

Part IV: Inequality

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Introduction

- Consider a couple of common metrics for economic well-being:
 - GDP
 - Per capita income adjusted for PPP
- At best, these can only capture average economic status
- Aggregate economic well-being also depends on how GDP is distributed

Introduction

- Does per capita GDP Measure Economic well-being?
- Undoubtedly, its positively correlated with economic wellbeing. But consider...

Country	PC GDP	Life Expectancy
USA	54980	79.8
Sweden	40870	83
Slovenia	28373	80
Equitoreal Guinea	25929	54
Greece	24574	81
Botswana	17101	66

- Issue: Per Capita GDP does not account for distribution of income!

The US Wage Distribution

Source: U.S. Bureau of Labor Statistics, *Current Population Survey, Outgoing Rotation Group*, 2012.

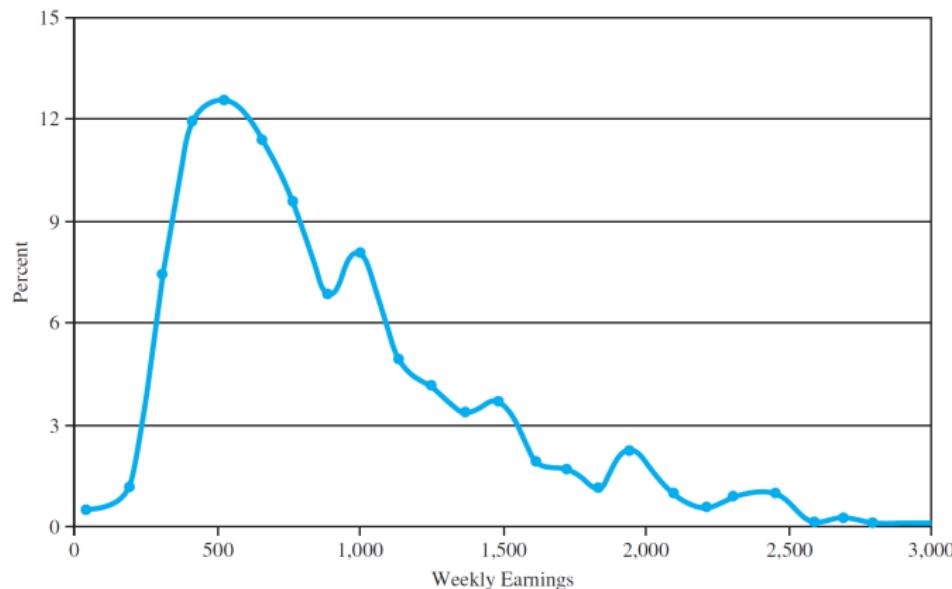


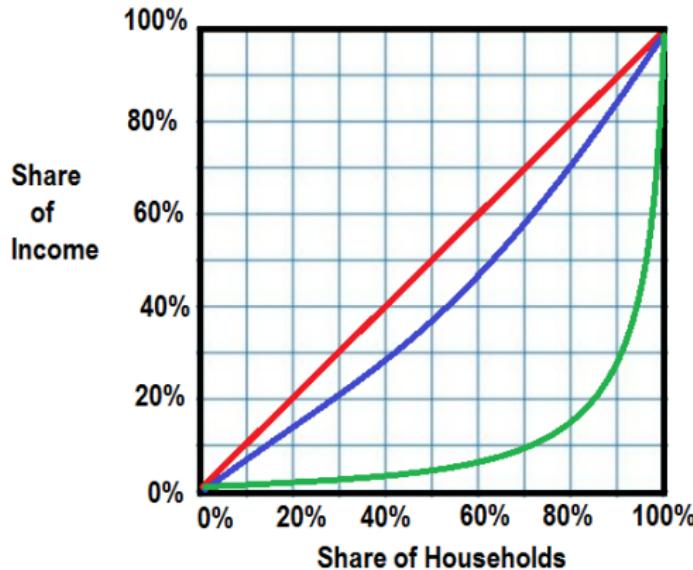
Figure: US Wage Distribution, 2012

Measuring Inequality

- Wage Percentile Differences: Compare wages between different percentiles of the distribution, usually expressed in percentage terms.
 - E.g. How much more does a worker in the 90th percentile of the wage distribution earn than one in the 50th percentile of the wage distribution?
 - E.g. How much more does a worker in the 90th percentile of the wage distribution earn than one in the 10th percentile of the wage distribution?

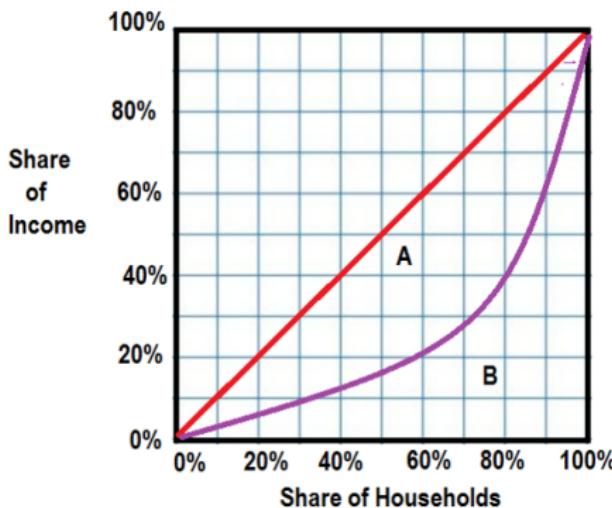
Measuring Inequality

- Gini Coefficient
- Lorenz Curve: Reports cumulative share of income accruing to percentiles of households.



Measuring Inequality

- Gini coefficient takes ratio of: Area between perfect equality Lorenz curve (red) and country's Lorenz curve (purple) to area under perfect equality Lorenz curve



- The Gini coefficient is thus defined as:

$$\frac{\text{Area A}}{\text{Area A} + \text{B}}$$

Measuring Inequality

Example

Suppose a simple economy is comprised of 50,000 individuals. Of these individuals, 60% report an annual income of \$30,000, 30% report an annual income of \$80,000, and 10% report an annual income of \$200,000. What is the Gini coefficient associated with this economy?

US Trends

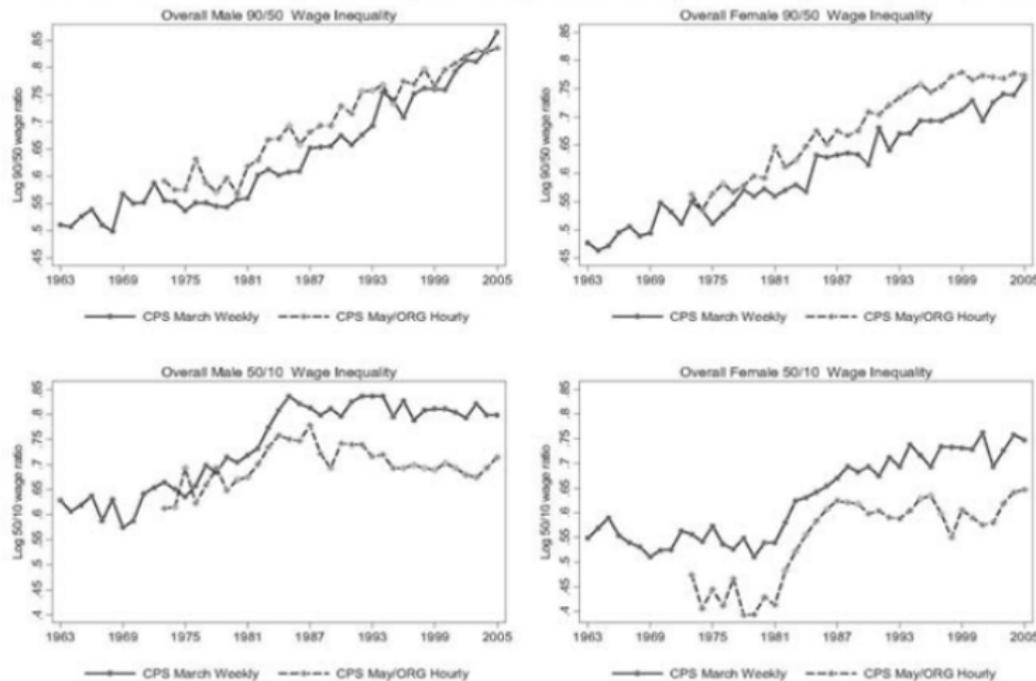
FIGURE 1.—CHANGE IN LOG REAL WEEKLY WAGE BY PERCENTILE, FULL-TIME WORKERS, 1963–2005



Source: Autor, Katz, and Kearney RESTAT 2008

US Trends

FIGURE 3.—90/50 AND 50/10 WEEKLY WAGE INEQUALITY IN MARCH (FULL-TIME WORKERS) AND HOURLY WAGE INEQUALITY IN MAY/ORG (ALL WORKERS) CPS SERIES, 1963–2005



Source: Autor, Katz, and Kearney RESTAT 2008

US Trends

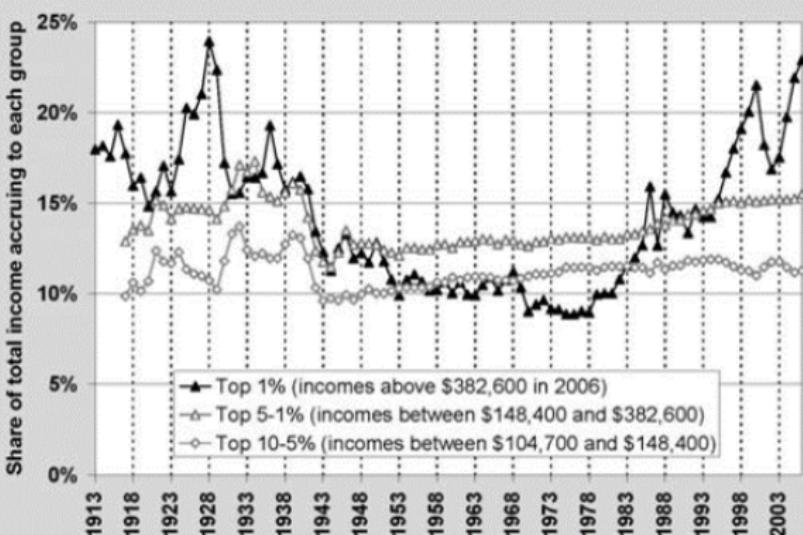


FIGURE 2

Decomposing the Top Decile US Income Share into 3 Groups, 1913-2006

Piketty and Saez 2003

US Trends

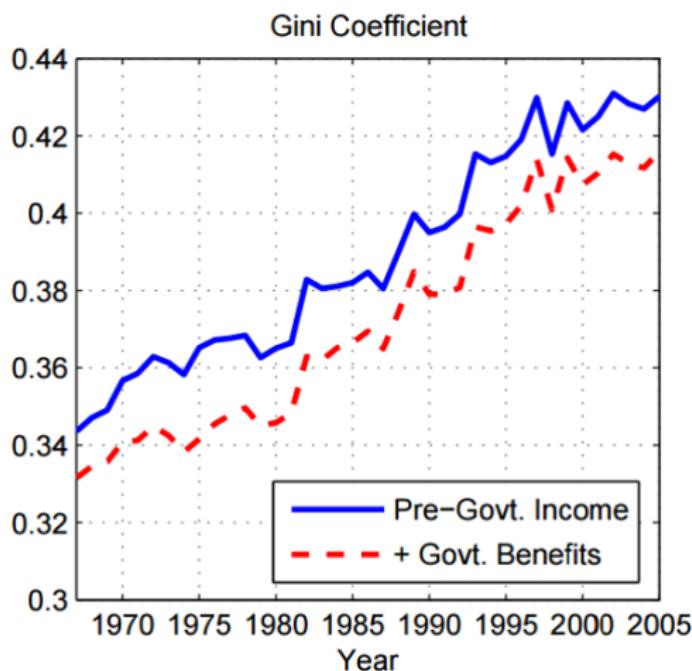
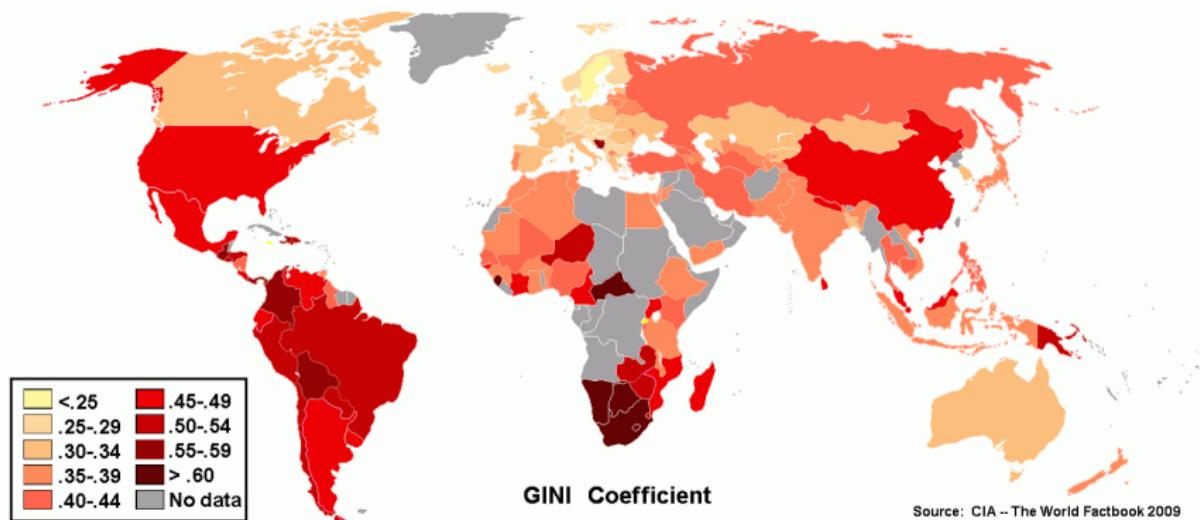


Figure: US Gini Coefficient, 1970-2005 (Heathcote et al., 2009)

World Comparison



Is Inequality Bad?

- Mainstream economists would generally agree that a perfectly even income distribution is suboptimal.
- Big disagreement over exactly how much income inequality is optimal.

Is Inequality Bad?

- Cronyism: The practice of favoring ones close friends, especially in political appointments.
 - Examples: Political lobbying for favorable industrial treatment, firms hiring less qualified friends/family, etc.
- Discrimination
 - Wage inequality resulting from differential pay according to characteristics irrelevant to the production process.
- Inequality at Birth
 - Wage inequality resulting from differential access to schooling, quality of schooling, bad infrastructure, etc.
- All of these are associated with economic inefficiencies, not to mention ethical issues.

Is Inequality Bad?

- Existence of wage inequality can also provide strong incentives to increase productivity and output.
- Investments in human capital spurred by desire to increase future earnings increase individuals' productivity.
- Discovery of new ideas responsible for much economic growth; presence of financial rewards for successful innovation incentivizes valuable innovations.
- Key here is that inequality can foster increases in aggregate productivity and output.

Is Inequality Bad?

- Previous argument highlights the basic issue: Inequality can foster productive behavior, but it can also foster unproductive (rent-seeking) behavior.
- How should policy be written to weigh the costs and benefits?
- How much of the inequality in the world today results from each of the (broadly speaking) “good” and “bad” inequality?

Readings

- Borjas 7.1 - 7.3
- Separate and Unequal: “The Price of Inequality” by Thomas Edsall, *The New York Times*
- Bad and Good Inequality by Gary Becker, *The Becker-Posner Blog*

Why is Inequality Rising?

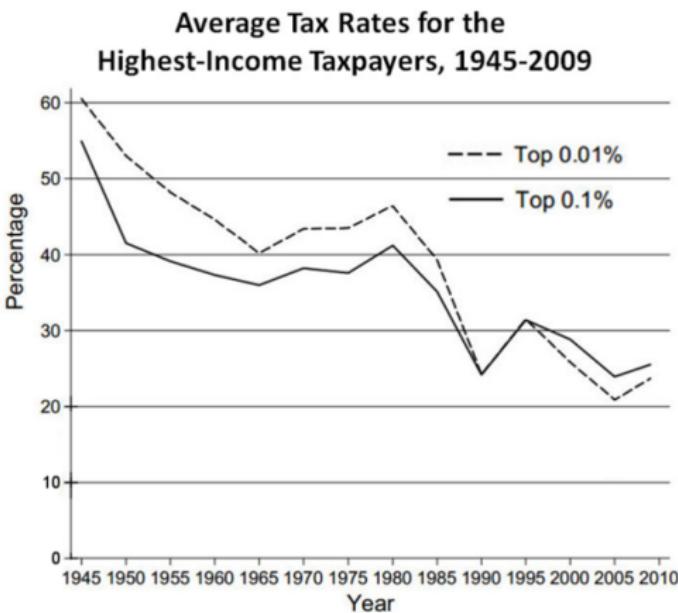
- Any way you slice it: wage inequality has greatly increased in the US over the past thirty years.
- Why has this happened?
- We'll discuss a few theories which attempt to explain rising inequality in the US.

Institutional Changes

- Straightforward argument: Decreasing tax rate on high income earners \Rightarrow higher levels of post-transfer wage inequality.
- Are taxation trends consistent with this?

Institutional Changes

- Tax rates on top earners have decreased significantly post-WWII.



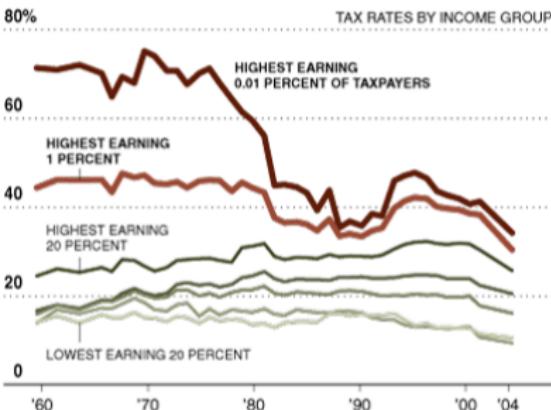
Source: CRS calculations using Internal Revenue Service (IRS) Statistics of Income (SOI) information.

Institutional Changes

- Magnitude of tax changes for the rest of the income distribution is small by comparison.

Lower Taxes for the Highest Earners

Since the 1960s, the total federal tax rate has fallen for low earners, risen for relatively high earners and fallen significantly for very high earners.



Numbers include income taxes, capital-gains taxes, payroll taxes, estate taxes, gift taxes and corporate taxes (which are effectively paid by stockholders). 2004 tax rates are based on 2004 tax law applied to 2000 income adjusted for income growth.

Institutional Changes

- Policy shifts may explain some of the overall changes in the post-transfer wage distribution.
- But,
 - overall level of redistribution is not lower today than in the past; difference in Gini pre-tax vs. post-tax is similar today to the 1980's.
 - We've seen significant growth in pre-tax inequality
 - Factors outside of policy can also have major effects

Institutional Changes

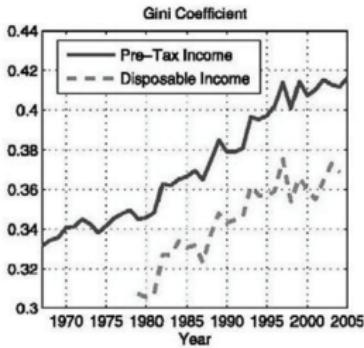
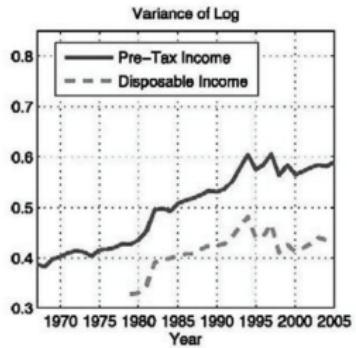
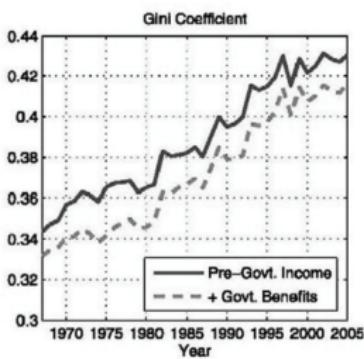
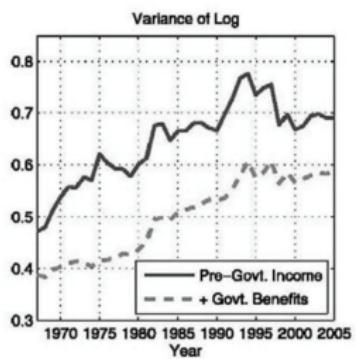
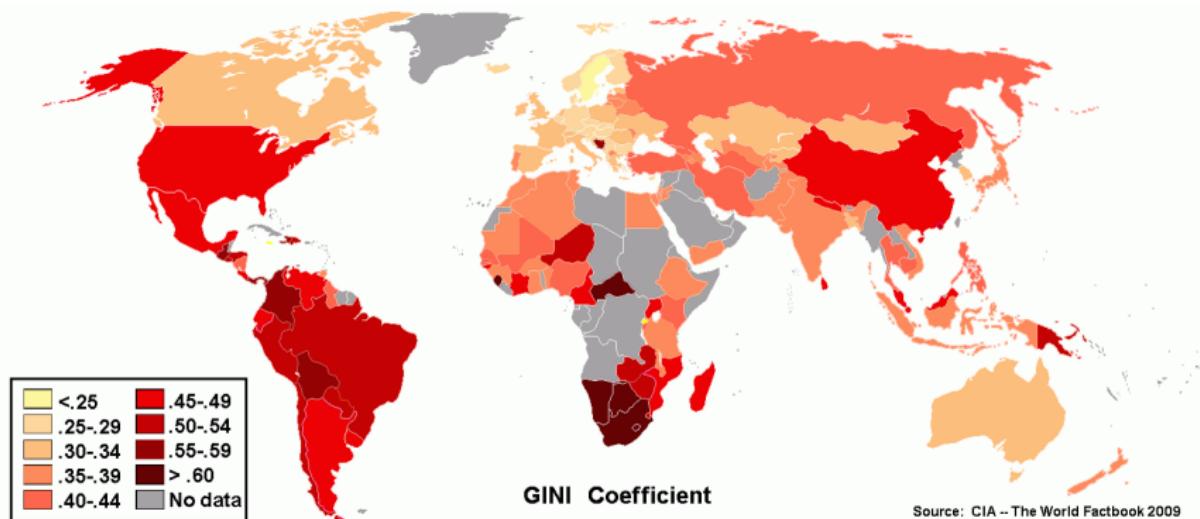
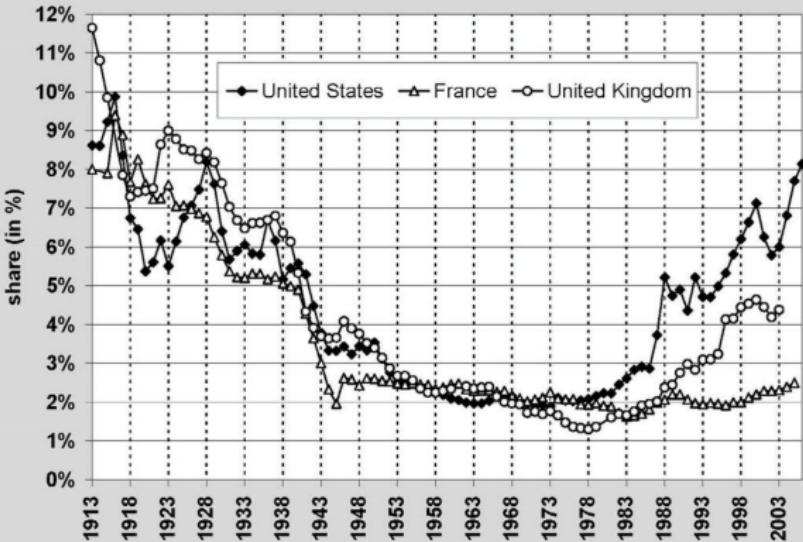


Fig. 12. From pre-government to disposable income (CPS).

Institutional Changes



Institutional Changes

**FIGURE 12**

Top 0.1% Income Shares in the U.S., France, and the U.K., 1913-2006
Piketty and Saez 2006 NBER WP 11955

Institutional Changes

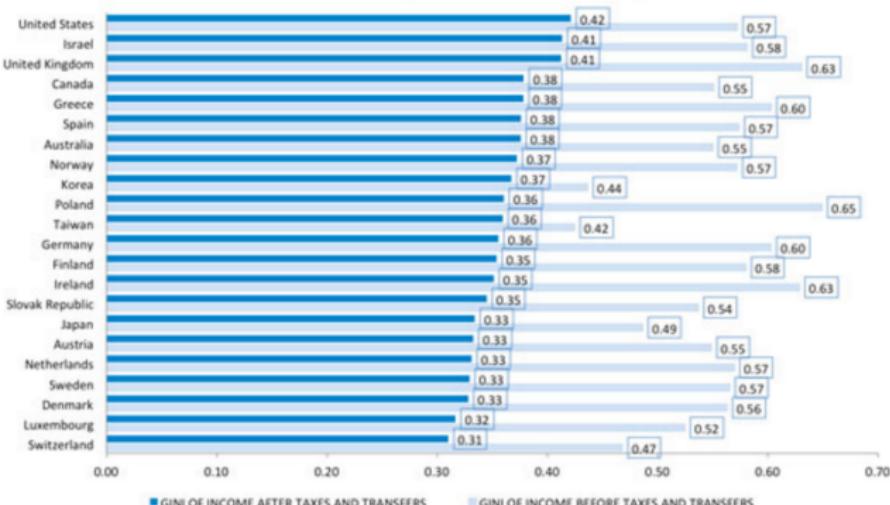
- Why is inequality more severe in US than Europe?
 - It's almost entirely due to policy differences.
 - EU spends far more of GDP on redistribution than US.
 - Pre-Tax Gini coefficients look very similar between US and major European economies.
 - Post-Tax/Transfer Gini coefficients look very different.
 - In short, Europe has historically been more aggressive with redistribution.

Institutional Changes

Gornick

Income Inequality and Redistribution

The U.S. government does less than many other rich countries to reduce market-generated income inequality.



Source: Author's calculations, 2013, based on LIS microdata, most recent datasets available (early to mid-2000s)

Supply Shifts in Skilled Labor Market

- Basic idea:
 - Relative wages of skilled and unskilled workers determined by supply curves for skilled and unskilled workers.
 - Increase in supply of skilled workers \Rightarrow decrease in relative wage of skilled workers \Rightarrow decrease in inequality
 - Decrease in supply of skilled workers \Rightarrow increase in relative wage of skilled workers \Rightarrow increase in inequality
- Need to look at supply shocks over the past 40 years and see if this story makes sense.

Supply Shifts in Skilled Labor Market

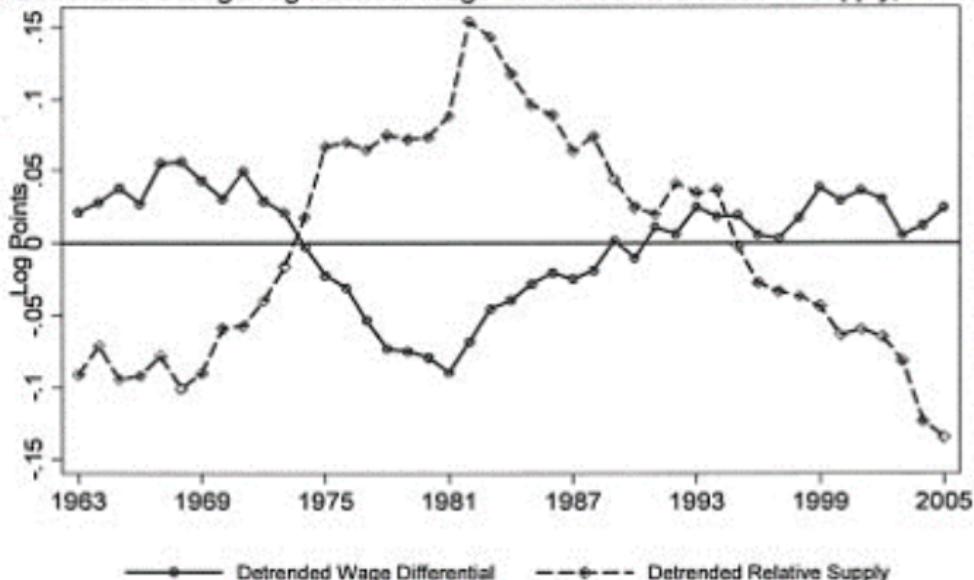
- 1970's: Baby boomers ⇒ outward supply shift of college graduates
 - Result: Decrease in the wage premium paid to college graduates
- 1980's: Decrease in supply of college graduates
 - Result: Increase in the wage premium paid to college graduates
- 1980's: Increase in number of unskilled immigrants
 - Result: Increased relative number of workers at the bottom of the skill distribution
- This would seem to support the supply shift hypothesis.

Supply Shifts in Skilled Labor Market

- But, what if supply shifts in unskilled labor went the same direction?
 - Baby Boomers: Increase in supply of both skilled and unskilled labor
 - Not necessarily clear that these supply shifts should decrease the wage premium paid to college educated workers
- Overall, the number of college graduates relative to the number of high school graduates continued to rise in the 1980s at the same time that the relative wage of college graduates was rising
- Supply shifts may explain some, but not all of rising inequality

Supply Shifts in Skilled Labor Market

A. Detrended College/High School Wage Differential and Relative Supply, 1963–2005



Skill-Biased Technological Change

- Over past 40+ years, economy has shifted from a manufacturing economy towards a technology-based economy
- New technologies good substitutes for low-skill labor, but complements to high-skill labor

Skill-Biased Technological Change

- Ex: Mechanization of industrial production
- Decrease in demand for low-skill workers who physically build products
- Increase in demand for high-skill workers (engineers, programmers) needed to run new machines
- Low-skill workers' wages fall
- High-skill workers' wages rise
- Increase in income inequality from this

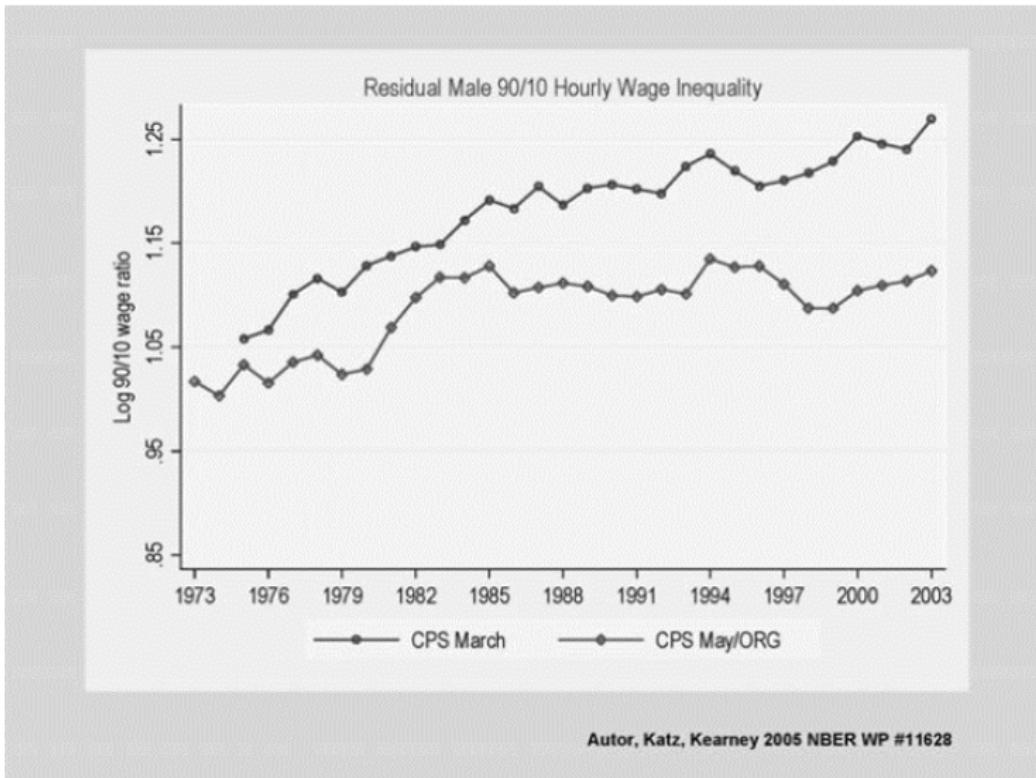
Skill-Biased Technological Change

- Prediction: We should find significant wage growth in those industries which employ advanced technology.
- Problem with this explanation: Tech-intensive industries have seen significant inequality growth. But, so have industries which are not traditionally thought of as tech-intensive.
- In essence, SBTC should cause increase in inequality between industries, but data shows significant increase in inequality within industries.

Skill-Biased Technological Change

- Prediction: Wage inequality should increase fastest during tech booms.
- Ex: IT Revolution, 1990 - 2000.
- Puzzle: Inequality increased in 1980's and 2000's, but actually did not increase all that much from late '80s to early '00s.

Skill-Biased Technological Change



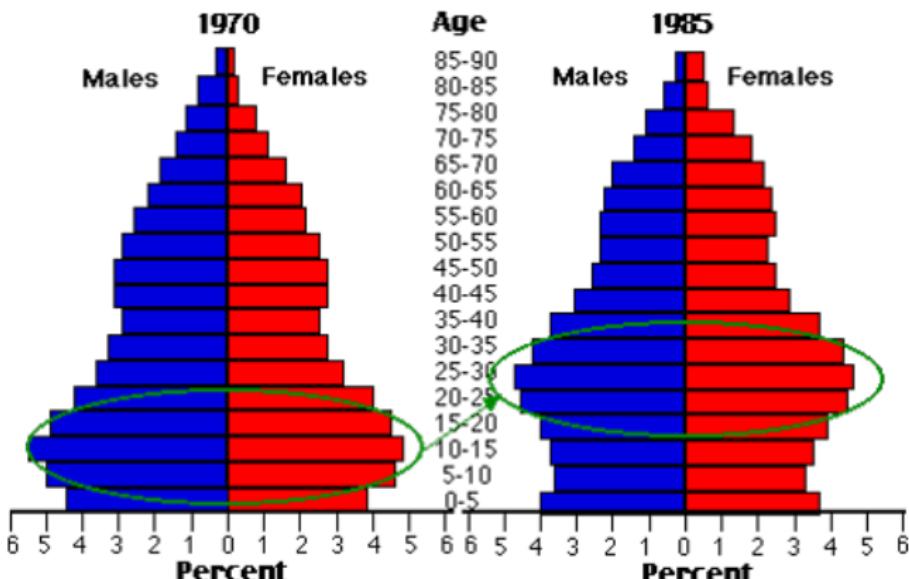
Skill-Biased Technological Change

- Very popular story of rising income inequality.
- But, surprisingly difficult to see the effects of this in the data.
- Difficult to say how large the effect of SBTC is on increasing inequality (lots of disagreement among researchers on this topic).

Labor Force Composition

- Autor, Katz, and Kearney (2005): Rising Wage Inequality: The Role of Composition and Prices
- Consider the following:
 - Older workers (age 40 - 60) generally have greater variance in wages.
 - Younger workers (age 20 - 40) generally have lower variance in wages.
 - Between 1970 and 1990, the proportion of Americans in the older group rose, while the proportion in the younger group fell.
- This type of “composition effect” could drive wage inequality, as economy composed of more individuals in high wage variance group.

Labor Force Composition



Labor Force Composition

- Consider other groups which have different wage variances:
 - College graduates: High wage variance
 - HS graduates: Lower wage variance
- 1970: 70% had at most HS education, 14% had college degree
- 1996: 40% had at most HS education, 28% had college degree
- Once again: Economy composed of greater proportion of high wage variance group ⇒ increase in wage inequality

Labor Force Composition

- Composition effects might explain bulk of increase in inequality if wage variance within education groups were similar now and 40 years ago.
- Problem with this explanation:
- Most of the increase in variation can be attributed to between-group price changes
- Both (i) the premium and (ii) the variance of wages paid to college graduates has risen greatly over the past 40 years.
- So how much is due to composition effects?

Labor Force Composition

- Autor, Katz, and Kearney:
- A decent amount of the increase in the lower tail (50/10) wage gap is explained by composition effects.
- very little of the increase in the upper tail (90/50) wage gap is explained by composition effects.
- Composition does seem to have an effect, but can't explain the rise in upper tail income inequality.

Readings

- Borjas 7.4
- Autor, Katz, and Kearney (2005). Rising Wage Inequality: The Role of Composition and Prices. *NBER Working Paper No. 11628*

Occupational Wage Dispersion

- Previous analysis tended to focus on economy-wide wage inequality.
- Or, inequality within demographic groups (composition effects and age).
- A finer question: Why do some occupations exhibit far more inequality than others?

Occupational Wage Dispersion

- Motivating feature of the data: Biggest growth in inequality is captured by growth in wages of extreme right tail, i.e., top 0.1%, top 0.01%, or top 400 families
- Earlier theories mostly explain growth in wage dispersion between ~5th percentile and 95th percentile, not the extremes.
- Fundamental question: How is it possible for an individual to be worth 50x, 100x, 1000x times as much as a typical individual to some firm?

Occupational Wage Dispersion

- Certain industries have relatively low wage dispersion.
 - Entry-level PhD economist: ~\$100,000
 - Nobel-laureate economist: ~\$300,000 - \$400,000
- Top 0.1% earn roughly 3x wage of “median” economist

Occupational Wage Dispersion

- Other industries have massive wage dispersion.
 - Barcelona's Lionel Messi: \$53,400,000
 - New York City FC's Tommy McNamara (\$85,000).
- We refer to such individuals as “superstars” in labor economics; workers who command a wage 50x, 100x, 1000x what their peers receive.

Superstars

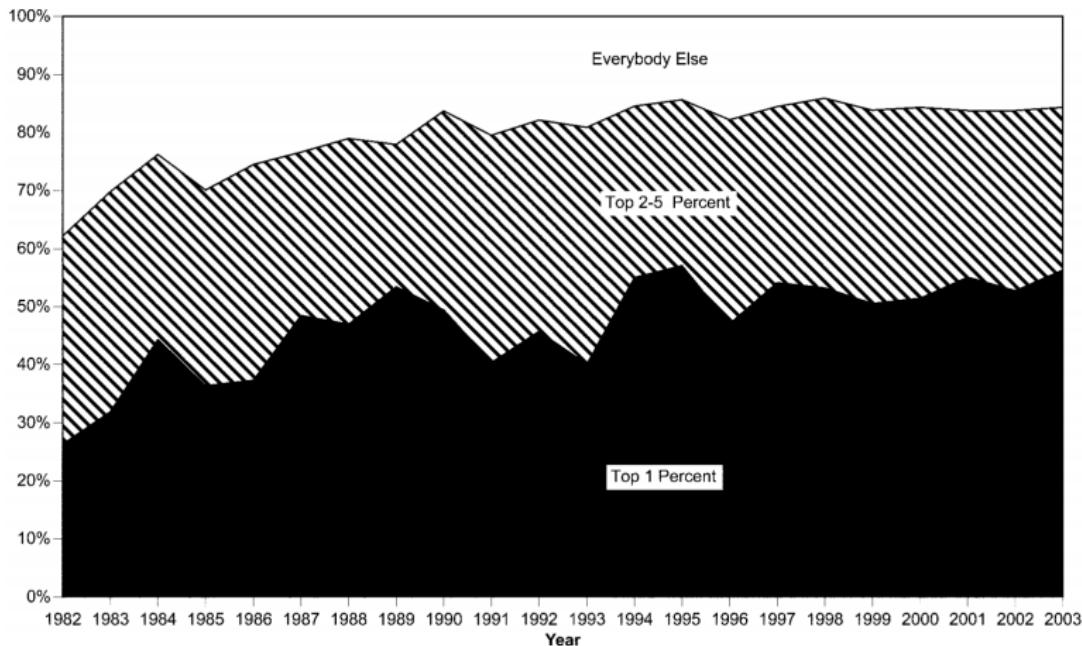


FIG. 6.—Share of total ticket revenue accruing to top performers, 1982–2003

Superstars

- Many other industries have superstar wage earners. Classic example is entertainment (including sports) industry:
 - Robert Downey Jr ~\$80M
 - Jennifer Lawrence ~\$55M
 - Taylor Swift ~\$40M
 - Aaron Rodgers: ~\$22M
- What characteristics do these occupations share?

Superstars

- Increasing returns to scale
- Compare:
 - Cost function for Ford when producing F-250s
 - Cost function for NFL when streaming games
- This characteristic essentially enables top talent to distribute their skills to a wider audience.

Superstars

- Large demand differentials
 - Willingness to pay for BMW 3-Series vs. Honda Accord:
“First-Best” only costs about 50% more than “Second-Best”
 - Willingness to pay for football tickets:
 - Manchester City vs Borussia Monchengladbach (Champions League): Starting at ~ \$100
 - Manchester City vs Middlesborough (English Premier League): Starting at ~ \$55
 - Average League Two tickets: ~ \$17
- Industries with “superstars” tend to exhibit significant difference in willingness to pay between top products and other products.

Superstars

- How important is this? Could it explain much of the wage growth of the top 0.1%?
- Maybe some. But bulk of growth seems to be due to increasing wages of business tycoons, CEO's, etc.

Inequality Across Generations

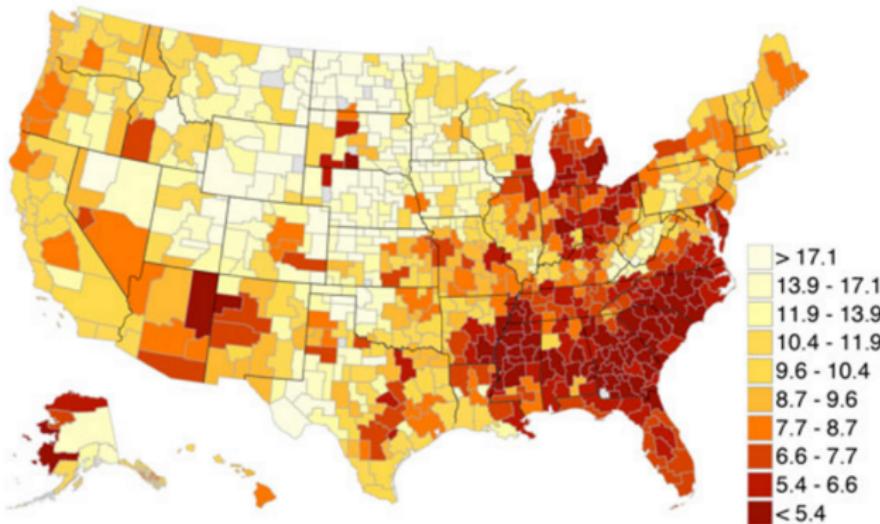
- Basic question: How mobile is income across generations?
- Relates back to question of whether inequality has resulted because of
 - Enterprising behavior (schooling investments, etc.)
 - Cronyism

Inequality Across Generations

Chetty

The Geography of Intergenerational Mobility in the United States

Odds that Child Born to a Family in Bottom Quintile Reaches the Top Quintile



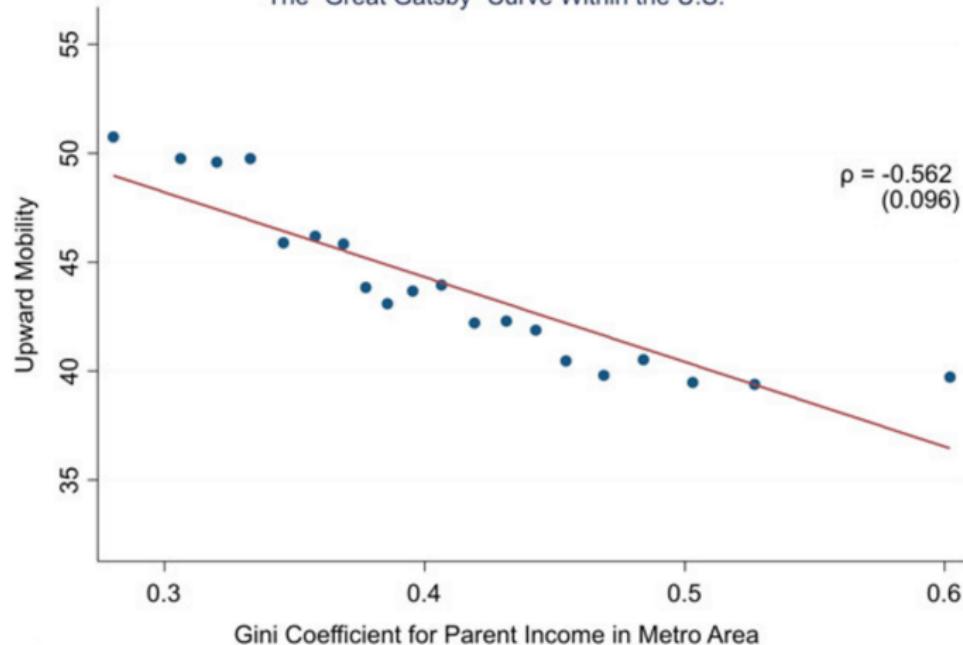
Note: Lighter Color = More Upward Mobility

Source: Chetty, Hendren, Kline, and Saez (2013)

Inequality Across Generations

Chetty

Upward Mobility vs. Inequality
The "Great Gatsby" Curve Within the U.S.



Inequality Across Generations

- Human capital investment decisions often made by parents
- High-income parents typically invest more ⇒ positive correlation between socioeconomic outcomes of the parents and the outcomes of their children
- Regression towards the mean: A tendency for income differences across families to decrease over time as families move toward the mean income in the population
 - Not all parental income is invested in children
 - Diminishing returns to education
 - Regression toward the mean in ability

Inequality Across Generations

- Intergenerational Earnings Elasticity: Gives estimated effect of one percent rise in parents' earnings on child's earnings.
- Recent studies: intergenerational coefficient of $\sim 0.3 - 0.4$.

Inequality Across Generations

Example

Consider two families, one with a yearly income of \$60,000 and the other with a yearly income of \$108,000. If the intergenerational correlation coefficient is 0.3, what is the expected difference in earnings of the children in the two families? What if it was 0.6?

Readings

- Borjas 7.5-7.6
- American Inequality in Six Charts by John Cassidy, *The New Yorker*.
- Krueger, Alan (2005). The Economics of Real Superstars: The Market for Rock Concerts in the Material World. *Journal of Labor Economics*.
- How Superstars' Pay Stifles Everyone Else, *The New York Times*
- Gabaix, Xavier & Augustin Landier (2007). Why has CEO Pay Increased So Much? *The Quarterly Journal of Economics*.