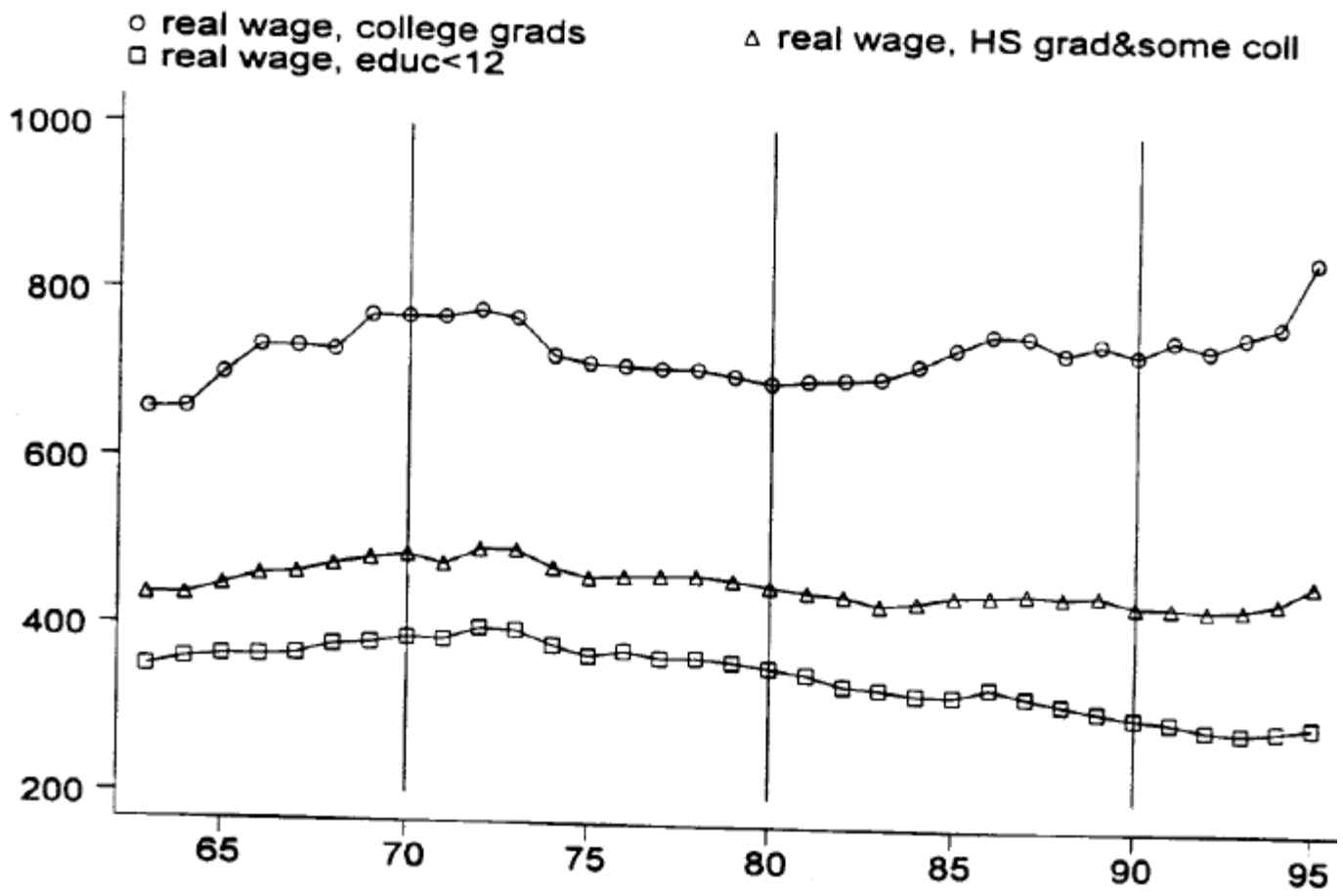


Source: Feenstra, Hanson, (2001), *Global production sharing and rising inequality: a survey of trade and wages*, Davis University

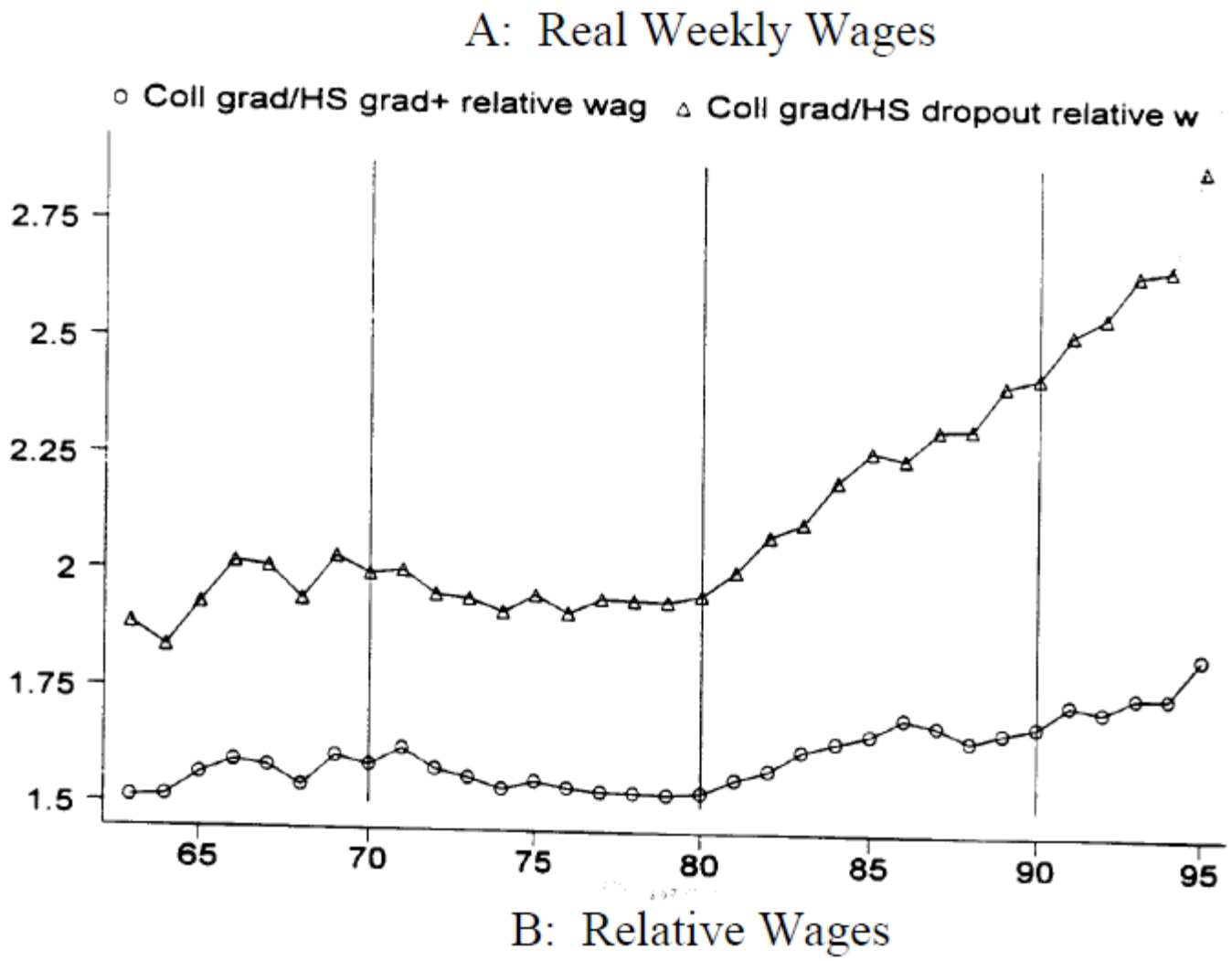
Shares of Employment by Education Level, USA - 1963-1995



Source: Deardorff (1998), *Technology, trade, and increasing inequality: does the cause matter for the cure*
Michigan University



Source: Deardorff (1998), *Technology, trade, and increasing inequality: does the cause matter for the cure?* Michigan University



Source: Deardorff (1998), *Technology, trade, and increasing inequality: does the cause matter for the cure*
Michigan University

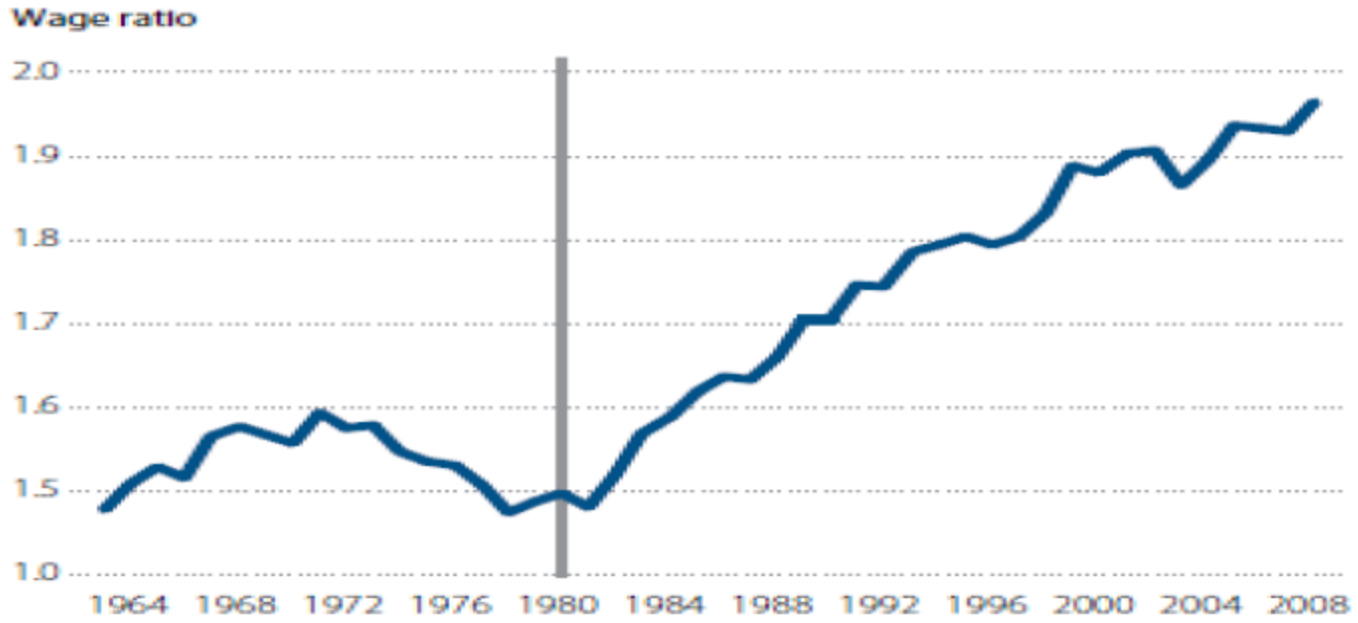
Table 1
Percent Change in Mean Earnings, 1980-1990,
Relative to the Mean Earnings of Operators,
United States (full time workers)

Managers	24
Technical	21
Service	14
Precision	3
Farm	2

Source: Lawrence (1995), from CPS Tapes

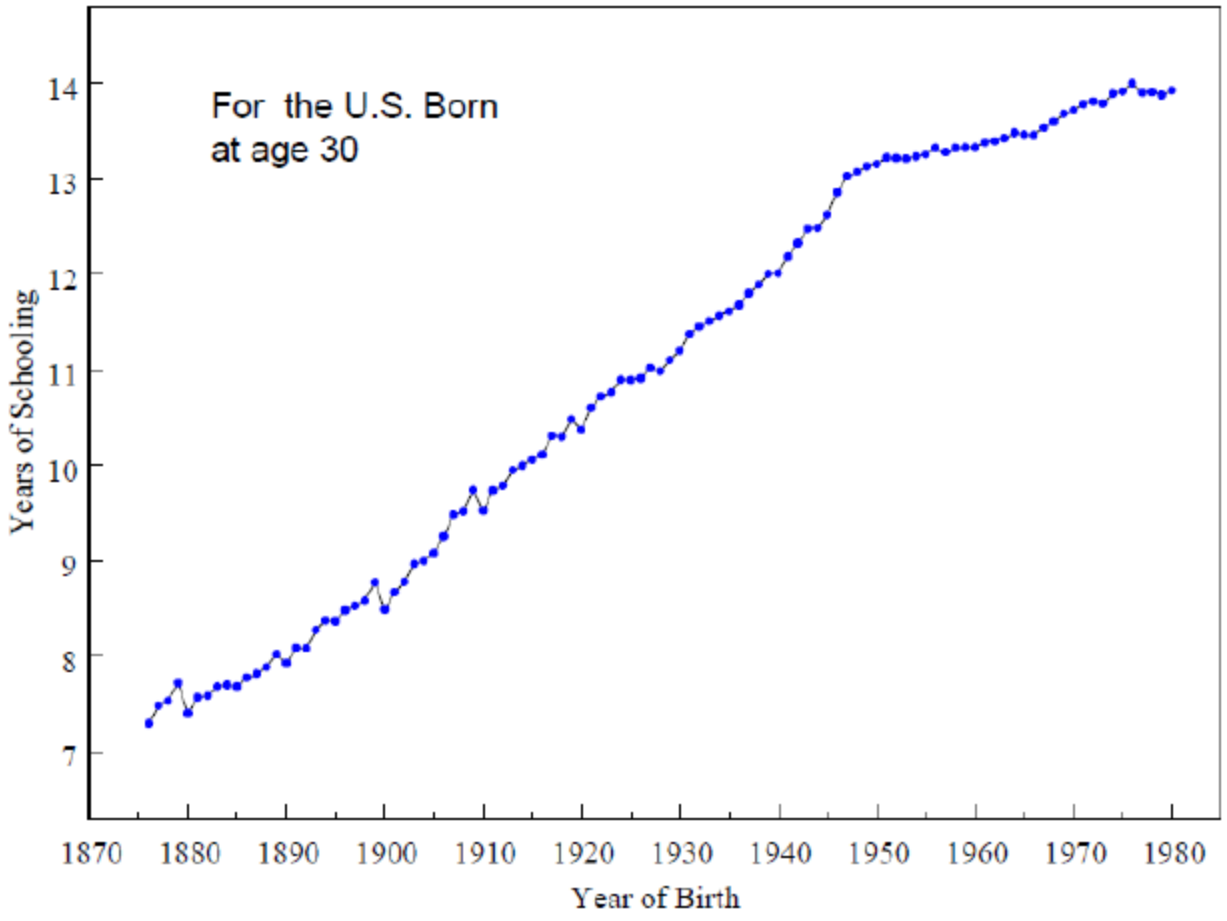
Source: Deardorff (1998), *Technology, trade, and increasing inequality: does the cause matter for the cure?* Michigan University

FIGURE 9: COLLEGE DEGREE VS. HIGH SCHOOL DIPLOMA WEEKLY WAGE RATIO (COMPOSITION ADJUSTED) 1963-2008, US, ALL WORKERS



Notes: Series is adjusted for experience, race and gender (not unobservables).
Source: Acemoglu & Autor (2010), March CPS, log(weekly wages) for full-time full year workers.

FIGURE 12: MEAN YEARS OF SCHOOLING BY BIRTH COHORT



Source: Goldin & Katz (2010), IPUMs, MORG

A way of introducing the effect of tech on differential wage dynamics is the so called model of SBTC (skill biased technical change)

$$Y = \left[\lambda N_H^{\frac{\sigma-1}{\sigma}} + (1-\lambda) N_L^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

see Van Reenen paper:

… from a CES production function …

$$\ln\left(\frac{W_H}{W_L}\right) = \ln\left(\frac{\lambda}{1-\lambda}\right) - \frac{1}{\sigma}\ln\left(\frac{N_H}{N_L}\right)$$

… to relative wages

demand factor (technology)

supply factor

…changing the initial production function
(explicit introduction of technology) …

$$Y = [(A_L N_L)^{\rho} + (A_H N_H)^{\rho}]^{1/\rho}$$

… to relative wages…

$$\ln\left(\frac{W_H}{W_L}\right) = \frac{\sigma - 1}{\sigma}\ln\left(\frac{A_H}{A_L}\right) - \frac{1}{\sigma}\ln\left(\frac{N_H}{N_L}\right)$$

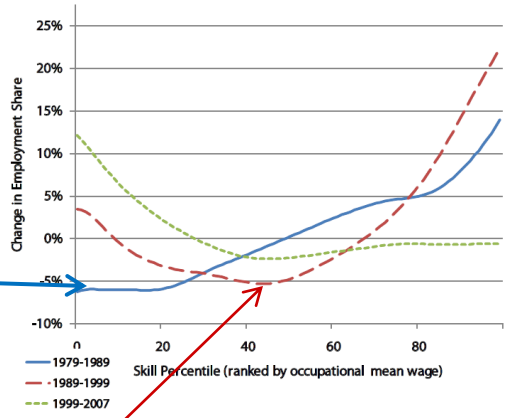
elasticities

A rise in A_H/A_L implies a rise in W_H relative to W_L: this is the SBTC

The previous model can explain a monotonic increase of the relative vage of more skilled workers

In the past it was that way (blue line)

Figure 1. *Smoothed Changes in Employment by Occupational Skill Percentile, 1979–2007*



Nevertheless ***it cannot explain the feature of the polarization of distribution***
(red line and, to a minor extent, green line)

In order to have a complete explanation of the ffects on wage dsipersion, we have to introduce the concept of
Task Biased Technical Change

tech. change had a differential impact on different tasks

"the main thing that computers do is to repalce routine task" (Van Reenen, p. 12) in also (mainly?) for non-manual jobs

The analysis of Van Reenen shows that

"***ICT*** *is a complement for the most skilled,* ***a substitute for the middle skilled*** *and broadly neutral for the least skilled*" (p. 16)

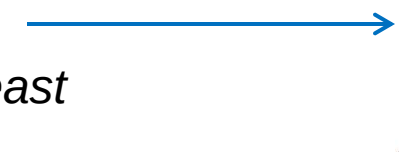
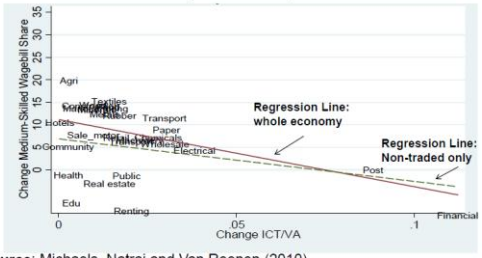


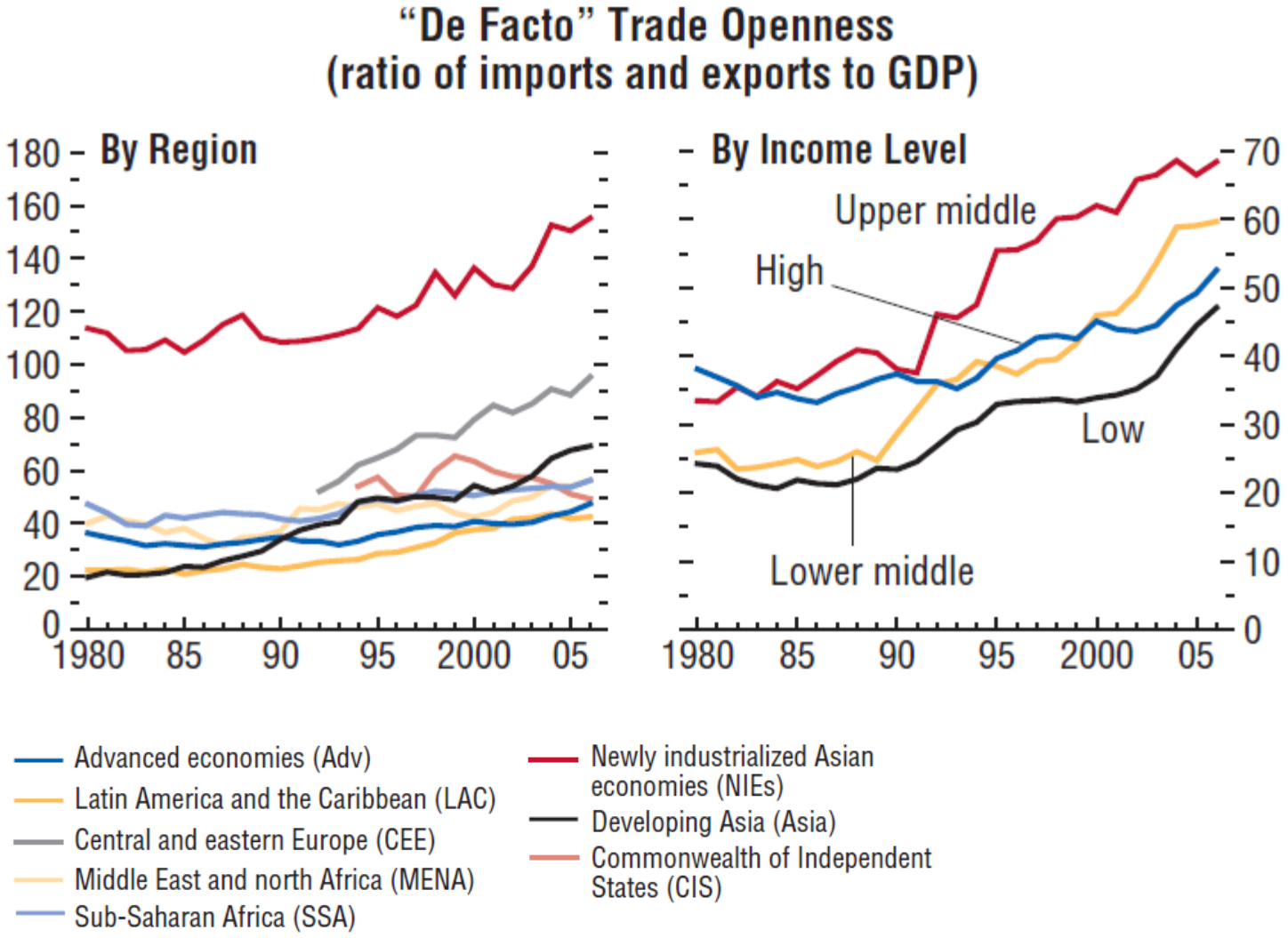
FIGURE 14, PANEL B: CROSS INDUSTRY GROWTH IN MEDIU EDUCATED WAGE BILL SHARE & ICT INTENSITY, AVERAGE ACROSS 11 COUNTRIES, 1980-2004, ALL SECTORS



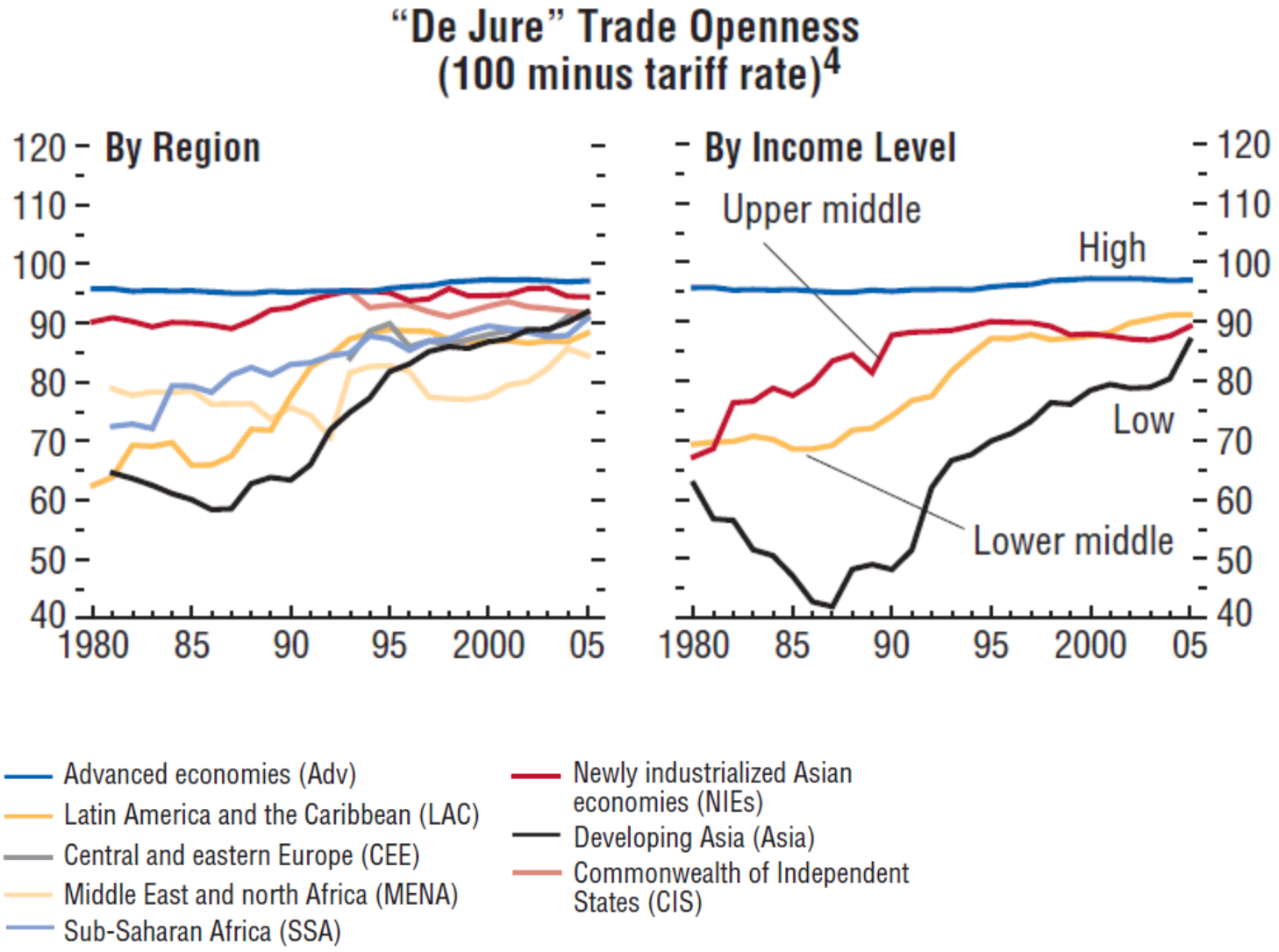
Source: Michaels, Natraj and Van Reenen (2010)
Note: Figure plots the growth from 1980-2004 of medium-skilled wage bill shares against the growth of ICT intensity (ICT/VA), by industry, averaged across countries. Lines show fitted values from regressions weighted by the cross-country average of each industry's share in 1980 employment (solid line for entire economy, dashed line for non-trade industries only).

this can be viewed ad an indirect evidence of the SBTC

globalization



Source: IMF WEO Oct. 2007

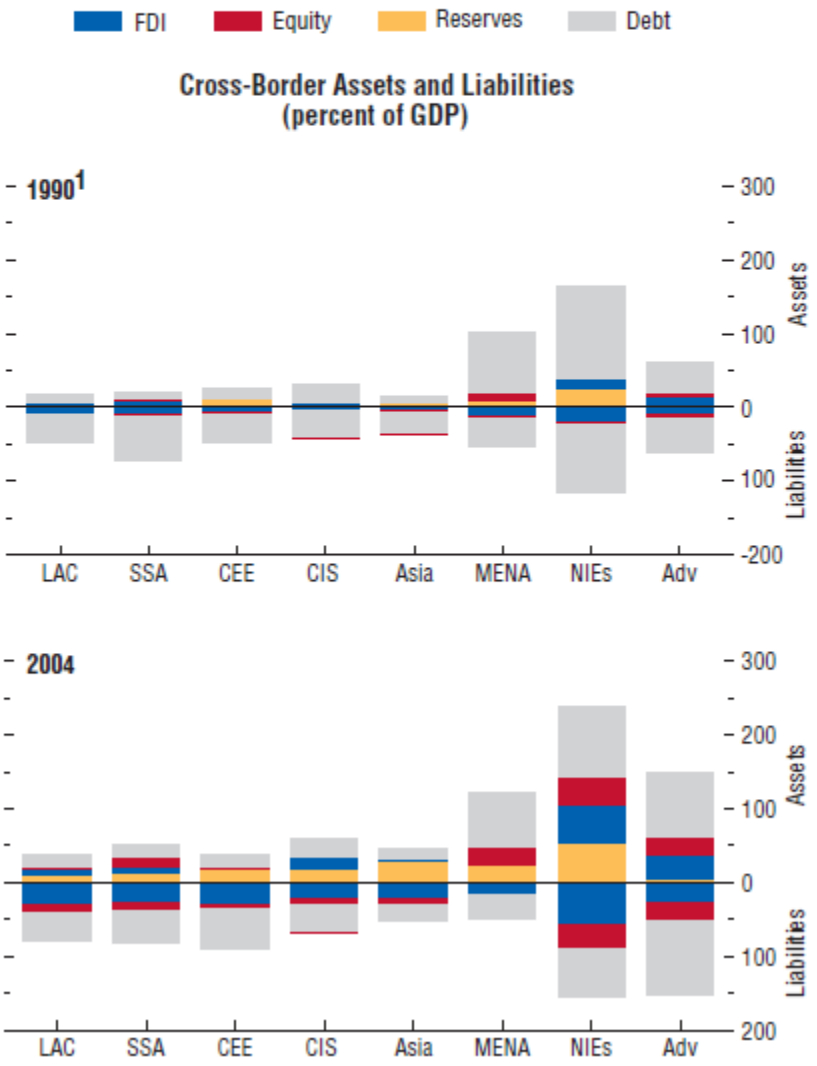


Source: IMF WEO Oct. 2007

Figure 4.2. Financial Globalization

(GDP-weighted average)

The advanced economies (including the NIEs) continue to have the largest amount of cross-border financial assets and liabilities, but other regions of the world have also progressively increased their cross-border asset and liability positions.



Source:
IMF WEO
Oct. 2007

the "trade" explanation
(of inequality)

free trade has a feature
(discovered by Samuelson)

↓

factor prices
do not depend directly on
national factor endowments.
(i.e.: the wage rate does not depend
on the endowment of L at the national level)

Instead,
factor prices depend on good prices,
and these are in turn determined
in the world market.

1
(in the absence of trade)
abundance or scarcity of

the “endowments”
(available quantities)
of primary factors of production,
such as labor (or types of labor), capital, and land

determine their prices

again, *as an example: wage (labor price)*

2

In the presence of trade trade factor endowments determine instead the *comparative advantages* of different countries and thus their trade patterns (H-O theory)

(an advanced country should have C.A.s in goods intensive of capital and/or of skilled labor)

2 (cont.)

Trade has a first direct consequence:

Traded goods will have the same price
(***convergence in good prices***)

3

Factor price equalization theorem:

under free trade,
if countries share the same technologies and face the same international prices of traded goods,

then
they will also have the same prices of factors

When countries exchange goods in reality …

… they are (indirectly) exchanging
factors of production

If a country A
exports goods whose production is intensive of factor *Ls* (skilled Labor),

and it imports goods that are intensive of factor *Lu* (unskilled Labor),

it means that
its exports contain more Ls (less Lu) than the imported goods.

As a consequence country A is indirectly exporting skilled Labor

The opposite is true for country B

it exports goods whose production is intensive of factor *Lu*, and it imports goods that are intensive of factor *Ls*: its exports contain more *Lu* (less *Ls*) than the imported goods.

As a consequence country B is indirectly exporting unskilled Labor

From this point of view

Trade in goods is trade in factors

As a consequence
trade leads
to factor price equalization

The importance of this for the discussion here is that it means that

the **demand curve for a country's labor** (as a function of wages) is not downward sloped but is instead **horizontal**

at a ***level*** that depend on prices of goods

increase of the demand
for goods intensive of
skilled labor =
increase in realtive prices

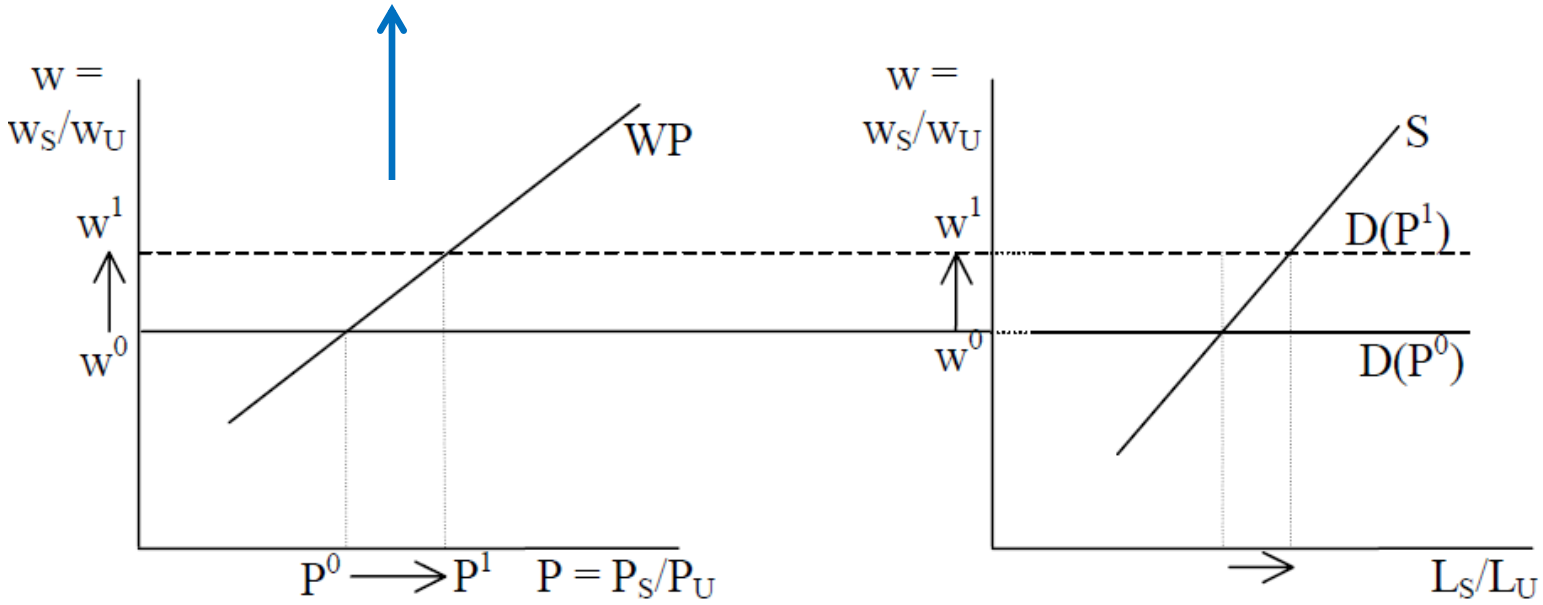


Figure 5:
Response of Relative Wages
to a Change in Relative Prices

Source: A. Deardorff (1998), Technology, Trade …

A possible consequence of the FPE:

Since the 70s *poor countries began to expor*t manufactured goods, especially *goods intensive of unskilled labor*

They also imported, from advanced countries, goods intensive of skilled labour

Many concluded that the rising inequality
(*in advanced economies*)
was a consequence of the FPE process:

increase in wages of skill workers
and
decrease in wages of unskilled workers

Does this interpretation hold?

FPE depends on some hypothesis:

1) All countries produce all goods

2) All countries share the same technologies

3) Traded goods prices should completely converge

1

FPE should imply
a rise in prices of goods
intensive of skill labor
(relative to prices of goods
intensive of unskilled labor).

Is it true?

Weighted **changes in domestic prices** (an example)

Germany (1980-90)	
All manufacturing industries	
Non-manual labor weights	23.98
Manual labor weights	26.03

This suggests that some of the industries that use most production (less skilled) workers are those with the highest price increases

Source: Feenstra, Hanson, (2001), *Global production sharing and rising inequality: a survey of trade and wages*, Davis University

Factor prices should CONVERGE:

increase (decrease) of skill (unskill) workers wage in advanced countries …

… and the opposite in developing countries (especially: increase in relative wage of unskill workers).

Not true
(example: Mexico after NAFTA)

3

Trade between advanced and emerging countries is growing but still is ***a small percentage of total trade flows*** of advanced countries (at least untill very recent times).

In conclusion …….

Table 1: Well-known estimates of the effect of trade on wages

Study	Estimated effect on skilled-unskilled wage ratio	Date of data
Krugman (1995)	3%	1992
Lawrence (1996)	3%	1993
Cline (1997)	7%	1993
Borjas, Freeman Katz (1997)	1.4%	1995

Source: Krugman (2008), *Trade and wages, reconsidered*, Princeton University

Decomposition of the Change in the Share of Employment and Wages of Non-Production Workers USA - 1973-79 and 1979-87

A. Industry Level Decomposition (percent)

Year	Employment			Wages		
	Between		*Within*	*Between*		*Within*
1973-79	0.121		0.199	0.119		0.212
Total		0.320			0.381	
1979-1987	0.184		0.362	0.309		0.410
Total		0.546			0.719	

NB:

trade explanation: expected "between" sectors changes

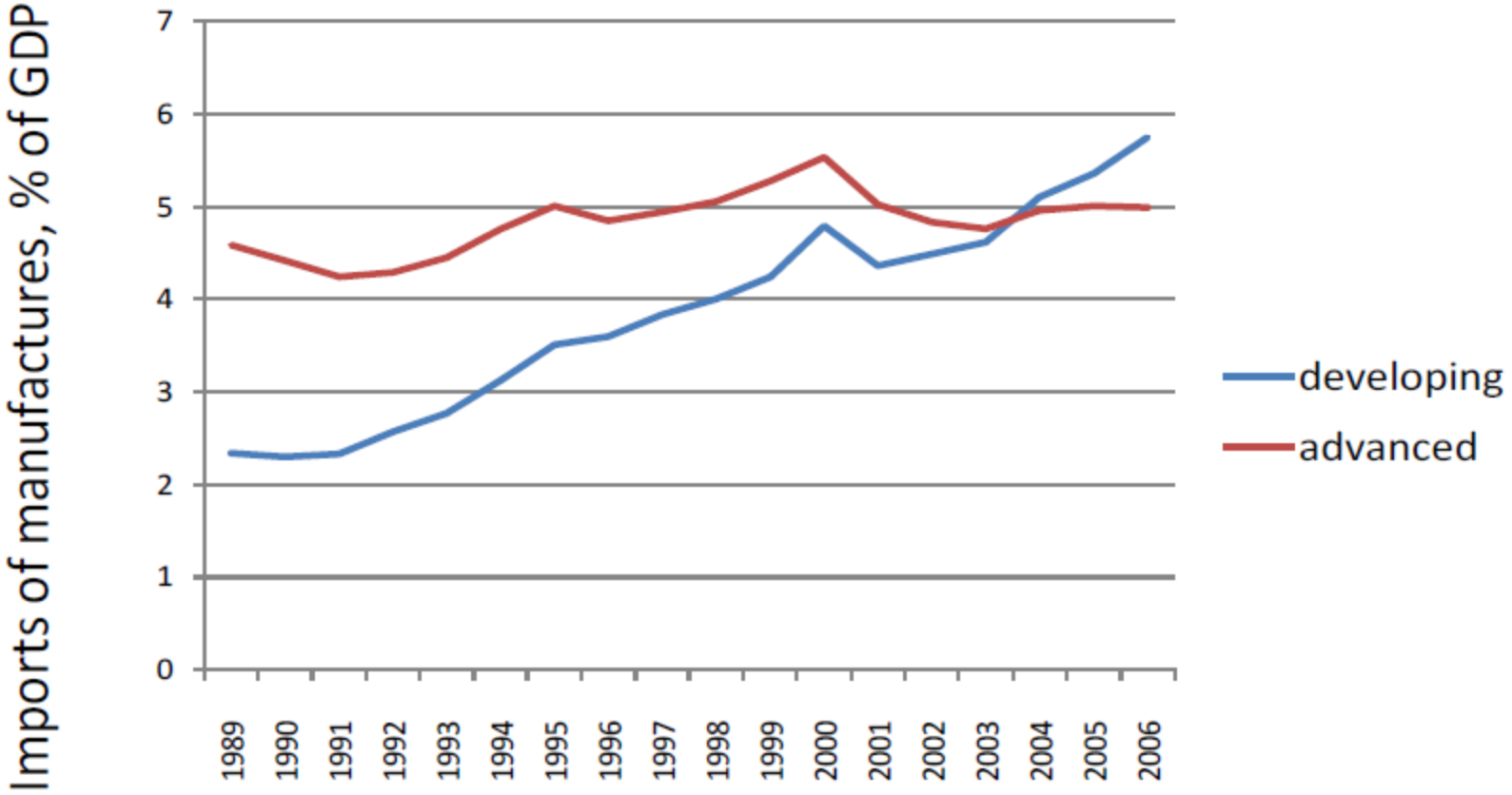
tech explanation: expected "within" sector changes

In these estimations the "within" component always overtakes the "between" component

Source: Feenstra, Hanson, (2001), *Global production sharing and rising inequality: a survey of trade and wages*, Davis University

However …..

USA: import penetration 1989-2006



Source: Krugman (2008), *Trade and wages, reconsidered*, Princeton University

geographical composition of US trade changed

Hourly compensation in top 10 U.S. trading partners
% of U.S. level

1975	*1990*	*2005*
Canada	Canada	Canada
Japan	Japan	**Mexico**
Germany	**Mexico**	**China**
UK	Germany	Japan
Mexico	UK	Germany
France	**Taiwan**	United Kingdom
Italy	**Korea**	**Korea**
Brazil	France	**Taiwan**
Netherland	Italy	France
Belgium	**China**	**Malaysia**
76%	**81%**	**65%**

Growing presence of emerging economies

Decreasing relalive labor cost of partners

Source: Krugman (2008), *Trade and wages, reconsidered*, Princeton University

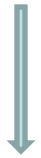
Anther possibility is that trade and technology, as determinants of changes in skill demand, interrelate

TRADE INDUCED TECHNOLOGICAL PROGRESS

i.e. tech. progress as a response to trade pressure

greater trade with less developed countries could spur (skill biased) technical change in advanced countries

TECH AND ***TRADE*** DEBATE: A PRACTICAL SOLUTION



An *empirical estimation* of relative contributions

(technology ***and*** globalization)

IMF empirical analysis based on this equation to be estimated(*):

$$\ln(GINI) = \alpha_0 + \alpha_1 \ln\left(\frac{X}{Y}\right) + \alpha_2 \ln\left(\frac{M}{Y}\right) + \alpha_3 (100 - TARIFF) + \sum_{i=1}^{3} \beta_i \ln\left(\frac{L_i}{Y}\right) + \beta_4 \ln\left(\frac{A}{Y}\right) + \beta_5 KA_{OPEN} +$$

$$+ \gamma_1 \ln\left(\frac{K_{ICT}}{K}\right) + \gamma_2 \ln\left(\frac{CREDIT}{Y}\right) + \gamma_3 POP_{SH} + \gamma_4 \ln H + \gamma_5 \ln\left(\frac{E_{AGR}}{E}\right) + \gamma_6 \ln\left(\frac{E_{IND}}{E}\right) + \varepsilon,$$

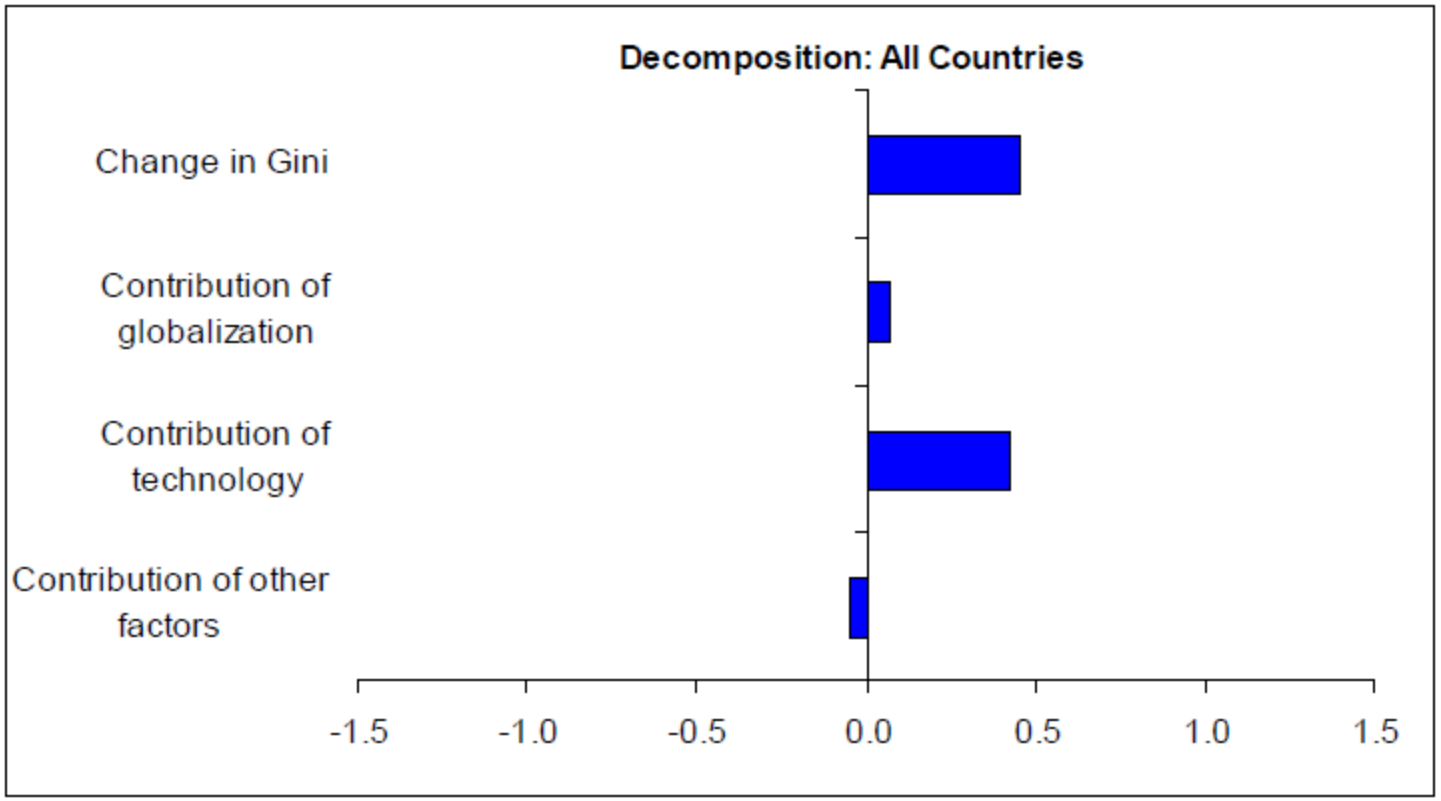
X and *M are non-oil exports and imports, Y is real per capita GDP, TARIFF is the* average tariff rate, *A and L are financial assets and liabilities, respectively,* KA_{OPEN} *is the* capital account openness index, K_{ICT} *is ICT capital, K is physical capital, CREDIT is credit* to the private sector by deposit money banks and other financial institutions, POP_{SH} *is the* share of population aged 15 and over with secondary or higher education, *H is average years* of education in the population aged 15 and over, E_{AGR} *and* E_{IND} *are employment in* agriculture and industry, and *E is total employment.*

(*) IMF also added per capita income (for the Kuznets curve hypothesis)

IMF empirical results (**log GINI as dependent variable**)

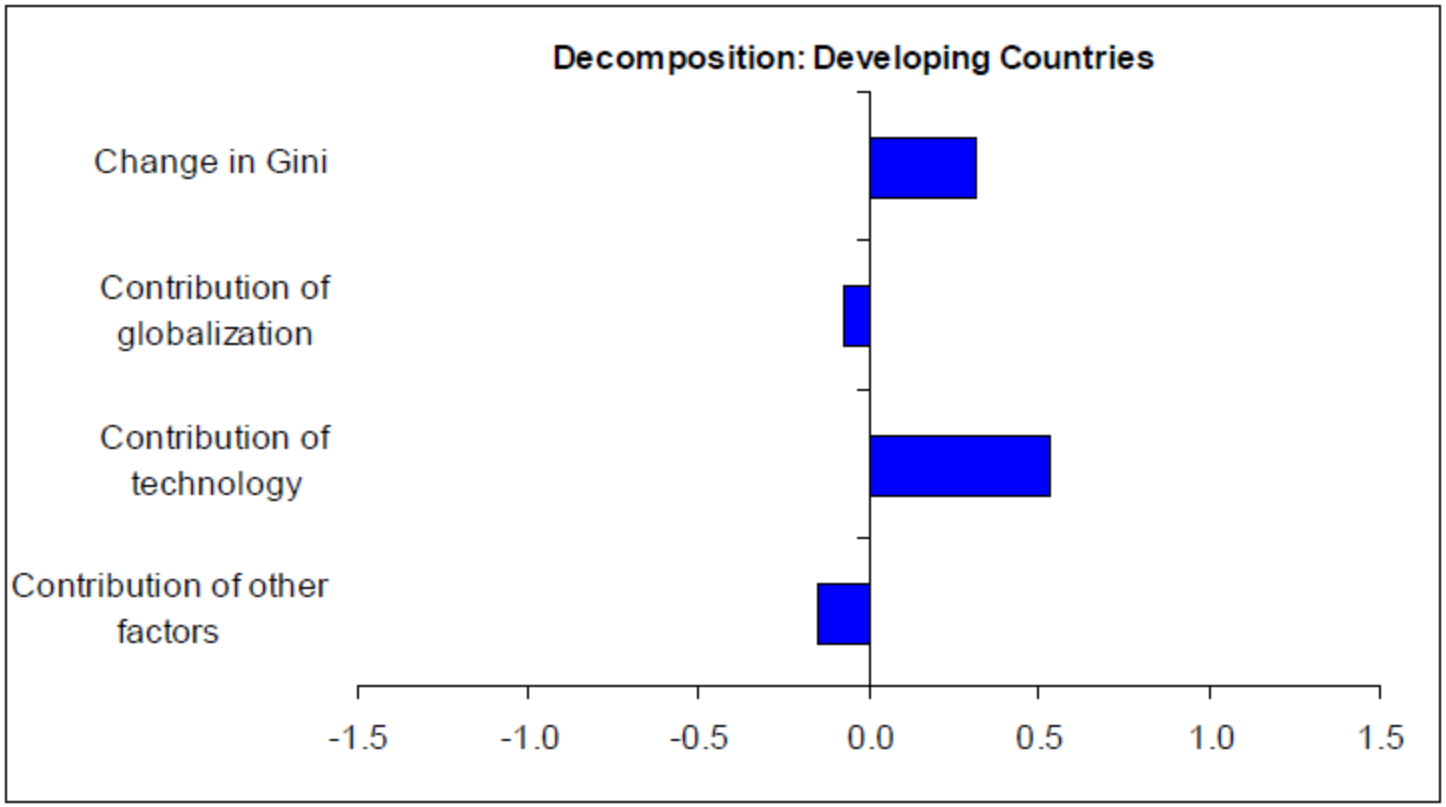
Trade globalization	
Ratio of exports and imports to GDP	–0.047 (1.50)
Exports-to-GDP ratio	
Agricultural exports	
Manufacturing exports	
Service exports	
100 minus tariff rate	–0.002 (2.27)**
Financial globalization	
Ratio of cross-border assets and liabilities to GDP	0.022 (1.24)
Ratio of inward FDI stock to GDP	
Capital account openness index	0.002 (0.36)
Control variables	
Share of ICT in total capital stock	0.047 (2.79)***
Credit to private sector (percent of GDP)	0.06 (3.74)***
Population share with at least a secondary education	0.005 (2.02)**
Average years of education	–0.355 (1.91)*
Agriculture employment share	0.04 (1.67)*
Industry employment share	–0.091 (2.40)**

?

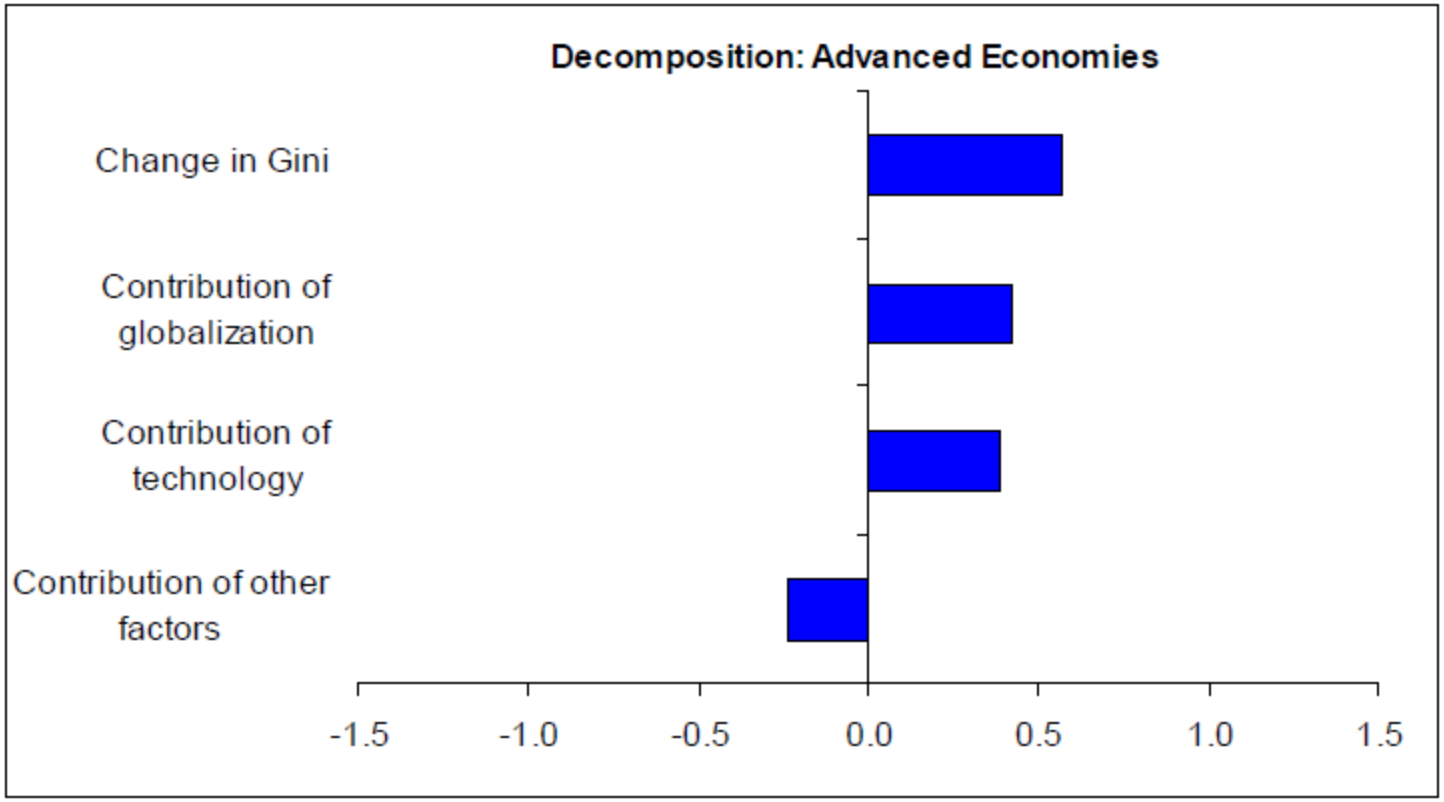


The rise of GINI appears mainly a consequence of the technological progress (Kuznets hypothesis?)

Source IMF
Jaumotte …



Thie previous impression (rise of GINI consequence of the technological progress) is confirmed in the subset of develping economies



Differently, the rise of GINI in developed economies is a consequence of both globalization and technological progress