

# Growth, Inequality, and Social Welfare

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World Bank DECRG Policy Research Talk

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# Widespread concerns about rising inequality within countries

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- *“We are the 99%”*
  - Occupy Wall Street

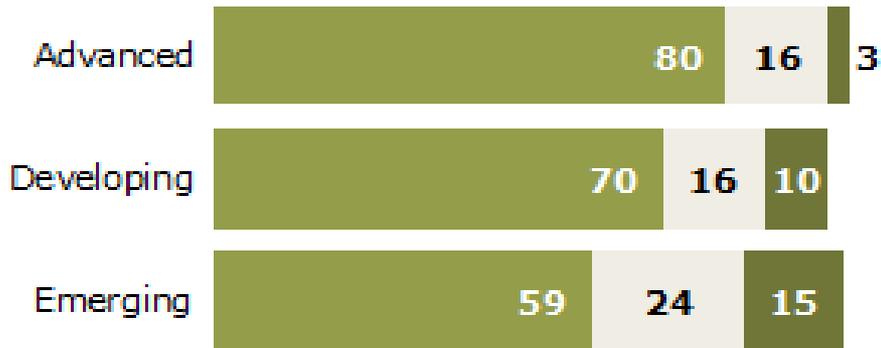
# Not just in rich countries....

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## Advanced Economies Most Likely to See Increased Inequality

*In the past five years, the gap between the rich and poor has...*

■ Increased ■ Stayed the same ■ Decreased



PEW RESEARCH CENTER Q24.

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*“Broad majorities in 31 of the 39 countries surveyed say the income gap has increased over the past five years. Reports of a rise in income inequality are particularly high in the advanced economies, where a median of 80% say things have gotten worse, compared with medians of 70% in the developing economies and 59% in the emerging markets.”*

— Pew Research Center  
(2013)

# Evidence on Inequality Trends is Mixed

- Inequality has increased in some countries, particularly due to gap between top end and everyone else
  - US: Gini increases from 30 to 40 in past 40 years
  - China: Gini increases from 32 to 42 in past 20 years
  - Atkinson/Piketty/Saez data show big increases in top 1% income share in countries like United States, United Kingdom

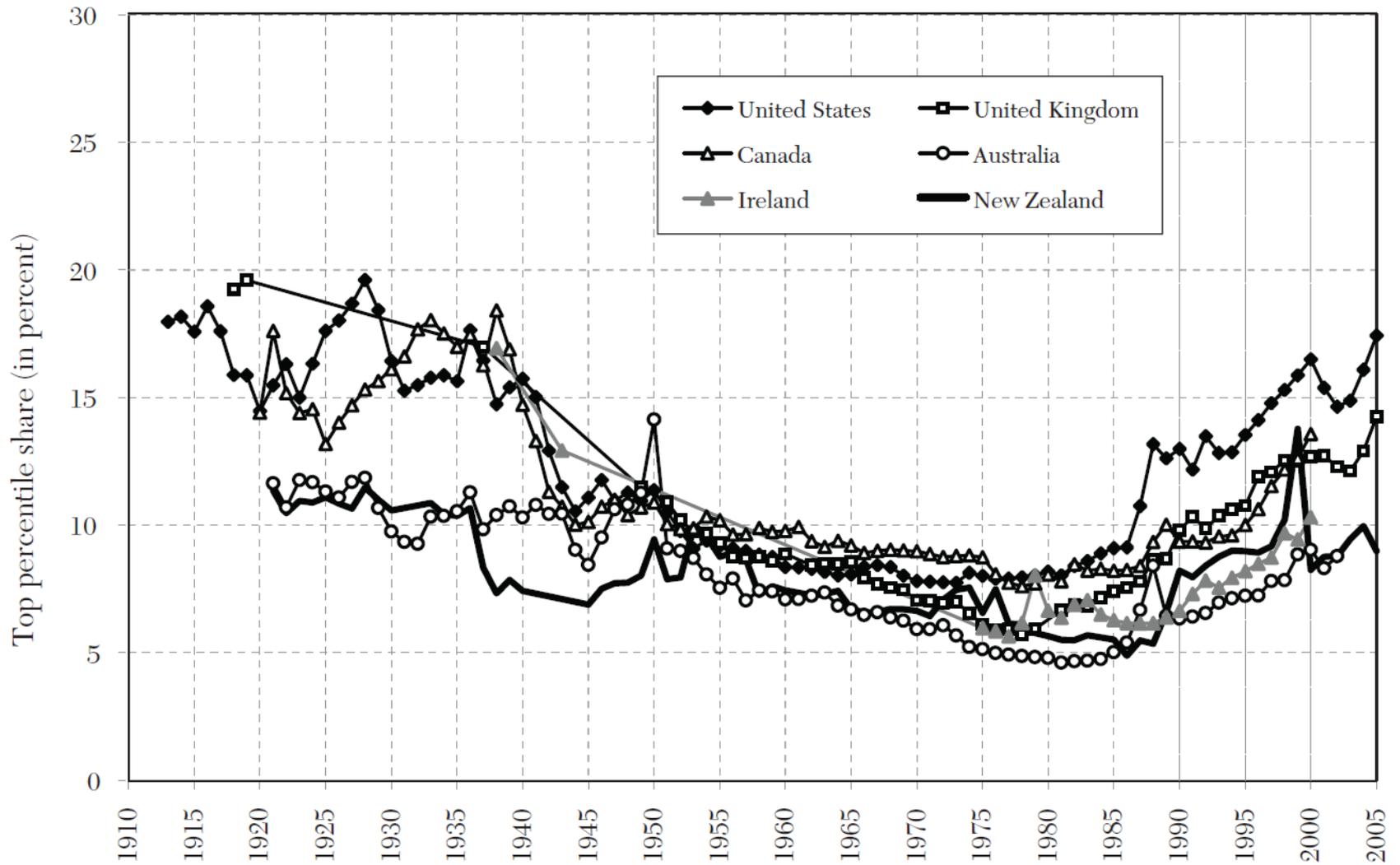


Figure 8. Top 1 Percent Share: English Speaking Countries (U-shaped), 1910–2005

Source: Atkinson and Piketty (2007, 2010).

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  - China: Gini increases from 32 to 42 in past 20 years
  - Atkinson/Piketty/Saez data show big increases in top 1% income share in countries like United States, United Kingdom
- But inequality has remained stable in other countries, and fallen in still others
  - Brazil: Gini falls from 60 to 55 during 2000s
  - Atkinson/Piketty/Saez data show stable top 1% income share in countries like Japan, Switzerland, Germany

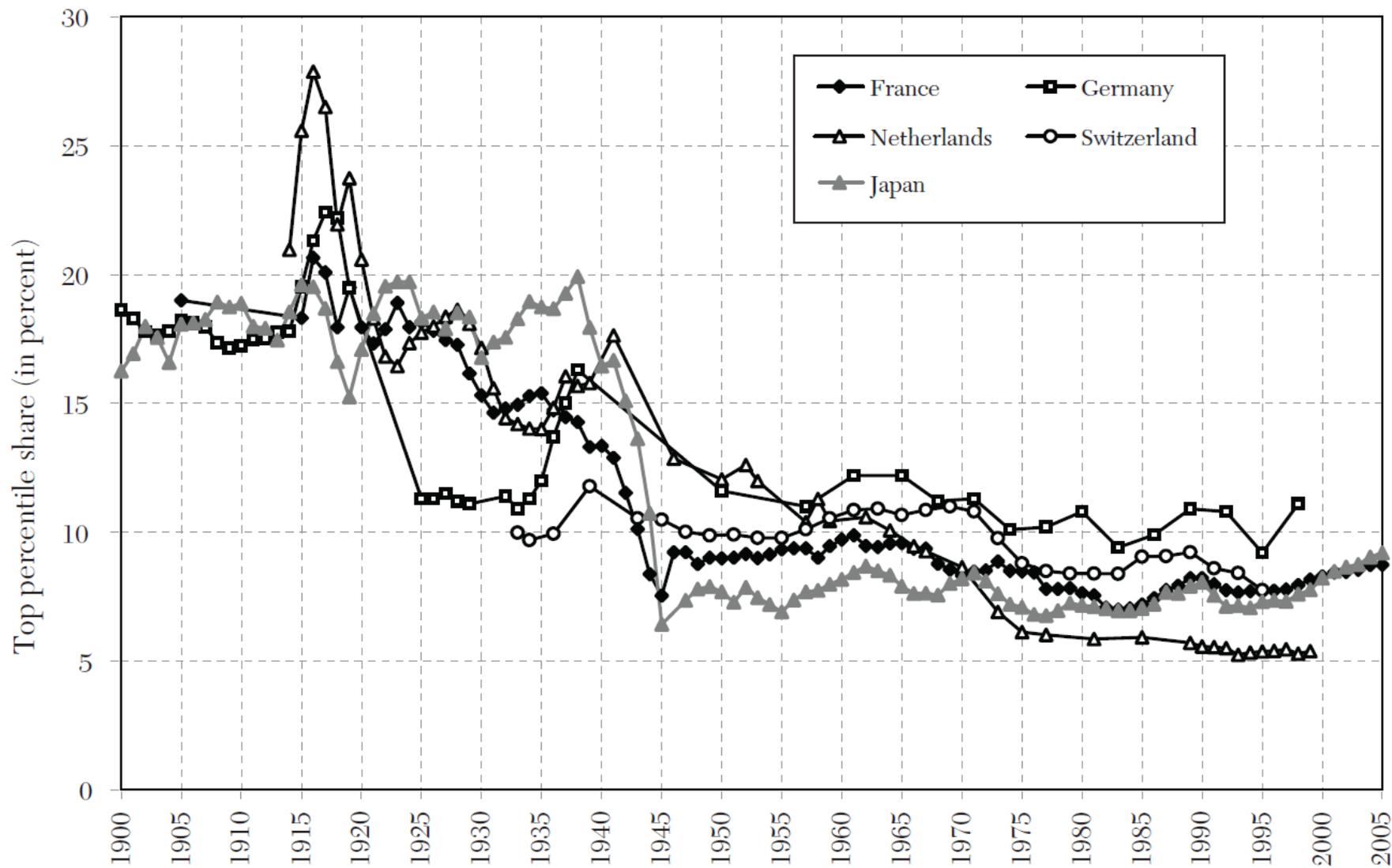


Figure 9. Top 1 Percent Share: Middle Europe and Japan (*L*-shaped), 1900–2005

Source: Atkinson and Picketty (2007, 2010).

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(in Either Direction) Matter?

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  - Intrinsic notions of fairness?
  - Economic outcomes like growth, institutions, etc.?
  - Many other possibilities.....

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- Matter for what?
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  - Economic outcomes like growth, institutions, etc.?
  - Many other possibilities.....
- Focus in this talk on one very modest question: how much do trends in inequality matter for *social welfare*?
  - Use several standard *social welfare functions* to value changes in inequality in terms of percentage points of growth in average incomes
    - Useful way of thinking about whether changes in inequality are “big” or “small” relative to growth
    - Useful to remember what inequality measures imply for social preferences across individuals

# Illustration

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- Two key ingredients
  - Choose a social welfare function
  - Decompose into growth and (in)equality change
    - Both in units of income growth

# Rest of Talk

- Review some common social welfare functions and what they imply for social preferences across individuals (nothing novel here)
- New empirical evidence on decomposition of social welfare growth into contributions of
  - Growth in average incomes
  - Growth in equality
  - Relate both to determinants of growth and inequality from cross-country literature

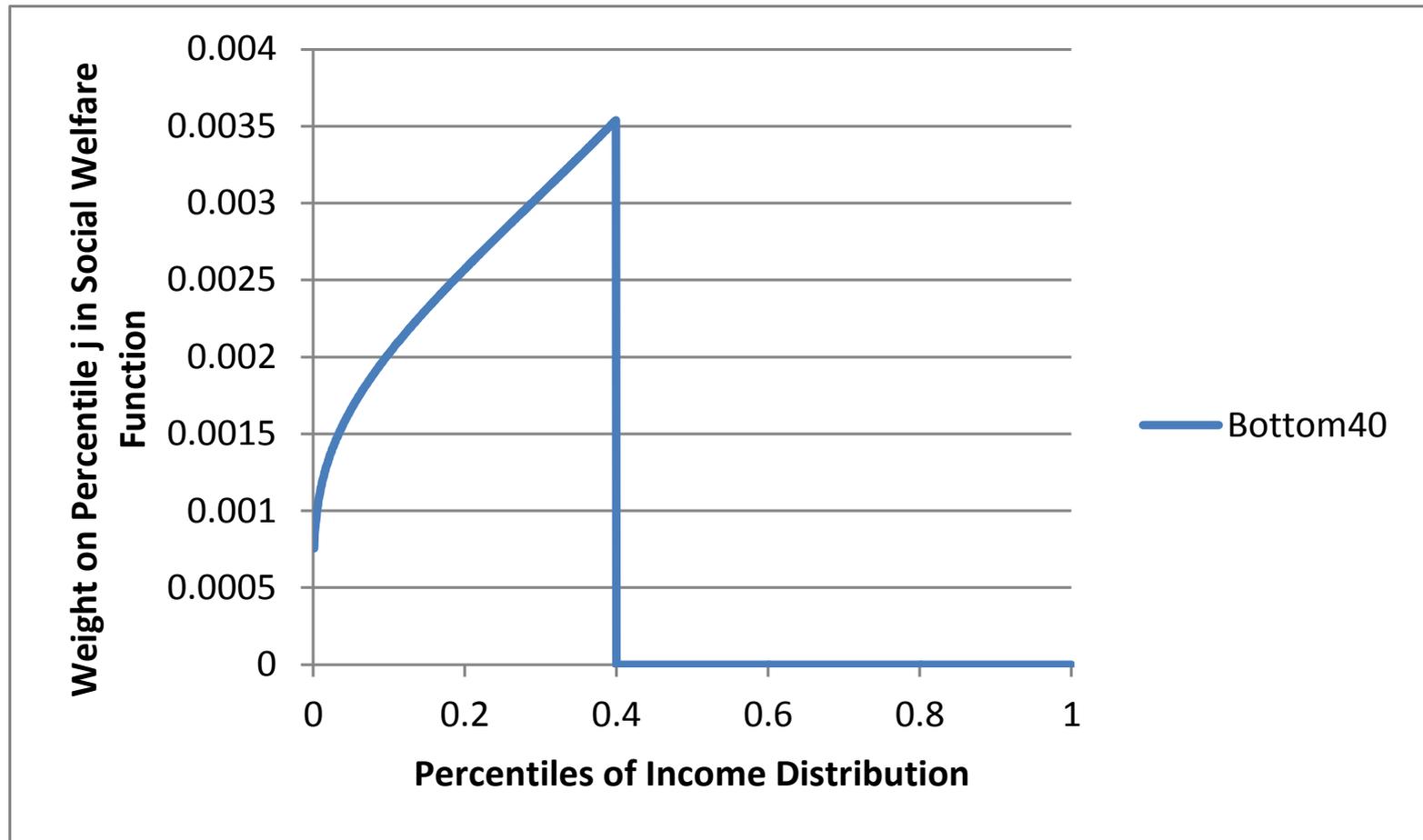
# Some Useful Social Welfare Functions

- Specific Examples
- Welfare Weights and Shared Prosperity

# Examples of Social Welfare Functions

- Average income of bottom X%
  - Mean income  $\times$  (income share of bottom X%)
  - Simple average of incomes below some cutoff percentile

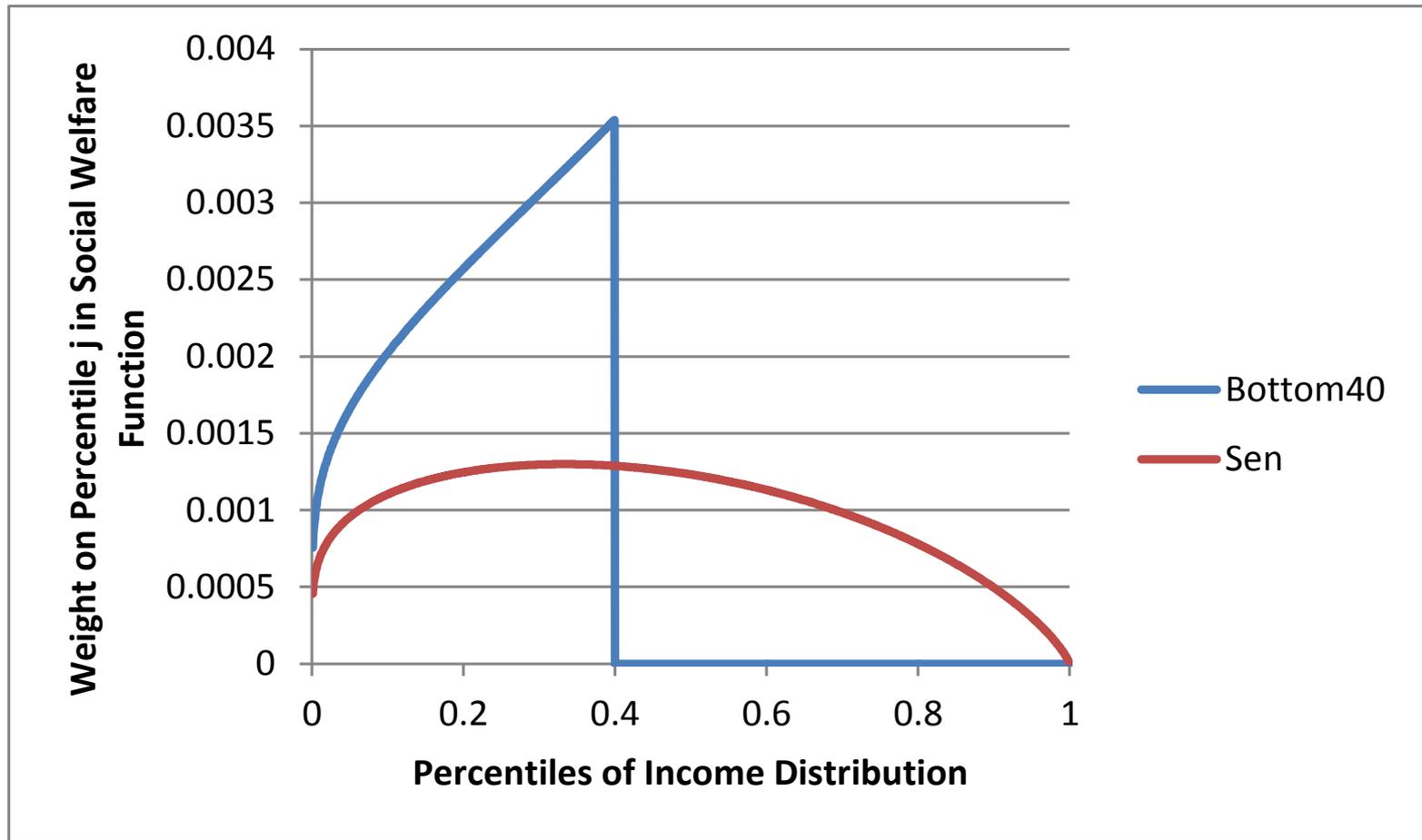
# SWFs Imply Weights on *Percentiles* of Income Distribution



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- Sen (1976) “Real National Income”
  - Mean income  $\times$  (1-Gini)
  - Weighted average of individuals incomes with weights proportional to *ranks* in income distribution

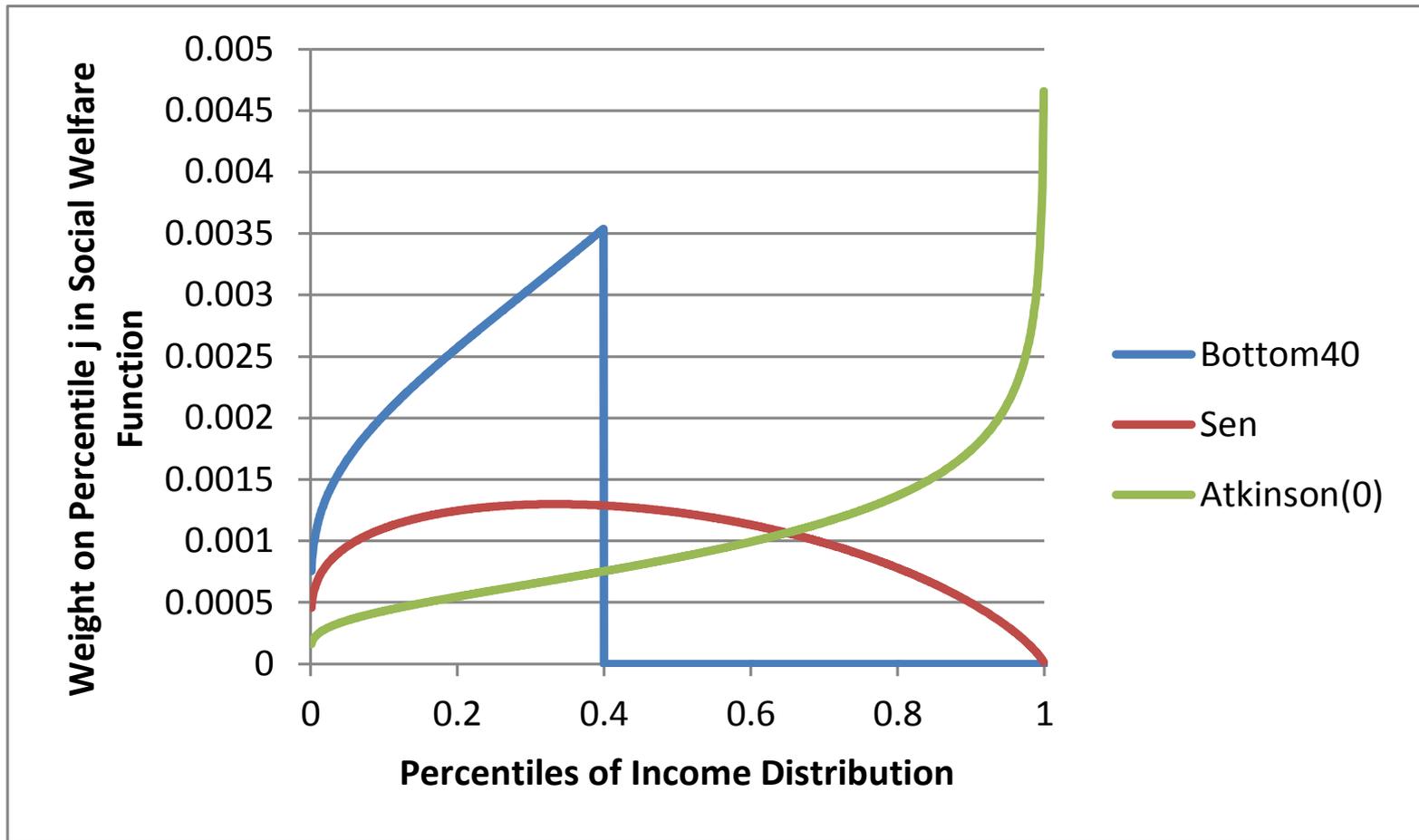
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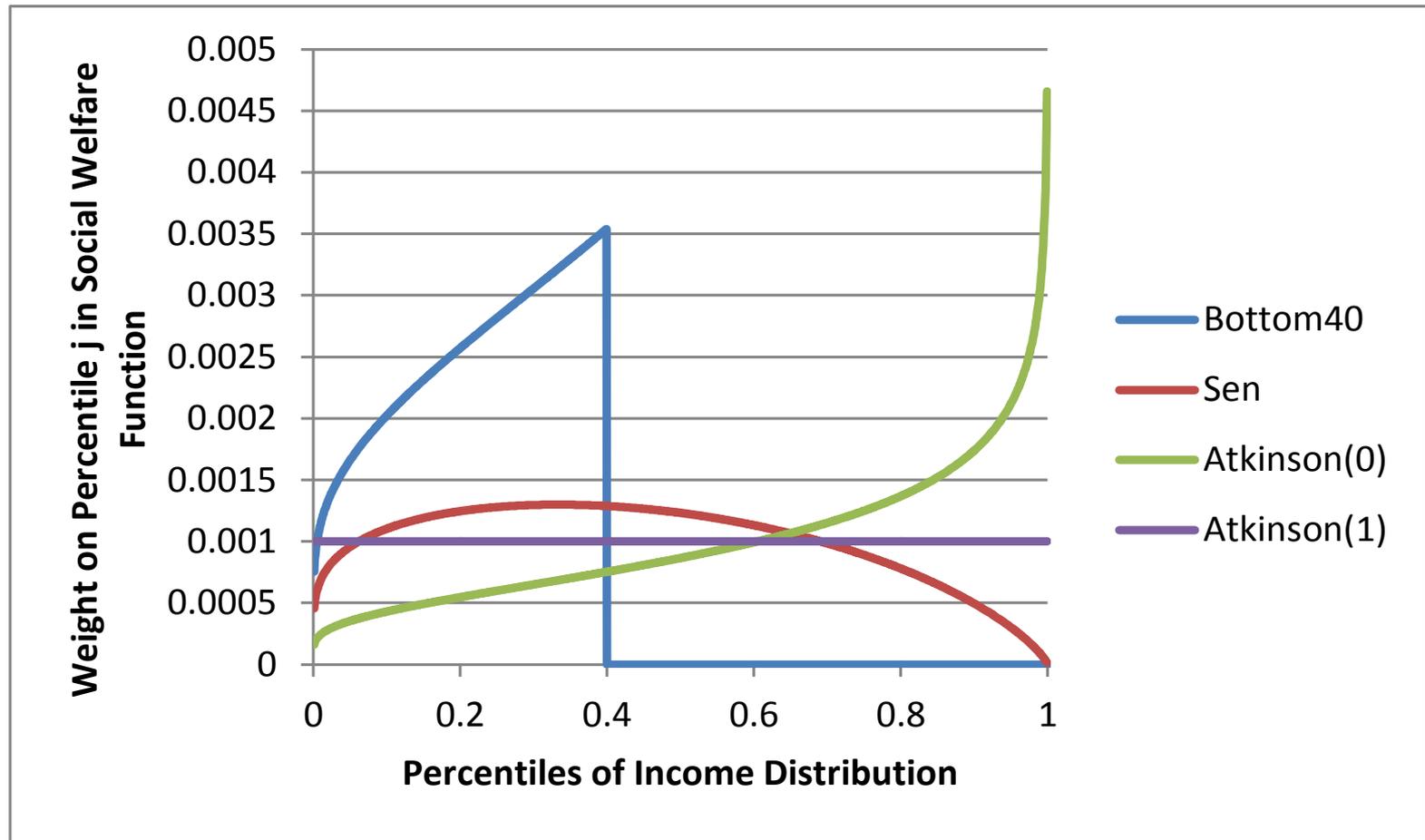
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- Atkinson SWF
  - Mean income  $\times$  (1-Atkinson Inequality Index)
  - Average of incomes raised to power  $1-\theta$ , higher  $\theta$  means more inequality aversion
    - $\theta=0$  gives back simple average incomes

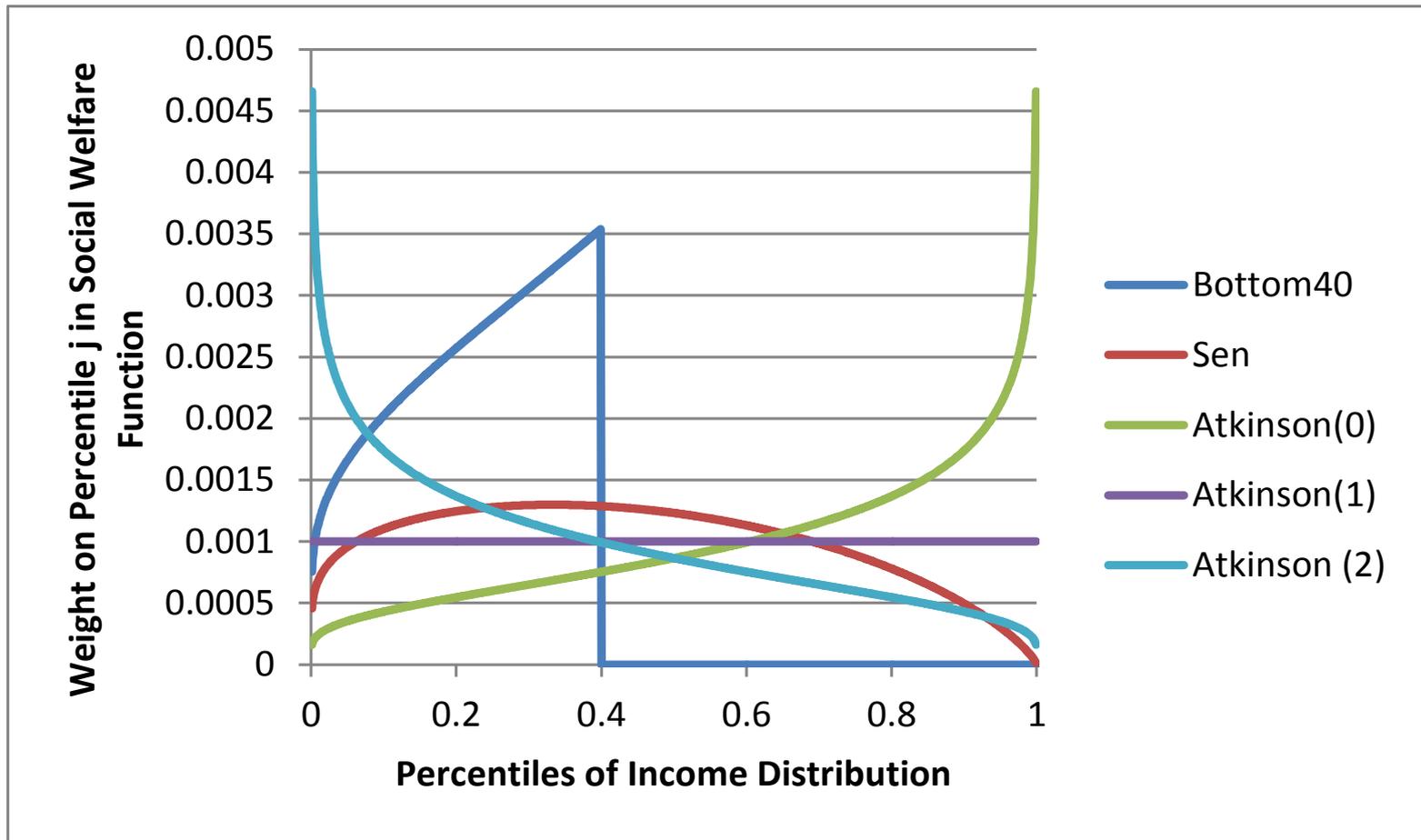
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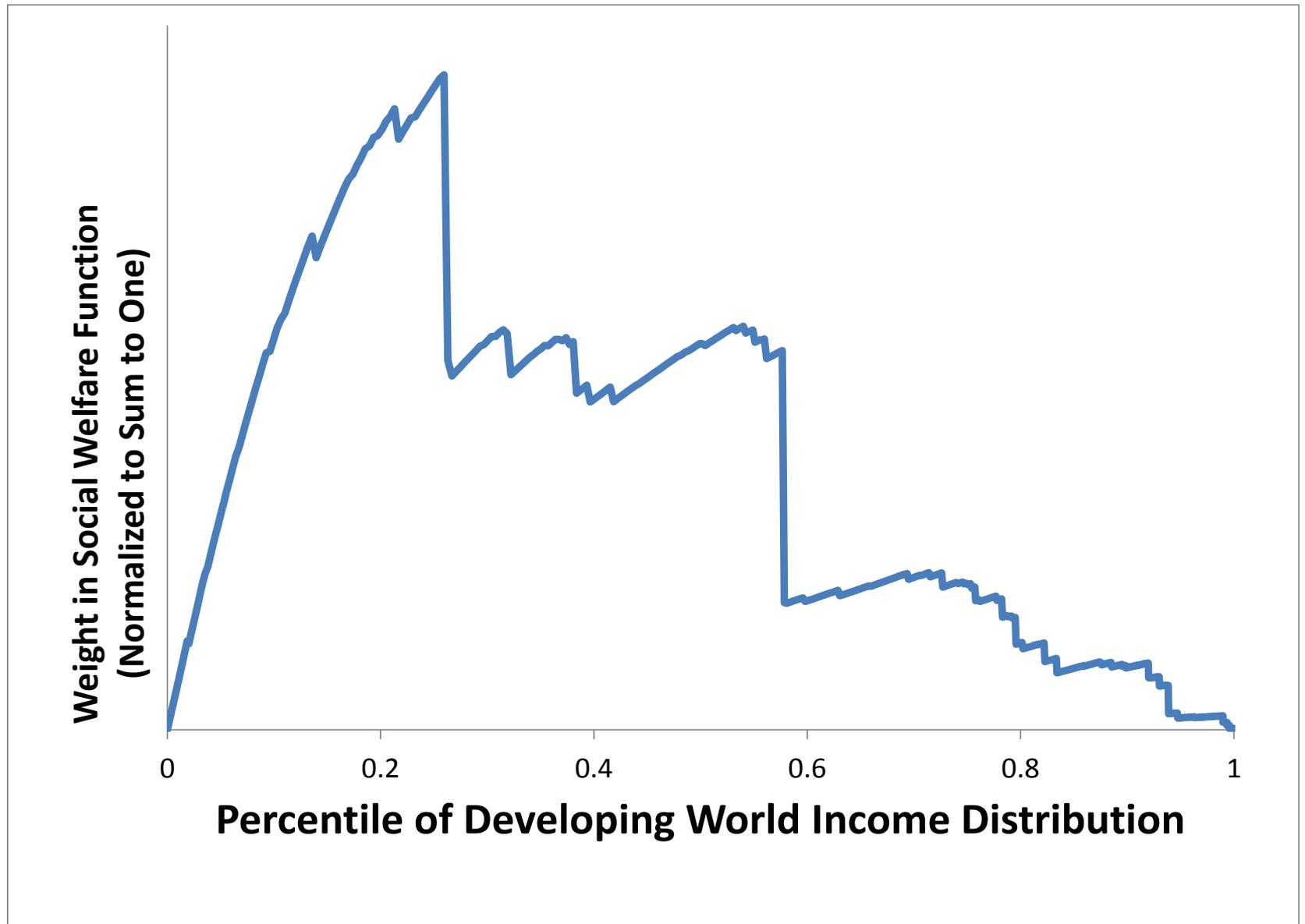
# Welfare Weights Worth Taking Seriously

- Shared prosperity target implies welfare weights that:
  - Are zero above 40<sup>th</sup> percentile
  - Increase with income for those below the 40<sup>th</sup> percentile

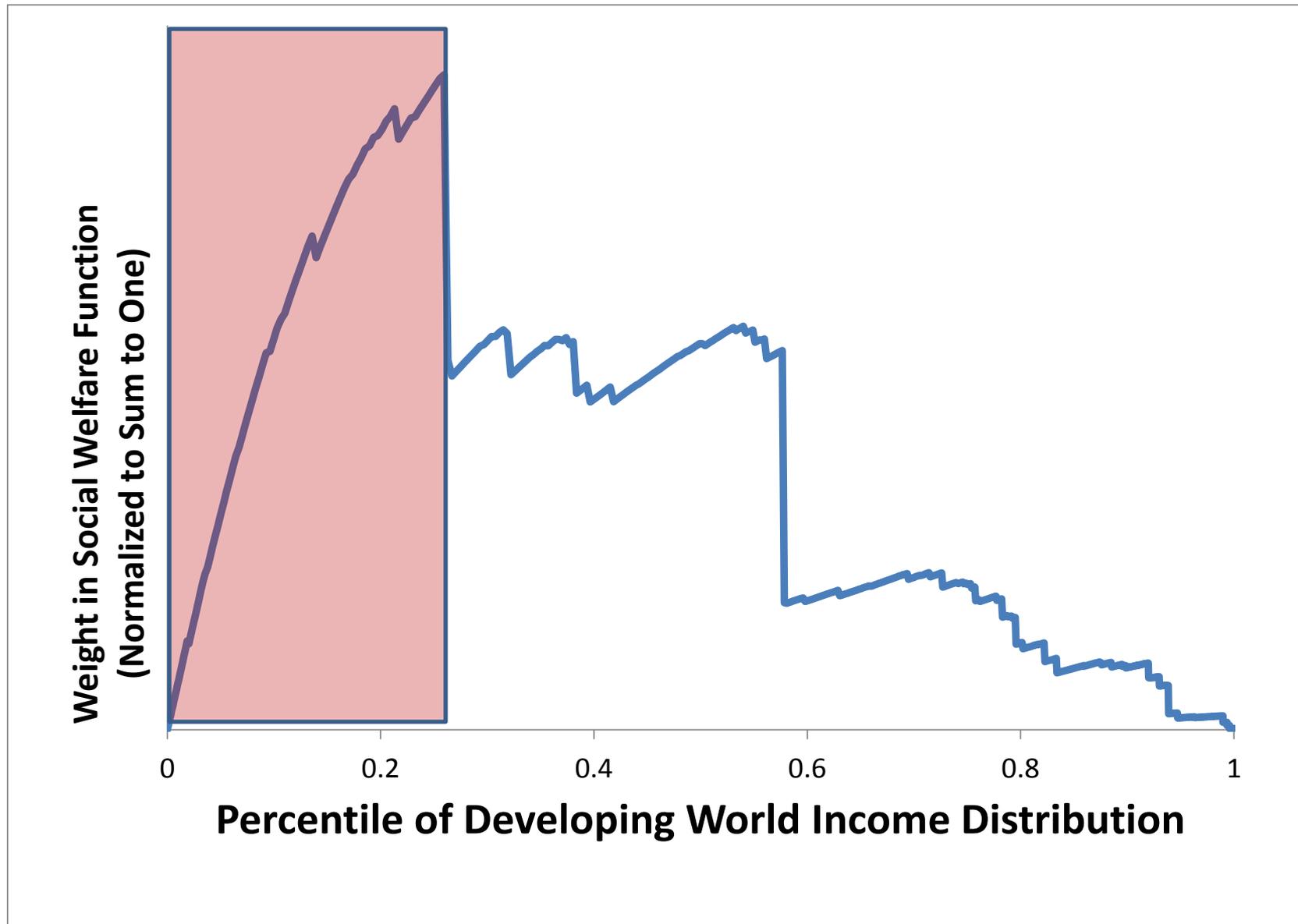
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- What does shared prosperity target at country level imply for welfare weights in world?
  - Not everyone in bottom 40 percent of world is also in bottom 40 percent of their own country
  - Welfare weights still are proportional to incomes for those who are in bottom 40 percent of their own country
  - Implies hump-shaped welfare weights across percentiles of world distribution

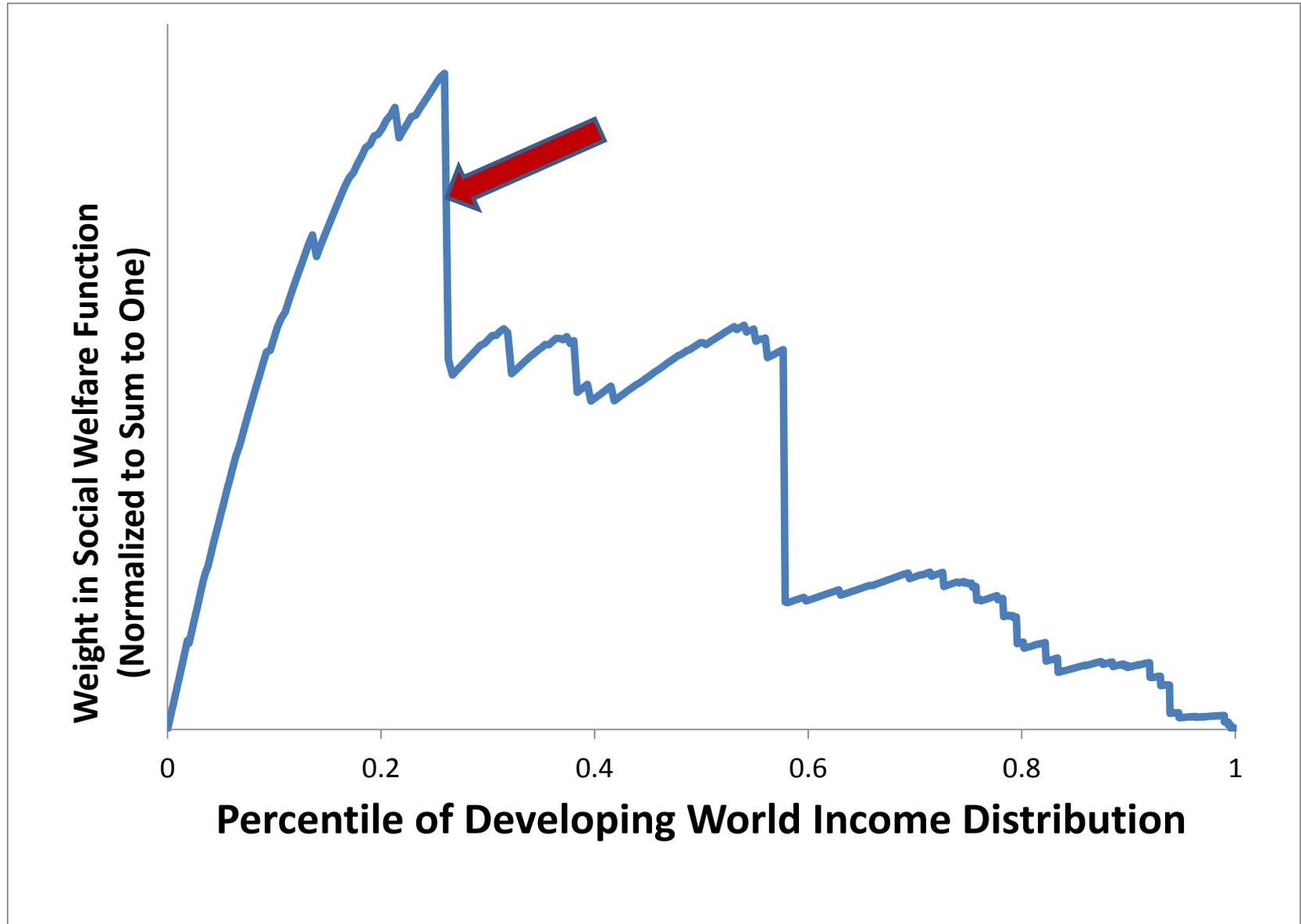
# Shared Prosperity: Global Welfare Weights



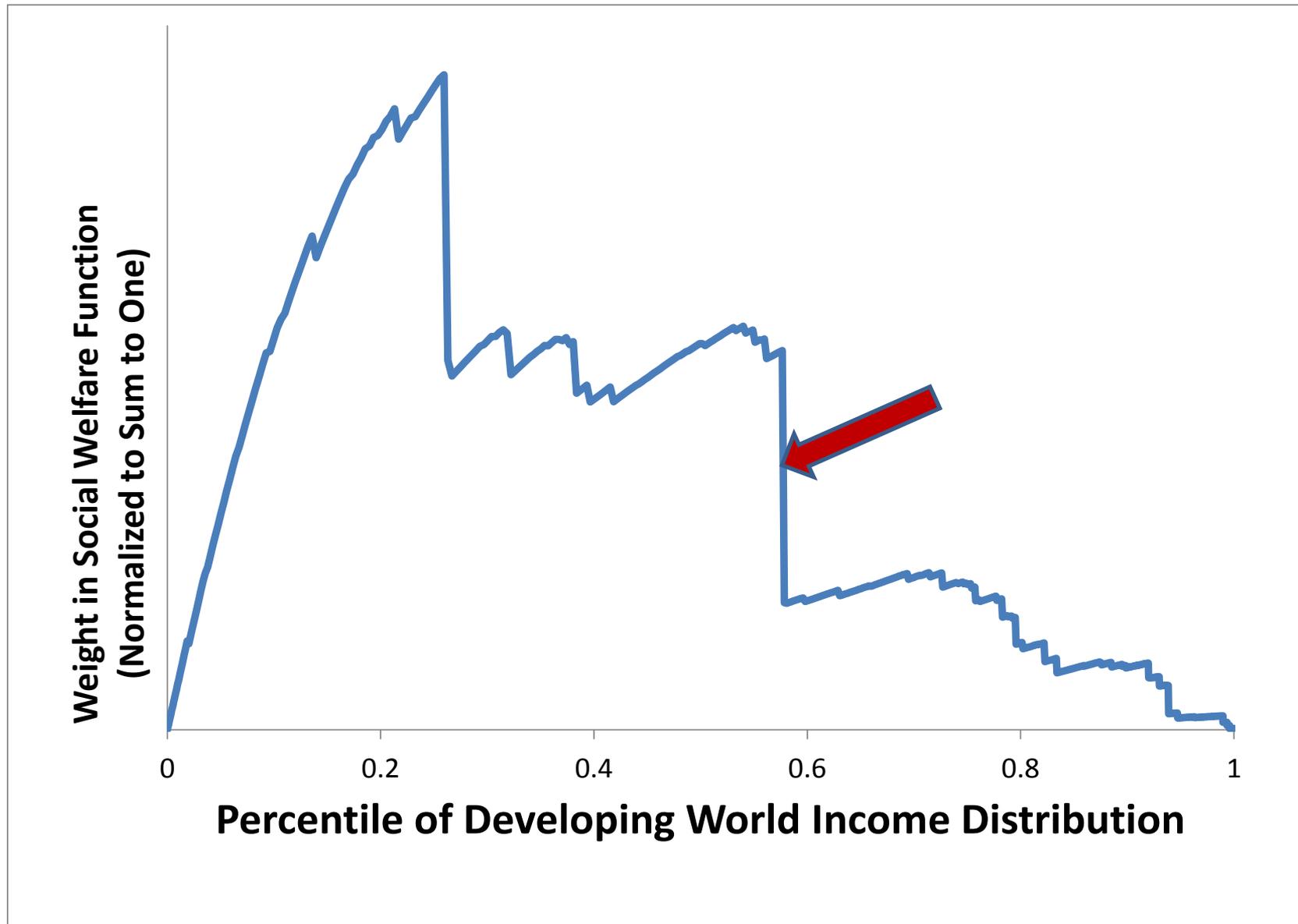
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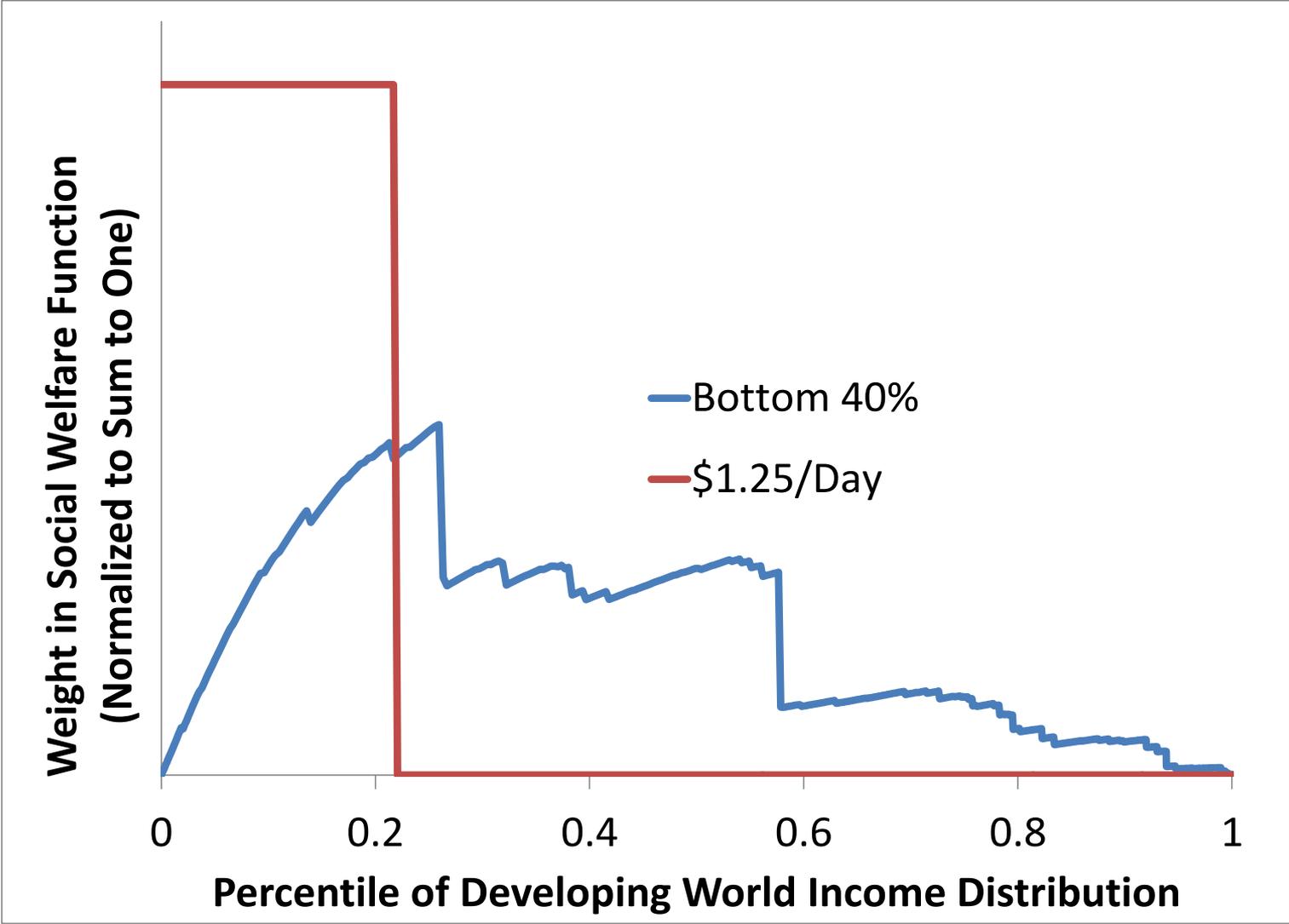
# Shared Prosperity: Global Welfare Weights



# Shared Prosperity: Global Welfare Weights



# Global Welfare Weights for Twin Goals



# Growth, Inequality, and Social Welfare

- Decomposing Social Welfare Growth
- Applications to Three Datasets
  1. Global cross-country data (POVCALNET + LIS)
  2. Atkinson/Piketty/Saez top incomes data
  3. Bourguignon and Morrisson global inequality in long run of history

# Decomposing Growth in Social Welfare

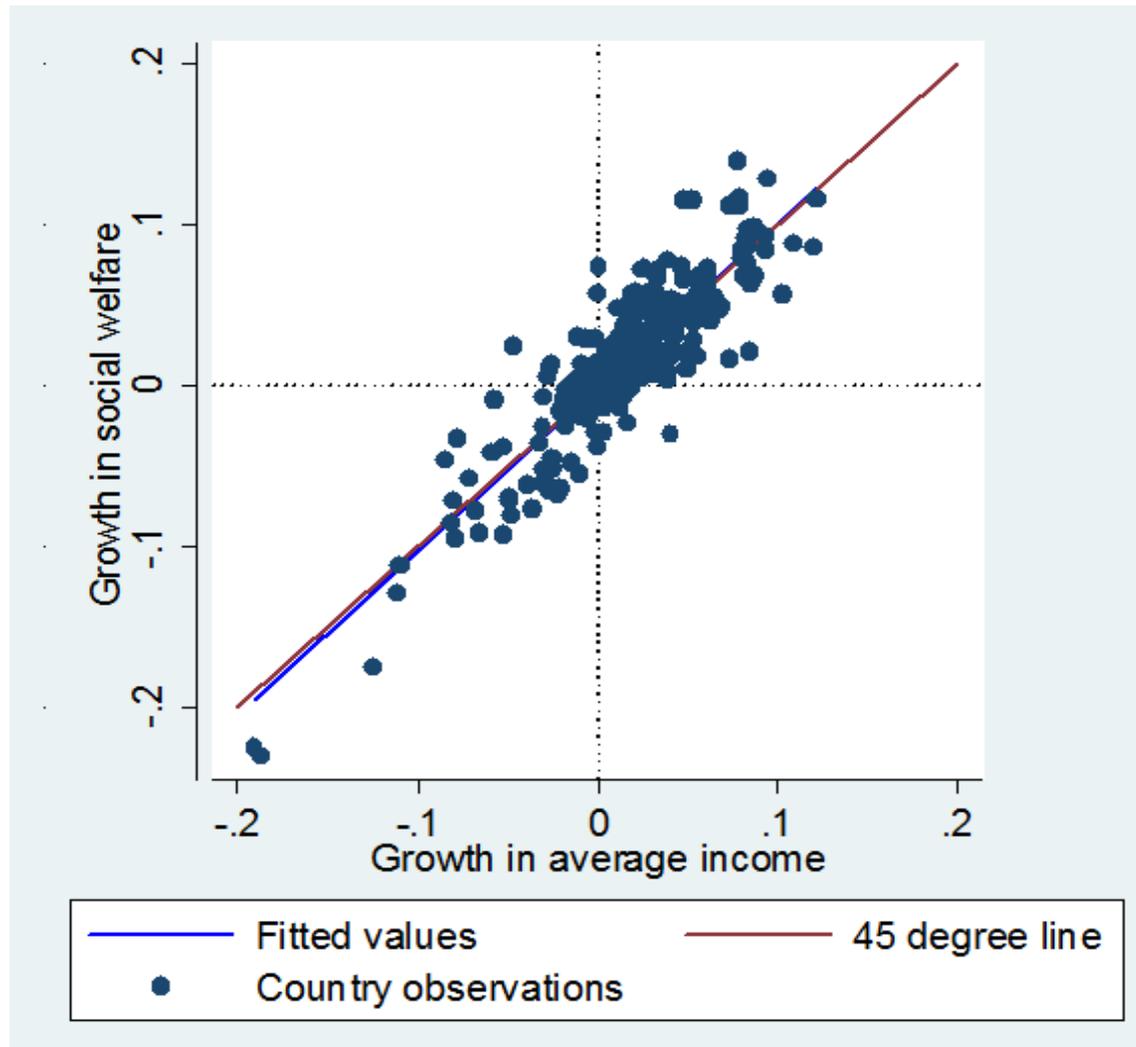
$$\begin{array}{l} \text{Growth in} \\ \text{Social} \\ \text{Welfare} \end{array} = \begin{array}{l} \text{Growth in} \\ \text{Mean} \\ \text{Income} \end{array} + \begin{array}{l} \text{Growth in} \\ \text{Relevant} \\ \textit{Equality} \\ \text{Measure} \end{array}$$

- First term is contribution of distribution-neutral growth to growth in social welfare
- Second term is “cost”/”benefit” of equality change in percentage points of welfare (and income) growth

# Application 1: POVCALNET+LIS

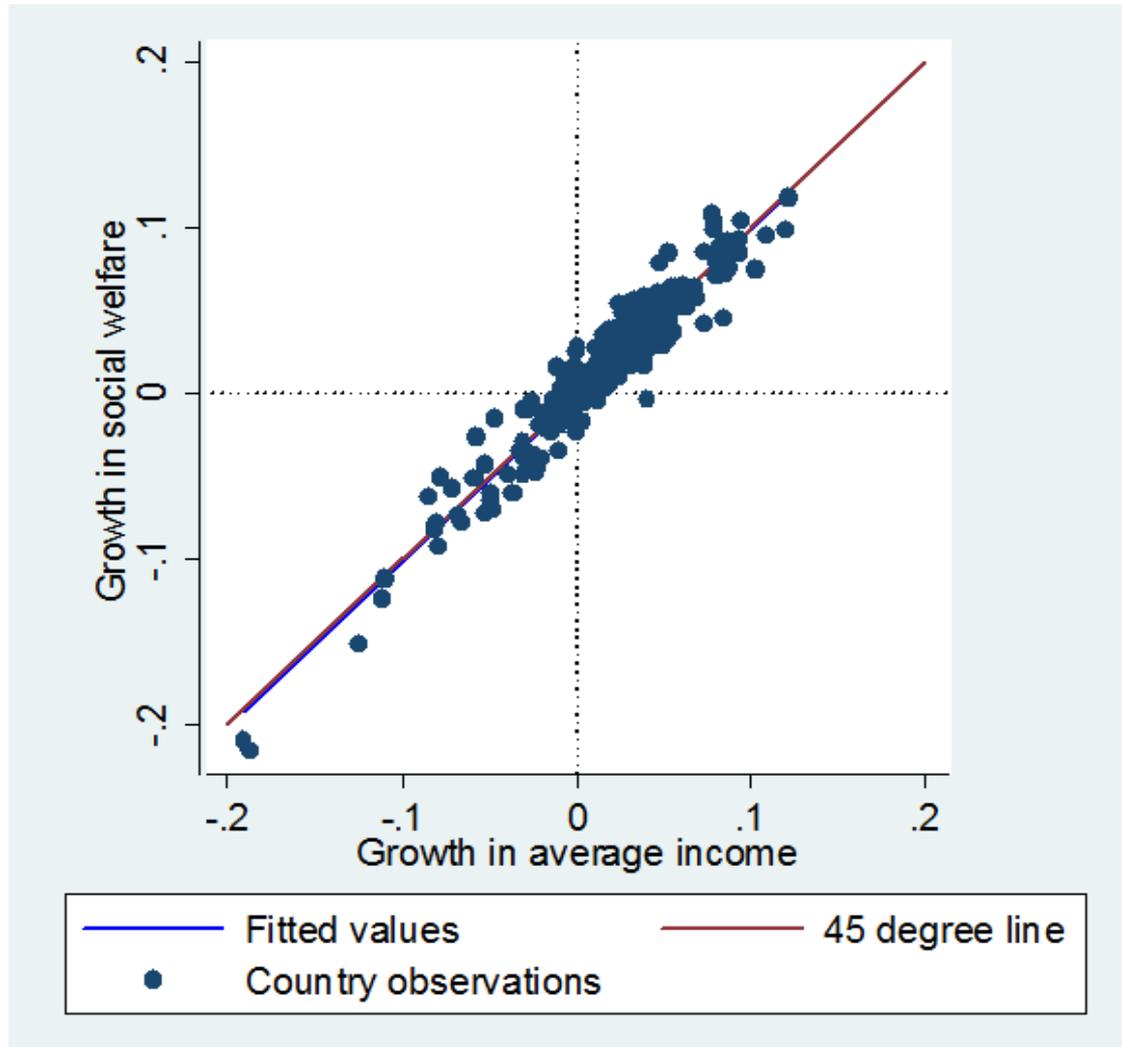
- Large irregularly-spaced cross-country panel on average income/consumption and decile shares based on:
  - POVCALNET – for developing countries
  - LIS – for OECD countries
- High-quality sample based directly on primary data from household surveys
- Most results based on sample of “spells” at least 5 years long, ensuring both end-points of spell are same type

# Growth and Social Welfare



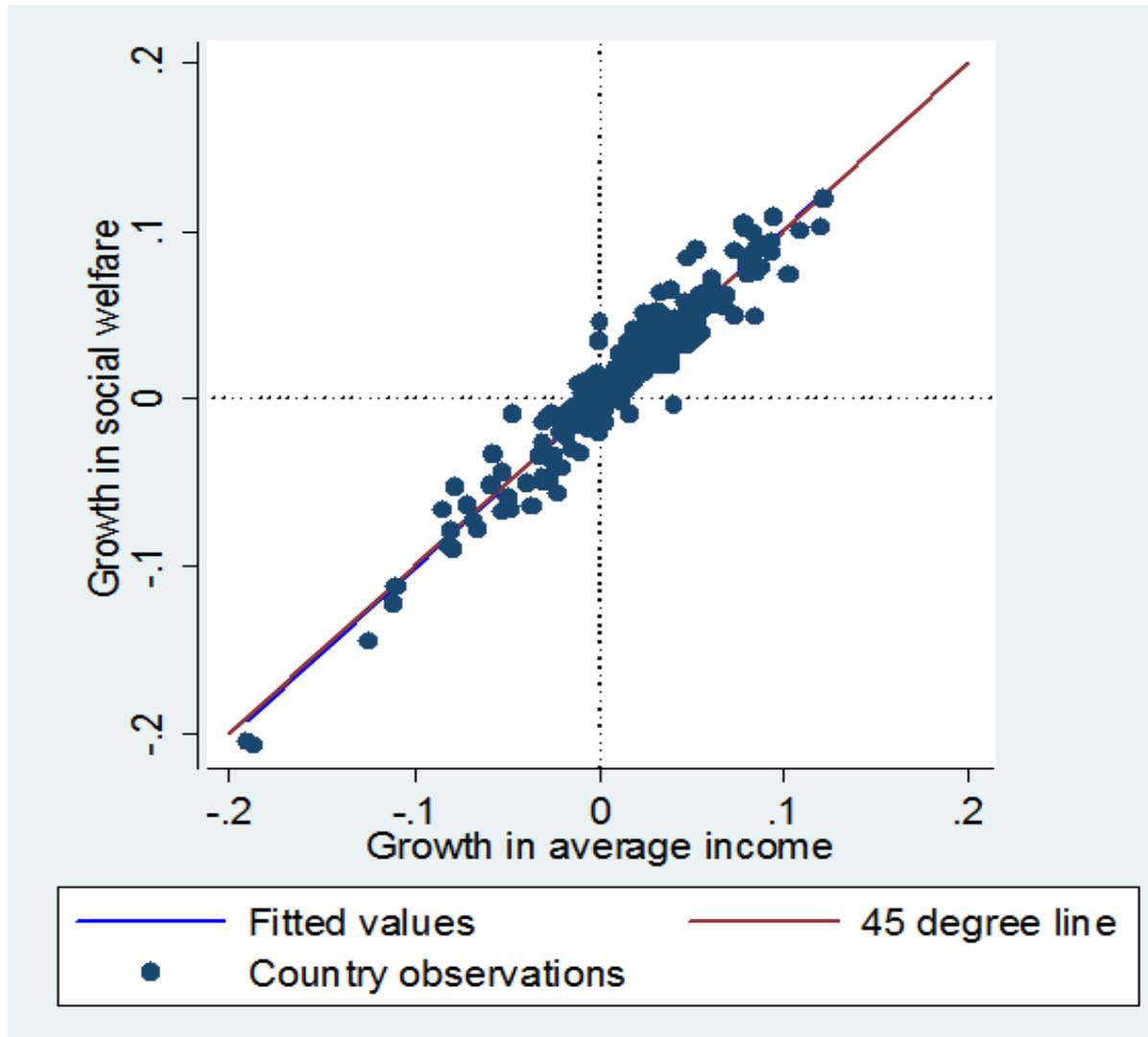
SWF=Bottom 40%, aka “Shared Prosperity”

# Growth and Social Welfare



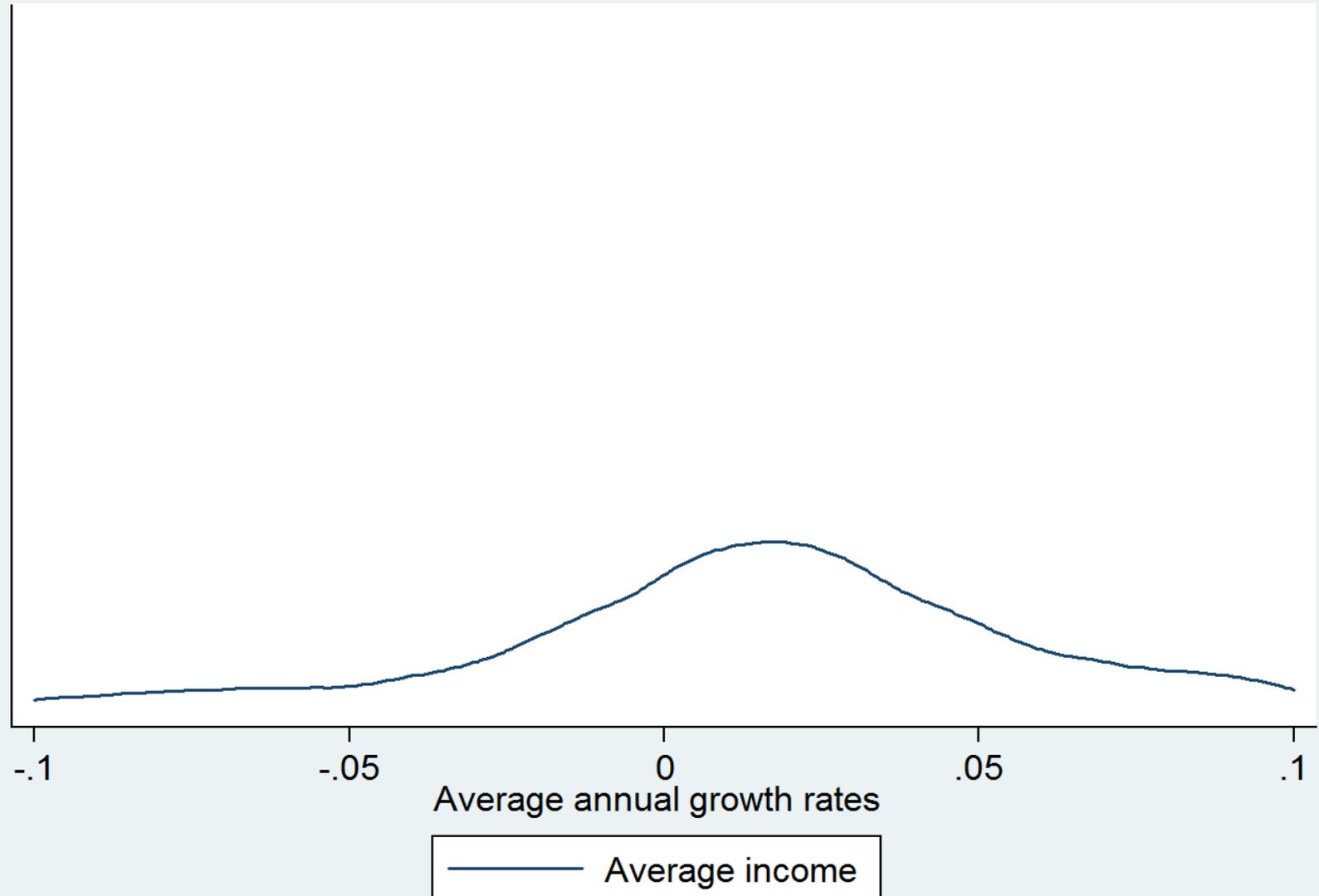
SWF=Sen's Real National Income

# Growth and Social Welfare

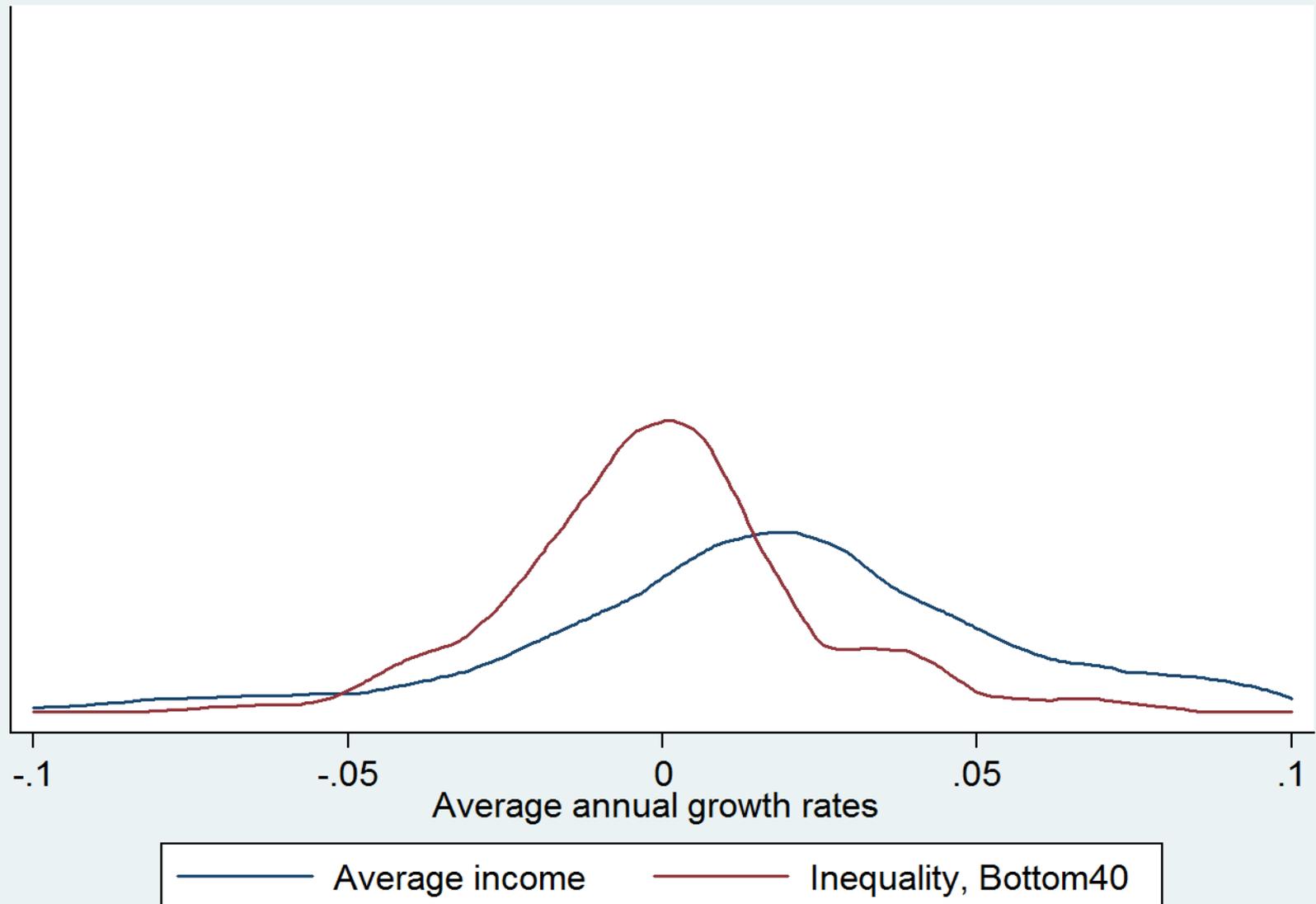


$$\text{SWF} = \text{Atkinson } A(1)$$

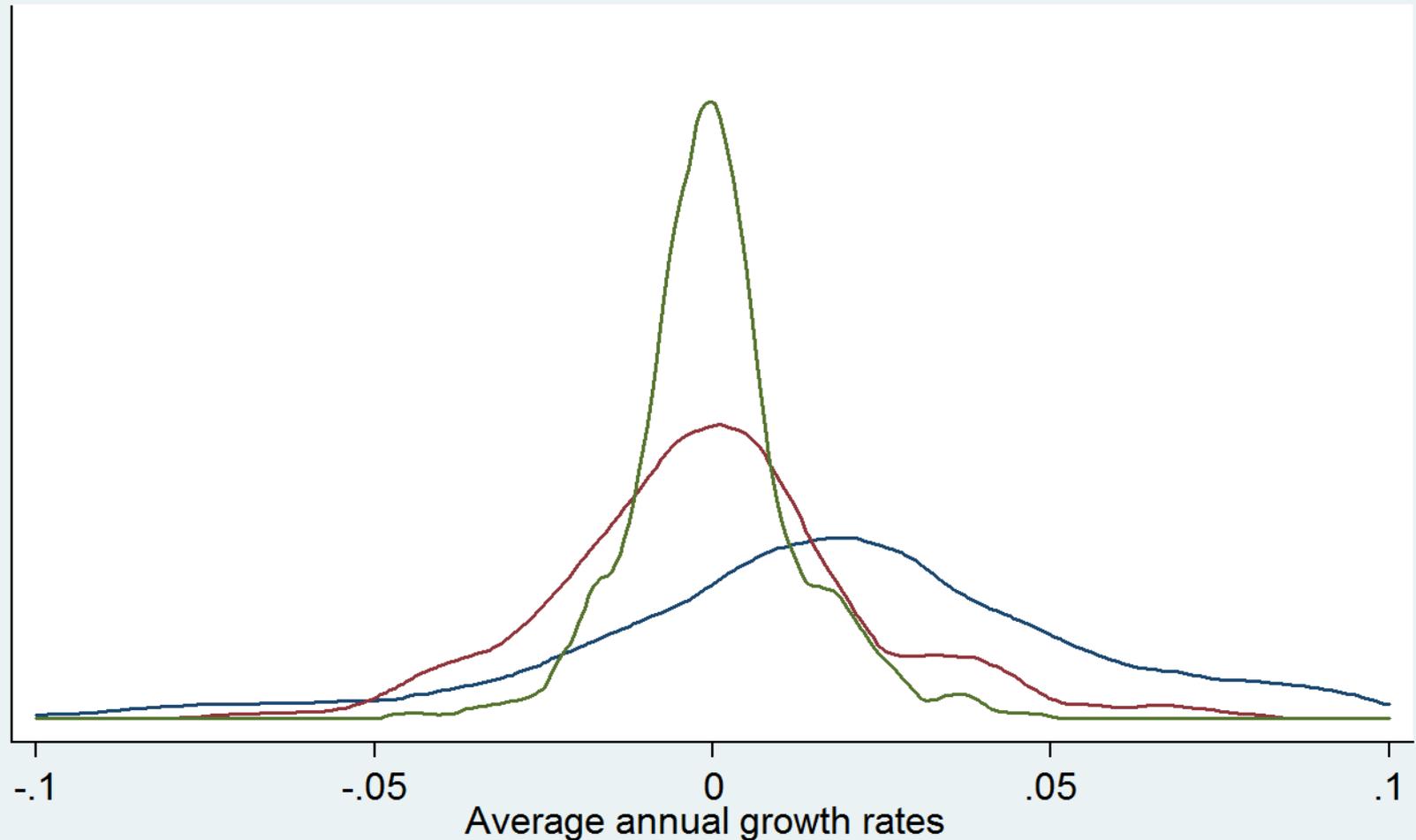
# Thought Experiment – Which Distribution Do You want to Draw Welfare Growth From?



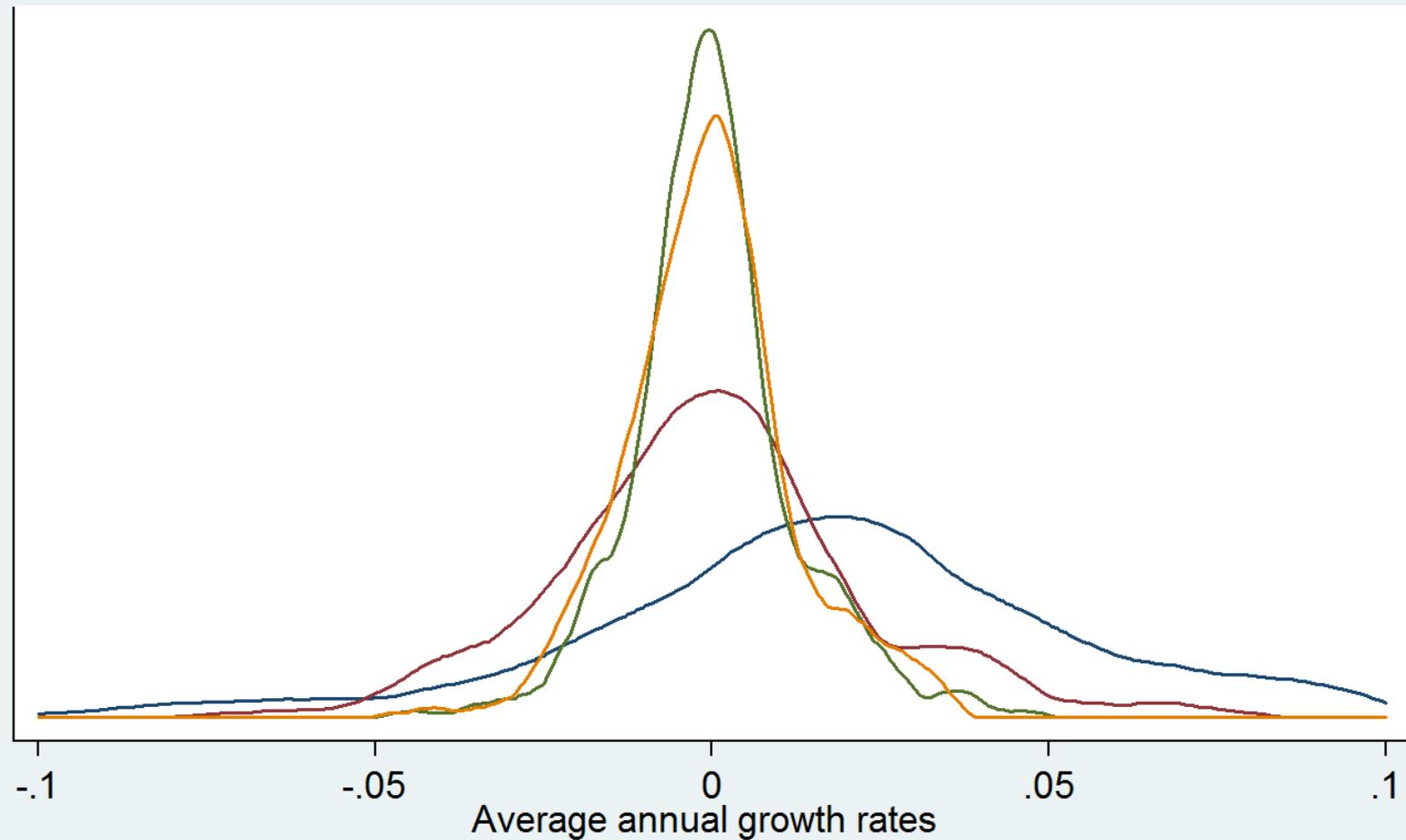
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# Descriptive Regressions

- Estimate OLS regression of SWF growth on average income growth
  - Estimated slope tells us about correlation between growth and inequality change
    - Slope = ( $>$ ) ( $<$ ) 1 implies zero (positive) (negative) correlation between equality changes and growth
  - Transformation of R-squared tells us share of variance (across spells) in social welfare growth due to average income growth

# Basic Regressions

<b>Social welfare growth regressed on average income growth</b>	<b>Slope</b>	<b>R-squared</b>	<b>Variance share driven by growth</b>
<b>Bottom 10%</b>	1.151***	0.476	0.413
<b>Bottom 20%</b>	1.075***	0.650	0.605
<b>Bottom 40%</b>	1.021***	0.783	0.767
<b>Bottom 90%</b>	0.991***	0.944	0.952
<b>Atkinson Index (1)</b>	1.008***	0.925	0.918
<b>Atkinson Index (2)</b>	1.043***	0.717	0.687
<b>Atkinson Index (3)</b>	1.083***	0.571	0.527
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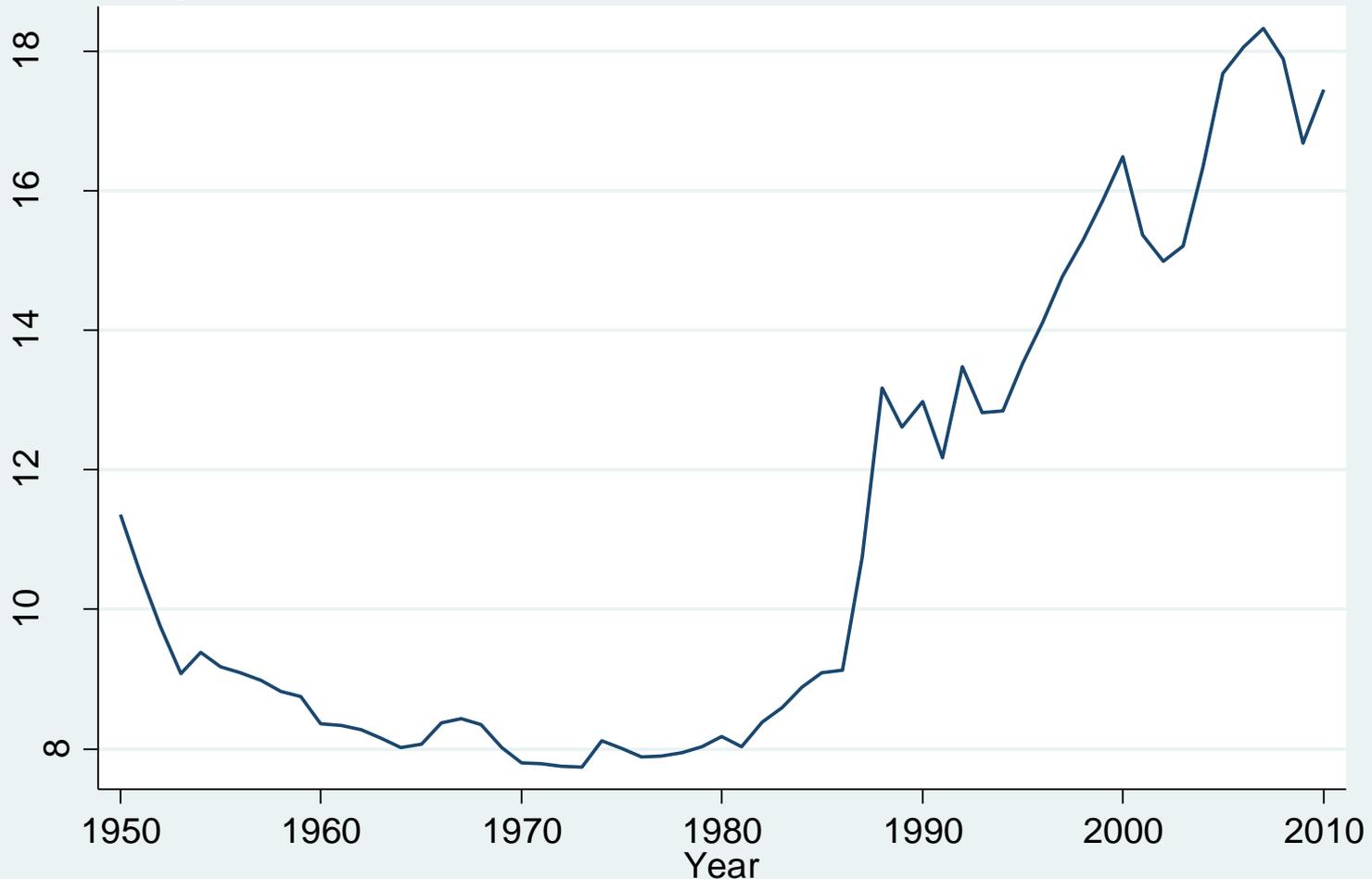
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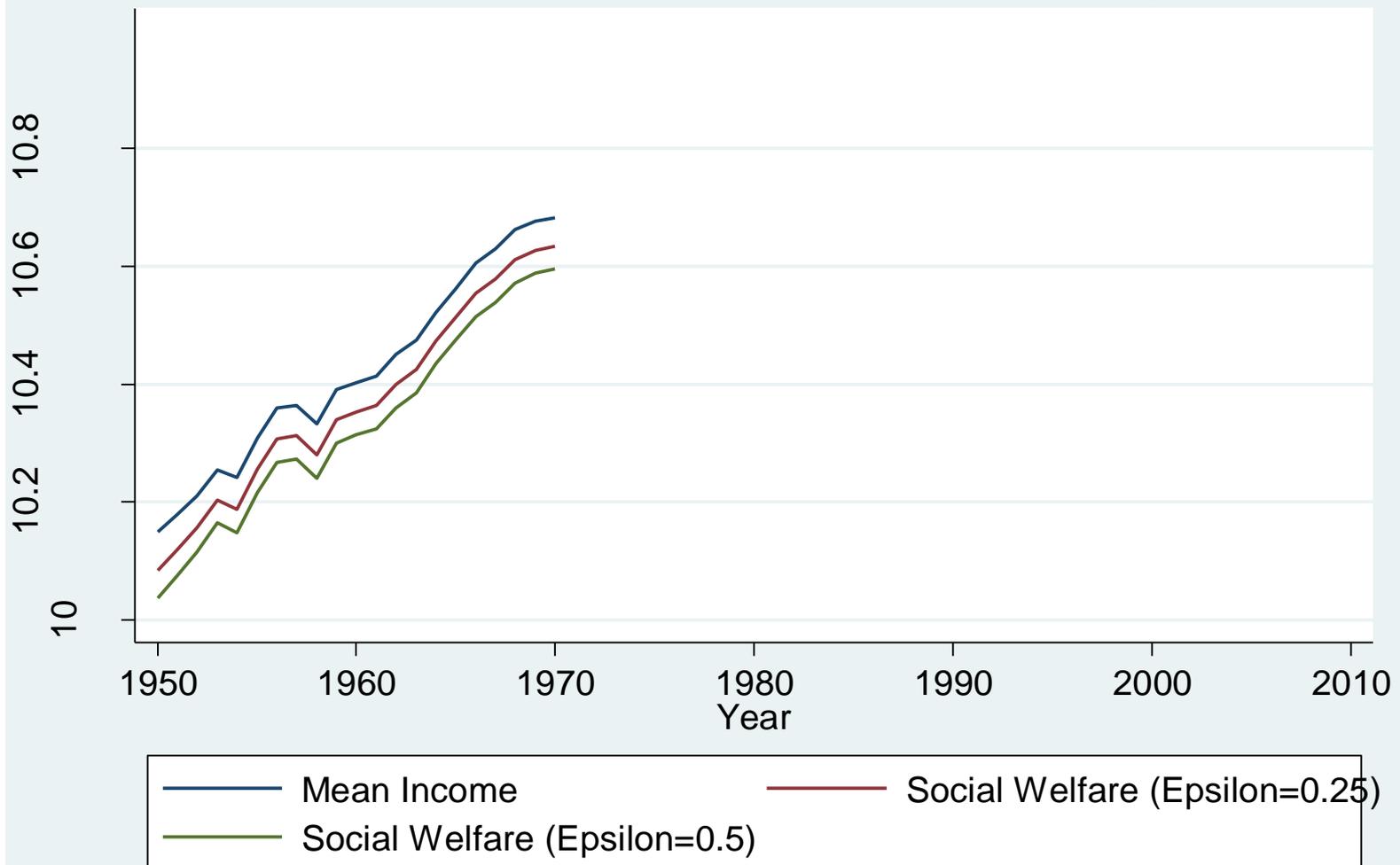
# Application 2: Piketty Top Incomes Data: United States 1950-2010

Top 1% Income Share in the United States, 1950-2010

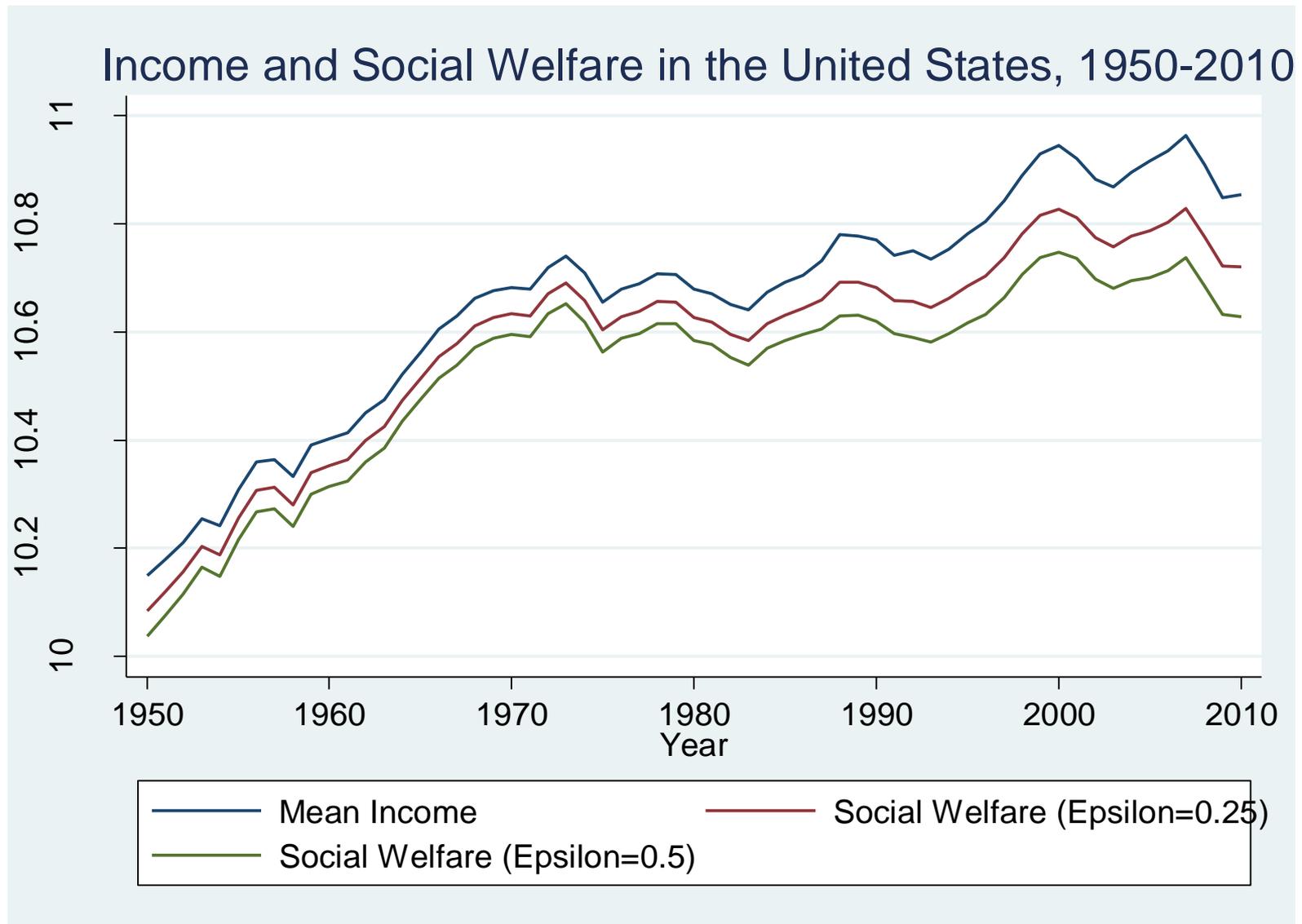


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Income and Social Welfare in the United States, 1950-2010

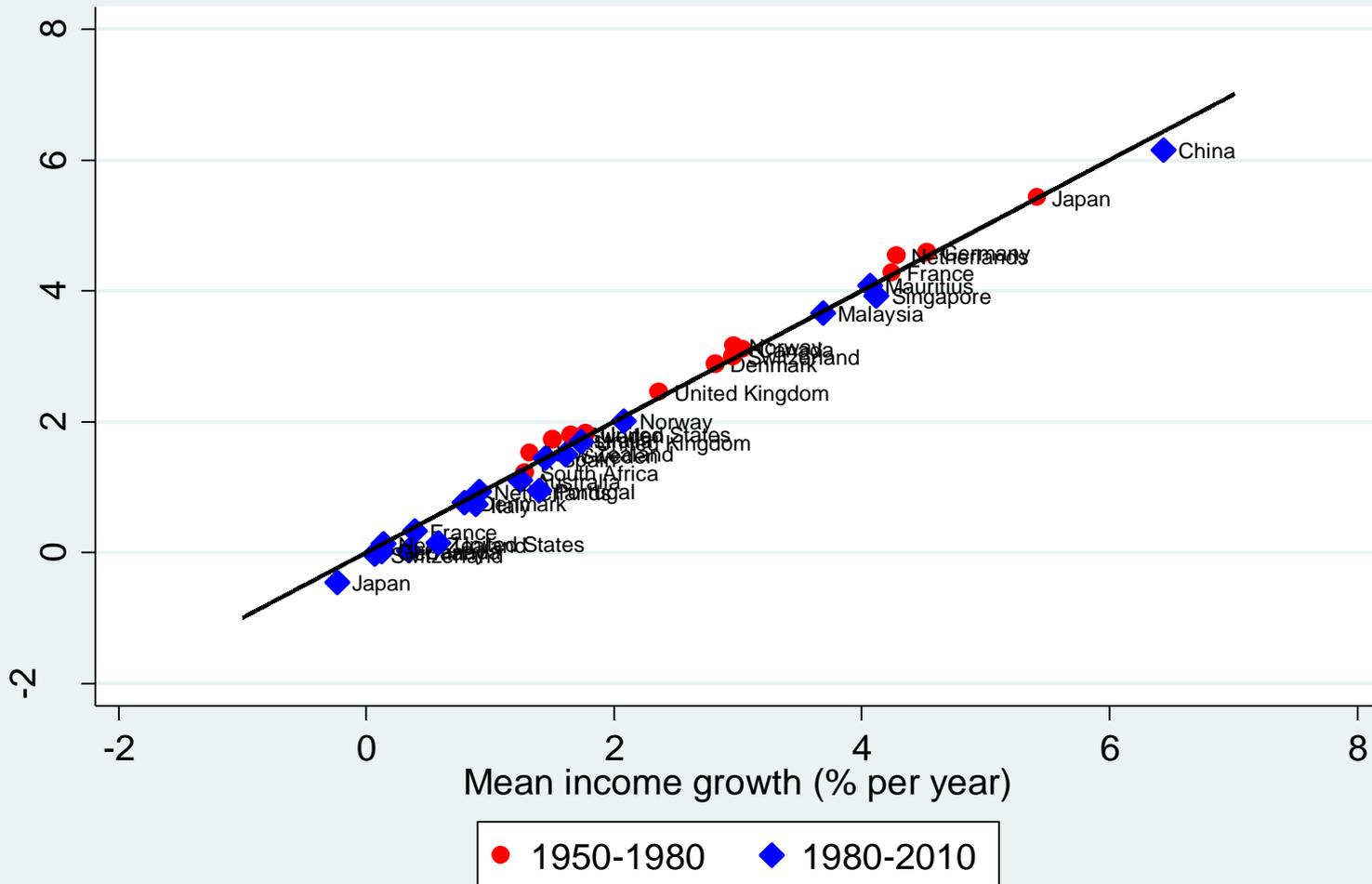


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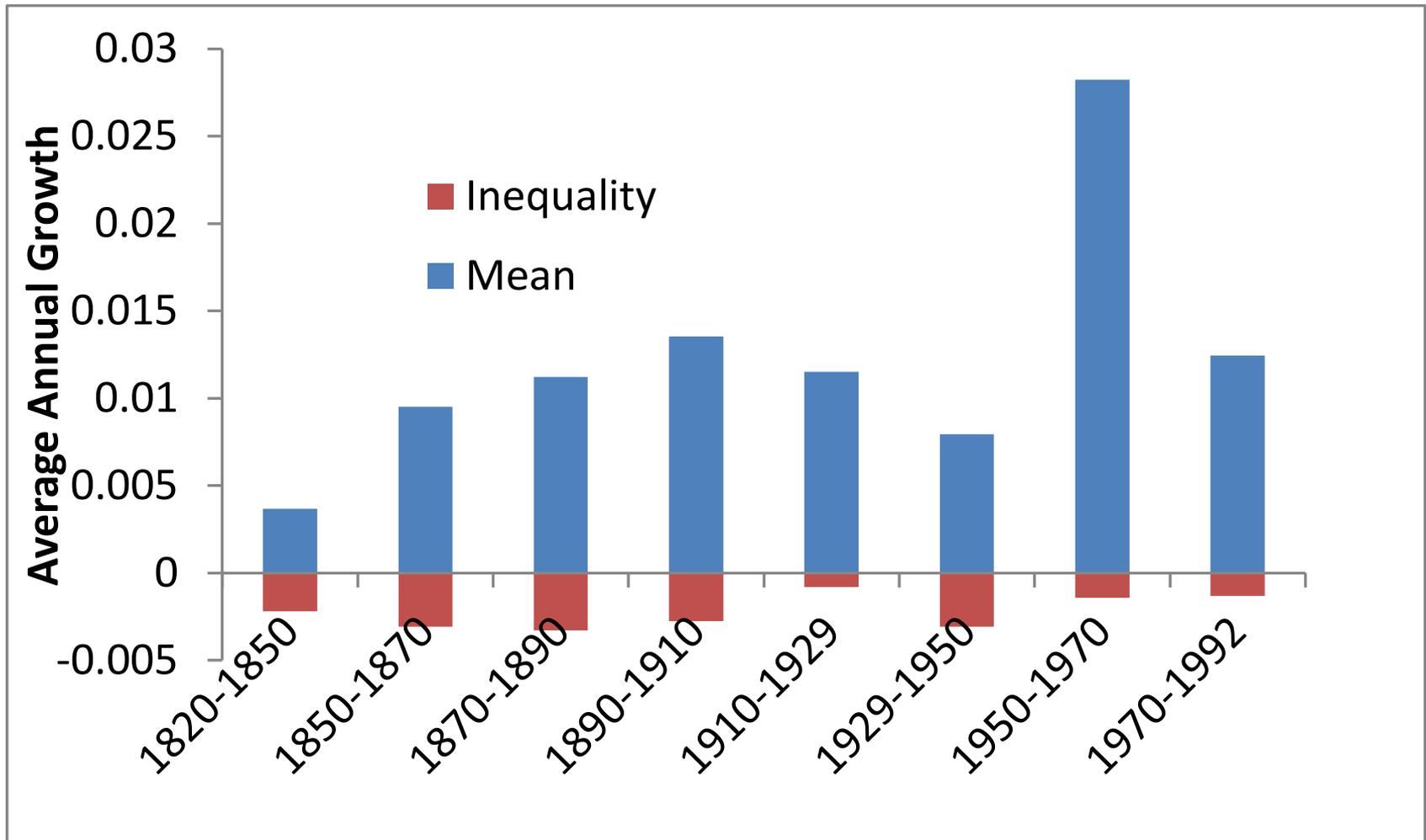


# Application 2: Piketty Top Incomes Data: All Countries 1950-1980 (red) 1980-2010 (blue)

Income Growth versus Social Welfare Growth, 1950-1980 and 1980-2010



# Application 3: Bourguignon and Morrisson (2002): Growth In Sen SWF For World



## Two Nerdy Digressions

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  - Partly due to sampling variation that introduces more variability in poorest income shares

# Two Nerdy Digressions

- Why is the share of variance of social welfare growth due to growth in average incomes lower for more bottom-sensitive SWFs?
  - Partly due to sampling variation that introduces more variability in poorest income shares
- What if you prefer another SWF?
  - Use concept of generalized Lorenz dominance to rank “final” distribution relative to “initial” distribution for each spell
  - *Any* increasing concave SWF would have moved in same direction as mean in 75% of spells

# Correlates of Growth and Equality Change

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- Regress growth and equality measures on:
  - Initial income
  - Initial equality
  - Usual suspects from cross-country literature
    - Financial development, trade openness, financial openness, inflation rate, government budget balance, life expectancy, population growth, civil liberties/political rights, revolutions, war dummy
    - Primary enrollment, educational inequality, share of agriculture in GDP

# Correlates of Growth and Equality Changes

- Estimated “effects” on growth and equality sum to “effects” on social welfare
- To avoid cherrypicking favourite specifications, use Bayesian Model Averaging to combine results from all  $2^{13}$  combinations of RHS variables
- Lowbrow estimation by OLS on irregularly-spaced panel of pooled spells
  - Least-bad alternative? (Hauk and Wacziarg)

# Overview of BMA Results

	<u>Growth in</u> <u>Mean</u>	<u>Growth in</u> <u>Equality</u>	<u>Growth in</u> <u>Social Welfare</u>
• <b>Initial Income</b>	<b>&lt;0</b>	<b>0</b>	<b>&lt;0</b>
• <b>Strong mean reversion in income</b>			

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• Initial Inequality	0	<0	<0
• Strong mean reversion in income			
• Strong mean reversion in inequality			
• Little evidence that initial equality is correlated with subsequent growth			

***Faster social welfare growth in countries that are initially poor and initially unequal***

# Overview of BMA Results

- Magnitude and significance of effects of other variables on growth generally larger than effects on equality changes
- Some examples of tradeoffs, e.g. share of agriculture in GDP is fairly significantly correlated with:
  - Slower growth
  - Increases in equality
  - But magnitude of growth effect is much larger so unambiguously bad for social welfare growth

# Summary

- Social welfare functions provide an off-the-shelf useful tool for valuing effects of inequality changes
  - Provides useful perspective on what we mean by “shared prosperity”
- Evidence from three datasets shows most of the variation in growth in social welfare is due to growth in average incomes
  - Changes in inequality are on average small and uncorrelated with growth in average incomes
- Most of correlation between “growth determinants” and growth in social welfare due to effects on growth in average incomes
  - Little systematic evidence on correlates of inequality change

# Implications

- Growing emphasis on inequality in recent policy discussion raises question of how much it matters
- Inequality changes have on average contributed much less to social welfare growth than differences in average growth performance across countries
- Emphasis on inequality in development policy discussions should not come at expense of focus on growth