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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Angus Deaton (2014), Science

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Thomas Piketty (2014)

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Occupy Wall Street

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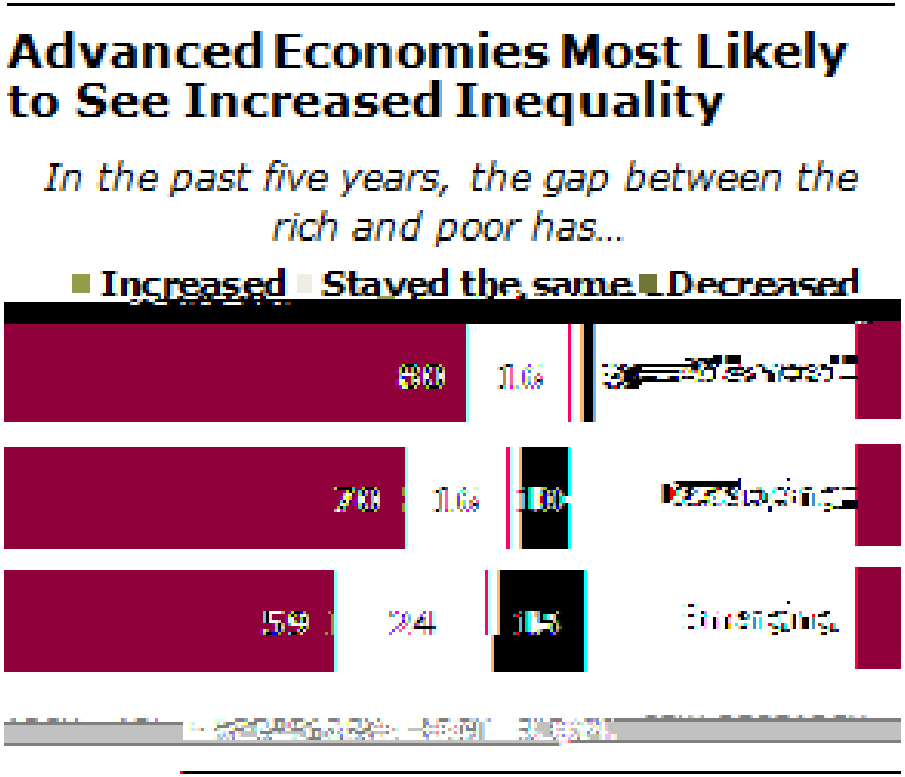

Pew Research Center (2013)

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

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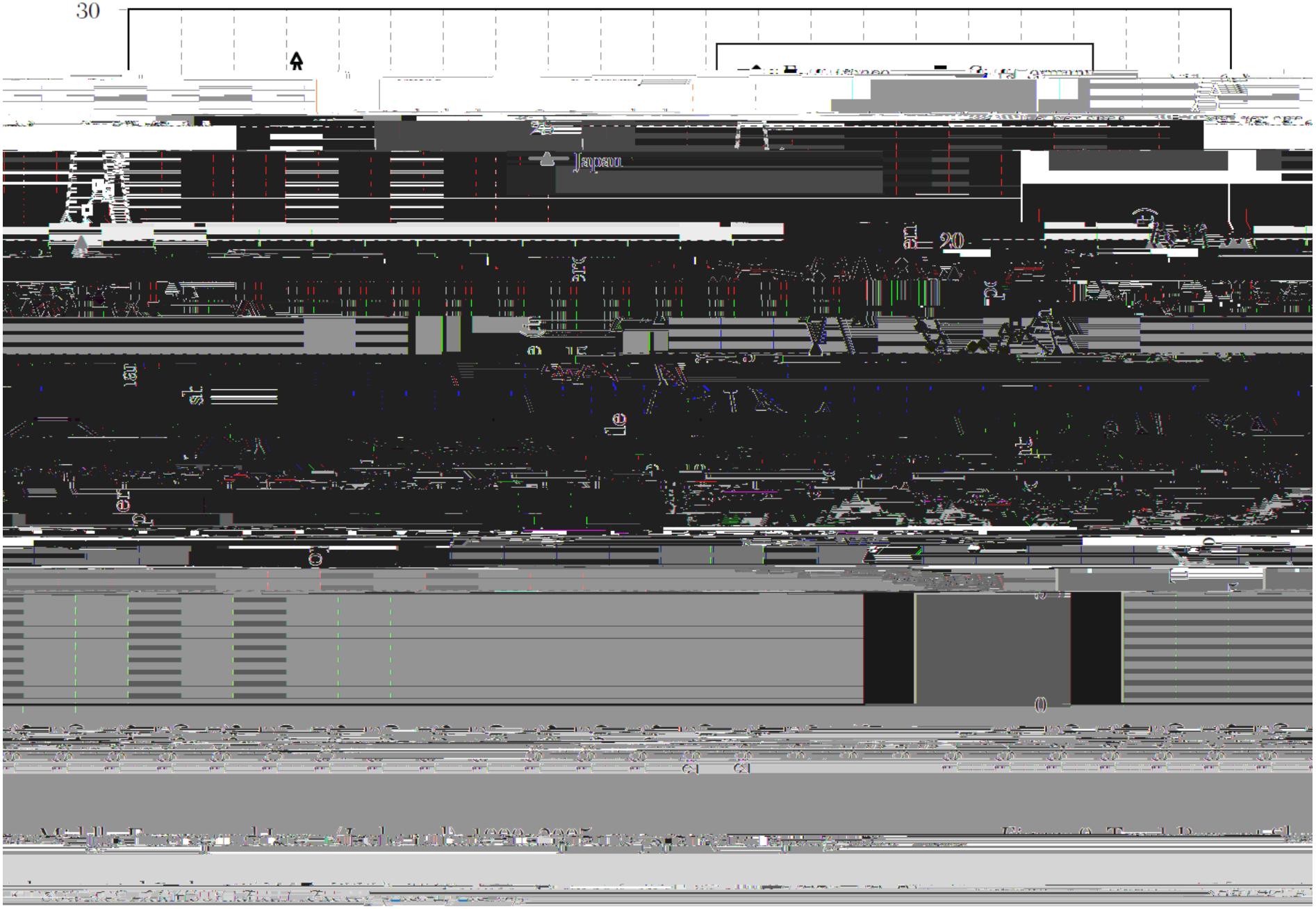
But inequality has remained stable in other countries, and fallen in still others

- 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


Japan

How Much Do These Changes in Inequality (in Either Direction) Matter?

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Matter for what?

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

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Focus in this talk on one very modest question: how much do trends in inequality matter for

- Use several standard to value changes in inequality in terms of percentage points of growth in average incomes
  - Useful way of thinking about whether changes in λyŶŜIjdzI·fλűè I·ℕŜ άōλƎέ ₴ℕ άăϒ I·ffέ ℕŜfI·űλØŜ ű₴ Ǝℕ₴øűK
  - Useful to remember what inequality measures imply for social preferences across individuals

Illustration

World . l·y˥Ωă ∃2l·f 2₹ άăKl·ℕĴŜŘ LJℕ2ăLJŜℕĴλűèɛ̋ λφŜφ ∃ℕ2øűK λy˥l·ØŜℕJ·∃Ŝ incomes in bottom 40%

Social welfare function is average incomes in bottom 40%

Illustration

World . l·y℄Ωă ∃⊇l·f ⊇ŦάăKl·ℕĴŜŘ LJℕ⊇ăLJŜℕĴλűèέΣ λφŜφ ∃ℕ⊇øűK λy l·ØŜℕl·∃Ŝ incomes in bottom 40%

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Growth in Average Incomes 6.7%

Illustration

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Growth in Average Incomes	6.7%
+ Growth in Income Share of Bottom 40%	-1.7%

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Growth in Average Incomes	6.7%
+ Growth in Income Share of Bottom 40%	-1.7%
= Growth in Social Welfare:	5.0%

Illustration

World . l·y℁⟮⍰ ∃2l·f 2ŧ T

Some Useful Social Welfare Functions

Specific Examples

Welfare Weights and Shared Prosperity

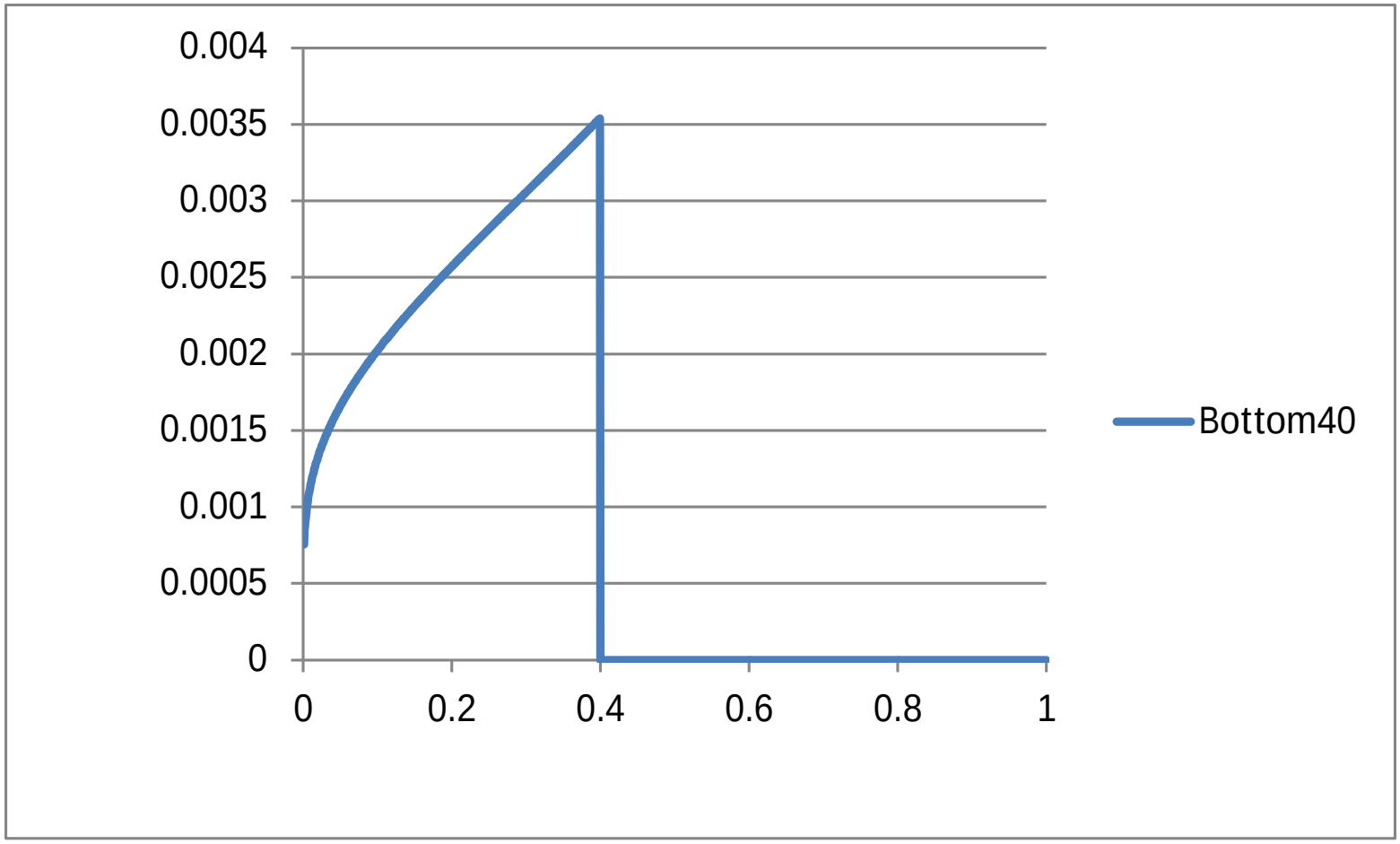
Examples of Social Welfare Functions

Average income of bottom X%

Mean income x (income share of bottom X%)

Simple average of incomes below some cutoff percentile

SWFs Imply Weights on of Income Distribution



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- Simple average of incomes below some cutoff percentile

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- Mean income x (1-Gini)
- Weighted average of individuals incomes with weights proportional to in income distribution

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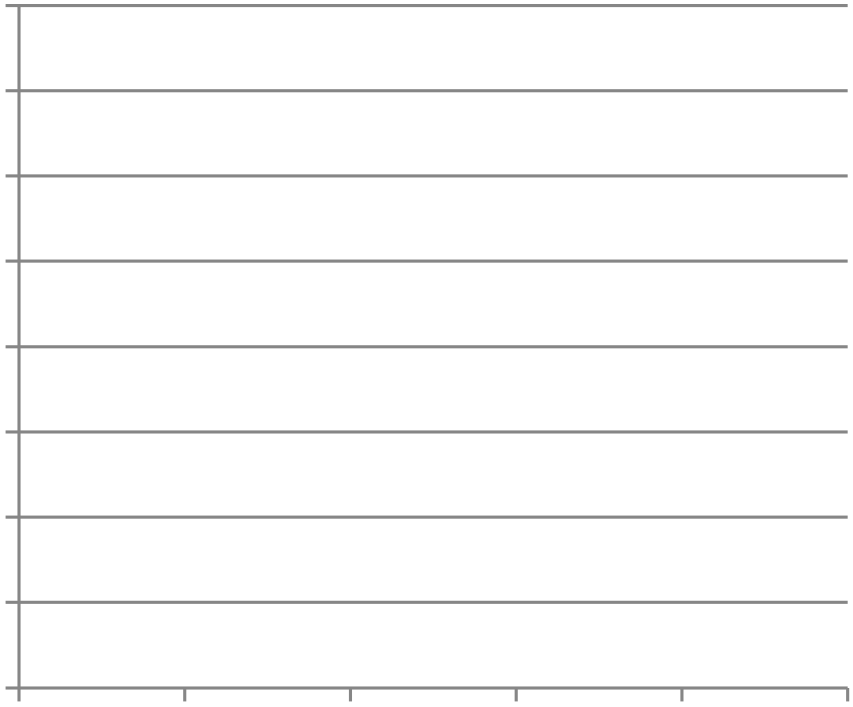

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Mean income x (1-Gini)

Weighted average of individuals incomes with weights proportional to in income distribution

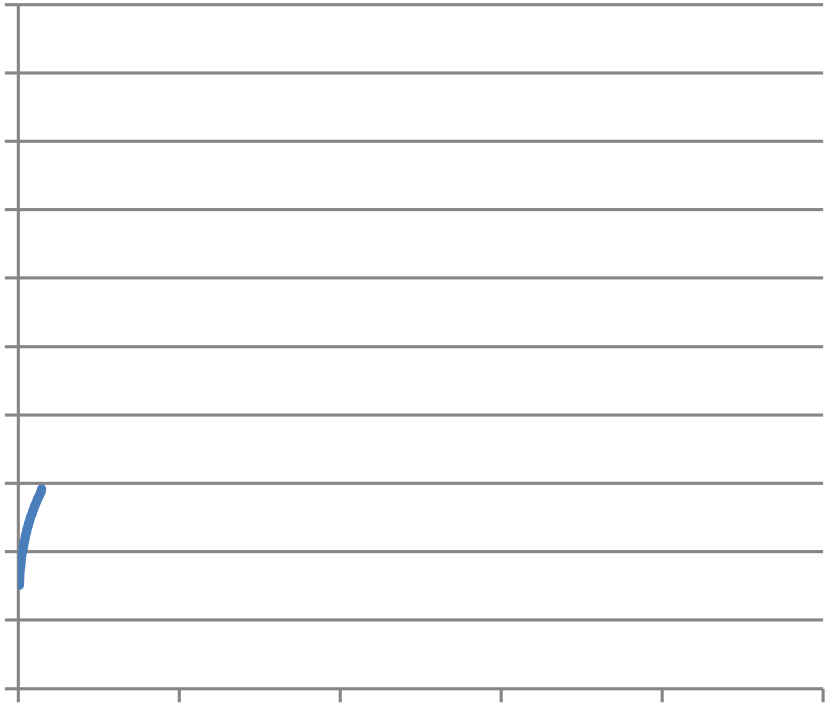
Atkinson SWF

Mean income x (1-Atkinson Inequality Index)

Average of incomes raised to power 1-‘ , higher ‘ means more inequality aversion

‘ =0 gives back simple average incomes

SWFs Imply Weights on of Income Distribution



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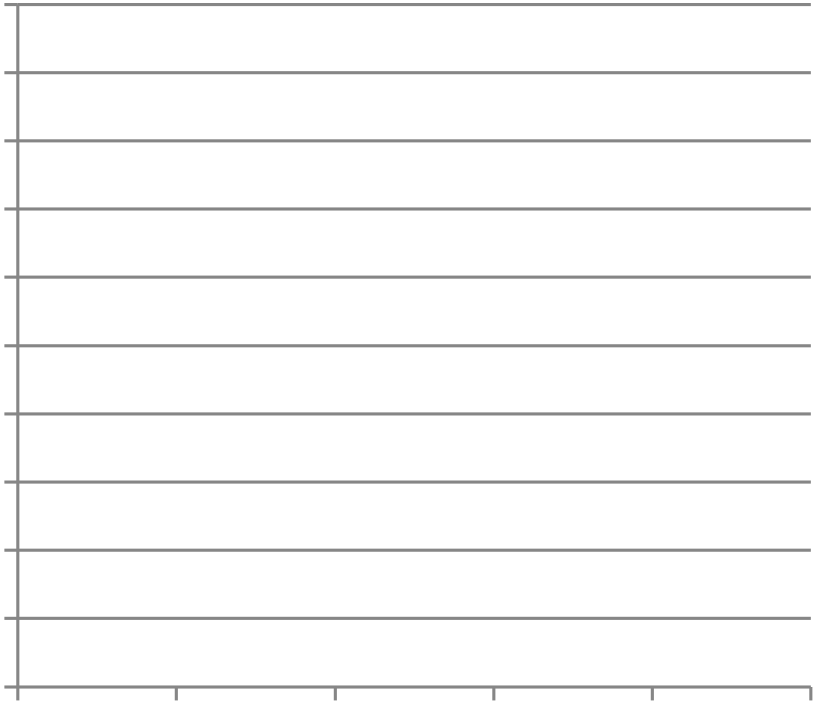

Welfare Weights Worth Taking Seriously

Shared prosperity target implies welfare weights that:

- Are zero above 40th percentile
- Increase with income for those below the 40th percentile

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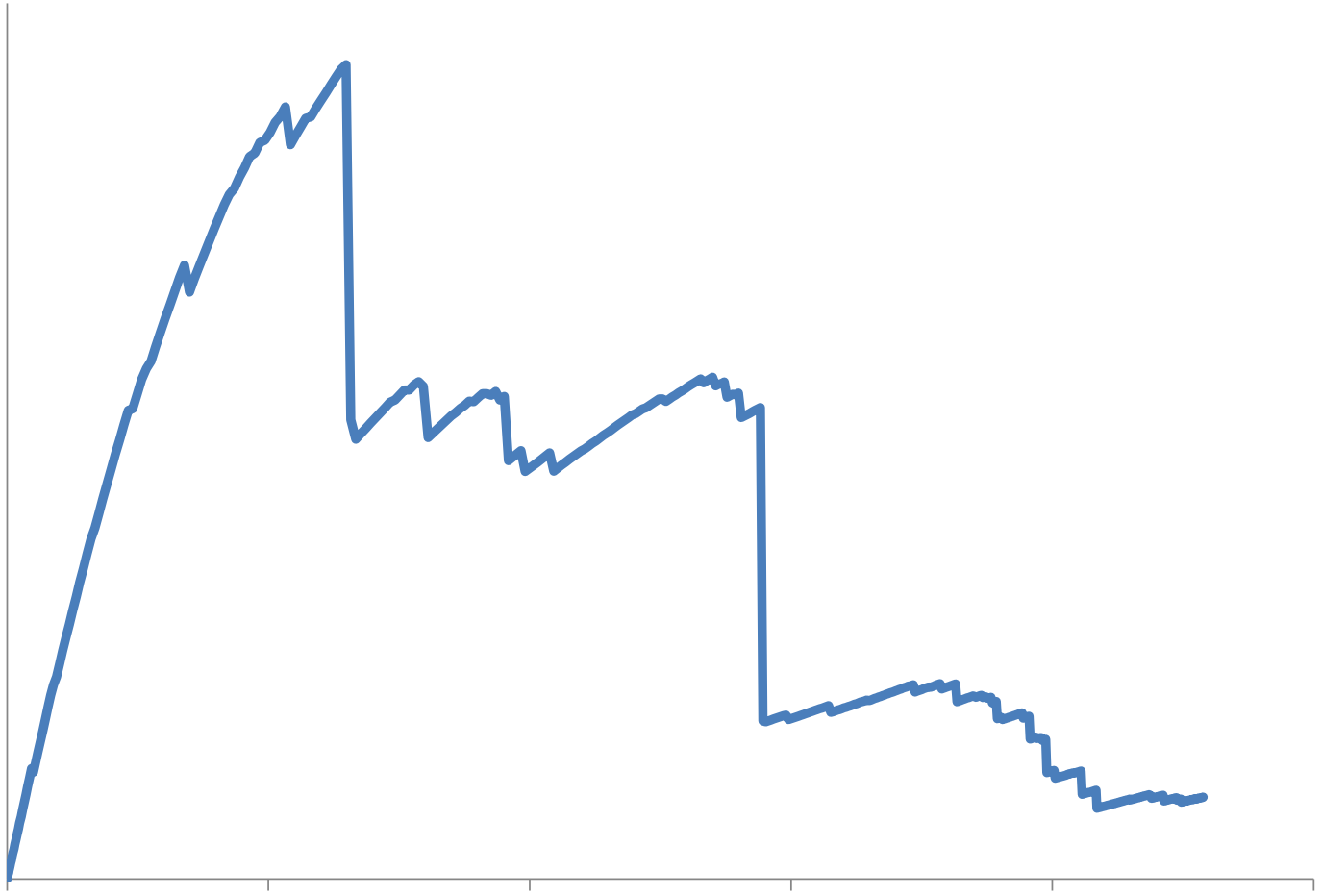
What does shared prosperity target at country level imply for welfare weights in world?

- 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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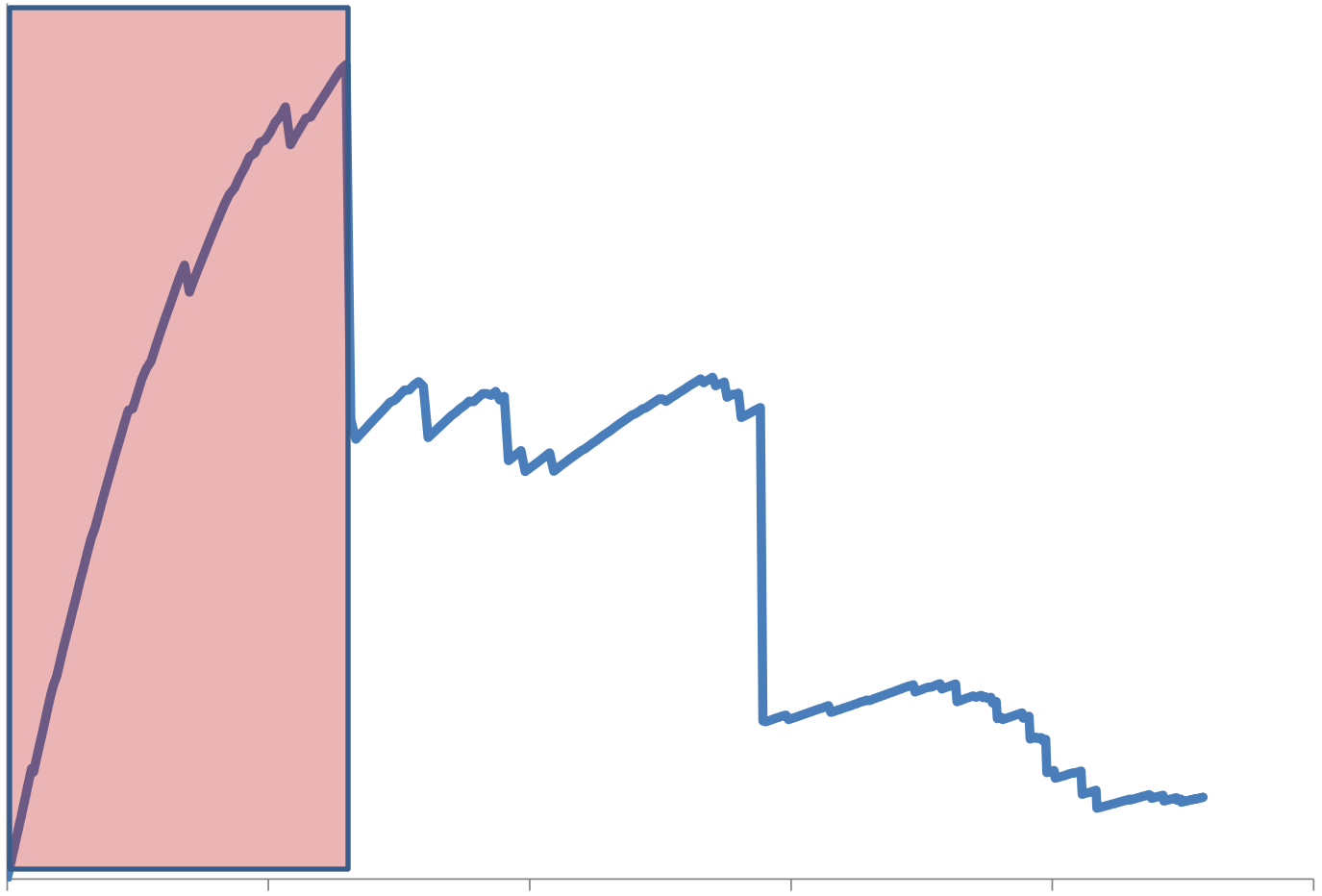

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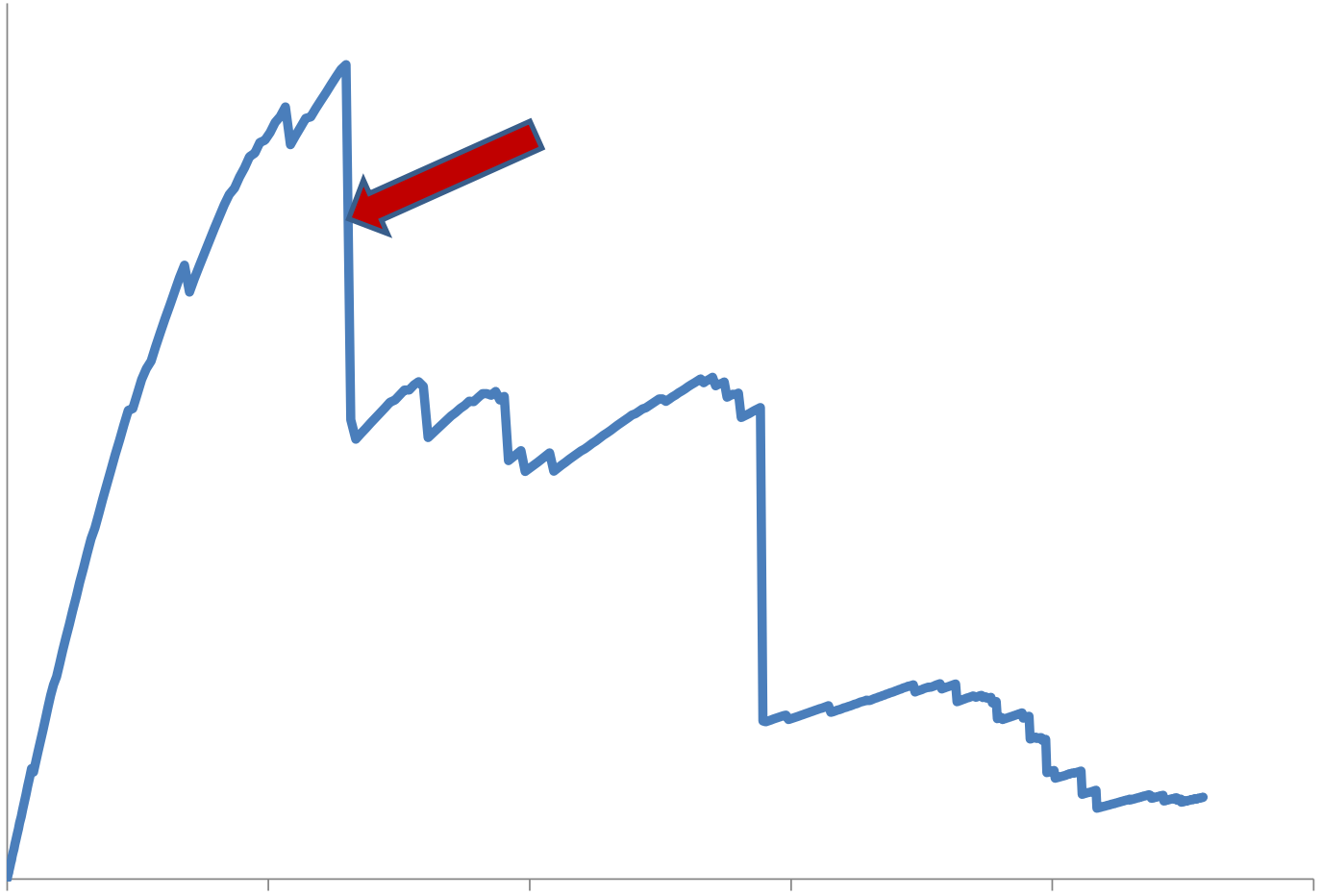


Global Welfare Weights for Twin Goals

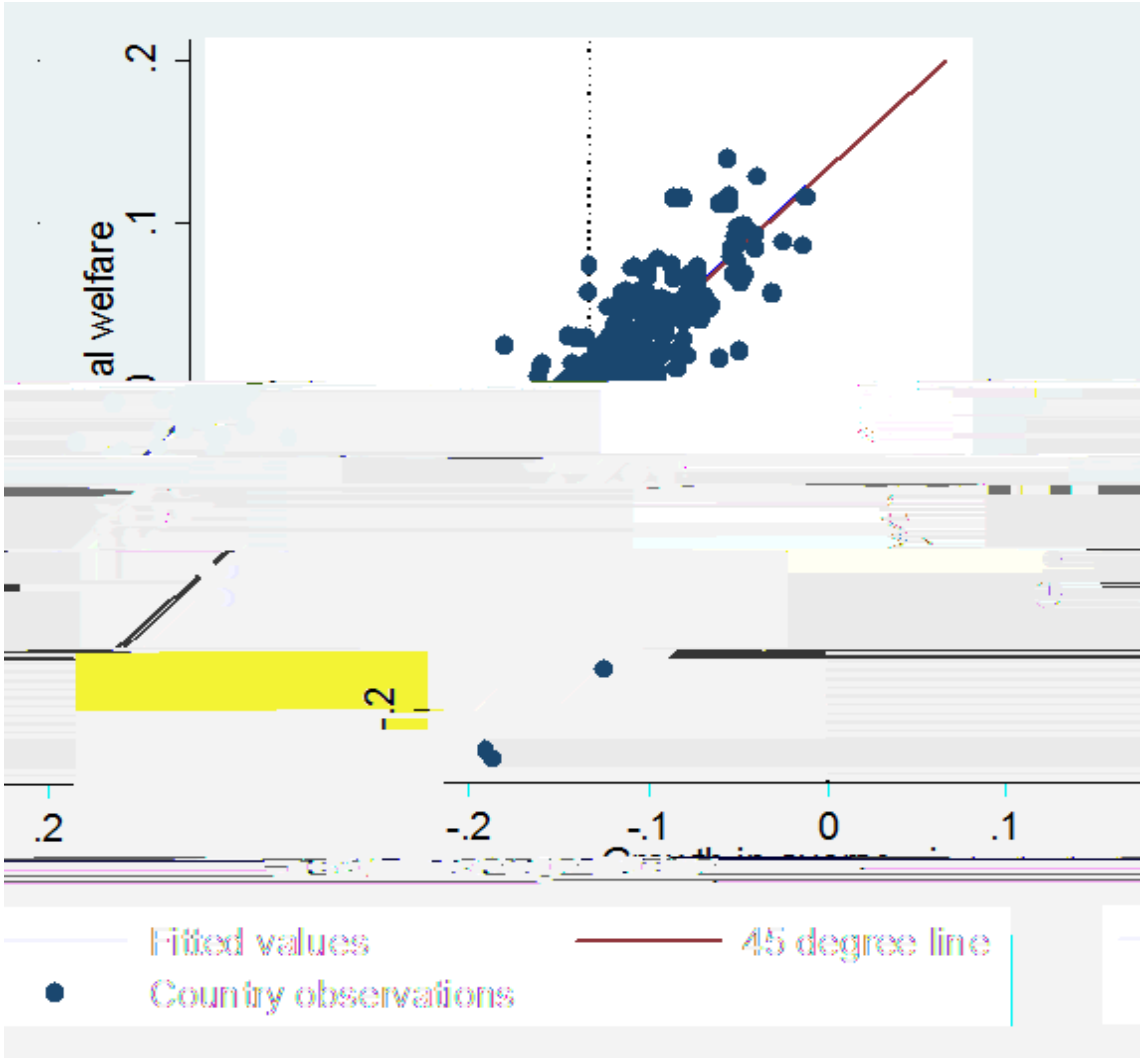
Growth, Inequality, and Social Welfare

Application 1: POVCALNET+LIS

Large irregularly-spaced cross-country panel on average income/consumption and decile shares based on:

- POVCALNET ς for developing countries

Growth and Social Welfare



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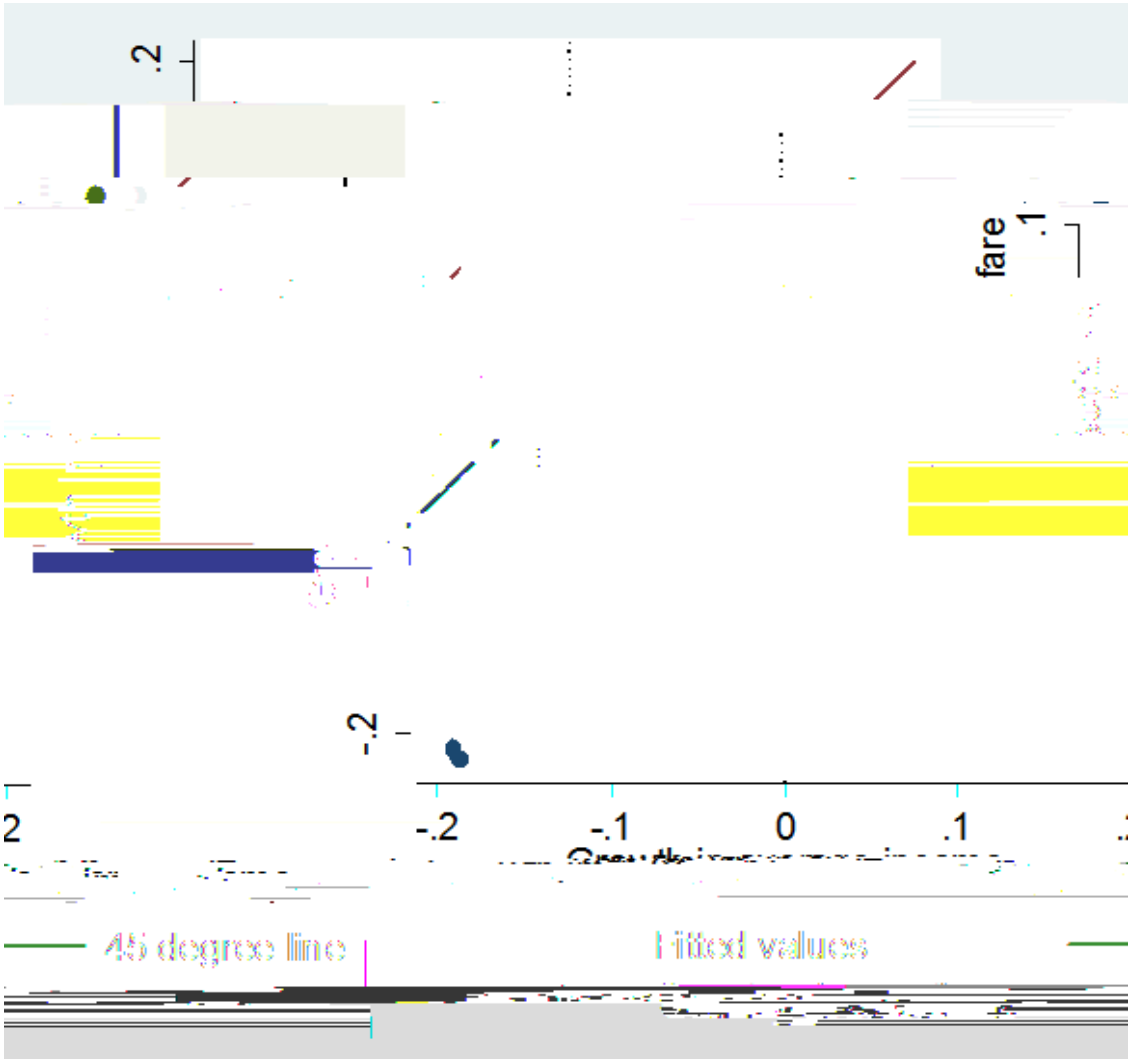
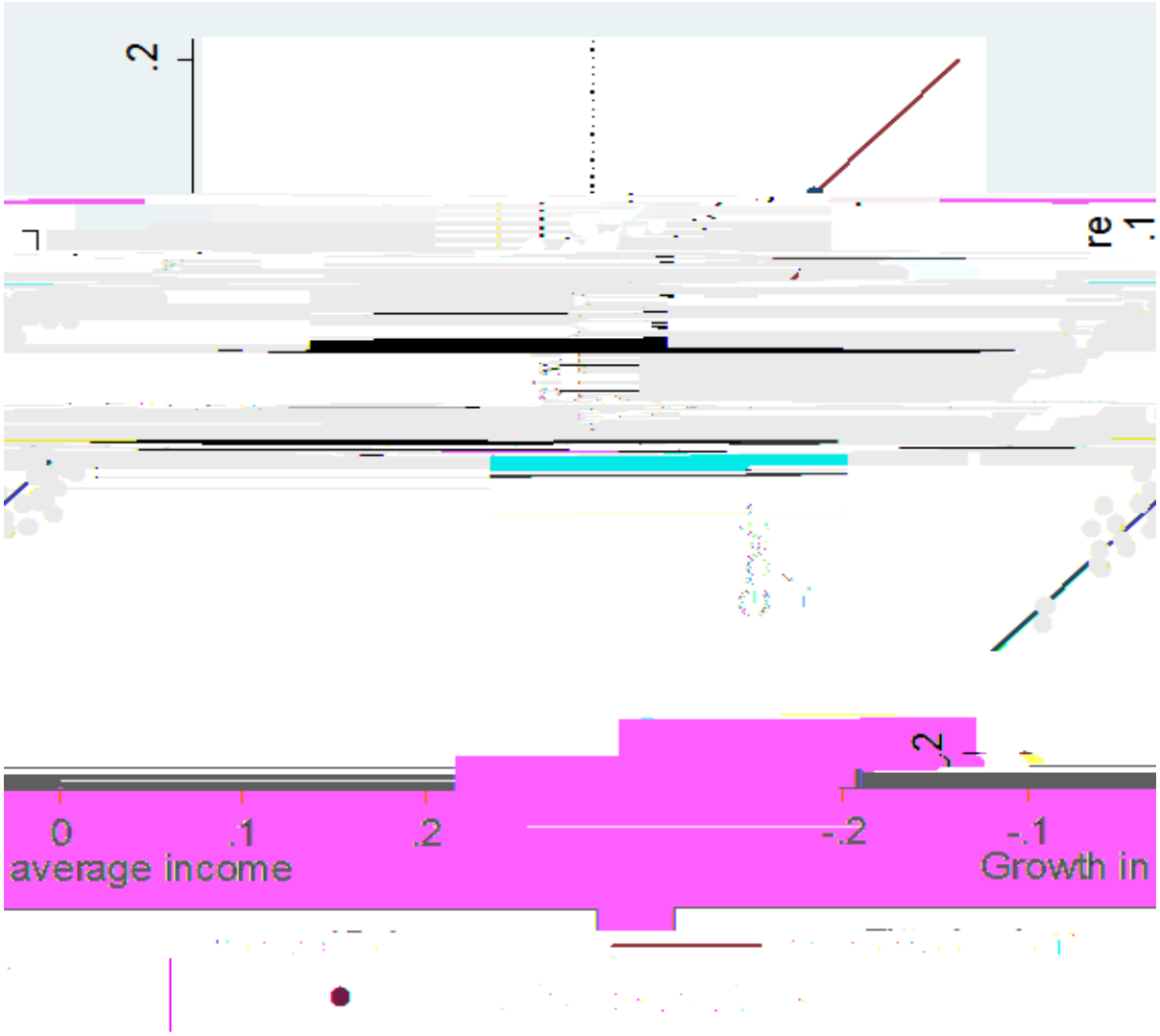
Growth and Social Welfare



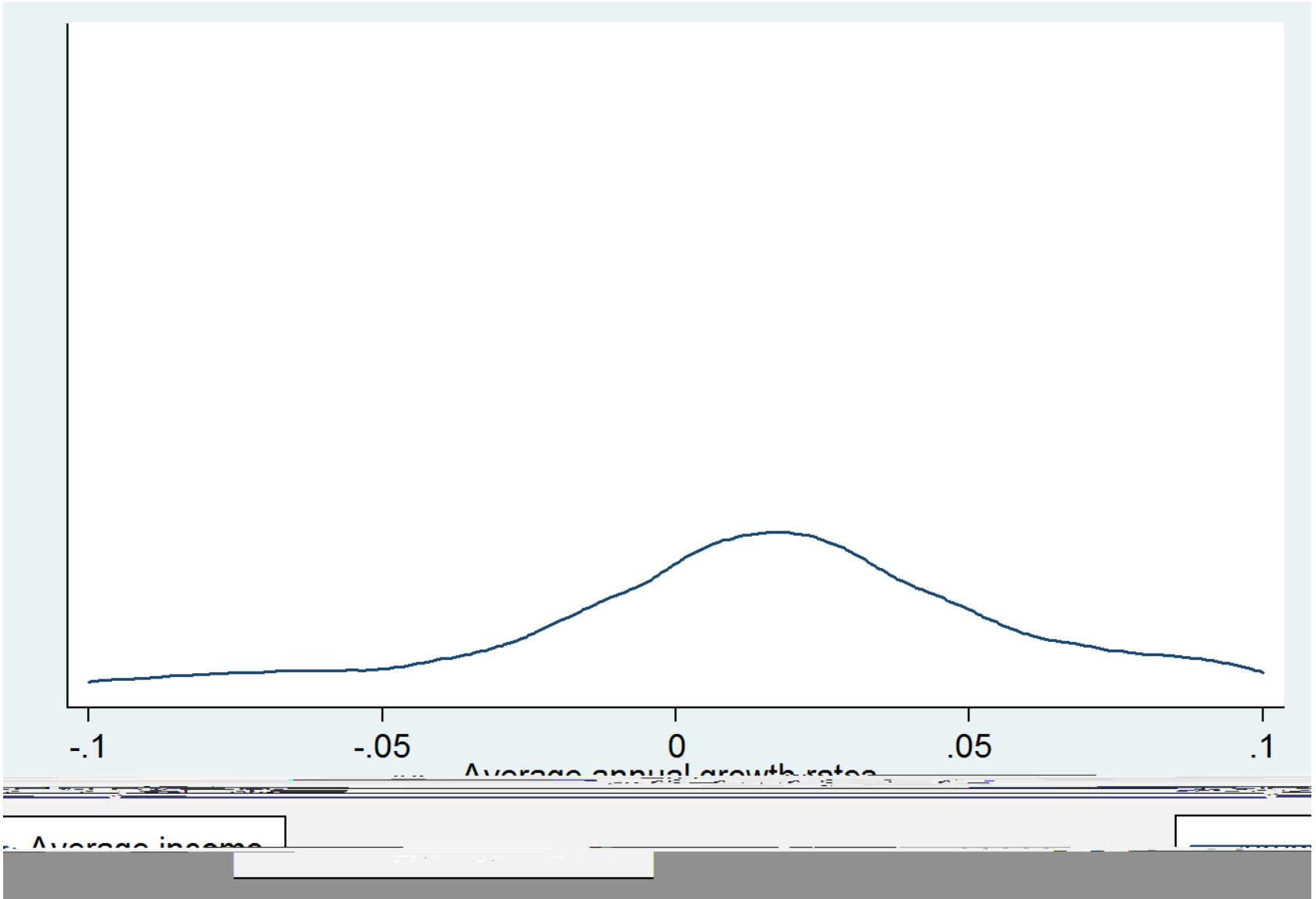
SWF={Ŝy⍰ă Real National Income

Growth and Social Welfare



SWF=Atkinson A(1)

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



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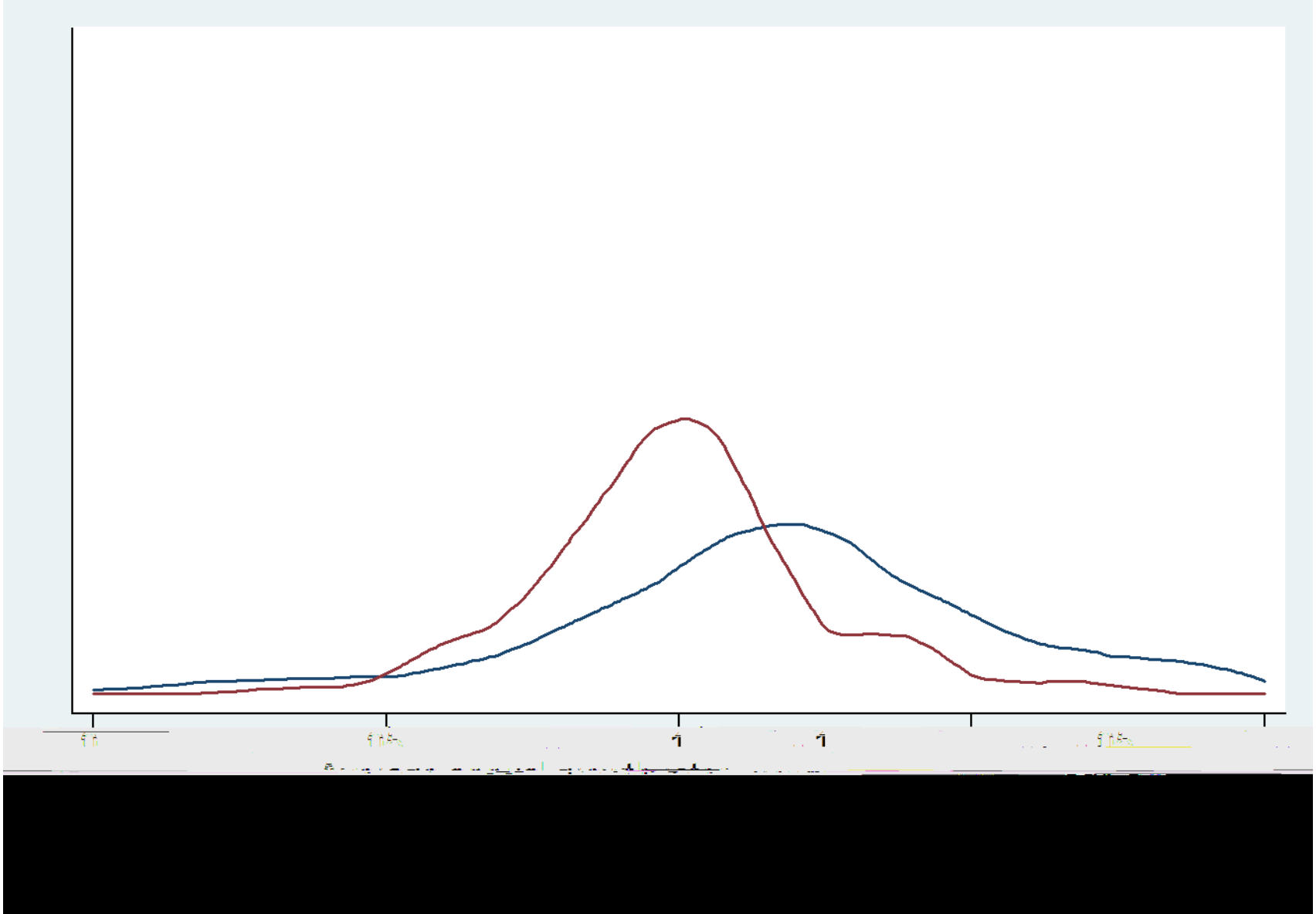

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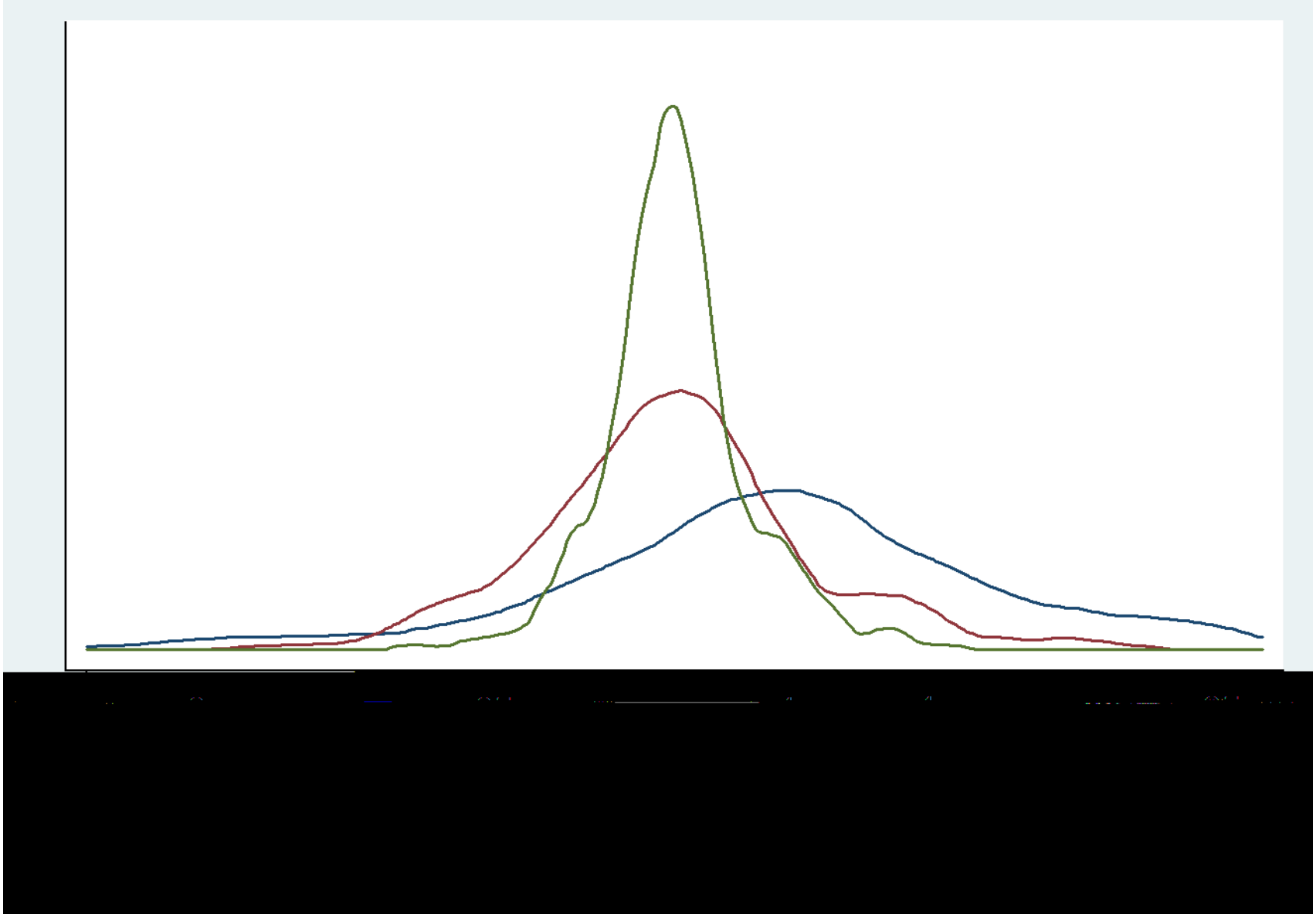

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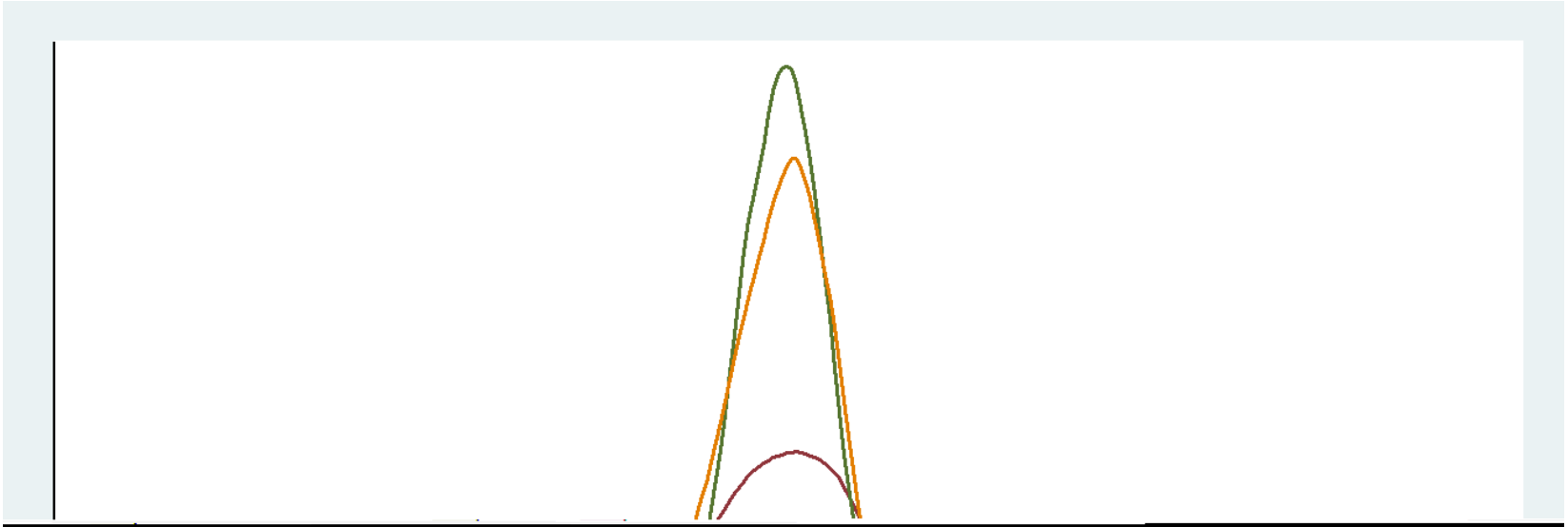

Descriptive Regressions

- 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

Social welfare growth regressed on average income growth	Slope	R-squared	Variance share driven by growth
Bottom 10%	1.151***	0.476	0.413
Bottom 20%	1.075***	0.650	0.605
Bottom 40%	1.021***	0.783	0.767
Bottom 90%	0.991***	0.944	0.952
Atkinson Index (1)	1.008***	0.925	0.918
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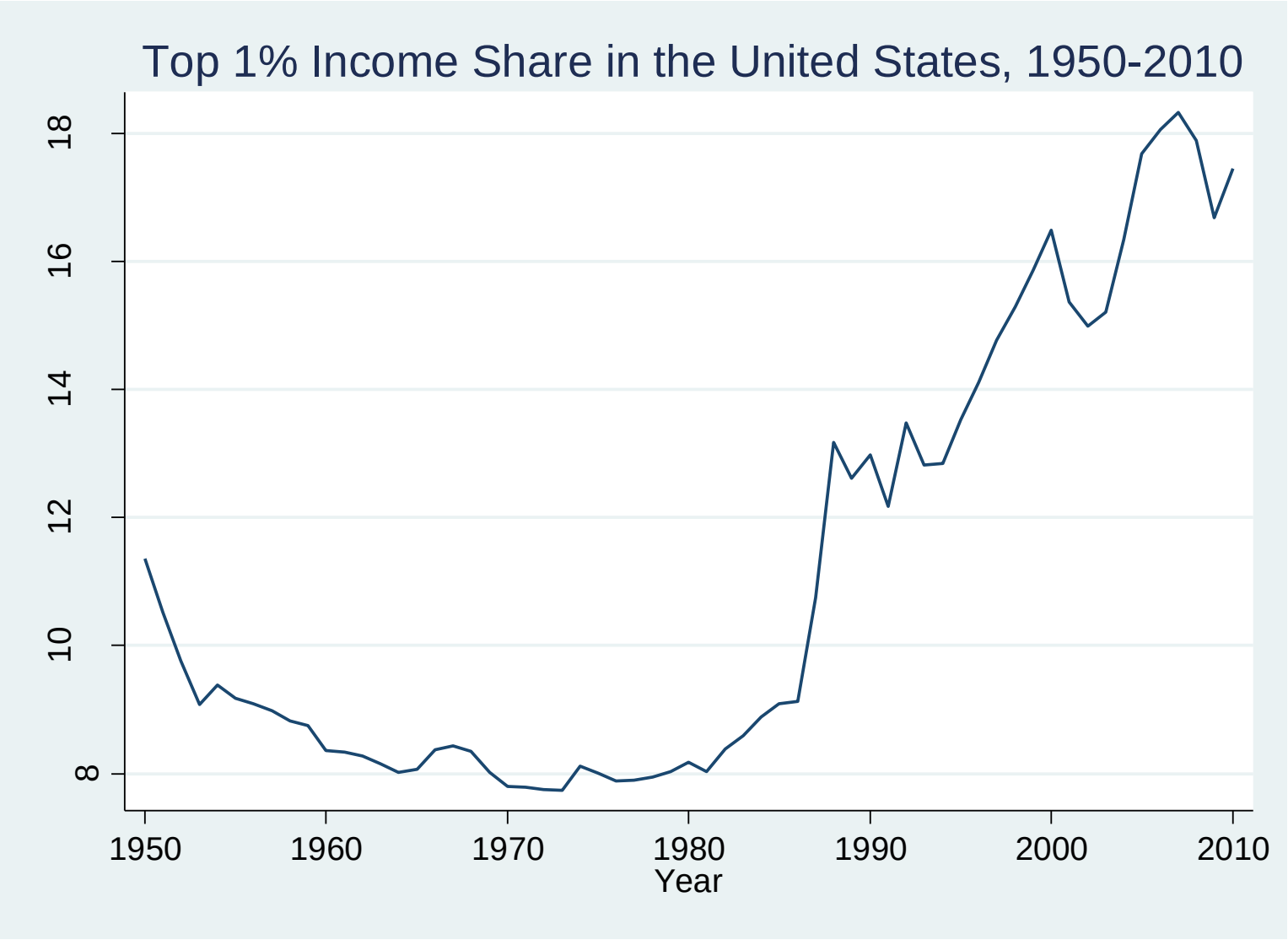

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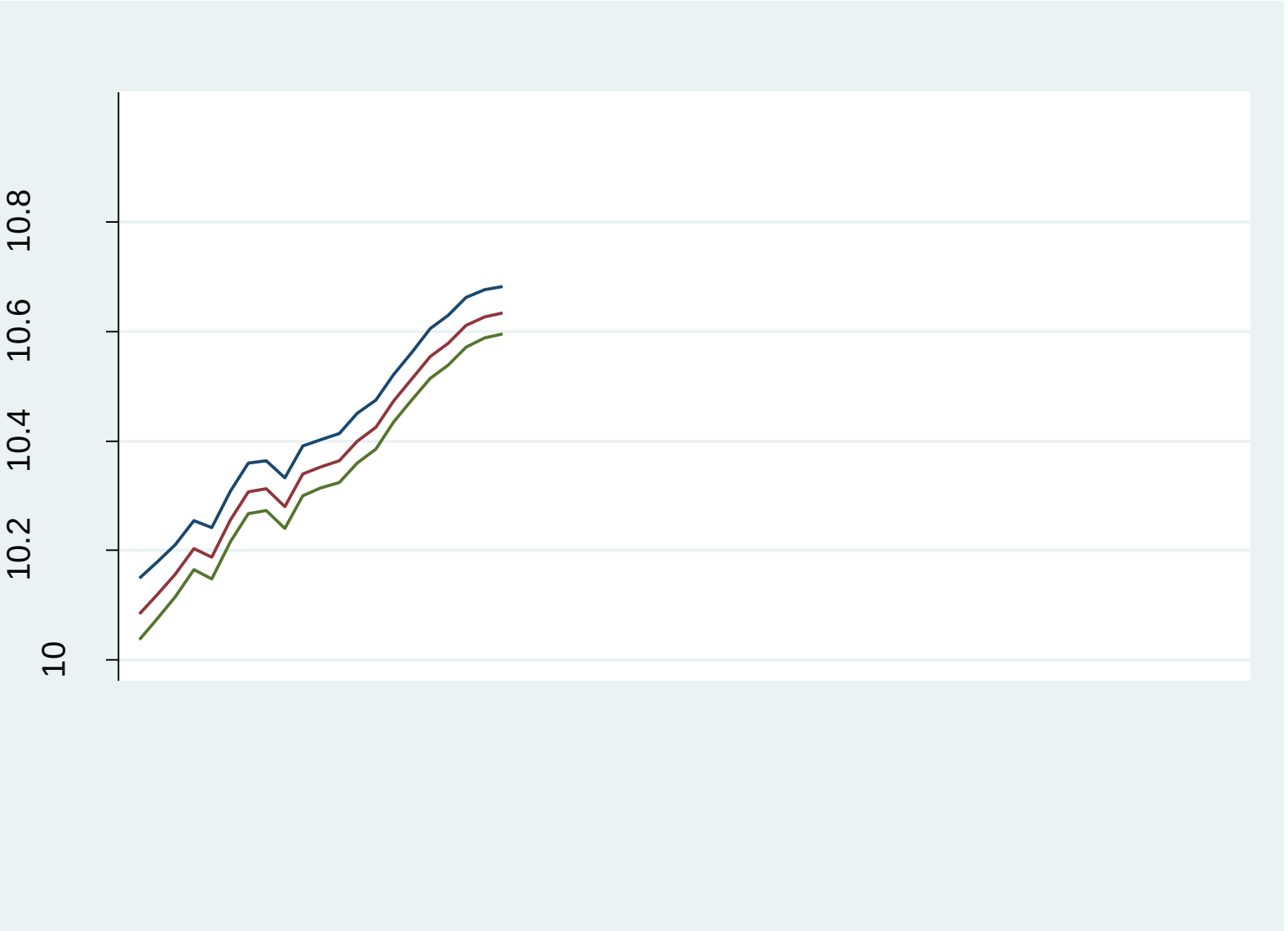

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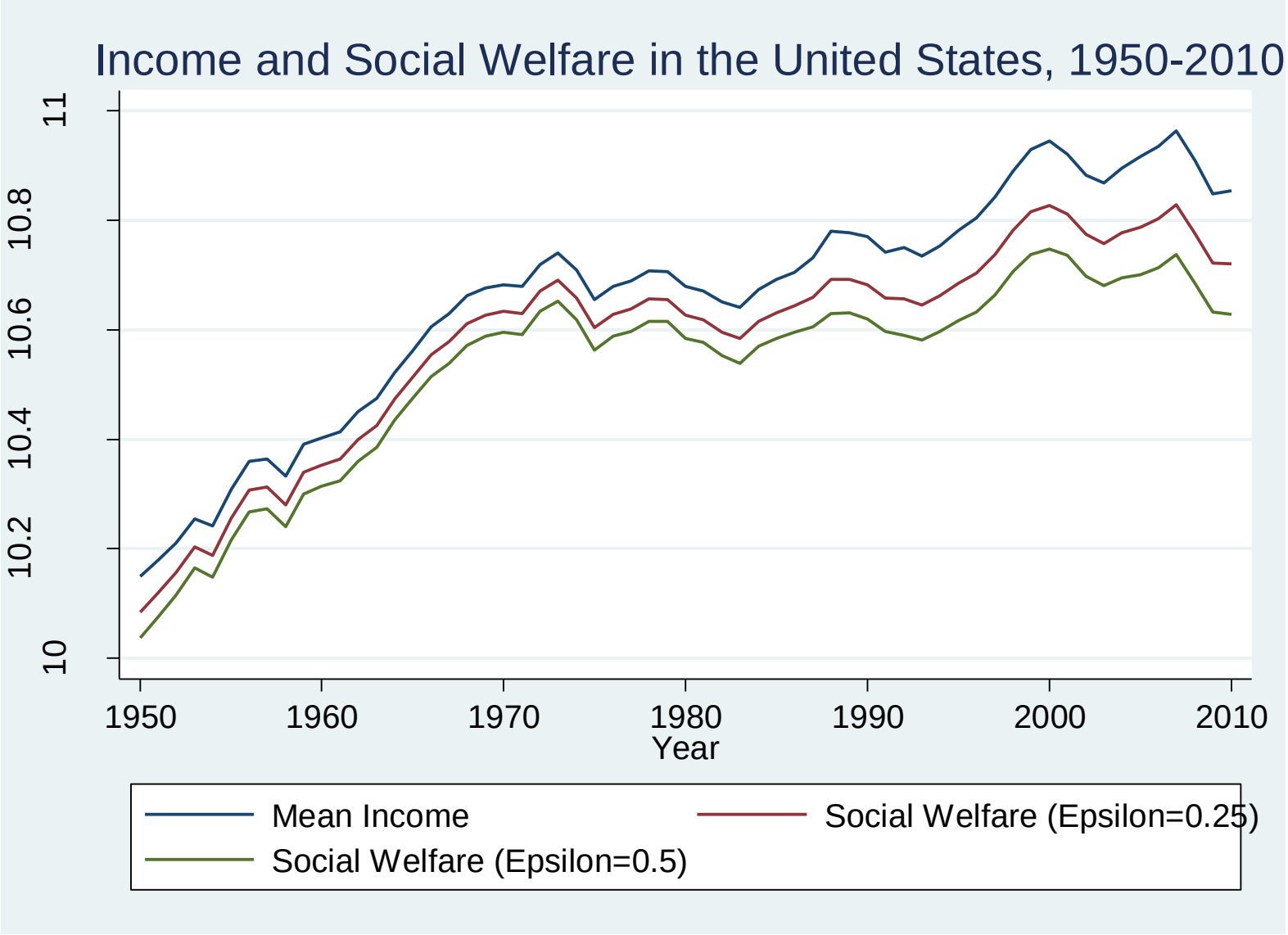
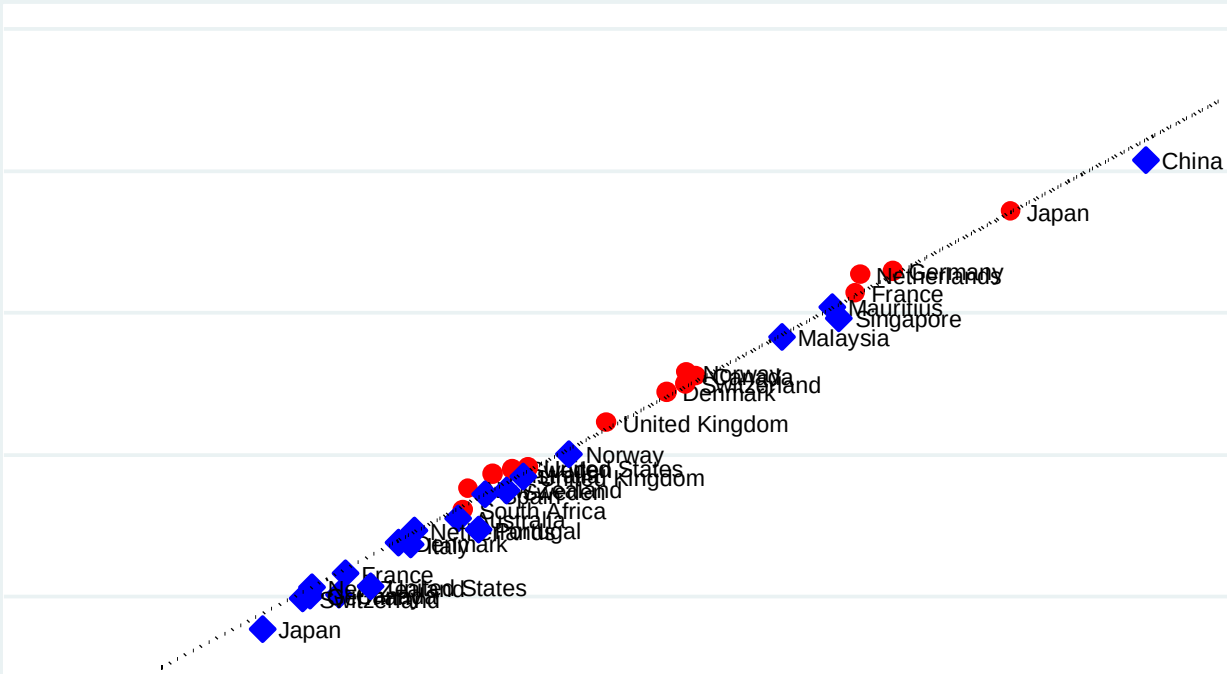
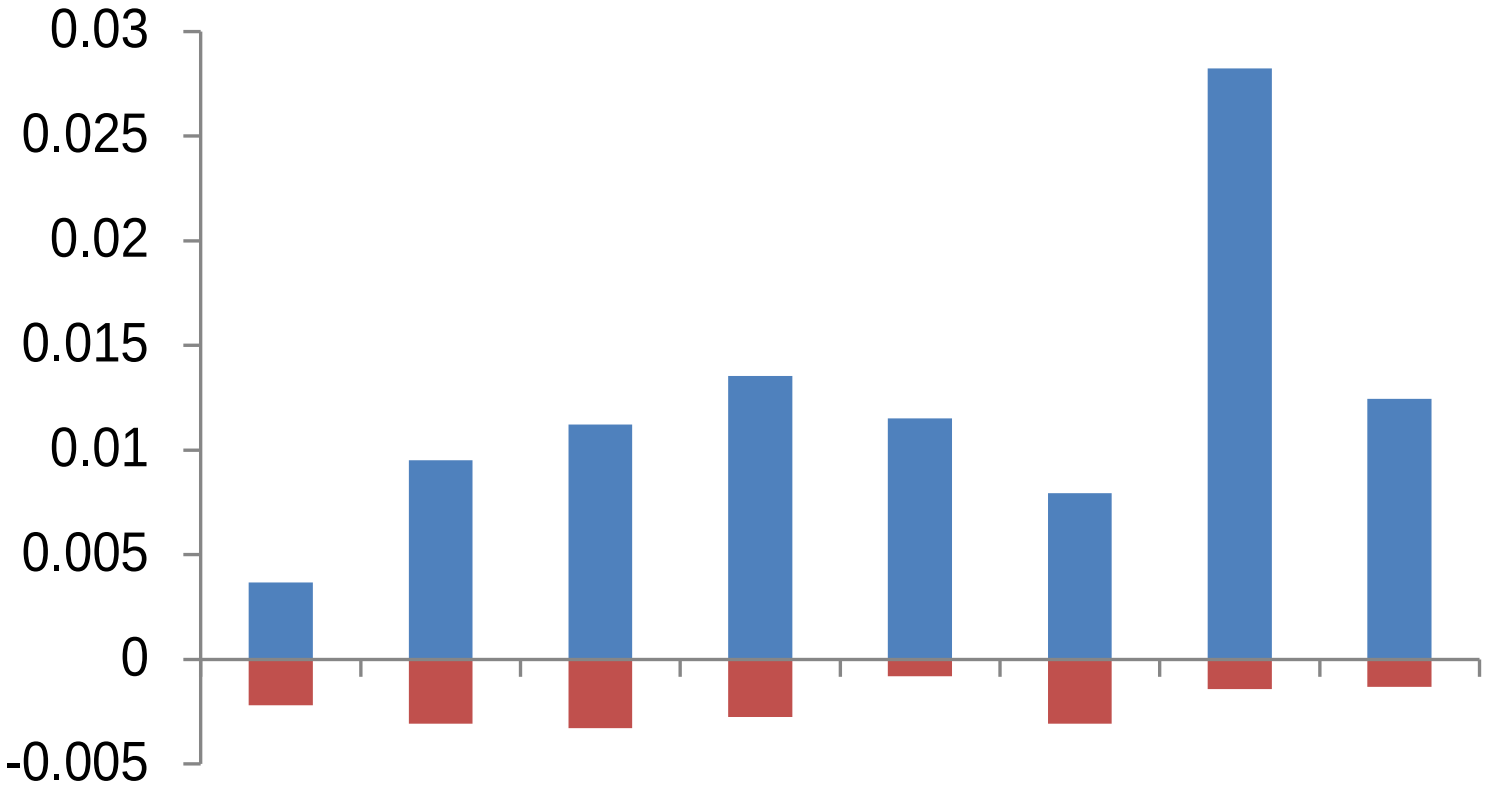


Application 2: Piketty Top Incomes Data: All Countries 1950-1980 (red) 1980-2010 (blue)



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



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

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- 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 ά₮ƛγ⅂·fε ŘƛăűNJƛōdzűƛƨγ˜NJŜf⅂·űƛØŜ űƨ άƛγ˜ƛűƛ⅂·fε ŘƛăűNJƛōdzűƛƨγ˜₮ƨNJ Ŝ⅂·ŎK spell
  - increasing concave SWF would have moved in same direction as mean in 75% of spells

Correlates of Growth and Equality Change

Correlates of Growth and Equality Changes

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

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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

Growth in Mean	Growth in Equality	Growth in Social Welfare

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	Growth in Mean	Growth in Equality	Growth in Social Welfare
Initial Income	<0	0	<0

Strong mean reversion in income

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Strong mean reversion in inequality

Overview of BMA Results

	Growth in Mean	Growth in Equality	Growth in Social Welfare
Initial Income	<0	0	<0
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

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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

a ƨ2ăű ƨŦ Ŏ2№№ŜfI·űλƨ2ƴ ōŜűøŜŜƴ άƎ№ƨ2øűK ŘŜűŜ№YλƴI·ƴűăε I·ƴŘ growth in social welfare due to effects on growth in average incomes

- Little systematic evidence on correlates of inequality change