Agenda

1. Incomes: Levels, Growth, Inequality
   - Household incomes
   - Wage Inequality
   - Intergenerational income mobility

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   - Skills and educational attainment
   - Wage differentials by skill
   - Occupational change & employment polarization

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4. Trade and Labor Markets

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6. Minimum wages, Pay comparisons, Wage spillovers

7. Gender Differences in Education and Labor Markets
Falling poverty, rising inequity

A striking statistic: Compared to 1981, worldwide there are now around 650 million fewer people living in extreme poverty – i.e. on less than $1.25 a day – even though, over that same period, the global population rose by about 2 billion. Many factors have contributed to that decline, but the most important is the rise of China – it alone accounted for around half a billion people moving out of extreme poverty.

But while $1.25-a-day poverty has been falling in much of the developing world, the same is not always true of relative poverty, which in many cases is at best stagnating. In addition, many of the countries that have made the biggest contributions to reducing poverty also have very high levels of inequality. In Brazil and much of South America, these often exceed 50 Gini points while in South Africa inequality touches 70 Gini points. It’s high, too, in India (around 34 Gini points) Indonesia (around 40 points) and China (around 45 points).

Data:
Poverty rates in developing countries have fallen sharply since the early 1980s, although much of the decline reflects China’s economic resurgence.

Poverty rates for the developing world, 1981-2008

% below poverty line

2. WHAT'S HAPPENING TO INCOME INEQUALITY?

mid-2000s, there were again striking variations between countries. To be sure, it rose in most, notably the United States, New Zealand and – perhaps surprisingly – Finland and Sweden. But in some others, such as France, it barely budged.

What accounts for these variations? A number of factors play a role, but two are of particular importance. The first is the wage gap (or “wage dispersion”) – that's the gap between the wages of high and low-income workers. In some countries, this gap is much wider than in others. The second is the role of the state, which takes income in the form of taxes and hands it back in the form of transfers. Taxes and transfers reduce income inequality in all OECD countries (see Section 3.5), but far more in some than in others.

These factors can be seen at work by comparing the inequality record of different countries. At the low end, the Nordic countries (Denmark, Iceland, Norway, and Sweden) and Switzerland all have below-average inequality and below-average poverty. Unemployment is low and the wage range is relatively narrow – very high wages

Data: Income inequality has increased in most OECD countries since the mid-1980s.

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Real Household Income at Selected Percentiles: 1967 to 2012

Note: Income rounded to nearest $100.


Income in thousands (2012 dollars)

- 10th Percentile: $9,800
- 50th Percentile (median): $42,900
- 90th Percentile: $90,400
- 95th Percentile: $114,200
- 100th Percentile:
- Recession

U.S. Census Bureau 2013

Growth in Real Mean Family Income by Income Quintile, 1947-1973 and 1973-2013

Source: U.S. Census Bureau, Historical Income Table F3 and Goldin and Katz (2007, Figure 1) for 1947-73

U.S. Census Bureau 2013
Average Annual Income % Change in Family Size-Adjusted Mean Income by Quintile

Note: Change in data collection methodology in 1993.

The income it takes to be middle income varies by household size, with smaller households requiring less to support the same lifestyle as larger households. For a three-person household, the middle-income range was about $42,000 to $126,000 annually in 2014. However, a one-person household needed only about $24,000 to $73,000 to be middle income.

For a five-person household to be considered middle income, its 2014 income had to range from $54,000 to $162,000.

In addition, the lower-income group is divided into lowest-income households (with income less than half of the overall median) and lower-middle income households (with incomes from half to less than two-thirds of the overall median). In 2014, a lowest-income household with three people lived on about $31,000 or less, and a lower-middle income household lived on about $31,000 to $42,000.

Likewise, upper-income households are divided into upper-middle income households (with more than twice the overall median income and up to three times the median) and highest-income households (with more than three times the overall median income). In 2014, an upper-middle income household with three people lived on about $126,000 to $188,000, and a highest-income household lived on more than $188,000.

The hollowing of the American middle class has proceeded steadily for more than four decades. Since 1971, each decade has ended with a smaller share of adults living in middle-income households than at the beginning of the decade, and no single decade stands out as having triggered or hastened the decline in the middle.

All dollar figures in the report are expressed in 2014 prices. Unless otherwise noted, incomes are adjusted for household size and converted to reflect a household size of three.

Share of adults living in middle-income households is falling

% of adults in each income tier

<table>
<thead>
<tr>
<th>Year</th>
<th>Lowest</th>
<th>Lower middle</th>
<th>Middle</th>
<th>Upper middle</th>
<th>Highest</th>
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<td>2015</td>
<td>20</td>
<td>9</td>
<td>50</td>
<td>12</td>
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<td>2011</td>
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<td>1991</td>
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<td>17</td>
<td>9</td>
<td>59</td>
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</tr>
<tr>
<td>1971</td>
<td>16</td>
<td>9</td>
<td>61</td>
<td>10</td>
<td>4</td>
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</table>
Changes in income status vary across demographic groups. This section identifies upwardly and downwardly mobile groups (winners and losers) by comparing changes in their income status over two time periods. From 1971 to 2015, adults overall experienced more movement up the economic ladder than down the ladder. The upper-income share increased 7 percentage points, from 14% to 21%, and the lower-income share increased 4 percentage points, from 25% to 29%. Thus, the net gain in income status from 1971 to 2015 is 3 percentage points.

The gain in economic status was more modest in the shorter term. From 2001 to 2015, the share of adults in the upper-income tier increased 3 percentage points, from 18% to 21%, and the share in the lower-income tier increased 1 percentage point, from 28% to 29%.

Older people, married couples and black adults improved their income status more than other groups from 1971 to 2015.
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Changes in the 90/10 Ratio of Full-Time Male Earnings Across Twelve OECD Countries, 1980-2011

Numbers at the base of each bar correspond to the 90/10 earnings ratio in each country in 1980.

- France: 3.3
- Finland: 2.4
- Japan: 2.6
- Sweden: 2.0
- Korea: 4.1
- Germany: 2.4
- Denmark: 2.1
- Netherlands: 2.2
- Australia: 2.7
- New Zealand: 2.1
- United Kingdom: 2.7
- United States: 3.6

Autor 2014
U.S. Earnings Inequality in the Post-War Era, 1945 - 2005

Goldin and Katz 2008
U.S. Indexed Real Incomes at the 20th, 50th and 95th Percentiles, 1945 – 2005

Goldin and Katz 2008

Men's Average Weekly Wages, Selected Percentiles

Murphy and Topel 2016


Murphy and Topel 2016

Growth in Men's and Women's Log Weekly Wages by Percentiles of the Wage Distribution, 1970-72 through 2010-12

Change in Log Wage

Percentile of Wage Distribution

Women

Men

Murphy and Topel 2016
Average Hours Worked by Wage Percentile, 1970/2 and 2010/12: Men

Murphy and Topel 2016
Average Hours Worked by Wage Percentile, 1970/2 and 2010/12: Women

Murphy and Topel 2016
Evolution of Inequality in the UK, 1977 - 2006

Figure 8  Changes in earnings deciles in the United Kingdom 1977–2006
Rise in West German Male Wage Inequality, 1985 - 2009

Figure 1a: Trends in Percentiles of Real Log Daily Wage
West German Men Relative to 1996 Base

Note: figure shows percentiles of log real daily wage for full time male workers on their main job, deviated from value of same percentile in 1996 and multiplied by 100.

Card, Heining, Kline 2013
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Countries with High Cross-Sectional Inequality Have Low Relative Earnings Mobility

Fig. 5. Earnings inequality and economic mobility: Cross-national relationships. Reproduced from Corak ([44], figs. 1 and 4) with permission of the American Economic Association. In both panels, the mobility measure is equal to the intergenerational earnings “elasticity,” meaning the average proportional increase in a son’s adult earnings predicted by his father’s adult earnings measured approximately three decades earlier. A higher intergenerational earnings elasticity therefore implies lower intergenerational
Inequality and mobility (intergenerational earnings elasticity) across OECD countries


Corak 2013
Comparing U.S. Parents’ and Children’s Income Distributions by Birth Cohort

B. Family Income Distributions: 1940 Birth Cohort

C. Family Income Distributions: 1980 Birth Cohort

Chetty et al. 2017
B. Mean Rate of Absolute Mobility by Cohort

Chetty et al. 2017
Absolute Mobility: Children Earning More than Their Parents

Figure 1. Baseline Estimates of Absolute Mobility by Birth Cohort

A. Selected Cohorts by Parent Income Percentile

- 1940
- 1950
- 1960
- 1970
- 1980

Notes:
- This figure plots the fraction of children earning more than their parents ("absolute mobility") by parent income percentile for selected child birth cohorts (Panel A) and on average by child birth cohort (Panel B).
- Panel A includes only parents with positive income; within this group, parents' income percentiles are constructed based on their ranks in the distribution of parents' incomes within each child cohort.
- Panel B includes parents with 0 income, defining absolute mobility as 100% for that subgroup when computing the mean rate of absolute mobility by cohort.

Chetty et al. 2017
Counterfactuals for Absolute Mobility: Contributions of Slowing GDP growth vs. Rising Inequality

A. Counterfactual Rates of Absolute Mobility by Parent Income Percentile

Chetty et al. 2017
The Trend in Absolute Mobility is Extremely Highly Correlated with Trend in Intergenerational Income Growth

Mobility and child-parent income gap, linked over time
(Top) From online table 1, column CY, of Chetty et al. (see www.equality-of-opportunity.org/data/); (bottom) from table S1 in Chetty et al. (I). Based on authors’ calculations (see SM).

Katz and Krueger 2017
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Wage Returns to Measured Skills Are Substantial but Variable Across Countries

Cross-national differences in wage returns to skills, 2011–2013
Percentage increase for a one standard deviation increase in skill

Hanushek et al. 2013
Measured Skills Highly Correlated with Education: Gaps in Literacy Proficiency by Education Group in OECD Countries

**Differences in literacy proficiency, by educational attainment**

<table>
<thead>
<tr>
<th>A. Mean literacy proficiency scores</th>
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<td><strong>Mean score</strong></td>
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<td>Lower than upper secondary</td>
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<td>Upper secondary</td>
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<tr>
<td>Tertiary</td>
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<tr>
<th>B. Mean literacy score differences between low- and high-educated adults</th>
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<tbody>
<tr>
<td>Tertiary minus lower than upper secondary</td>
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</table>

<table>
<thead>
<tr>
<th>Country</th>
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<th>Upper secondary</th>
<th>Tertiary</th>
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<td>Sweden</td>
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<td>Flanders (Belgium)</td>
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<tr>
<td>United States</td>
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</tbody>
</table>

**Notes:**
All differences in Panel B are statistically significant. Unadjusted differences are the differences between the two means for each contrast category. Adjusted differences are based on a regression model and take account of differences associated with other factors: age, gender, immigration and language background, socio-economic background, and type of occupation. Only the score-point differences between two contrast categories are shown in Panel B, which is useful for showing the relative significance of educational attainment vis-a-vis observed score-point differences. For more detailed regression results, including for each category of each variable included in the model, see Table B3.17 in Annex B. Lower than upper secondary includes ISCED 1, 2 and 3C short. Upper secondary education includes ISCED 3A, 3B, 3C long and 4. Tertiary includes ISCED 5A, 5B and 6. Where possible, foreign qualifications are included as per their closest correspondence to the respective national education systems. Countries are ranked in ascending order of the unadjusted differences in literacy scores (tertiary minus lower than upper secondary).

Source:

200 225 250 275 300 325 300 325 350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975 1000

Score

M 0 20 40 60 80

Score-point difference

OECD Skills Outlook 2013
Emp Rates Uniformly High among Top Tercile PIAAC Scorers in 2012

Broecke, Quintini and Vandeweyer (2015)
Emp Rates Uniformly Low among Bottom Tercile PIAAC Scorers in 2012

Proportion Employed

Slovak Republic
Spain
Italy
Ireland
Poland
Finland
Flanders (B)
Denmark
France
Sweden
PIAAC average
England/N. Ireland (UK)
Netherlands
Estonia
Australia
Germany
U.S.
Austria
Norway
Japan
Canada
Korea

Broecke, Quintini and Vandeweyer (2015)
Major Employment Transitions: Agriculture to Industry to Services

- Agriculture: 68% in 1840, 40% in 1900, 11% in 1950, 2% in 2010
- Industry: 22% in 1840, 27% in 1900, 37% in 1950, 20% in 2010
- Services: 33% in 1840, 33% in 1900, 52% in 1950, 78% in 2010

Johnston 2012
Figure 1.4. Years of Schooling by Birth Cohorts, U.S. Native-Born: 1876 to 1975.

Goldin and Katz, 2008
Figure 1.5. Years of Schooling by Birth Cohorts, U.S. Native-Born, by Sex: 1876 to 1975. This figure plots the mean years of completed schooling for U.S. native-born residents by birth cohort and sex, adjusted to age 35 using the approach described in the notes to Figure 1.4. Sources: 1940 to 2000 IPUMS.
Figure 7. High School Completion Rates by Birth Cohort: 1930–1975

Source: Census IPUMS 1 percent samples for years 1960, 1970, 1980, 1990, and 2000. Sample includes adults ages 25 through 64 born after 1930 with nonmissing education. Plotted values correspond to predicted high school completion rates at age 35 by birth cohort. Predictions are obtained from an OLS regression of a high school completion dummy on sex by birth-year dummies and a quartic in age. Individuals are coded as high school graduates if they have completed twelve years of school (1960, 1970 and 1980 Census) or if they report a high school diploma or GED (1990 and 2000 Census).
Figure 8. College Completion Rates by Birth Cohort: 1930–1975
Distribution of Educational Attainment of the U.S. Workforce, 1915 – 2005: So Low in 1915!

1.8. Distribution of Educational Attainment of the Workforce: 1915 to 2005

Sources: See Table 1.2.

Goldin and Katz 2008
College Share of U.S. Hours Worked, 1963 - 2012

Autor 2014
College Share of Hours Worked in the U.S. 1963 - 2012: Males and Females with <10 Years of Potential Experience

Autor 2014
Tertiary Education Completion in OECD Countries as of 2012 by Age Groups, 25 – 34 and 55 – 65

Population with tertiary education
Percentage, by age group

<table>
<thead>
<tr>
<th>Country</th>
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<th>55-65 year-olds</th>
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<td>England/N. Ireland (UK)</td>
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<td>Austria</td>
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</table>

1. See notes at the end of this chapter.

Countries are ranked in descending order of the percentage of 25-34 year-olds with tertiary education.
Source: Survey of Adult Skills (PIAAC) (2012), Table B2.2 in Annex B.
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Earnings Differentials between “College” and “High School” Young Adults 30 - 44 in OECD Countries, 2005

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<th>Country</th>
<th>Differential</th>
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<td>Australia</td>
<td>34%</td>
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<td>Belgium</td>
<td>34%</td>
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<td>Finland</td>
<td>38%</td>
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<td>Italy</td>
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<td>47%</td>
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<td>Austria</td>
<td>48%</td>
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<tr>
<td>France</td>
<td>48%</td>
</tr>
<tr>
<td>Korea</td>
<td>48%</td>
</tr>
<tr>
<td>Germany</td>
<td>50%</td>
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<tr>
<td>Ireland</td>
<td>59%</td>
</tr>
<tr>
<td>UK</td>
<td>61%</td>
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</table>
Indexed Real Full-Time Wages in U.S. by Sex and Education, 1963-2012: Rising Return Reflects (in part) Falling HS Level

College versus High-School Wage Gap (Percent)

Changes in real wage levels of full-time U.S. workers by sex and education, 1963–2012

A. Real weekly earnings relative to 1963 (men)

B. Real weekly earnings relative to 1963 (women)

Autor, 2014
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Katz & Margo, 2014 (in Autor 2015)
Occupational Polarization, 1979 – 2012

Percent Growth in Employment by Occupational Category
Occupational Polarization in the U.S., 1982 – 2012: An Aggregate View

Figure 3: Percent Change in Employment Shares by Occupation Group


In this delineation, non-routine cognitive occupations include managerial, professional and technical workers, such as physicians, public relations managers, financial analysts, computer programmers, and economists. Routine cognitive occupations are those in sales, and office and administrative support; examples include secretaries, bank tellers, retail salespeople, travel agents, mail clerks, and data entry keyers. Routine manual occupations are "blue collar" jobs, such as machine operators and tenders, mechanics, dressmakers, fabricators and assemblers, and meat processing workers. Non-routine manual occupations are service jobs, including janitors, gardeners, manicurists, bartenders, home care aides, and personal care workers.

These classifications correspond to rankings in the occupational wage distribution. Non-
Employment Polarization in the European Union, 1993 - 2010

Goos, Manning and Salomons, 2014
Here, an occupation’s skill rank is proxied by the average wage of its workers in 1980. The y-axis of the figure corresponds to the change in employment at each occupational percentile as a share of total U.S. employment during the decade. Since the sum of shares must equal one in each decade, the change in these shares across decades must total zero. These series are smoothed using a locally weighted regression to reduce jumpiness when measuring employment shifts at such a narrow level of aggregation. Due to smoothing, the sum of share changes may not integrate precisely to zero.

The figure reveals a striking reversal of occupational employment changes between the early and later years of the sample, paralleling the polarization of earnings. Between 1979 and 1989, occupational employment growth was nearly monotone in occupational skill; occupations below the median declined as a share of employment and occupations above the median increased. Between 1990 and 2007, relative employment growth was smoothing, the sum of share changes may not integrate precisely to zero.

Figure 5. Smoothed Changes in Employment by Occupational Skill Percentile, 1979–2007

Source: Census IPUMS 5 percent samples for years 1980, 1990, and 2000, and Census American Community Survey for 2008. All occupation and earnings measures in these samples refer to prior year’s employment. The figure plots log changes in employment shares by 1980 occupational skill percentile rank using a locally weighted smoothing regression (bandwidth 0.8 with 100 observations), where skill percentiles are measured as the employment-weighted percentile rank of an occupation’s mean log wage in the Census IPUMS 1980 5 percent extract. Mean education in each occupation is calculated using workers’ hours of annual labor supply times the Census sampling weights. Consistent occupation codes for Census years 1980, 1990, and 2000, and 2008 are from Autor and Dorn (2011).
Occupational Polarization, 1979 – 2007, Detailed View

Figure 10

Smoothed Changes in Employment by Occupational Skill Percentile 1979-2007

100 x Change in Employment Share

Skill Percentile (Ranked by Occupational Mean Wage)


Acemoglu and Autor 2011

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<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
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</tbody>
</table>

Notes:
The Survey of Adult Skills (PIAAC) is used to identify occupations associated with high and low literacy and numeracy scores, and then time series data available from the Labour Force Survey (LFS) Database are used to track changes in those occupations over time. See Chapter 2 of this volume and The Survey of Adult Skills: Reader’s Companion (OECD, 2013) for an extended discussion describing the literacy and numeracy scales. Only the 24 OECD countries available in the 1998 LFS Database are included in the analysis. Highest average scores are in or near the upper half of Level 3 for literacy and numeracy; next to highest average scores are in or near the lower half of Level 3 for literacy and numeracy; next to lowest average scores are in or near the upper half of Level 2 for literacy and numeracy; lowest average scores are in or near the lower half of Level 2 for literacy and numeracy.

Source:
Eurostat, LFS Database; Survey of Adults Skills (PIAAC) (2012). See Table A1.6 in Annex A.
Growth of High-Math/High-Social Occupations 1980 - 2012

Relative Changes in Employment Share by Occupation Task Intensity
1980 to 2012

Occupational Task Intensity based on 1998 O*NET

Deming 2016
Declining Fortunes of Young College Workers Since 2000?

Panel A. Cognitive employment profiles

Panel B. Wage profiles

Figure 1. Cognitive Employment and Wage Profiles for Exactly College Workers

Beaudry, Green and Sand 2014
Declining Fortunes of Young Post-College Workers Since 2000?

Figure 3. Cognitive Employment and Wage Profiles for Post-College Workers

Beaudry, Green and Sand 2014
Agenda

1. **Incomes: Levels, Growth, Inequality**
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   - Occupational change & employment polarization

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3. WHY IS INCOME INEQUALITY RISING?

has been particularly striking in the United States: In 1980, the top 1% of income recipients in the U.S. earned 8% of all pre-tax income; by 2012, their share had risen to over 19%. Other OECD countries also saw big rises, including the United Kingdom and Australia.

The rising income share of the 1% has become a hot issue, but some observers believe this focus actually misses much of the story of rising income inequality. As well as looking at the top 1% of earners, they argue, we should also look at an even smaller segment – the top 0.1% of earners (1 in 1,000), and the top 0.01% of earners (1 in 10,000). As the Nobel laureate Paul Krugman has noted, data from the U.S. Congressional Budget Office shows that between 1979 and 2005, the after-tax income of Americans in the middle of the income distribution rose by 21%; among the 0.1% it was up 400%.

Data: Top earners have increased their share of total earnings in most OECD countries since the 1980s.

Share of top 1% incomes in total pre-tax income, 1981-2012 (or latest year available)

OECD Income Taxes Becoming Less Progressive

Data: Tax rates on top incomes fell substantially between the 1980s and the financial crisis.

Maximum, minimum and average statutory tax rates on top incomes in OECD countries, 1981-2013 (or latest)


Piketty and Saez, 2003 (updated to 2015)
Top Decile Wage Share, 1917 – 2015

Piketty and Saez, 2003 (updated to 2015)
Top Decile U.S. Income Shares, 1917 – 2015: P1, P1-P5, P5-P10

Share of total income accruing to each group

- Top 1% (incomes above $443,000 in 2015)
- Top 5-1% (incomes between $180,500 and $443,000)
- Top 10-5% (incomes between $124,800 and $180,500)

Piketty and Saez, 2003 (updated to 2015)
Top Decile U.S. Wage Income Shares, 1917 – 2015: P1, P1-P5, P5-P10

Piketty and Saez, 2003 (updated to 2015)
Average Real Wage Incomes: Top 1% and Bottom 99%

Piketty and Saez, 2003 (updated to 2015)
Top 0.1% Income Share, 1917 – 2015

Source: Piketty and Saez, 2003 updated to 2015. Series based on pre-tax cash market income including or excluding realized capital gains, and always excluding government transfers.
Top 0.1% Income Share, 1917 – 2015: Income Sources

US Top 0.1% Pre-Tax Income Share and Composition

Source: Piketty and Saez, 2003 updated to 2015. Series based on pre-tax cash market income including or excluding realized capital gains, and always excluding government transfers.
Moreover, it was before the 1950–51 commodity price boom that affected top shares in Australia, New Zealand, and Singapore. If we start with the top 1 percent—the group on which attention is commonly focused and which is depicted on figures 8–11—then we can see from table 6 that the shares of total gross income are strikingly similar when we take account of the possible margins of error. There are eighteen countries for which we have estimates. If we take 10 percent as the central value (the median is in fact around 10.8), then twelve of the eighteen lie within the range 8 to 12 percent (i.e., with an error margin of ±20 percent). In countries as diverse as India, Norway, France, New Zealand, and the United States, the top 1 percent had on average between eight to twelve times average income. Three countries were only just below 8 percent: Japan, Finland, and Sweden. The countries above the range were Ireland, Argentina, and (colonial) Indonesia. The top 1 percent is of course just one point on the distribution. If we look at the top 0.1 percent, shown in table 6 for eighteen countries (Portugal replacing Finland), then we find that again twelve lie within a (±20 percent) range around 3.25 percent from 2.6 to 3.9 percent. Leaving out the three outliers at each end, the top 0.1 percent had between twenty-six and thirty-nine times the average income. We also report in table 6 the inverse Pareto–Lorenz coefficients $\beta$ associated to the upper tail of the observed distribution in the various countries in 1949 and 2005.
Recall from equation (2) that $\beta$ measures the average income of people above $y$, relative to $y$ and provides a direct intuitive measure of the fatness of the upper tail of the distribution. Coming back to 1949, we find that ten of the twenty countries for which $\beta$ coefficient values are shown in table 6 lie between 1.88 and 2.00 in 1949. Countries as different as Spain, Norway, the United States, and (colonial) Singapore had Pareto coefficients that differed only in the second decimal place. As of 1949, the only countries with $\beta$ coefficients above 2.5 were Argentina and India.

1949 is of interest not just for being mid-century but also because later years did not exhibit the degree of similarity described above. The right-hand part of table 6 assembles estimates for 2005 (or a close year). The central value for the share of the top 1 percent is not too different from that in 1949: 9 percent. But we now find more dispersion. For the top 1 percent, nine out of twenty-one countries lie outside the range of ±20 percent. Leaving out the two outliers at each end, the top 0.1 percent had between thirteen and fifty-six times the average income (in 1949 these figures had been twenty and fifty-two). In terms of the $\beta$ coefficients, only four of the twenty-two countries had values between 1.88 and 2.00. Of the countries present in 1949, five now have values of $\beta$ in excess of 2.5.

Before 1949

Before examining the recent period in detail, we look at the first half of the century (and back into the nineteenth century).

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

Atkinson, Piketty, and Saez: Top Incomes in the Long Run of History

What happened before 1949 is relevant for several reasons. The behavior of the income distribution in today's rich countries may provide a guide as to what can be expected in today's fast-growing economies. We can learn from nineteenth-century data, such as those for Norway or Japan, that cover the period of industrialization. Events in today's world economy may resemble those in the past. If we are concerned as to the distributional impact of recession, then there may be lessons to be learned from the 1930s.

The data assembled here provide evidence about the interwar period for nineteen of the twenty-two countries; and for five of the countries we have more than one observation before the First World War. In table 7, we have assembled the changes in the shares of the top 1 percent and top 0.1 percent for certain key periods, such as the world wars and the crash of 1929–32, as well as for the whole period up to 1949. The first striking conclusion is that the top shares in 1949 were much lower than thirty years earlier (1919) in the great majority of countries. Of the eighteen countries for which we can make the comparison with 1919 (or in some cases with the early 1920s), no fewer than thirteen showed a strong decline in top income shares. In only one case (Indonesia) was there an increase in the top shares. In half of the countries, the fall caused the shares to be at least halved between 1919 and 1949. For countries where one can compare 1949 with 1913–14, the fall generally seems at least as large.

Figure 10. Top 1 Percent Share: Nordic and Southern Europe (U/L-shaped), 1900–2006

Top 1% Income Share: Developing Countries

Figure 11. Top 1 Percent Share: Developing Countries, 1920–2005

Atkinson, Piketty, Saez 2011
Adding Capital Gains: US, Canada, Spain, Sweden and Finland

Figure 7. Effect of Capital Gains on Share of Top Percentile, 1949–2006

Occupations and National Income Shares of Top 1 Percent of Households, 1979 – 2005

Share of National Income Including Capital Gains Accruing to Top 1% of HH's 1979 - 2005

- All other
- Computer, Math, Engineer, Technical
- Lawyers
- Medical
- Finance
- Executives/Managers
- Non-Finance

Bakija, Cole and Heim 2012
Occupations of the Top 1 Percent of U.S. Households, 1979 – 2005

Occupations of Those in Top 1% Including Capital Gains, 1979 - 2005

- All Other
- Computer, Math, Engineer, Technical
- Lawyers
- Medical
- Finance
- Executives/Managers
- Non-Finance

Bakija, Cole and Heim 2012
What this simple calculation suggests is that the growth of skill differentials among the typical college-educated male workers relative to the typical high school educated workers is four times as large as the redistribution by the top 1% between 1979 and 2012. 

Moreover, the earnings gap between a college-educated worker and a high school educated worker rose by $27,951 between 1979 and 2012 (from $17,411 to $34,969) in 2012 dollars. Autor (2014) calculated that higher returns to postsecondary education can explain just over 95% of the increase in the earnings ratio of college graduates to high school graduates. 

Although data limitations make it difficult to determine the answer to what extent rising returns to education contribute to the increase of earnings inequality, we know from Firpo et al. (2011) that it is skills that are rewarded per se, rather than the education per se. 

The earnings gap between college-educated and high school educated males working full-time full-year rose by $27,951 between 1979 and 2012, from $12,887 to $23,280. Figure 1 underscores this pattern by plotting the changes in the male earnings ratio from 1979 to 2012, the share of all household incomes received by the top 1% of American households over the past three decades. 

There is no denying the extraordinary rise in the dispersion of U.S. wages between 1979 and 2012, the share of all household incomes received by the top 1% of American households rose nearly doubling from $12,887 to $23,280 between 1979 and 2012. As Fig. 1 underscores, the rise of the U.S. male 90/10 earnings ratio between 1979 and 2012, the change in the earnings ratio differed greatly across countries. 

The earnings ratio of college graduates to high school graduates cannot be inferred from trends in top incomes: 1979 to 2012 to the bottom 99% of households (buting the gains of the top 1% between 1979 and 2012). 

The growth of skill differentials among the typical college-educated male workers relative to the typical high school educated workers is four times as large as the redistribution by the top 1% between 1979 and 2012.
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Small Economies Trade More as Share of GDP
Merchandise Trade to GDP 1960 – 2009: Rising

Source: World Bank, 2011
Rise of Middle-Income Countries in World Trade

Exports and Imports Relative to GDP by Regional Trading Partner

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<th>Region</th>
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<td>China, India</td>
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<td>Mid-income countries</td>
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<td>World</td>
<td>17.4%</td>
<td>26.0%</td>
</tr>
</tbody>
</table>

Hanson 2012
China’s Historic Rise as a World Manufacturing Power

Shares of world manufacturing exports

- China
- Other emerging economies
- USA
- Germany


Percent: 0, 5, 10, 15, 20

Autor, Dorn, Hanson 2016
The Share of U.S. Employment in Manufacturing, 1939 – 2014

U.S. Manufacturing Employment, 1939 - 2016 (1,000s)

- 1943, 16.6 mil
- 1979, 19.7 mil
- 1999, 17.3 mil
- 2007, 13.8 mil
- 2010, 11.9 mil
- 2016, 12.4 mil
Unequal Gains: Parts of America Most Affected by China’s Rising Manufacturing Prowess, 1990 – 2007

Most-affected areas of the U.S.

Colors show which areas were most affected by China’s rise, based on the increase in Chinese imports per worker in each area from 1990 to 2007. Hovering over each area on the map will show a demographic breakdown of that area, below, and its most-affected industries, at right.

Most-affected industries

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<th>Most-affected industries, based on number of areas*</th>
<th>Impact per worker†</th>
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<tbody>
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<td>Furniture and fixtures 196 areas</td>
<td>$44k</td>
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<td>Games, toys, and children’s vehicles 114 areas</td>
<td>$488k</td>
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<tr>
<td>Sporting and athletic goods 106 areas</td>
<td>$82k</td>
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<tr>
<td>Electronic components 87 areas</td>
<td>$65k</td>
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<tr>
<td>Plastics products 84 areas</td>
<td>$11k</td>
</tr>
<tr>
<td>Motor-vehicle parts and accessories 79 areas</td>
<td>$12k</td>
</tr>
<tr>
<td>Electronic computers 68 areas</td>
<td>$207k</td>
</tr>
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</table>

Autor, Dorn, Hanson & Wall Street Journal, 2016
Regional Tariff Changes in Brazil 1990 - 1995

\[ RTC_r = \sum_i \beta_{ri} d \ln(1 + \tau_i), \]

\[ \beta_{ri} = \frac{\lambda_{ri} \frac{1}{\varphi_i}}{\sum_j \lambda_{rj} \frac{1}{\varphi_j}} \]

\( \tau_i \) is industry \( i \)'s tariff

\( \lambda_{ri} \) is \( i \)'s share of traded-sector employment in \( r \)

\( \varphi_i \) is one minus labor's share of VA in \( i \)

Dix-Carneiro and Kovak 2014
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The Geography of Upward Mobility in America

Chetty and Hendren, 2014

Children's Chances of Reaching Top 20% of Income Distribution Given Parents in Bottom 20%

Chetty and Hendren, 2014
Notes: These figures illustrate the geographic variation in child income rank outcomes at age 26 from the 1985 cohort amongst our sample of permanent residents across commuting zones (CZs) and counties in the U.S. Panel A reports the expected rank for children whose parental income is at the 25th percentile of the income distribution of parents, and Panel B reports the expected rank for children whose parental income is at the 75th percentile. Both figures use the baseline family income definitions for parents and children. The figure restricts to the subset of parents who stay in the commuting zone throughout our sample period (1996-2012) (but does not restrict based on the geographic location of the child at age 26). To construct this figure, we regress child income rank on a constant and parent income rank in each CZ, exploiting the linearity property shown in Figure I. Panel A then reports the predicted child rank outcome for parents at the 25th percentile of the family income distribution (˜ $30K per year). Panel B reports the predicted child rank outcome for parents at the 75th percentile of the family income distribution (˜ $97K per year).
‘Causal Effects’ of Place on Children of 25th Pctile HH’s

B. At the County Level; within CZs

Chetty and Hendren 2018
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Notes: The figure shows all MW increases between 1979 and 2016. There are a total of 516 minimum wage increases. The blue circles show the primary minimum wage events used in estimating equation 4; the partially transparent orange triangles highlight small minimum wage changes where minimum wage increased less than $0.25 (the size of our wage bins) or where less than 2 percent of the workforce earned between the new and the old minimum wage. The green circles indicate federal changes, which we exclude from our primary sample of treatments because the change in missing number of jobs, Δb, is only identified from time-series variation for these events as there are no “control states” with wage floors lower than the new minimum wage (see the text for details).
Minimum Wage Has Gone from Highly Binding to Irrelevant to Binding

The paper proceeds as follows. Section I discusses data and sources of identification. Section II presents the measurement framework and estimates a set of causal effects estimates models that, like Lee (1999), explicitly account for the bite of the minimum wage in estimating its effect on the wage distribution. We compare parameterized OLS and 2SLS models and document the pitfalls that arise in the OLS estimation. Section III uses point estimates from the main regression models to calculate counterfactual changes in wage inequality, holding the real minimum wage constant. Section IV analyzes the extent to which apparent spillovers may be due to measurement error. The final section concludes.

I. Changes in the Federal Minimum Wage and Variation in State Minimum Wages

In July of 2007, the real value of the US federal minimum wage fell to its lowest point in over three decades, reflecting a nearly continuous decline from a 1979 high point, including two decade-long spans in which the minimum wage remained fixed—1981 through 1990, and 1997 through 2007. Perhaps responding to federal inaction, numerous states have over the past two decades legislated state minimum wages that exceed the federal level. At the end of the 1980s, 12 states' minimum wages exceeded the federal level; by 2008, this number had reached 31 (subsequently reduced to 15 by the 2009 federal minimum wage increase).

Table 1 assigns each state the minimum wage that was in effect for the largest number of months in a calendar year. Because the 2009 federal minimum wage increase took effect in late July, it is not coded as exceeding most state minimums until 2010.

Figure 2. Share of Hours at or Below the Minimum Wage

Notes: The figure plots estimates of the share of hours worked for reported wages equal to or less than the applicable state or federal minimum wage, corresponding with data from columns 4 and 8 of Tables 1A and 1B.

Autor, Manning & Smith 2017
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7. Gender Differences in Education and Labor Markets
Percentage of 25-34 Year-Olds Who Have Attained Tertiary Education, by Gender (2014)

OECD Education and at a Glance 2014

Countries are ranked in descending order of the percentage of women who attained tertiary education.
Years of Completed Schooling by Birth Cohort and Sex, 1876 - 1975

Figure 1.5. Years of Schooling by Birth Cohorts, U.S. Native-Born, by Sex: 1876 to 1975. This figure plots the mean years of completed schooling for U.S. native-born residents by birth cohort and sex, adjusted to age 35 using the approach described in the notes to Figure 1.4. Sources: 1940 to 2000 IPUMS.
U.S. Women are Better Students than U.S. Men

Figure 6: Grade Point Averages of Graduating High School Seniors 1990-2009

Source: National Center for Education Statistics.

Murphy and Topel 2016

High School Grade Point Average

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<thead>
<tr>
<th>Year</th>
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<th>Females</th>
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<tr>
<td>1994</td>
<td>2.68</td>
<td>2.90</td>
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</tr>
<tr>
<td>2000</td>
<td>2.83</td>
<td>3.05</td>
</tr>
<tr>
<td>2005</td>
<td>2.86</td>
<td>3.09</td>
</tr>
<tr>
<td>2009</td>
<td>2.90</td>
<td>3.10</td>
</tr>
</tbody>
</table>
Educational Attainment of High School Cohorts, 1916-2003

Men and Women Aged 18 in the Indicated Year

Educational Attainment of High School Cohorts, 1916-2003

Women, Some College

Men, Some College

Men, ≥4 Years College

Women, ≥4 Years College

Note: Figure shows the fraction of individuals that turned 18 in the indicated years with either some college (at least 1 year of post-secondary schooling) or with at least 4 years of college.

Educational Attainment by High School Graduates: Cohorts Completing High School 1916 – 2003

Murphy and Topel 2016
U.S. Wen’s College Attainment: Not Much Happening

College Attainment (16 Years) by High School Cohort and Age
Men, High School Cohorts 1960-2000

Murphy and Topel 2016
U.S. Women’s College Attainment: Big Gains

College Attainment (16 Years) by High School Cohort and Age
Women, High School Cohorts 1960-2000

Murphy and Topel 2016
Failure to Launch: BA Attainment for Students Enrolling in a 4-Year College in 2003/04 by Family Income Quartile

National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study
14.662 requirements

Requirements

1. Weekly readings/comments
2. Four p-sets
3. Two research proposals
4. Final/general
5. Class participation