

Income distribution and redistribution

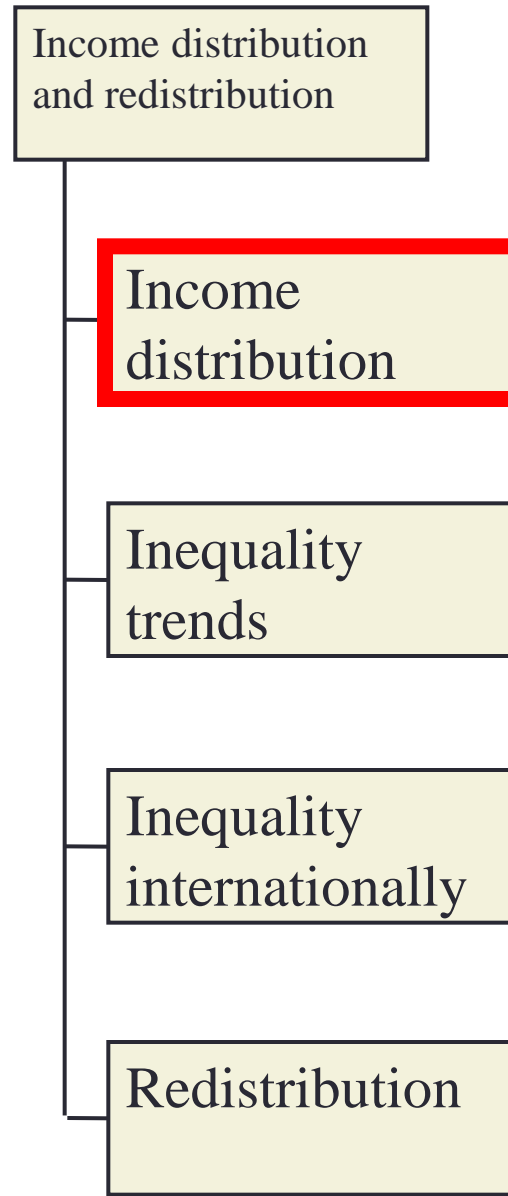
HMRC-HMT Economics of Taxation

<http://darp.lse.ac.uk/HMRC-HMT>

Frank Cowell, 7 December 2015

Overview...

Use US data as a working template

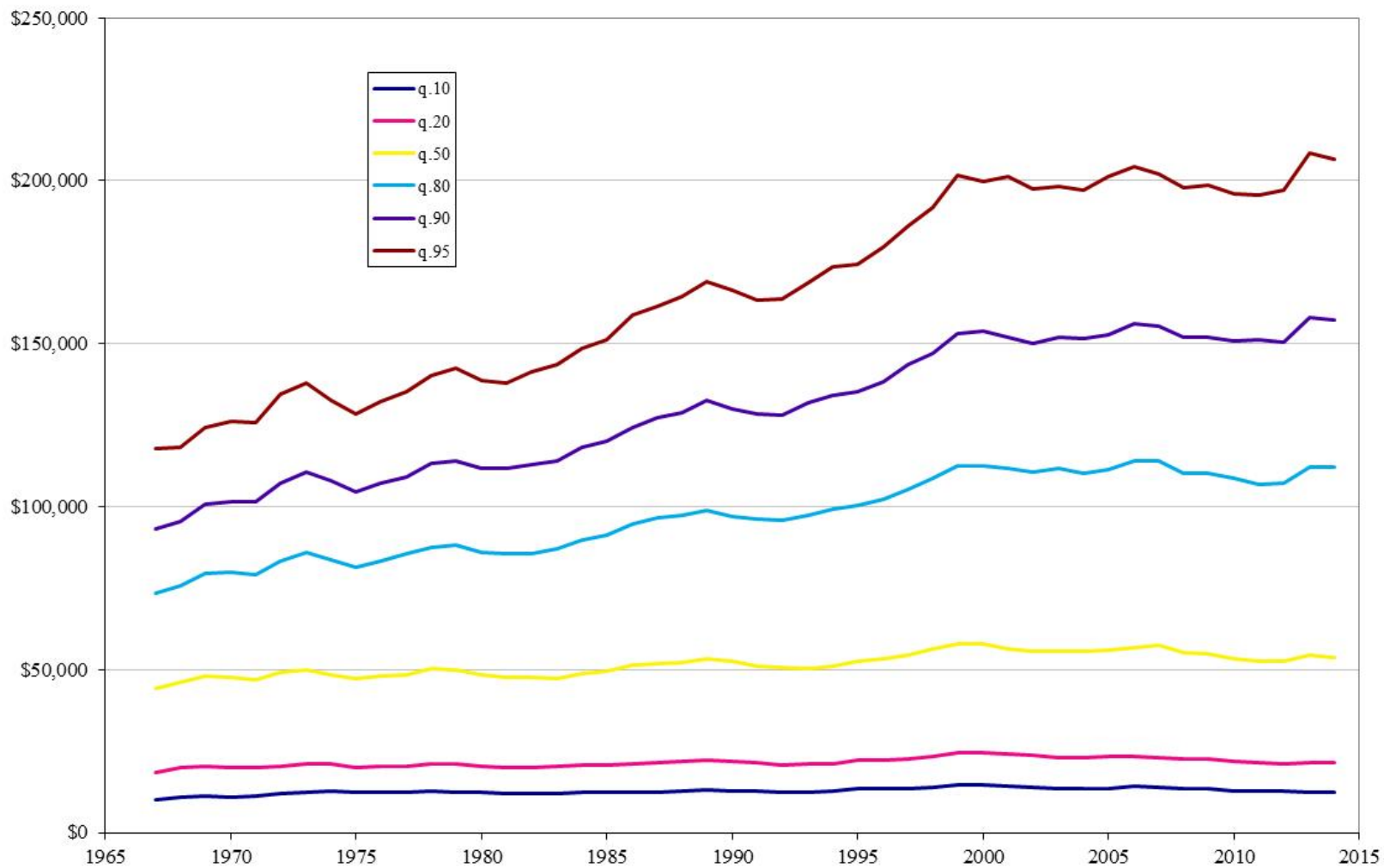


Quantile Incomes by Households

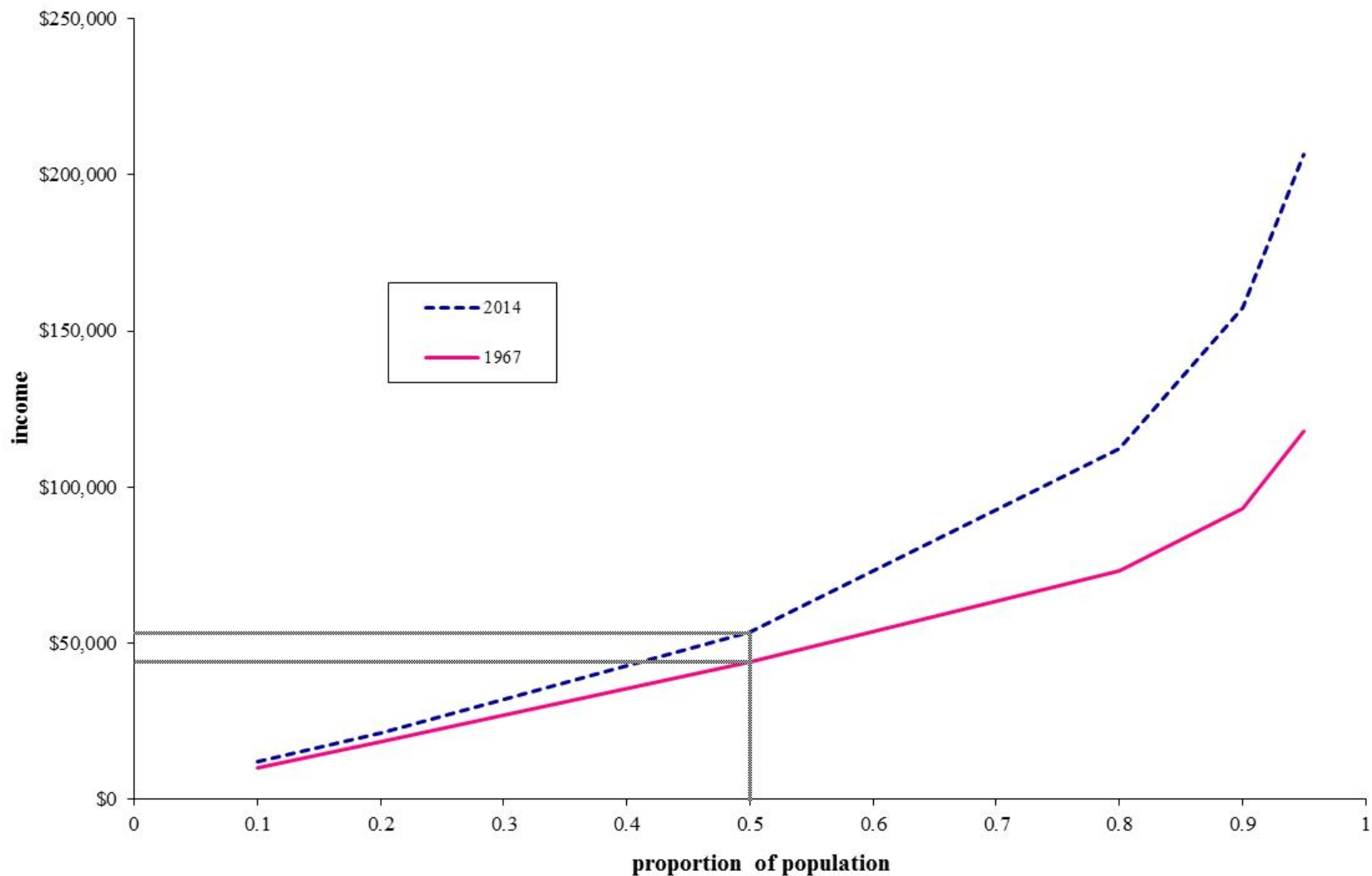
	1967	2014	Growth
10%	\$10,102	\$12,276	21.5%
20%	\$18,593	\$21,432	15.3%
50%	\$44,271	\$53,657	21.2%
80%	\$73,382	\$112,262	53.0%
90%	\$93,215	\$157,479	68.9%
95%	\$117,759	\$206,568	75.4%

- [DeNavas-Walt et al \(2015\)](#) Table A-3

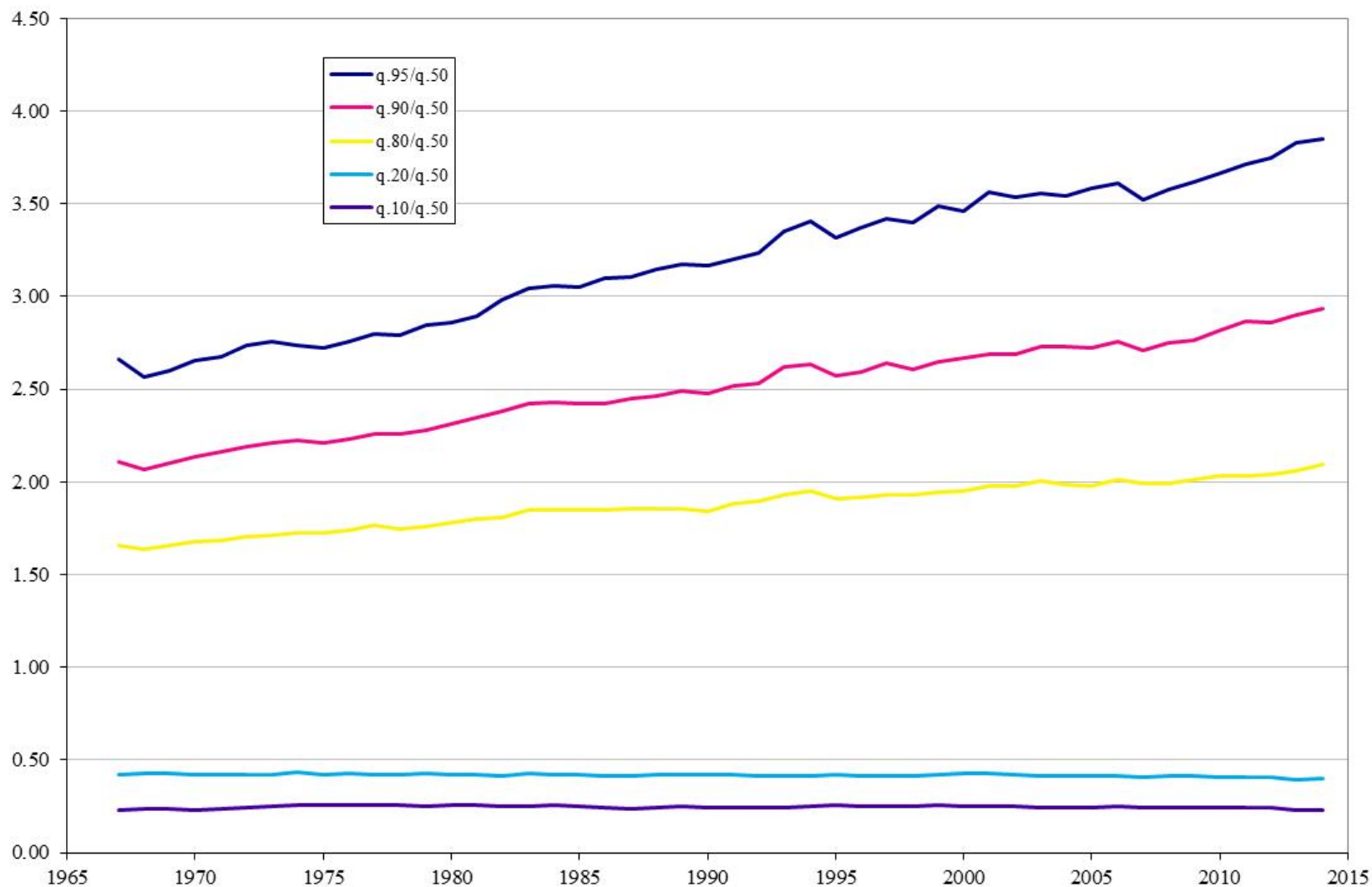
Quantiles: 1967 – 2014



The Parade: quantiles vs population

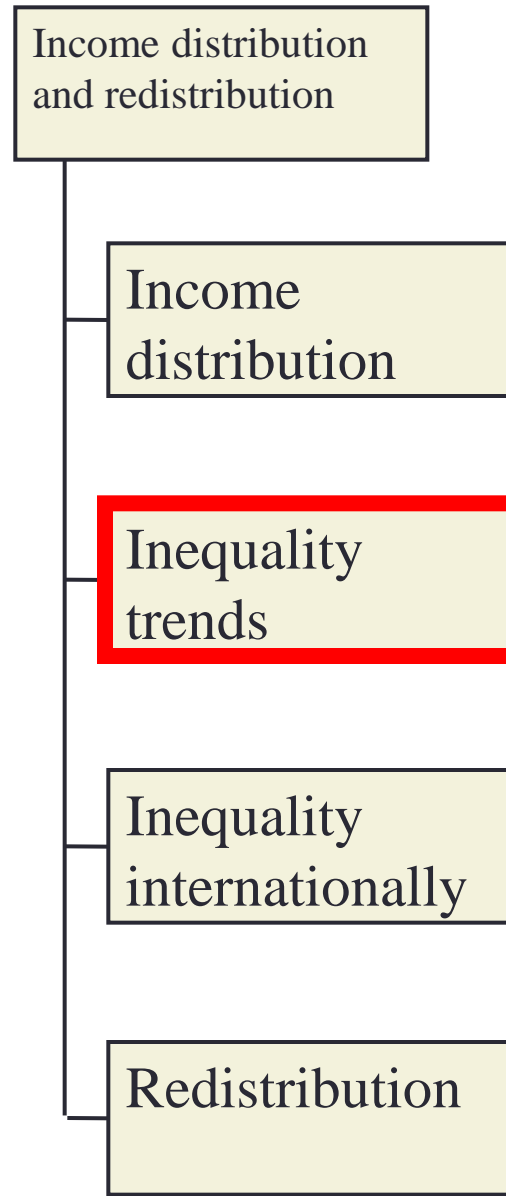


Quantile ratios: US 1967 – 2014



Overview...

*Developments in the
USA and UK*

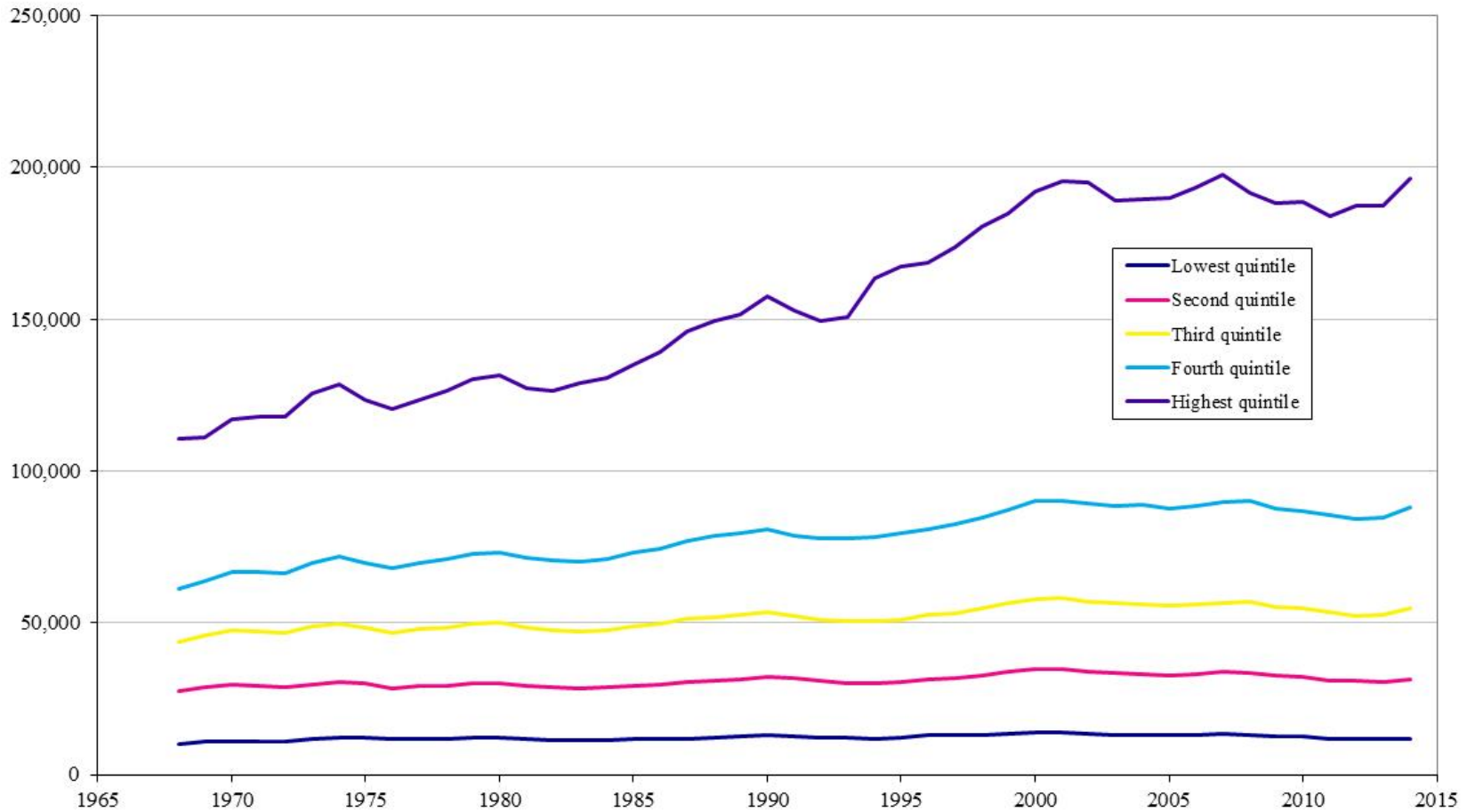


Mean incomes by groups of households

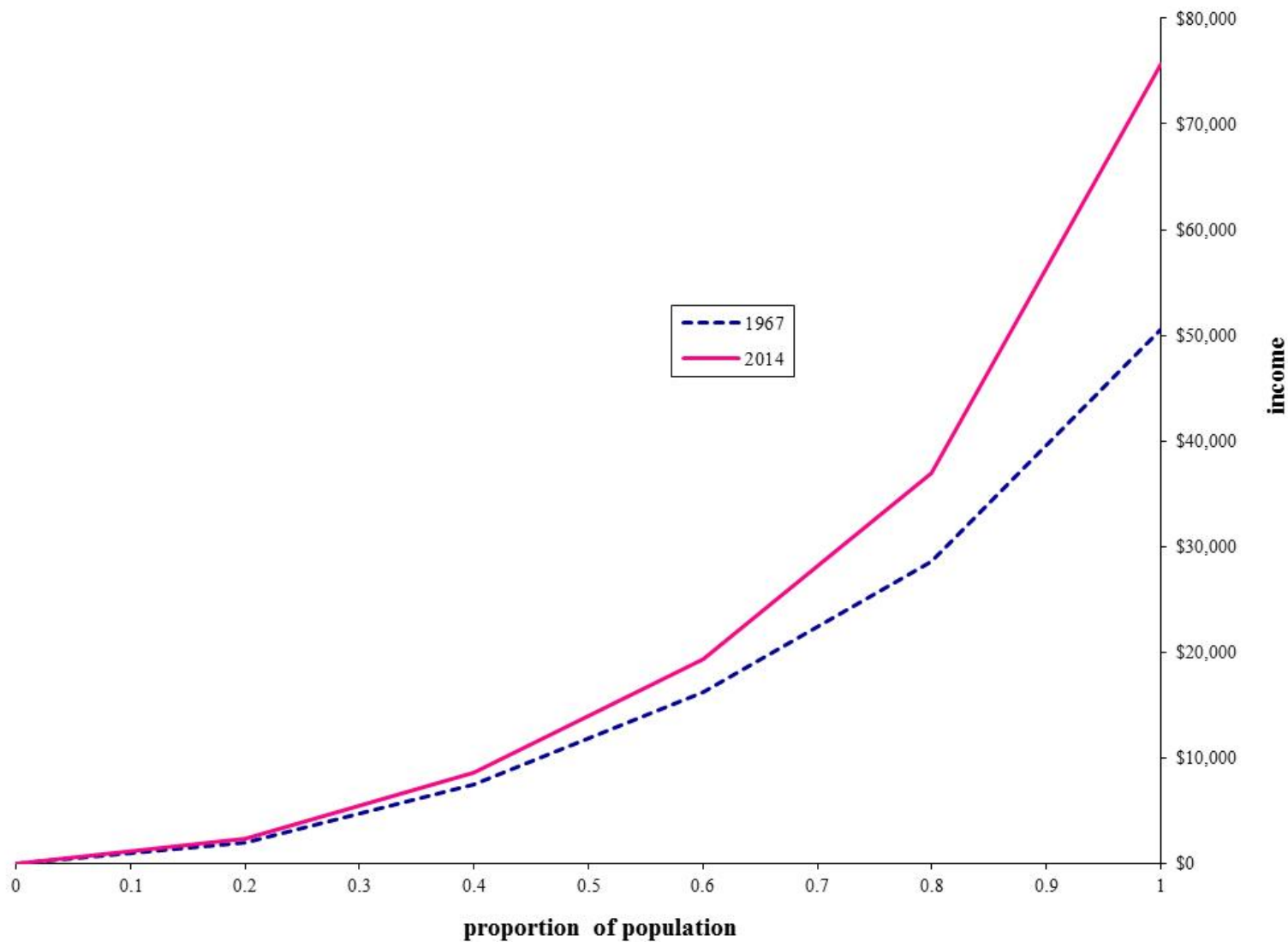
	1967	2014	Growth
1st quintile	\$9,915	\$11,676	17.8%
2 nd quintile	\$27,473	\$31,087	13.2%
3 rd quintile	\$43,865	\$54,041	23.3%
4 th quintile	\$61,372	\$87,834	43.1%
5 th quintile	\$110,447	\$194,053	75.7%
<i>Overall</i>	\$50,614	\$75,738	49.6%

Differential growth of mean incomes

Mean Incomes US

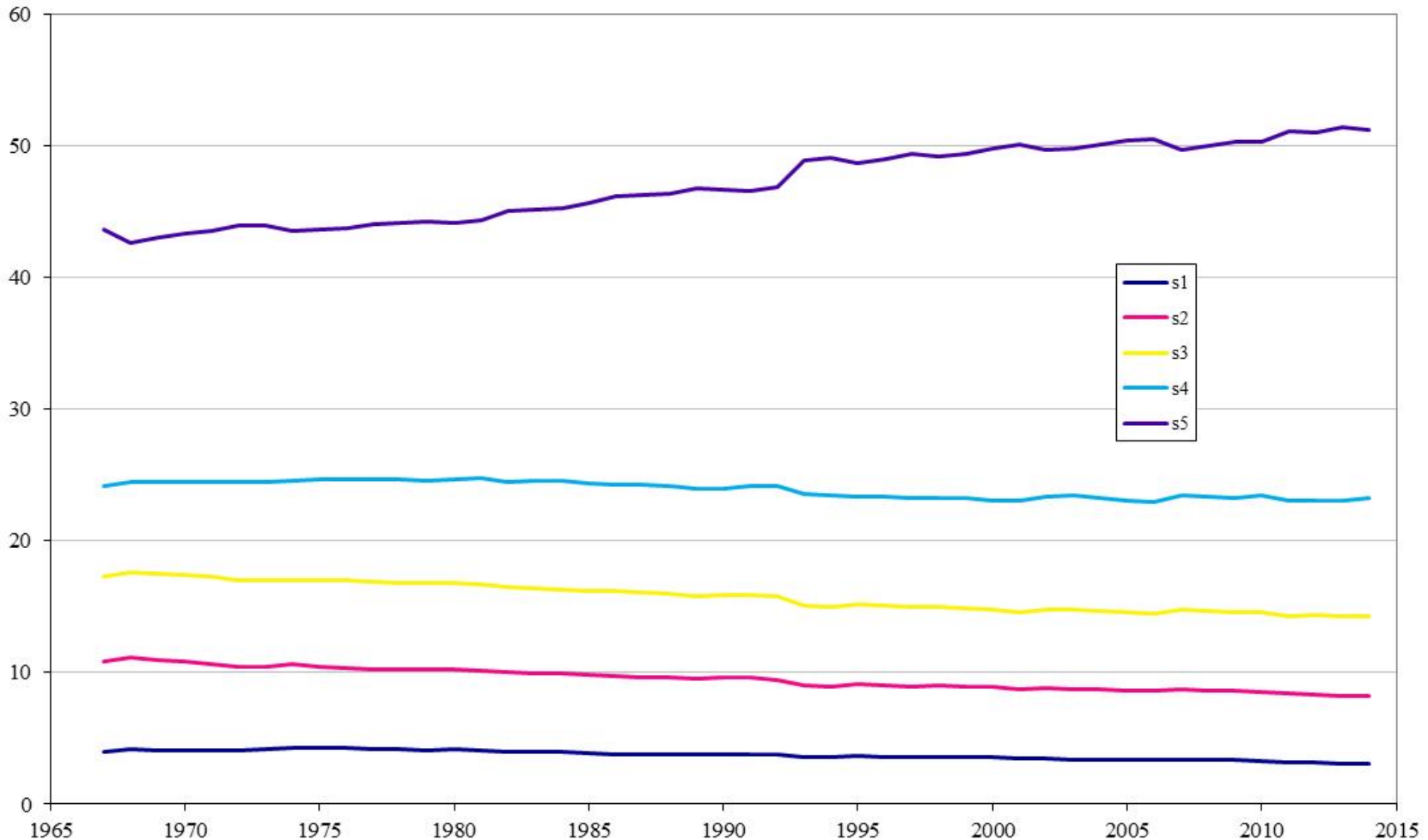


1: The Generalised Lorenz Curve

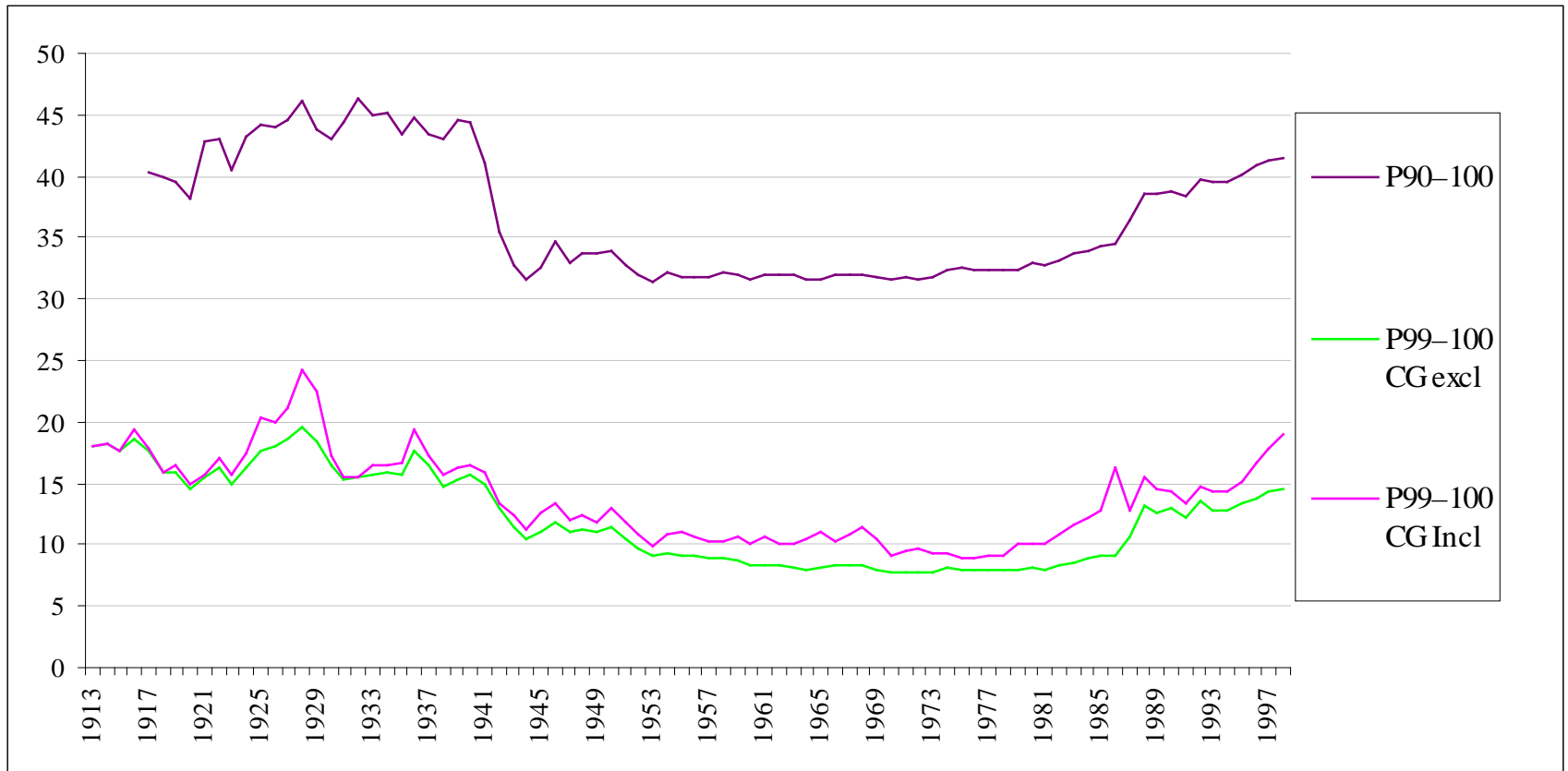


2: Income shares: US 1967-2015

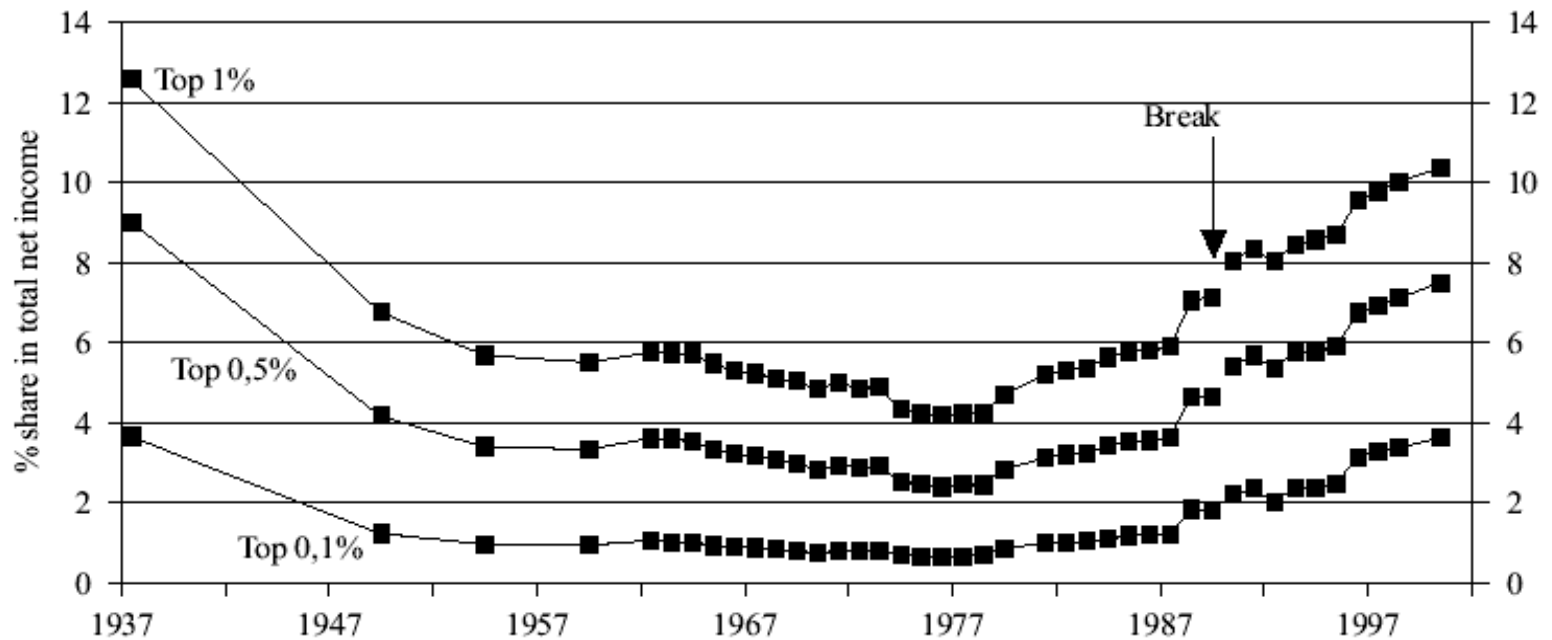
Income shares, US



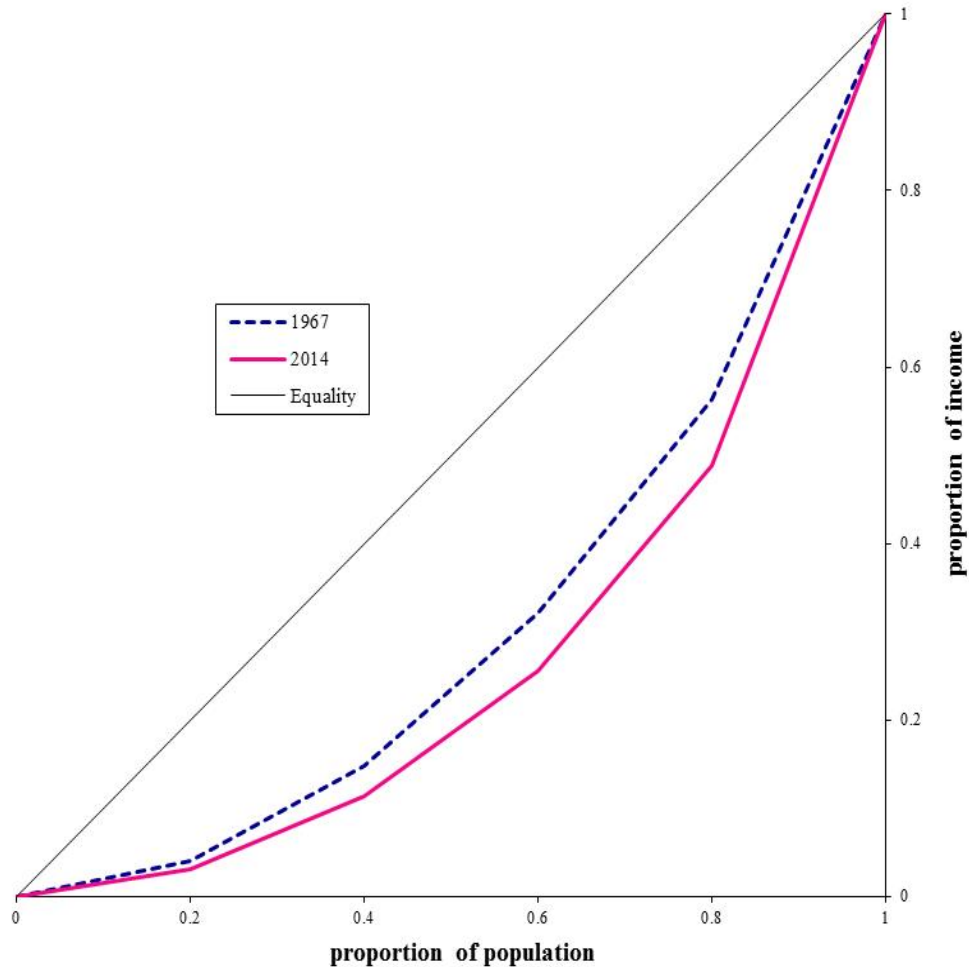
2: Top income shares in US



Top income shares in the UK

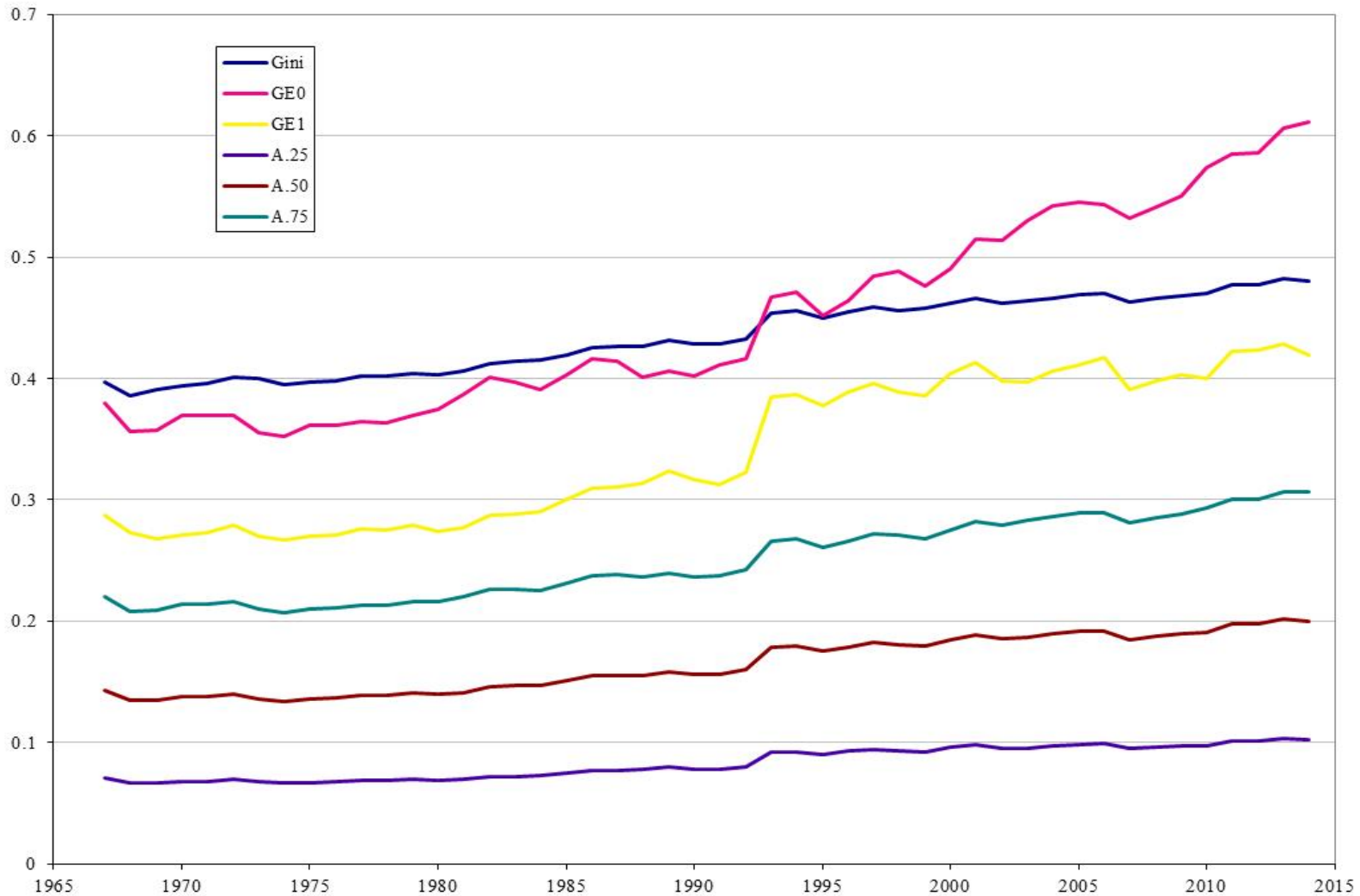


3: Lorenz curve



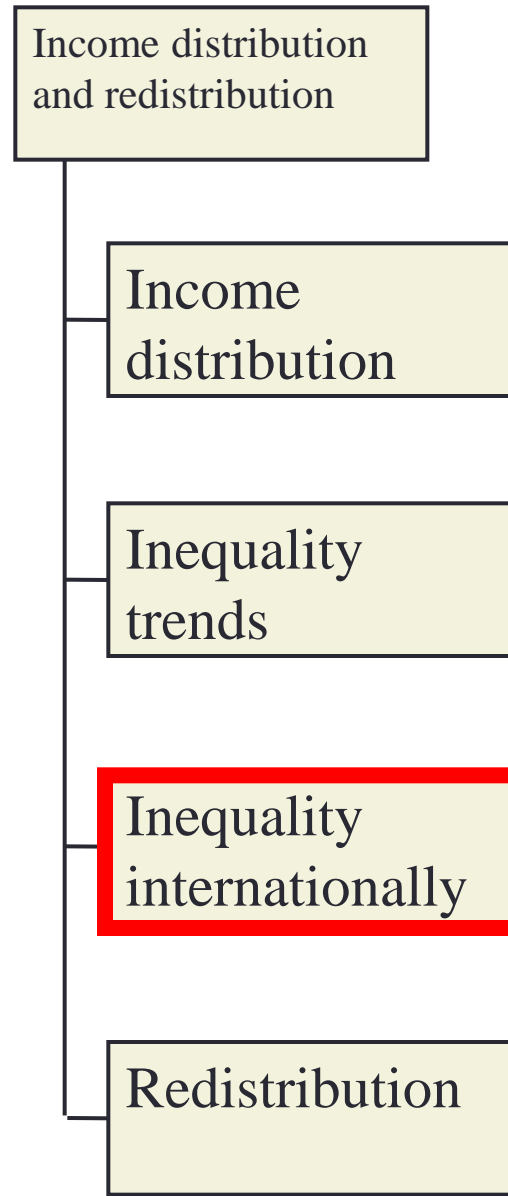
- Natural interpretation in terms of shares
- Gives a natural definition of the Gini coefficient

Example 1: Inequality, US experience



Overview...

Comparisons across countries? Convergence?



Income or consumption?

		<i>Gini coefficient</i>	
	<i>Year</i>	<i>Consumption</i>	<i>Income</i>
Albania	1996	0.252	0.392
Bulgaria	1995	0.274	0.392
Bangladesh	2000	0.334	0.392
Vietnam	1998	0.362	0.489
Nepal	1996	0.366	0.513
Morocco	1998	0.390	0.586
Nicaragua	1998	0.417	0.534
Thailand	2000	0.428	0.523
Peru	1994	0.446	0.523
Panama	1997	0.468	0.621
Russia	1997	0.474	0.478
Brazil	1996	0.497	0.596

See [World Bank \(2005\)](#), page 38

Example 2: International trends

	1985	2008
Mexico	0.45	0.48
United States	0.34	0.38
Israel	0.33	0.37
United Kingdom	0.32	0.34
Italy	0.31	0.34
Australia	0.309	0.34
New Zealand	0.27	0.33
Japan	0.30	0.33
Canada	0.29	0.32
Germany	0.25	0.30
Netherlands	0.27	0.29
Luxembourg	0.25	0.288
Finland	0.209	0.259
Sweden	0.20	0.26
Czech Republic	0.23	0.26
Norway	0.22	0.25
Denmark	0.22	0.25

	1985	2008
Turkey	0.43	0.41
Greece	0.34	0.31

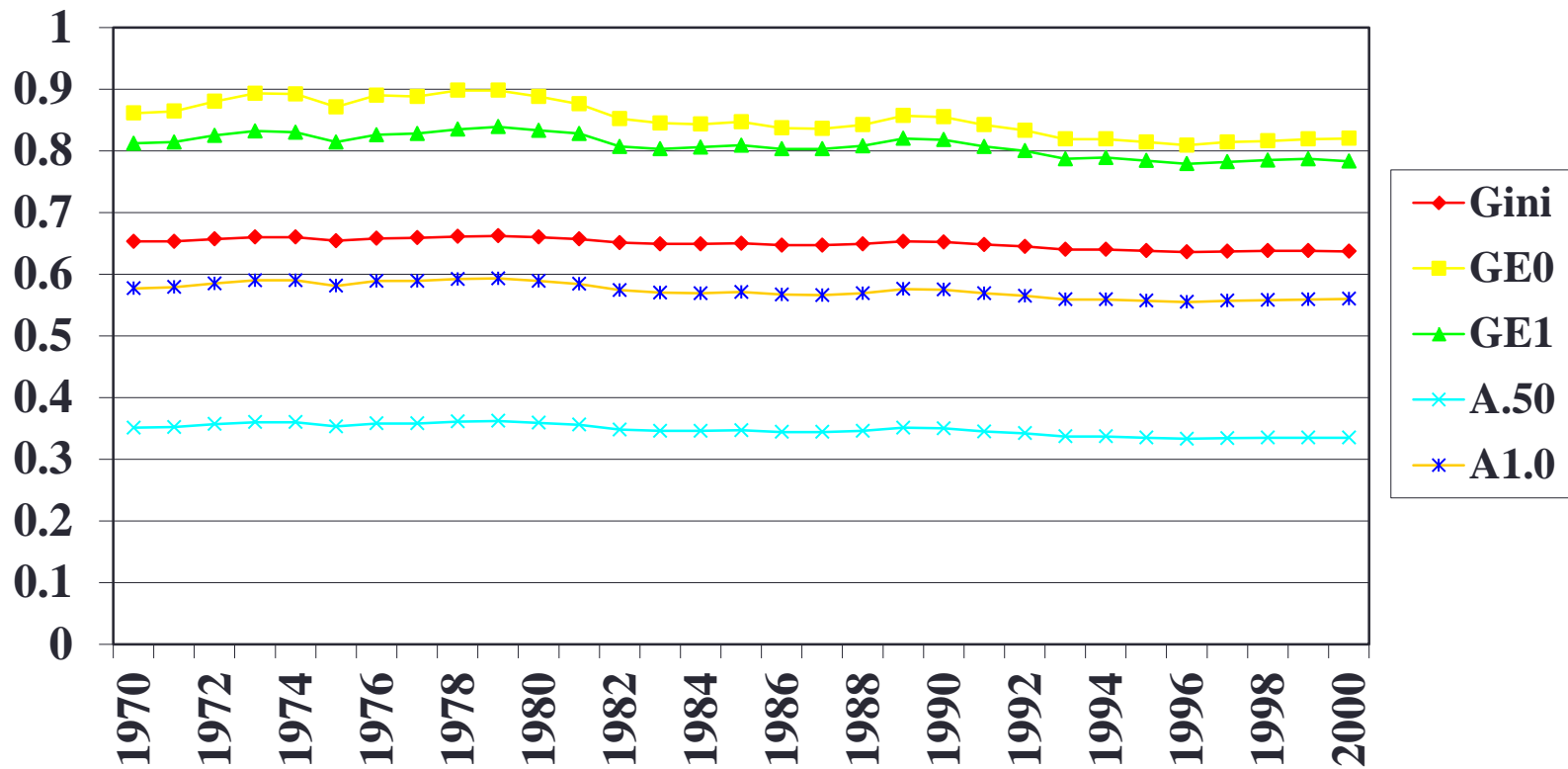
France	0.30	0.29
Hungary	0.27	0.27
Belgium	0.256	0.259

Source: [OECD \(2011\)](#)

Example 2: International trends (2)

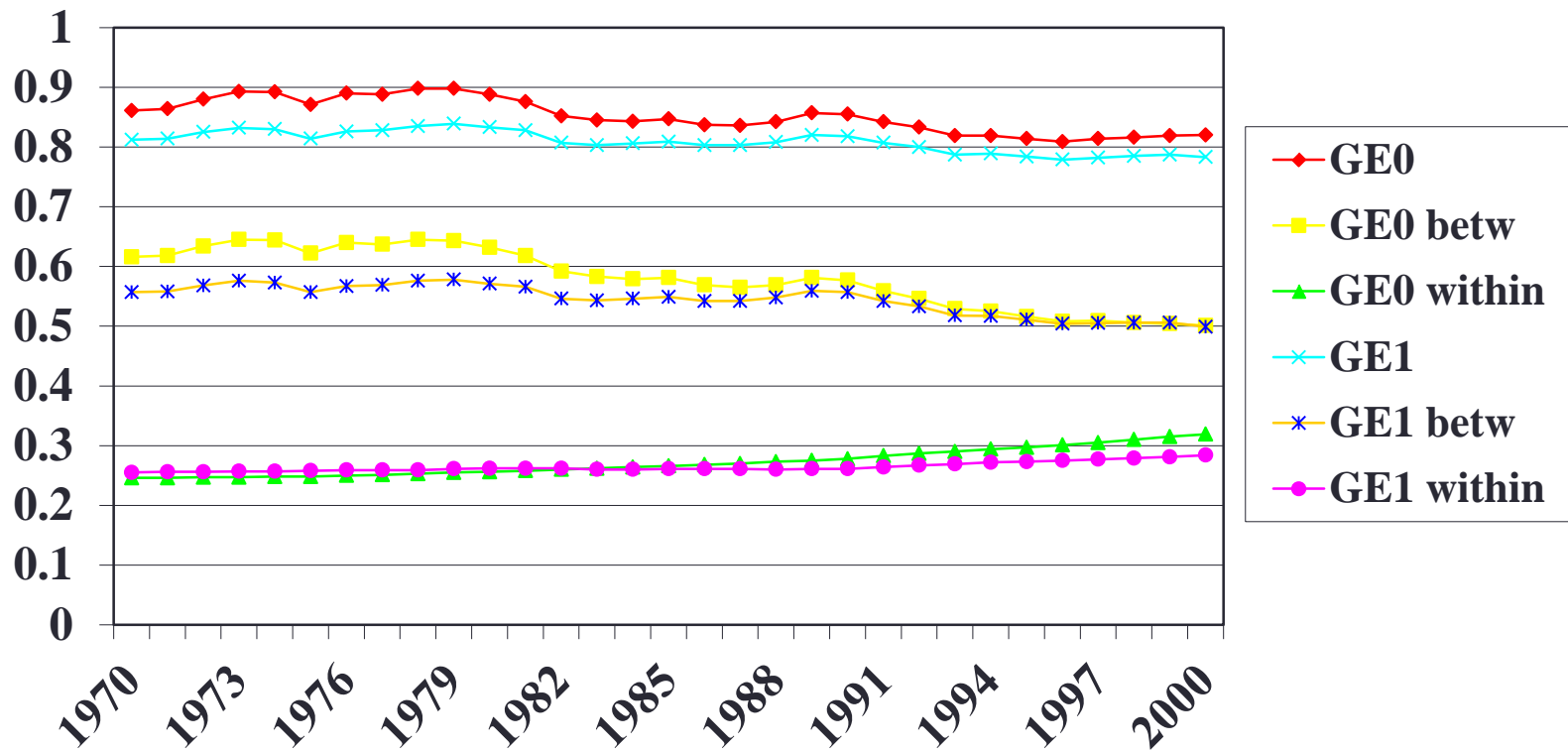
- Break down overall inequality to analyse trends:
 - $I = \sum_j w_j I_j + I_{\text{between}}$
 - do this with *any* inequality measure I ?
 - what weights should we use?
- Traditional approach takes each country as separate unit
 - shows divergence – increase in inequality
 - but, in effect, weights countries equally
 - debatable that China gets the same weight as very small countries
- New conventional view ([Sala-i-Martin 2006](#))
 - within-country disparities have increased
 - not enough to offset reduction in cross-country disparities.
- Components of change in distribution are important
 - “correctly” compute world income distribution
 - decomposition within/between countries is then crucial
 - what drives cross-country reductions in inequality?
 - large growth rate of the incomes of the Chinese

Inequality: World experience



Source: [Sala-i-Martin \(2006\)](#)

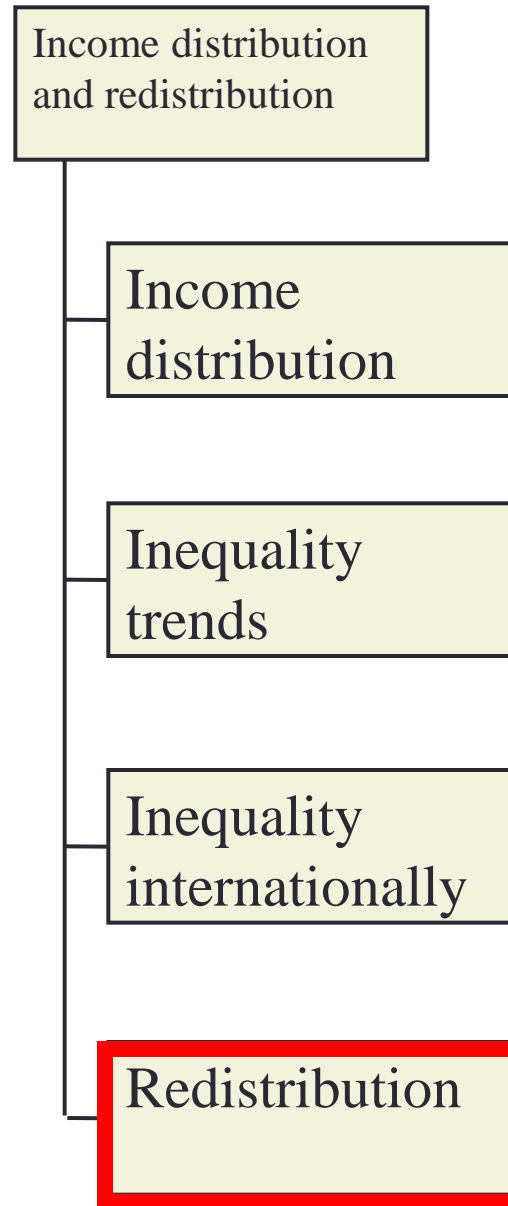
Inequality: World experience: (2)



Source: [Sala-i-Martin \(2006\)](#)

Overview...

Impact of taxes and benefits



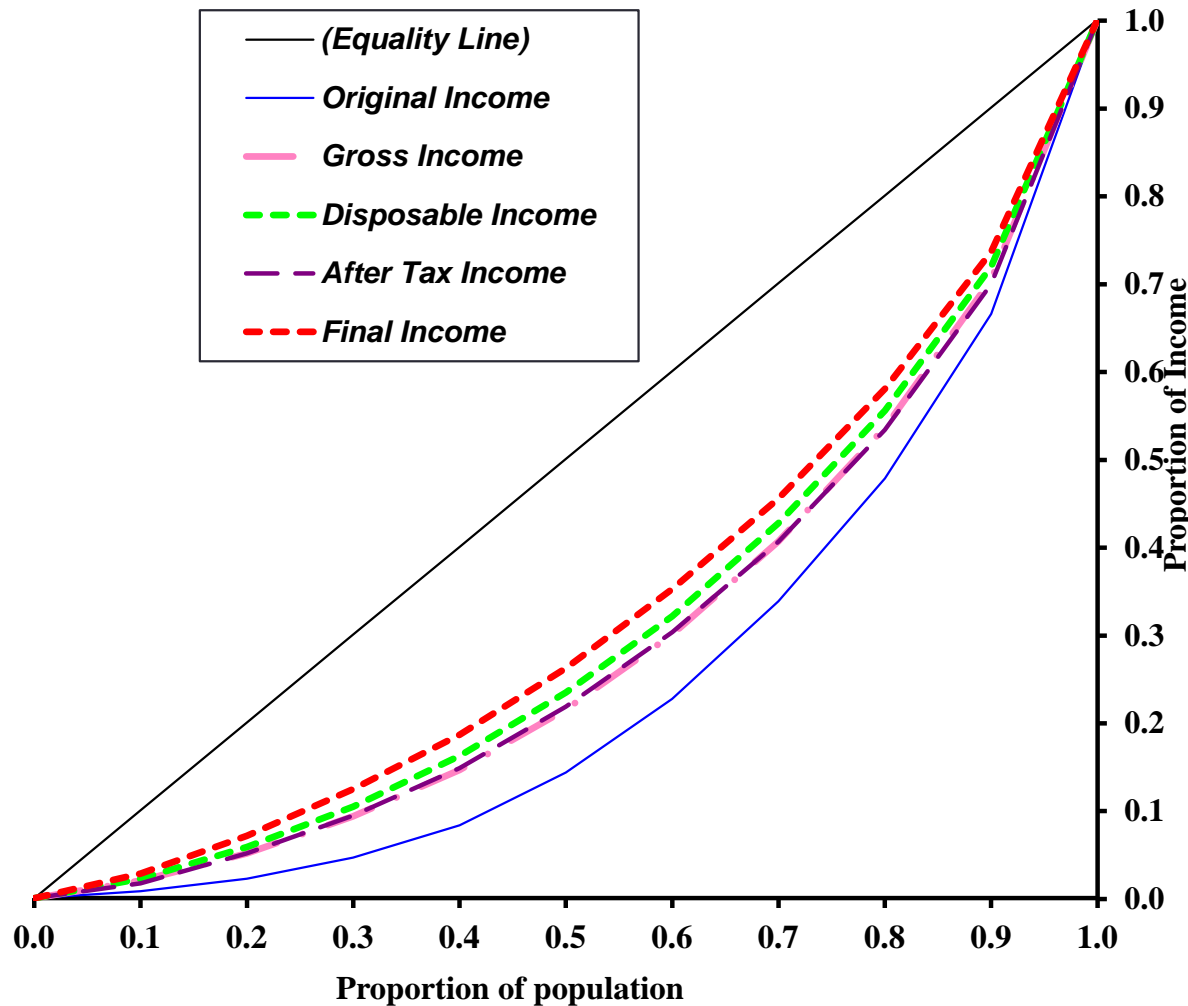
Another application of ranking

- Tax and benefit system maps one distribution into another
 - $c = y - T(y)$
 - y : pre-tax income c : post-tax income
- Use ranking tools to assess the impact of this in welfare terms
- Typically this uses one or other concept of Lorenz dominance
- Linked to *effective tax progression*
 - T is progressive if c Lorenz-dominates y
 - see [Jakobsson \(1976\)](#)
- What Lorenz ranking would we expect to apply to these 5 concepts?

original income
+ cash benefits
gross income
- direct taxes
disposable income
- indirect taxes
post-tax income
+ non-cash benefits
final income

Impact of Taxes and Benefits. UK 2006/7.

Lorenz Curve

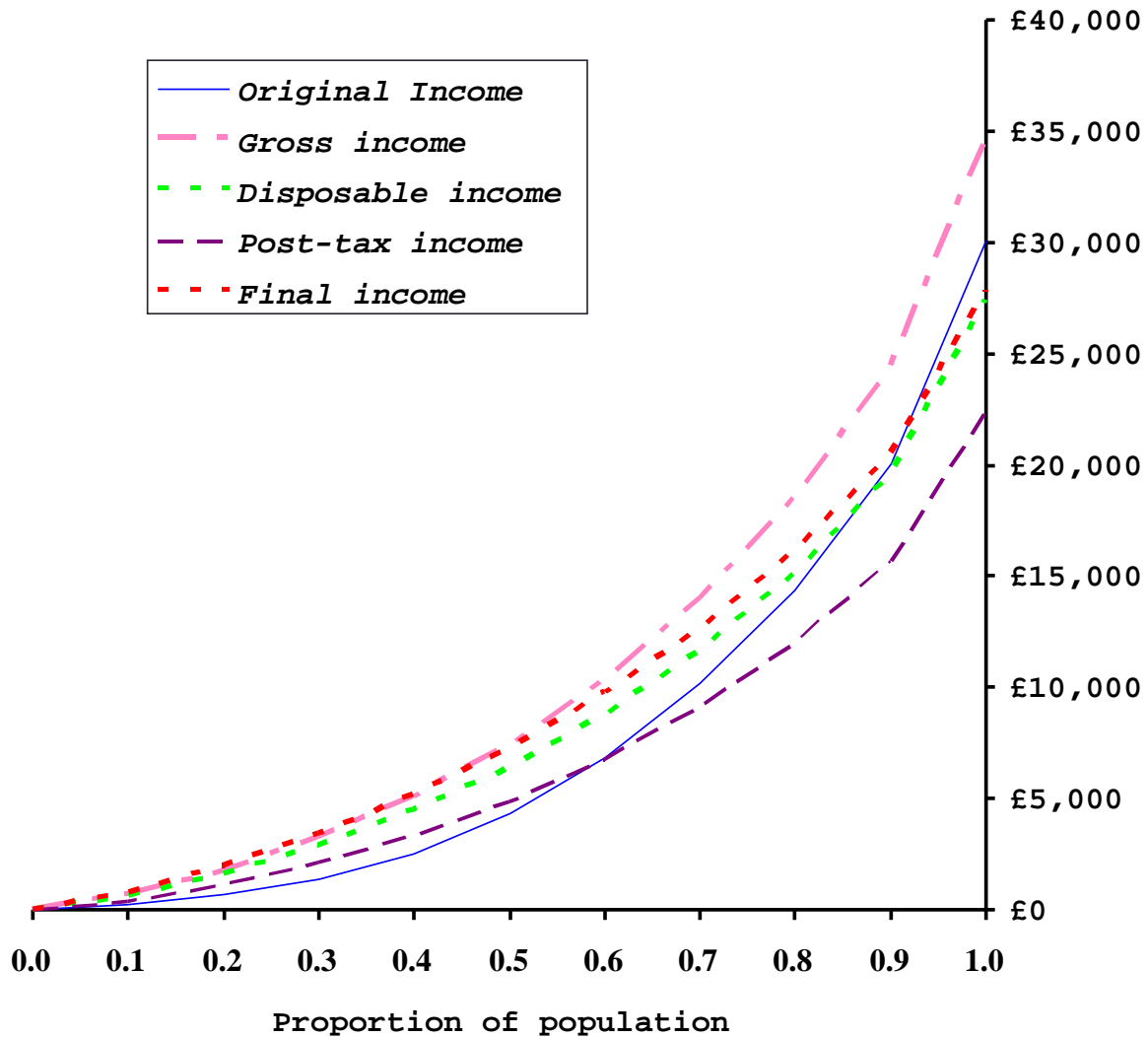


- + *cash benefits*
- - *direct taxes*
- - *indirect taxes*
- + *noncash benefits*

- Big effect from benefits side
- Modest impact of taxes
- Direct and indirect taxes work in opposite directions

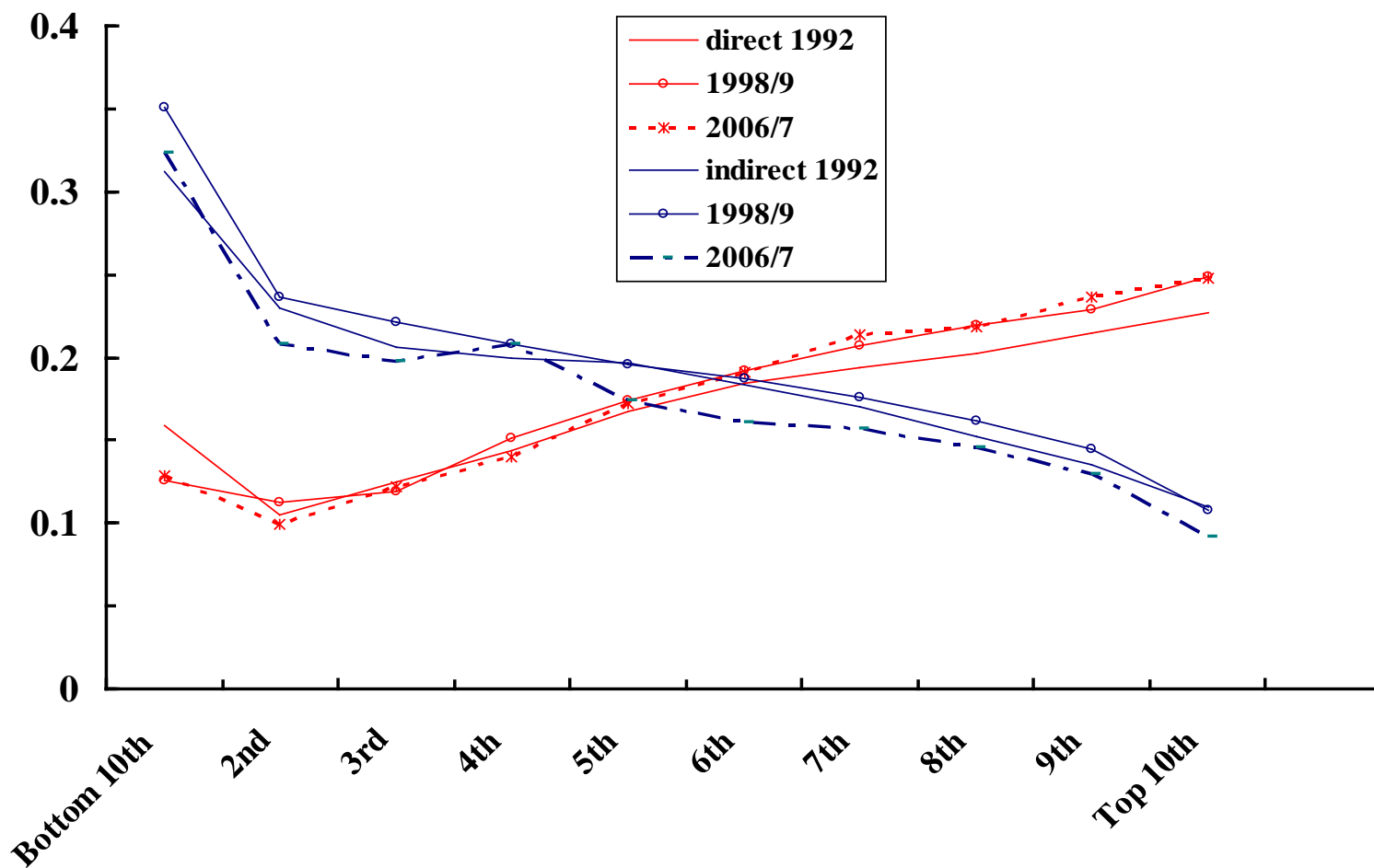
Impact of Taxes and Benefits. UK 2006/7.

GLC



Final income does not second-order dominate original income

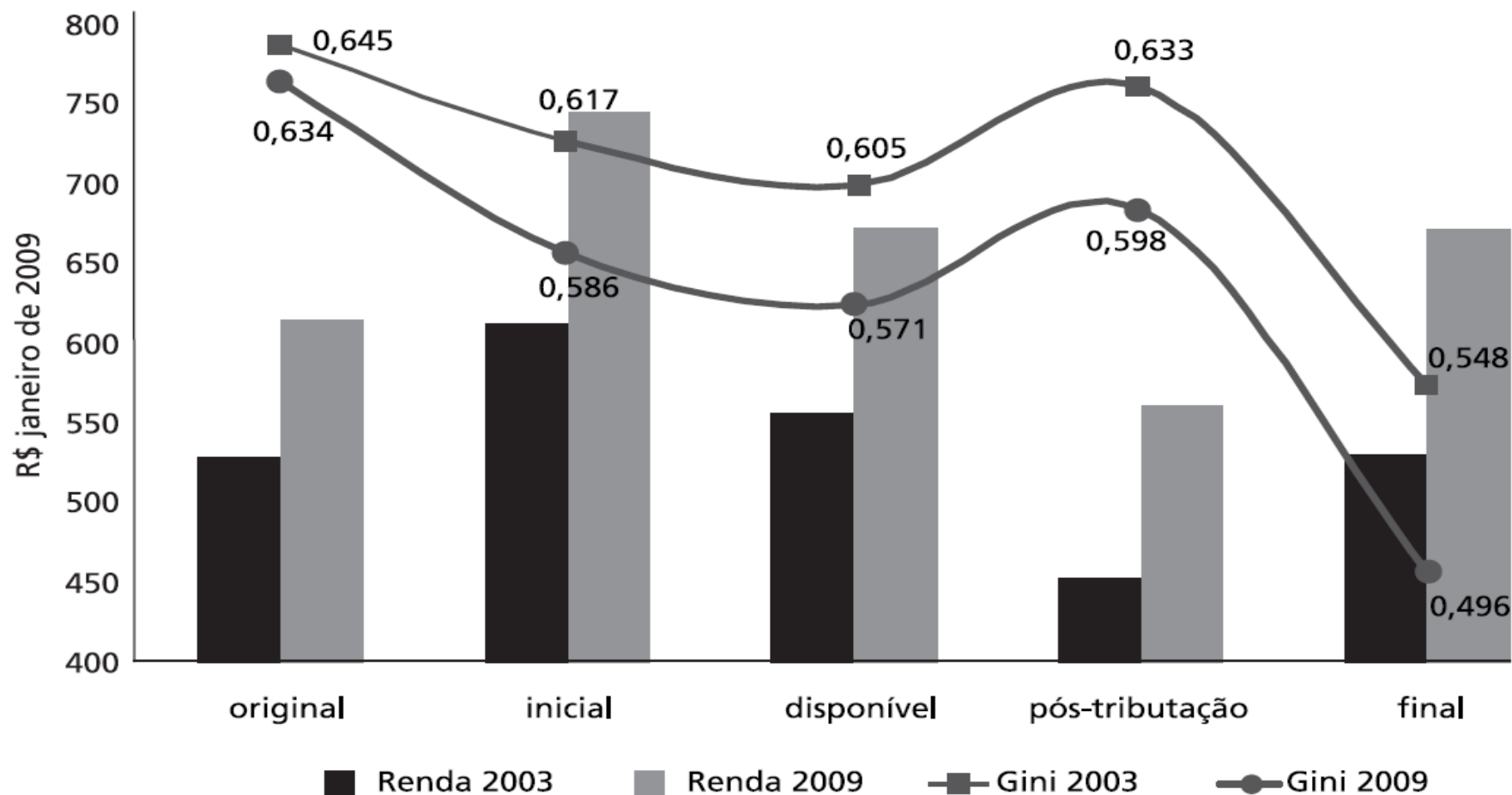
Implied tax rates in *Economic and Labour Market Review*



▪ Formerly *Economic Trends*. Taxes as proportion of gross income – see [Jones, \(2008\)](#)

Impact of taxes and benefits: Brazil

Comportamento do índice de Gini e das rendas monetárias original, inicial, disponível, final – Brasil (2002-2003 e 2008-2009)



Source: [Carlos Ribeiro et al. \(2011\)](#)

Summary

- 2nd-order (GL)-dominance: ranking by cumulations
 - From lecture 1
- Lorenz dominance equivalent to ranking by shares
 - Special case of GL-dominance normalised by means
 - use to characterise redistributational impact
- If Lorenz-curves intersect unambiguous inequality orderings not possible
 - Makes inequality measures especially interesting
- Use I -measures to capture effective tax progression

References

- * [Atkinson, A. B. \(2004\)](#) “Income tax and top incomes over the twentieth century,” *Hacienda Pública Española*, **168**, 123-141
- * [DeNavas-Walt, C. and Proctor, B. D. \(2015\)](#) “Income and poverty in the United States: 2014.” Current Population Reports P60-252, U.S. Census Bureau, U.S. Government Printing Office, Washington, DC.
- [Jakobsson, U. \(1976\)](#) “On the measurement of the degree of progression,” *Journal of Public Economics*, **5**, 161-168.
- * [Jones, F. \(2008\)](#) “The effects of taxes and benefits on household income, 2006/07,” *Economic and Labour Market Review*, **2**, 37-47.
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- [OECD \(2011\)](#) *Divided We Stand: Why Inequality Keeps Rising* OECD iLibrary.
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- [Sala-i-Martin, X. \(2006\)](#) “The world distribution of income: Falling poverty and ... convergence, period”, *Quarterly Journal of Economics*, 121
- [The World Bank \(2004\)](#) *2005 World Development Report: A Better Investment Climate for Everyone*. Oxford University Press, New York
- [The World Bank \(2005\)](#) *2006 World Development Report: Equity and Development*. Oxford University Press, New York