Topic 7 Wage Inequality

Measurement and trends in a few countries overtime

Wage Inequality

- Wage Inequality is of major public interest
- There is a large literature exploring differences between countries and whether it changes overtime
- Much discussion of the political and economic consequences
- We will begin by discussing measures and then talk about patterns over time

Measure of Wage Inequality

- Well-known measures of inequality include the Gini coefficient, the Theil (entropy) coefficient, the coefficient of variation, and the variance (or std deviation) of logs are often used to compare between countries
- The Gini is most commonly used
- The Gini coefficient is usually defined based on the Lorenz curve
- Lorenz Curve:Plots the proportion of the total income of the population (y axis) that is cumulatively earned by the bottom x% of the population

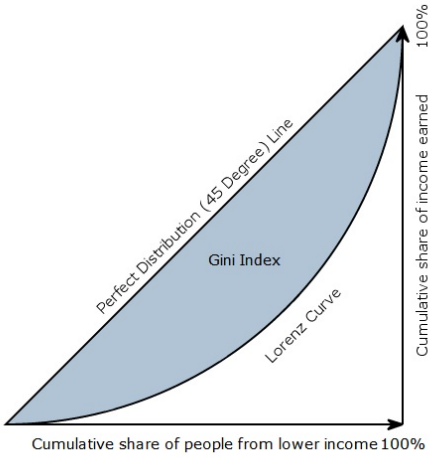
Measure of Wage Inequality

Gini Coefficient: ratio area between the Lorenz and perfect equality

A Gini of zero represents perfect equality (everyone gets the same income)

A Gini of 1 represents maximal inequality (e.g. only one person has all the wealth and everyone else zero)

It is frequently used to compare income across countries



Measures of Wage Inequality

- The problem with measures like the gini or the coefficient of variation is that they only provide a particular aggregate measure of dispersion
- Problematic as difference sources of changes in the wage distribution are likely to affect different parts of the distribution
- Because of this limitation, modern inequality literature tends to rely on flexible/non-parametric approaches

Measures of Wage Inequality

- Let $\theta = F(w^{\theta})$ be a percentile rank of the log wage (w). The θ^{th} quantile or percentile of the distrdistributionibution is defined as w^{θ}. For example, the 50^{th} quantile is the median $w^{0.5}$
- Since the cumulative distribution F is monotonic, it can be invested as $w = F^{-1}(\theta)$. It follows, for example, that

$$d^{90-10} = F^{-1}(90) - F^{-1}(10)$$

Is the 90-10 log wage differential between the 90^{th} and 10^{th} quantile

Measures of Wage Inequality

- Similarly

$$d^{90-50} = F^{-1}(90) - F^{-1}(50)$$

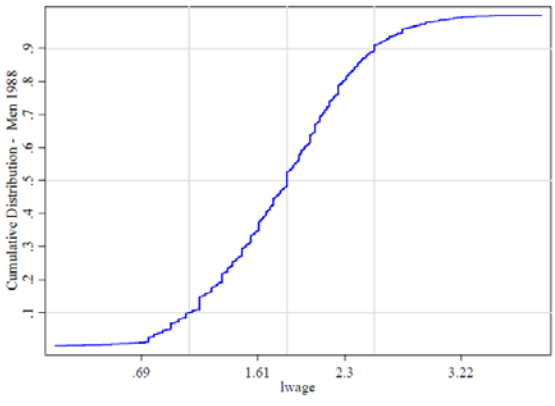
And

$$d^{50-10} = F^{-1}(50) - F^{-1}(10)$$

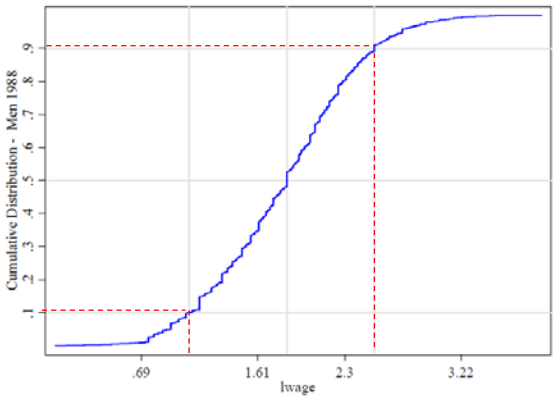
represent the 90-50 and 50-10 log wage differential and are often used to describe **upper end** and **lower end** wage inequality, respectively.

- These measure the spread of the distribution at different points

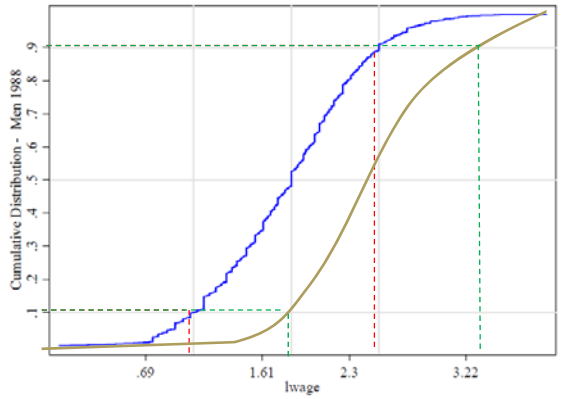
Measuring Wage Inequality



Measuring Wage Inequality



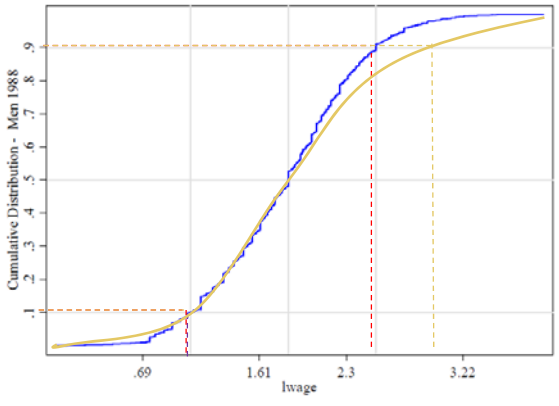
Measuring Wage Inequality



Note

- These measures adopt a **relative** notion of inequality: e.g. how much richer are people at the top of the distribution in relative terms. The **absolute** gap (how much richer they are in actual dollars) is not captured.
- This also means that if everyone's income doubled, income inequality would remain unchanged.
- Put differently, these inequality measures will only change over time if income is growing at different rates for different parts of the distribution.

Measuring Wage Inequality



- To describe changes over time, **plots** of the **percentiles** of the wage distribution on the horizontal axis and the **change in the log wage** on the vertical axis are used

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

Autor, Katz, Kearney (2008)

- Alternatively, **indexes** of some chosen **percentiles** of the log wage distribution are plotted

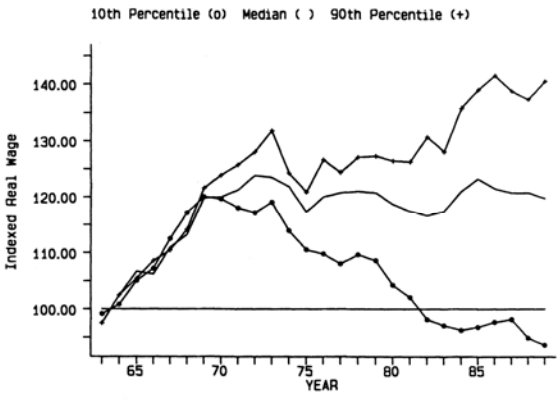
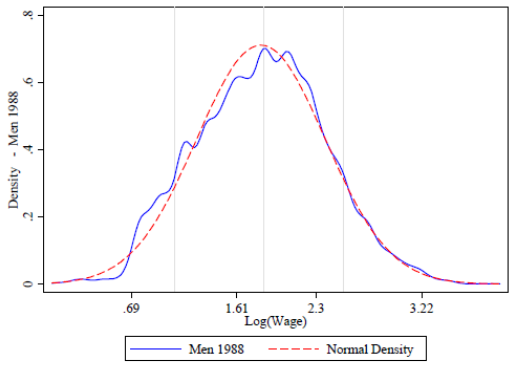


FIG. 1.—Indexed real weekly wages by percentile, 1963–89

Juhn, Murphy, Pierce (1993)

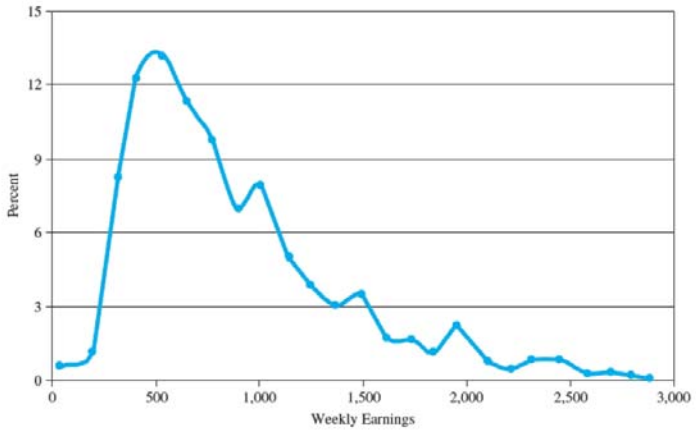
- Another popular approach consists of plotting the density of wages using kernel methods



Wage Distributions

FIGURE 7-1 **The Wage Distribution in the United States, 2010**

Source: U.S. Bureau of Labor Statistics, *Current Population Survey, Outgoing Rotation Group*, 2010.



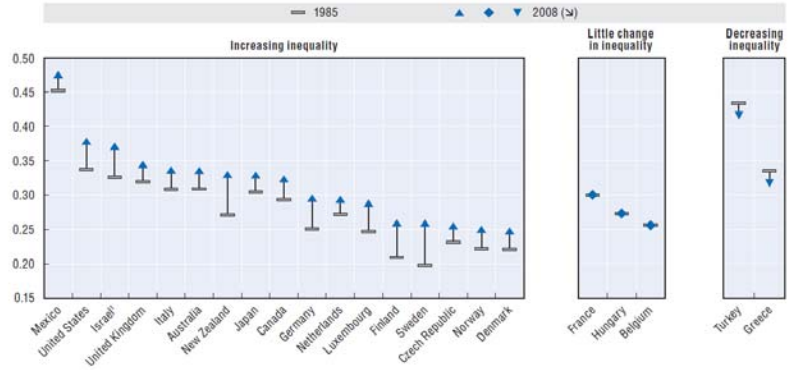
Wage Inequality

Trends

Across OCED Inequality

Figure 1. **Income inequality increased in most, but not all OECD countries**

Gini coefficients of income inequality, mid-1980s and late 2000s



Note: For data years see Table 1. "Little change" in inequality refers to changes of less than 2 percentage points.

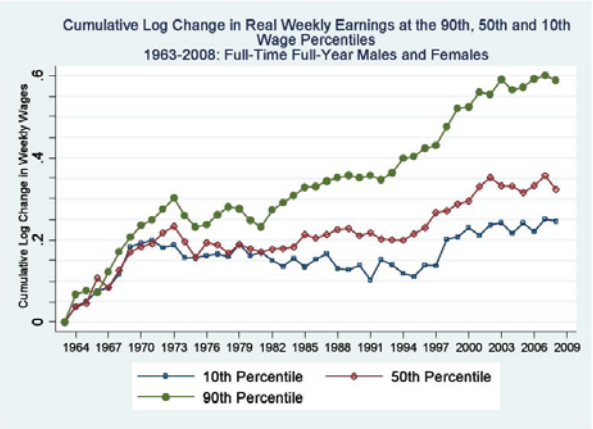
1. Information on data for Israel: http://dx.doi.org/10.1787/888932315602.

Source: OECD Database on Household Income Distribution and Poverty.

StatLink http://dx.doi.org/10.1787/888932535185

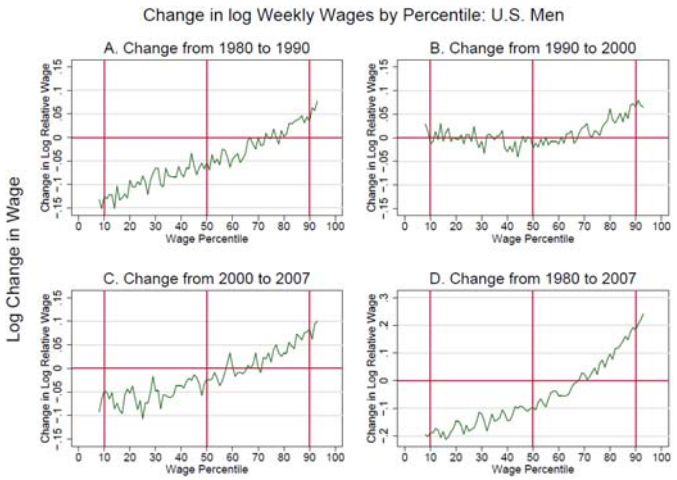
Changes in United States

Figure 7a

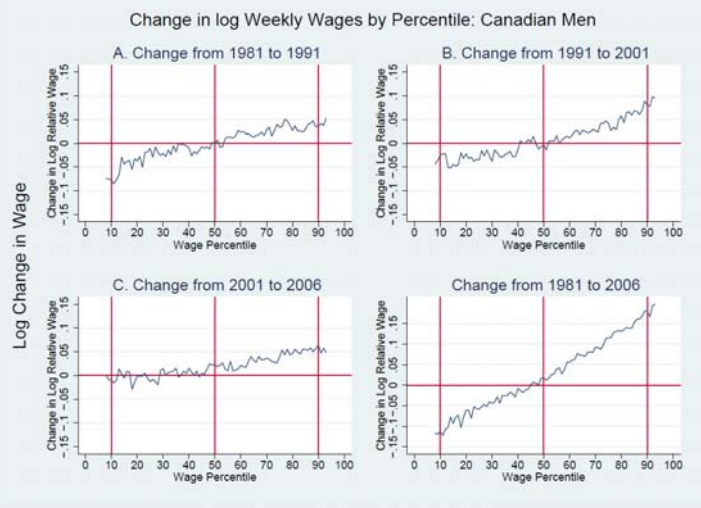


Source: March CPS data for earnings years 1963-2008. For each year, the 10th, median and 90th percentiles of log weekly wages are calculated for full-time, full-year workers.

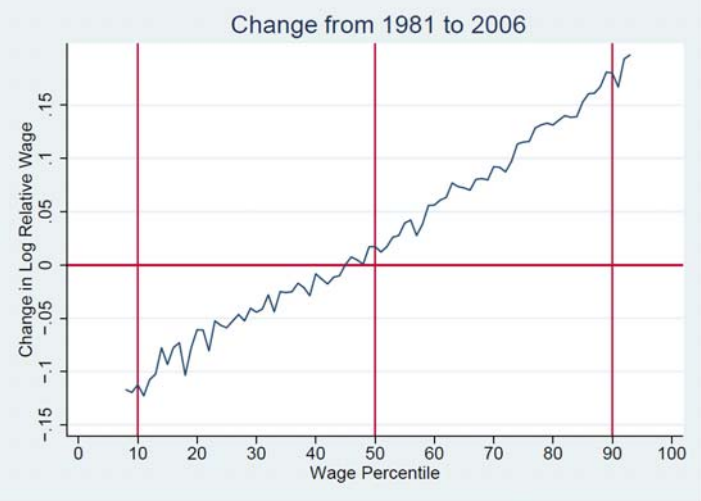
Changes in the United States



Changes in Canada



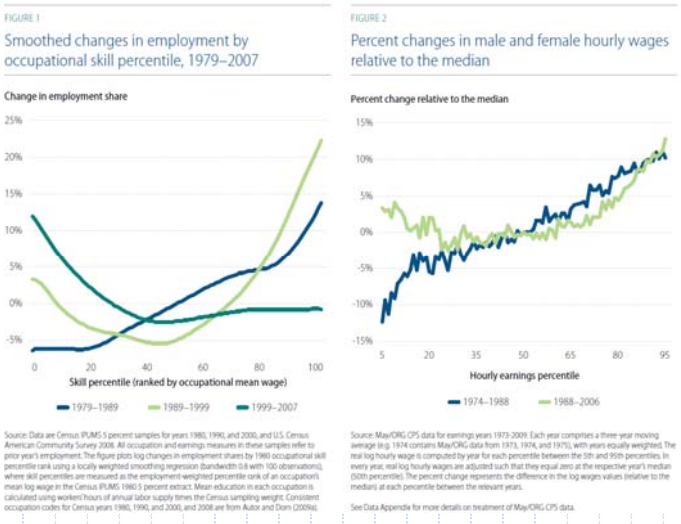
Changes in Canada



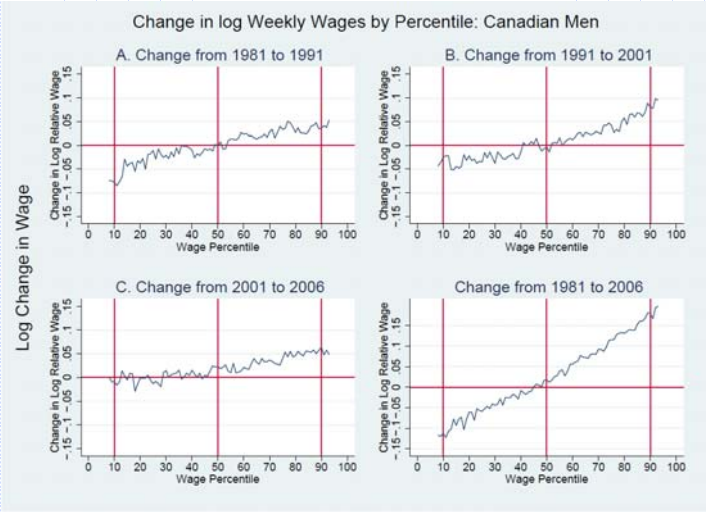
Job Polarization

- Polarization is typically taken to mean a loss of middle skill (well-paying) jobs relative to both low and high skill jobs
- Standard approach: rank occupations skill level as represented by the average wage in a base year
- Plot employment growth or wage growth in the occupation against their base year ranking
- Sometimes for wages, also just plot changes at each percentile

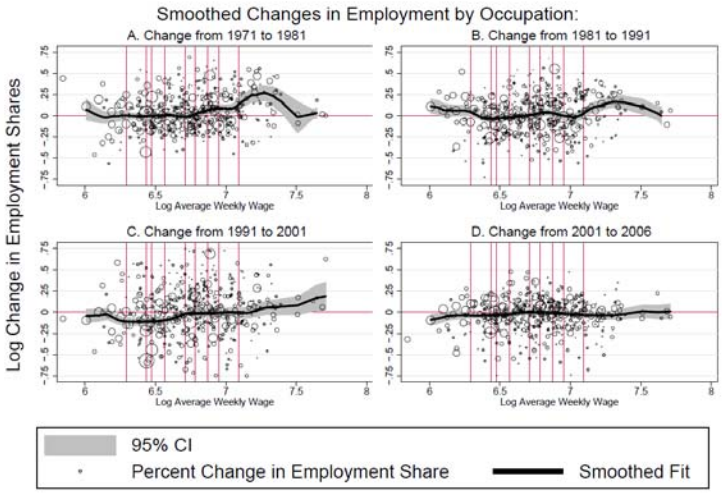
Changes in the United States



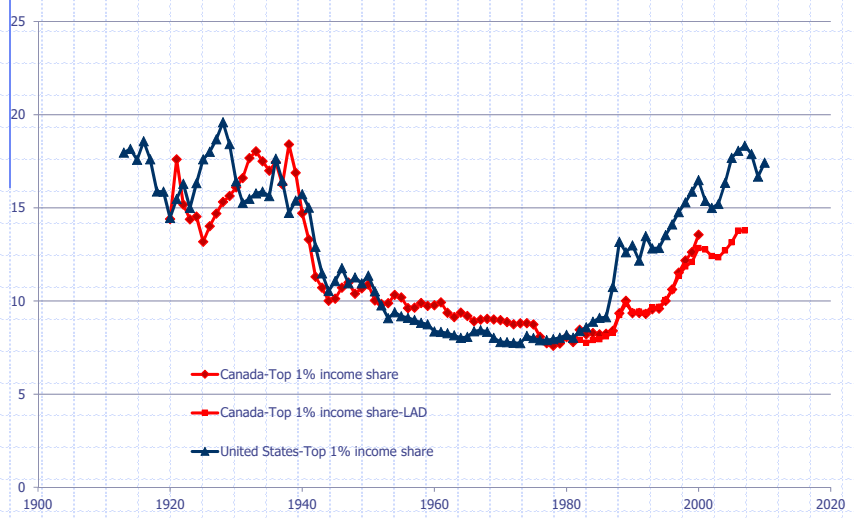
Changes in Canada



Changes in Canada



Growth In Top 1% Canada and US



Summary

- Wage inequality has increased over the 1980s for most countries
- Employment has polarized, with main losses in Clerical Occupations in Canada
- Wages have not polarized. More like a straight increase in inequality in Canada
- In the United States, there is some evidence that both wages and employment has polarized
- Increased growth income for top 1 percent