Growth, Inequality, and Social Welfare

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Road to Lima Presentation
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Views expressed here are the authors’, and do not reflect the official views of the World Bank, its Executive Directors, or the countries they represent.
Perceived increase in inequality in all types of countries

“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
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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
Social welfare functions that can be decomposed into growth + change in inequality

- World Bank’s goal of “shared prosperity”, i.e. growth in average incomes in bottom 40%
  - Social welfare function is average incomes in bottom 40%
Illustration

• World Bank’s goal of “shared prosperity”, i.e. growth in average incomes in bottom 40%
  – Social welfare function is average incomes in bottom 40%

• Example: In China between 1990 and 2007...
  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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• Two key ingredients
  – Choose a social welfare function
  – Decompose into growth and (in)equality change
    • Both in units of income growth
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 Percentiles of Income Distribution

The graph illustrates the relationship between the weight on percentile $j$ in the social welfare function and the percentiles of the income distribution. The x-axis represents the percentiles of income distribution, ranging from 0 to 1, while the y-axis shows the weight on percentile $j$ ranging from 0 to 0.004. The line labeled "Bottom40" indicates the weight distribution for the bottom 40% of the income distribution.
Examples of Social Welfare Functions

• **Average income of bottom X%**
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• **Sen (1976) “Real National Income”**
  - Mean income x (1-Gini)
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• **Atkinson SWF**
  – Mean income x (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
SWFs Imply Weights on Percentiles of Income Distribution

Weight on Percentile j in Social Welfare Function

Percentiles of Income Distribution

Bottom40
Sen
Atkinson(0)
SWFs Imply Weights on Percentiles of Income Distribution

![Graph showing weights on percentiles of income distribution.](image-url)
Decomposing Growth in Social Welfare

- All SWFs considered here are of the form $W = \mu(1-I)$

\[
\frac{dW}{W} = \frac{d\mu}{\mu} + \frac{d(1-I)}{(1-I)}
\]

- 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
Data: 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 compilations based directly on primary data from household surveys

• Construct sample of income/consumption and social welfare growth over 285 “spells” at least 5 years long, covering 117 countries
Growth and Social Welfare

SWF=Bottom 40%, aka “Shared Prosperity”
Growth and Social Welfare

SWF = Sen’s Real National Income
Growth and Social Welfare

SWF=Atkinson A(1)
Thought Experiment – Which Distribution Do You want to Draw Welfare Growth From?
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![Graph showing average annual growth rates](image)
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 reflects 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
    • in Klenow-Rodriguez-Clare sense....
## Descriptive Regressions

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Two Other Applications

• Atkinson-Piketty-Saez data on Top Incomes
  – mostly OECD economies
  – based on tax records rather than household surveys
  – construct social welfare function = average income in bottom 90%
Piketty Top Incomes Data, SWF=Bottom 90%: All Countries 1950-1980 (red) 1980-2010 (blue)
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- Bourguignon-Morrisson data on global inequality since 1820
  - mostly Maddison data on GDP per capita
  - heroic imputations and guesstimates of within-country inequality
Bourguignon and Morrisson (2002): SWF = Sen Index For World

Average Annual Growth

- Inequality
- Mean

Time Periods:
- 1820-1850
- 1850-1870
- 1870-1890
- 1890-1910
- 1910-1929
- 1929-1950
- 1950-1970
- 1970-1992
Using Bayesian Model Averaging to Summarize 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

• 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)
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- Little evidence that initial equality is correlated with subsequent growth
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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

- 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

• Helping countries improve household survey data is an important contribution

• Emphasis on “doing something about” inequality in development policy discussions should not come at expense of focus on growth

• There are likely to be equality-enhancing measures such as early childhood education and health interventions that are either positive for growth or at least neutral
It’s important to realize that the absence of any clear relationship is a big win for progressives: right-wingers always claim that any attempt to reduce inequality will hurt the feelings of job creators and kill growth, but there’s not a hint of that problem in the data. But not much evidence that failure to reduce inequality kills growth, either. And I personally am making an effort not to be greedy — not to claim that a drive against inequality, which I view as crucially important for social and political reasons, is also the cure for lots of other things.

-- Paul Krugman blog, June 8, 2015