

Trade, Technology, and Inequality: Who Owns the Robots?

for the Tower Center /Dallas FRB Conference:
“Trade vs technology: what’s the blame for expanding inequality in the US?”

March 1, 2018

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6 Main messages

(try to remember at least 4)

- 1. Income and wealth inequality, ever rising**
- 2. Capital wins and labor loses**
- 3. Technology does most of the damage**
- 4. Trade also creates big winners and losers**
- 5. Tax and regulatory policy help the winners**
- 6. We can do better--the outcomes are not inevitable**

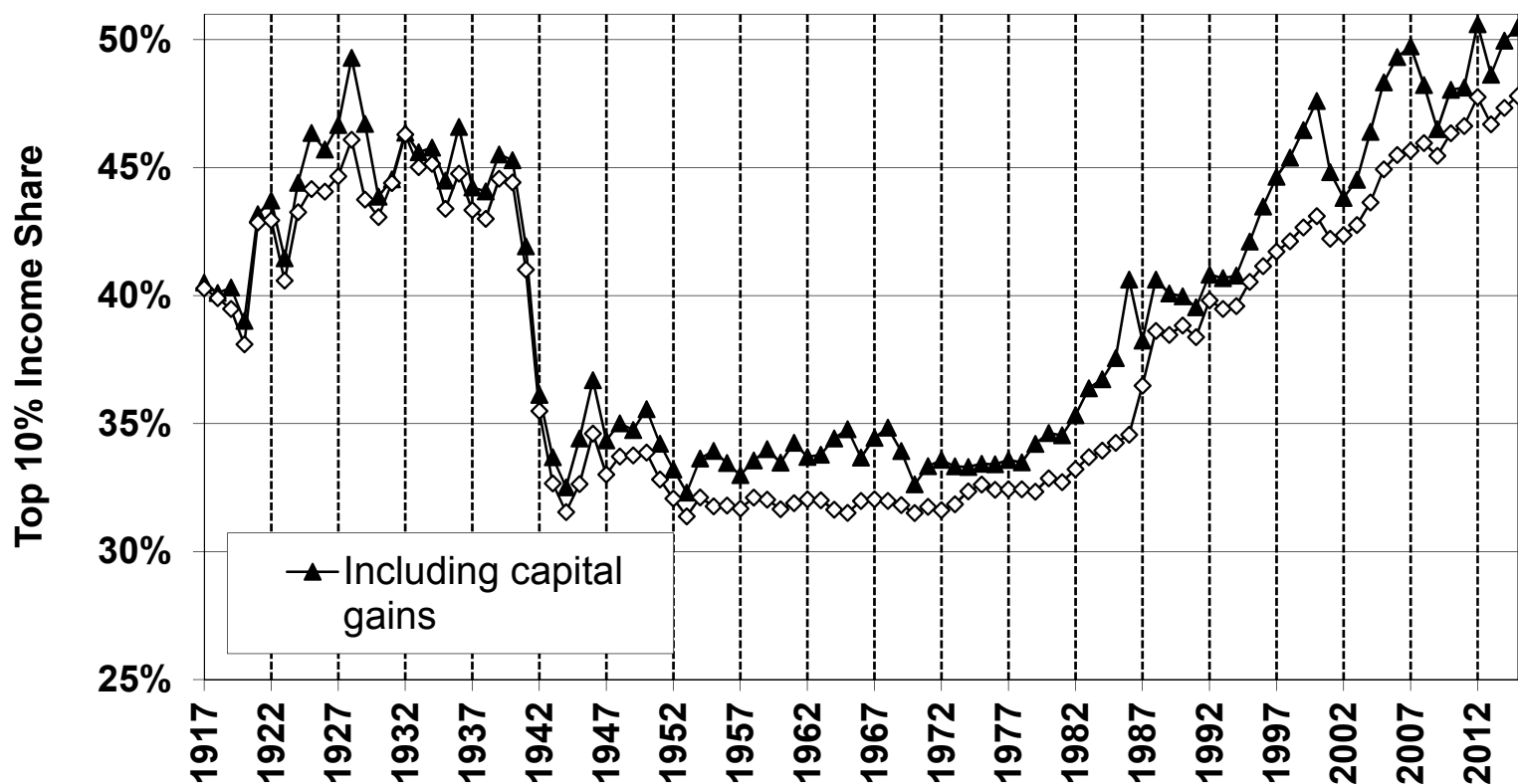
1. Income and wealth inequality, ever rising in America

- **Inequality rising in all dimensions: labor, capital ; wealth, income and consumption**
- **Financial and business wealth heavily skewed toward the top of the distribution**
- **Same with human capital and knowledge – income and wealth predict college attendance and graduation**
- **Not just in USA but also in other rich and major nations**

Top 10 percent **INCOME** share

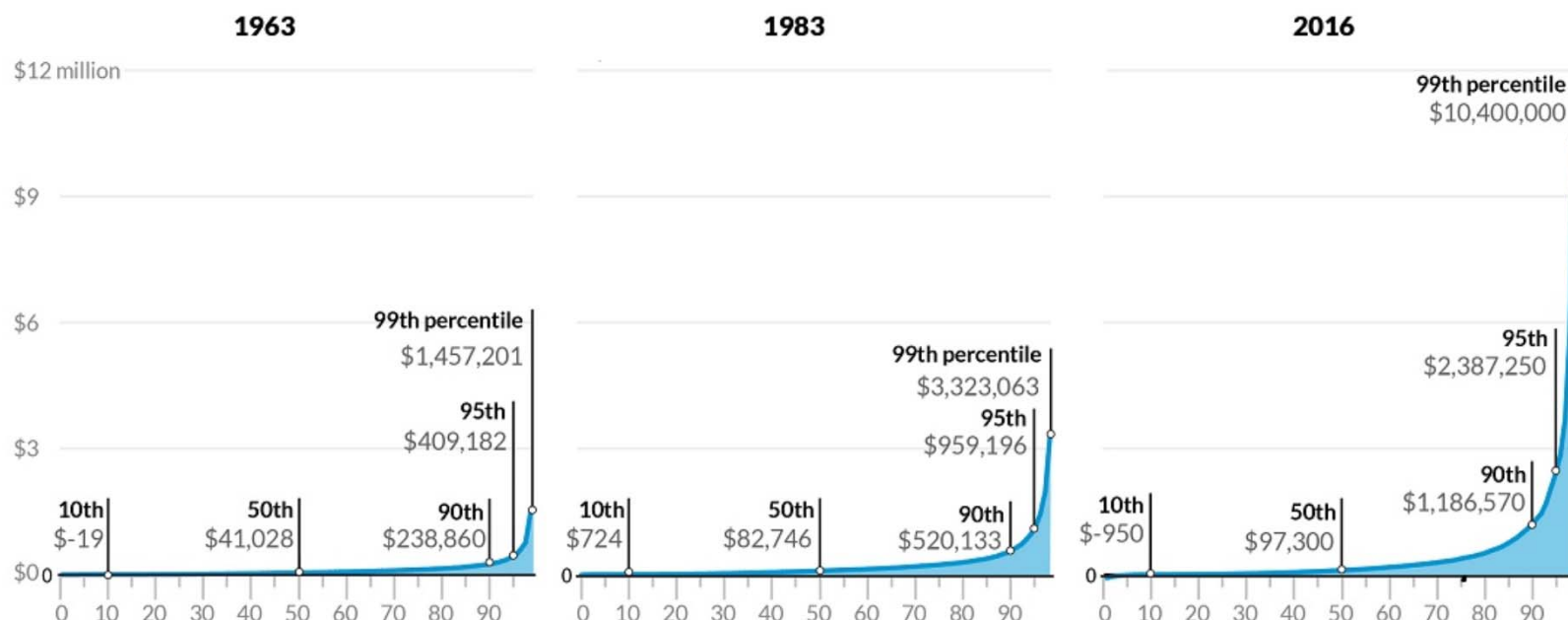
(source <http://elsa.berkeley.edu/~saez/TabFig2015prel.xls>)

Note 2015 exceeds 1927 for all time high



The distribution of family **WEALTH** is growing far more unequal

Distribution of Family Wealth, 1963–2016



Source: Urban Institute calculations from Survey of Financial Characteristics of Consumers 1962 (December 31), Survey of Changes in Family Finances 1963, and Survey of Consumer Finances 1983–2016.

Note: 2016 dollars.

URBAN INSTITUTE

Source : SCF at <http://apps.urban.org/features/wealth-inequality-charts/>

$Y = C \pm \text{change NW}$

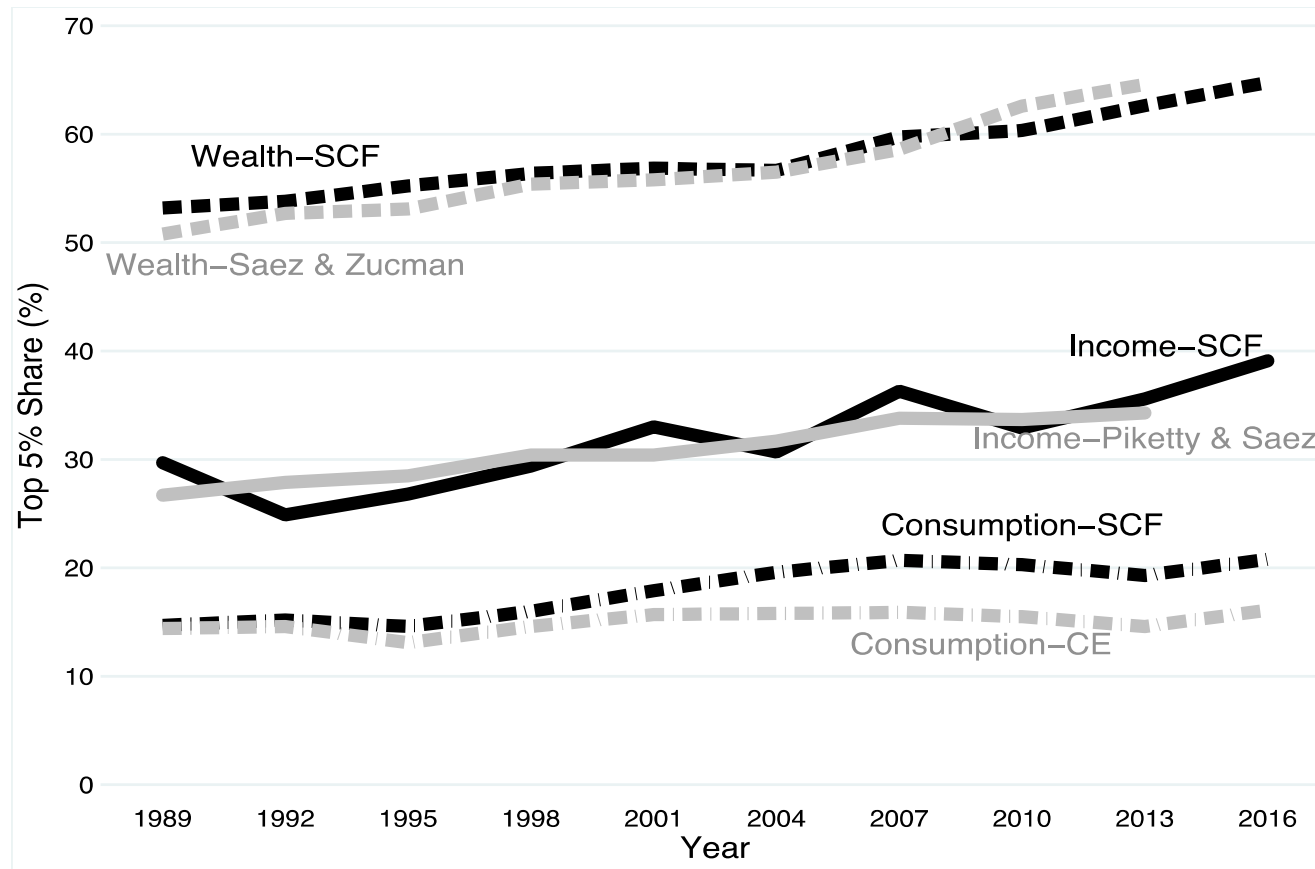
1989-2016

- Measures of one-dimensional inequality understate the level of inequality today and the growth in inequality since 1989
- Inequality in income (Y), consumption (C) and wealth (or net worth, NW) all rising separately
- Inequality in any two dimensions increased faster than in any one dimension
- Inequality in all three dimensions together rose by the most
- What fraction of all households that were in the top 5% of the income (Y) distribution were also in the top 5% of the consumption (C) distribution and the top 5% of the wealth (NW) distribution year by year ?

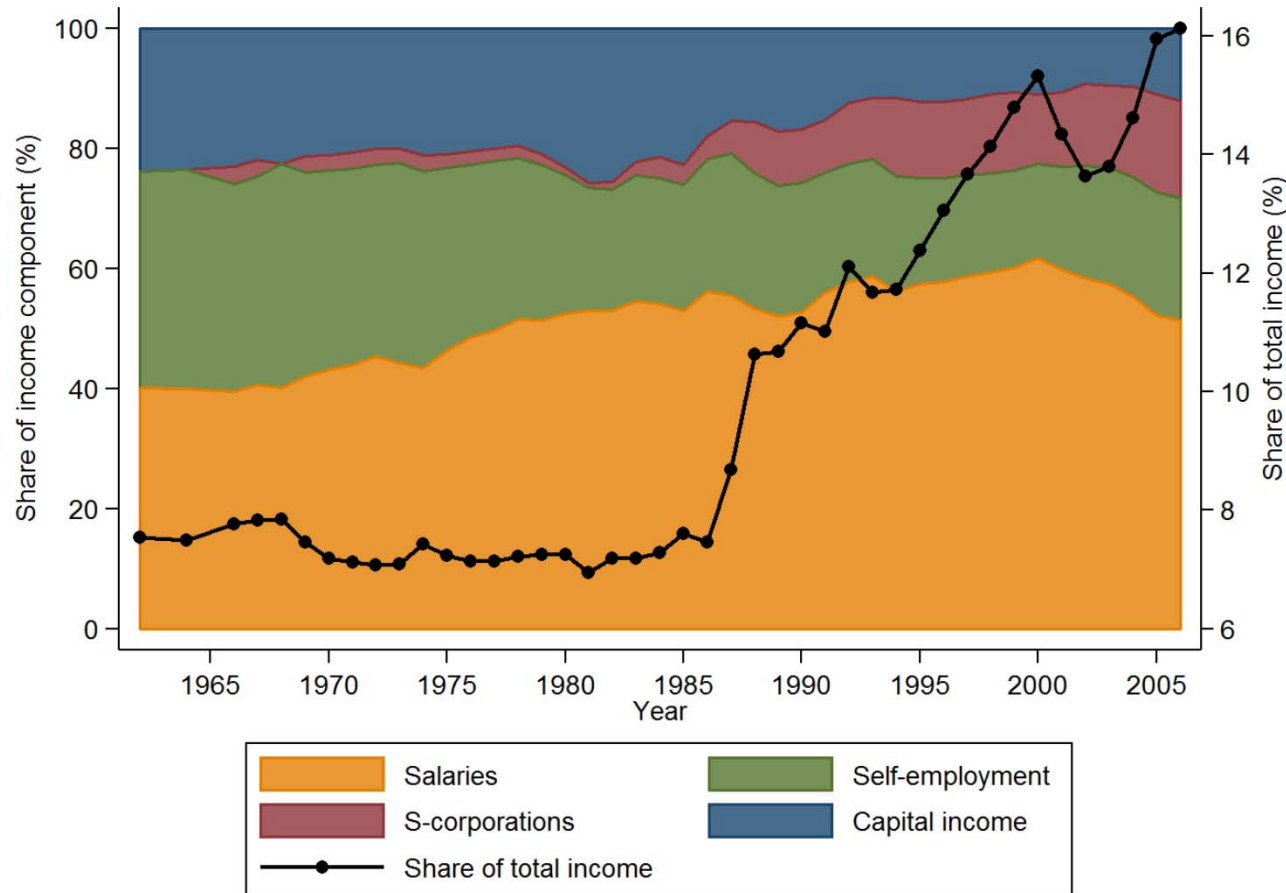
In 1989—32 % ; by 2007 it was 49%--

In 2016 , 44% (but still growing rapidly since)

1-D inequality: comparison of share held by top 5%



US top 1% income shares(L, orange, and lots of K) and composition*



Excluding capital gains and negative observations. Income categories are defined below in Section 1.

*Source: Anthony B. Atkinson and Christoph Lakner. 2017. "Capital and Labor The Factor Income Composition of Top Incomes in the United States, 1962–2006", World Bank Policy Research Working Paper 8268, December at <http://documents.worldbank.org/curated/en/260871513017553079/pdf/WPS8268.pdf>

And, all this high and rising wealth inequality is understated !

- SCF (best survey we have) shows wealth as of March 2016—since then, markets up 30+ %
- Who wins ? --The “change in net worth” folks, and this change does not show up in household income data until it is realized
- Most stocks and financial wealth including defined contribution pension plans are owned by the top decile (about 75 %)
- E.g, 1998 and 2017, two “very good years”

2. Capital wins and labor loses in the macro figures too

- Factor Shares--capital share of macro GDP rising in USA : 30% in 80's , now 45%, – why?
- **Capital, up:**
 - 'Regulatory' policy (rising concentration of industry, less competition, more profit) and tax policy help technology grow
 - 'Rent capture': sheltered markets, enforcement , market niches, tax laws , and political power
 - Corporations are net **LENDERS**: their savings fund 2/3 investment
- **Labor, down :** (not just 'less union power')
 - "Non-compete clauses"; immobility; workplace flexibility --all favor employers

Factors Contributing to the Decline in Employment-to-Population Ratio from 1999-2016*

E/POP NOT SAME as inequality—but still--

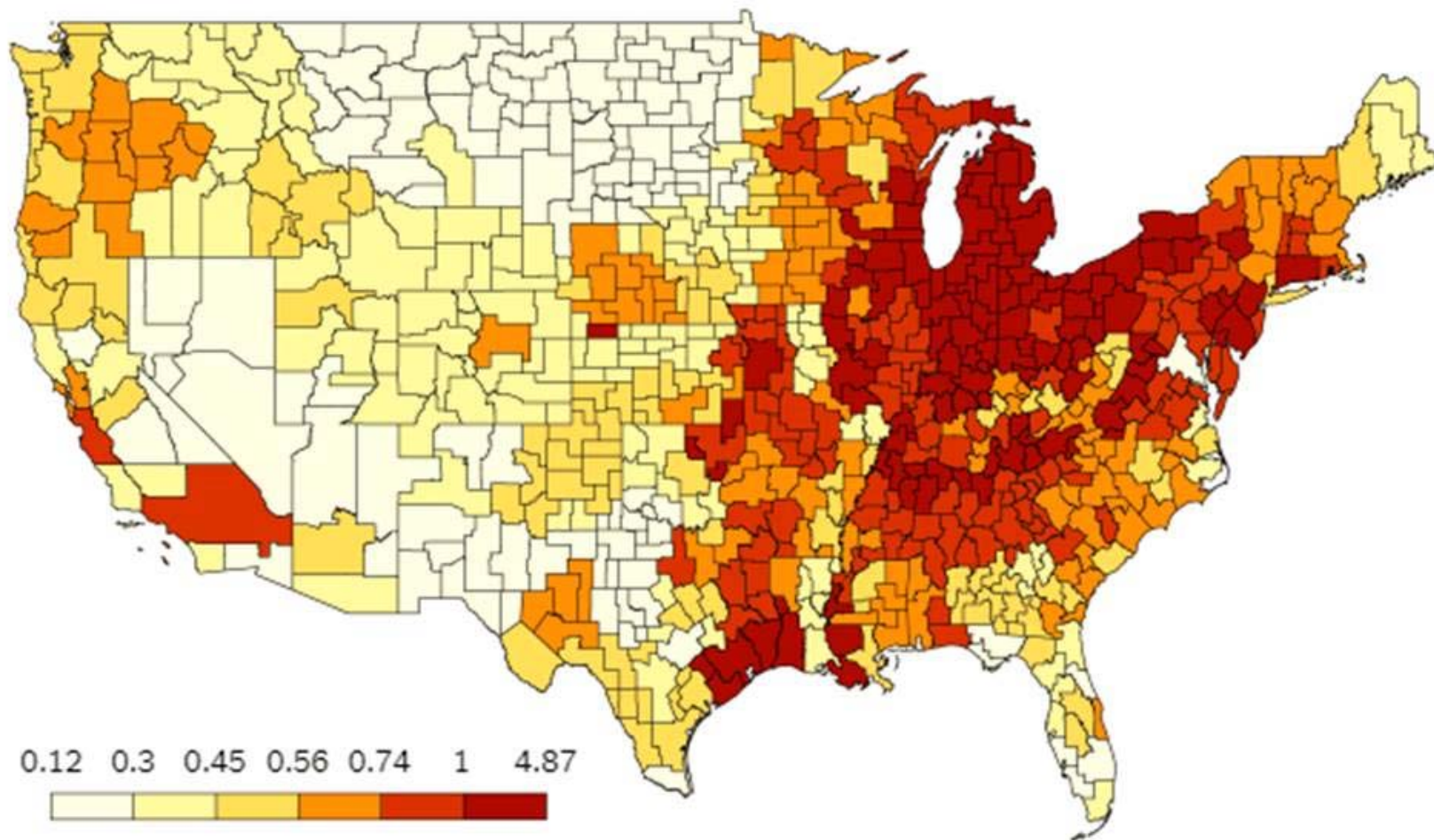
<i>Major contributing factors</i>	1.59
- <i>Expanded foreign trade (esp China)</i>	1.04
- <i>Adoption of industrial robots</i>	.55
<i>Other Significant contributing factors</i>	.53
<i>Unknown , unclear</i>	2.35
<i>Total Decline E/Pop</i>	4.50

* Source: Table 3, modified and shortened from
Katharine G. Abraham and Melissa S. Kearney. 2018. " Explaining the Decline in the U.S. Employment-to-Population Ratio: A Review of the Evidence" NBER Working Paper No. 24333, February
<http://www.nber.org/papers/w24333.pdf>

3. Technology does most of the inequality damage

- Digitization, robotics, automatization and AI
- Coming on all over— structurally and cyclically
- Why Tech? cost is known; reliability high; maintenance usually low ; no pension or health insurance !
- Takes “new labor” but much less, as a complement
- Who owns the robots ?—capital and industry
- And now, tight labor markets speed capitalization of production in goods and services (prices of substitutes are changing , K cheaper than L as wages rise)
- Taxes support accumulation, write offs, buy backs

Where the Robots Live—robots per industrial worker



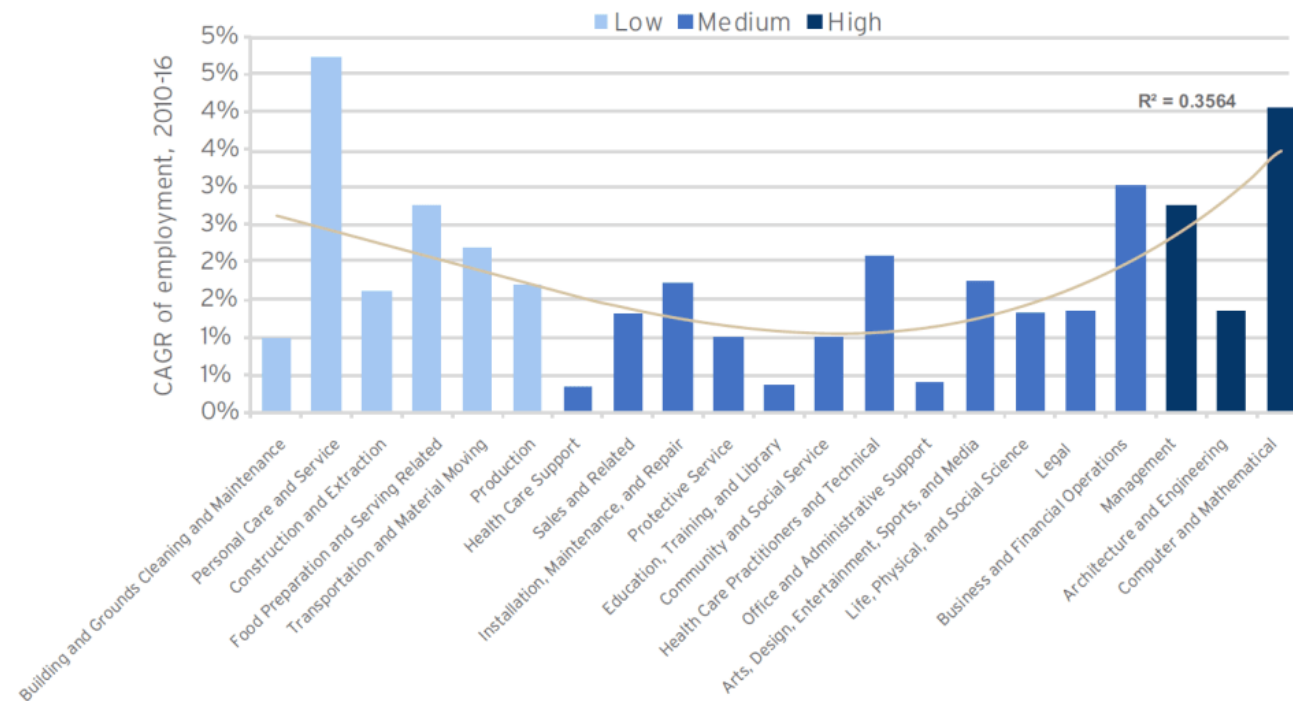
Source: Daron Acemoglu, MIT , and Pascual Restrepo, Boston University

Digital technology : empowers, polarizes—and hollows out

FIGURE 9

Compound annual growth rate of employment by occupation group, 2010-2016

Occupation groups arrayed by 2016 mean digital scores



Source: Brookings analysis of O*NET and OES data

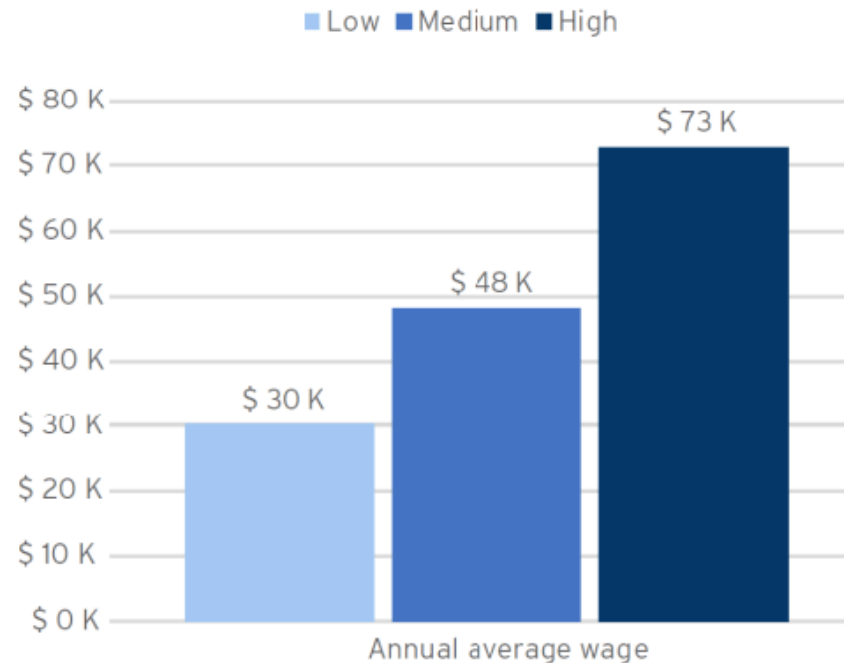
Note: Farming, Fishing, and Forestry occupations are excluded due to small employment size.

Source: <https://www.brookings.edu/blog/the-avenue/2017/11/21/tech-empowers-tech-polarizes/>

Digital technology : empowers, polarizes- and pays better

FIGURE 5

Mean annual wage by digitalization level
2016



Source: Brookings analysis of O*NET and OES data

Source: <https://www.brookings.edu/blog/the-avenue/2017/11/21/tech-empowers-tech-polarizes/>

4. Trade also creates winners and losers

- Trade and comparative advantage makes nations wealthy—*but not evenly so*
- **KEY POINT: winners do not compensate losers (TAA –blah, see *Atlantic* series)**
- Trade policy, tariffs, quotas, and direct subsidies in agriculture, energy, etc., all promote winners and shelter profits
- Result: Google, Amazon, global firms too big to regulate or control ?

5. Current tax and regulatory policy helps the winners

- Who own the swamp, the robots and the technology ?
- Winners in tax law—CIT, OK,--but PIT too?
- Tax policy and rent seeking in 21st century:
 - the carried interest provisions continue
 - rising monopoly concentration and decline of anti-trust in winner take all markets
 - individual “start ups” rise now (CIT rate, 21 % vs. 37+%, PIT)-- winners are even better off

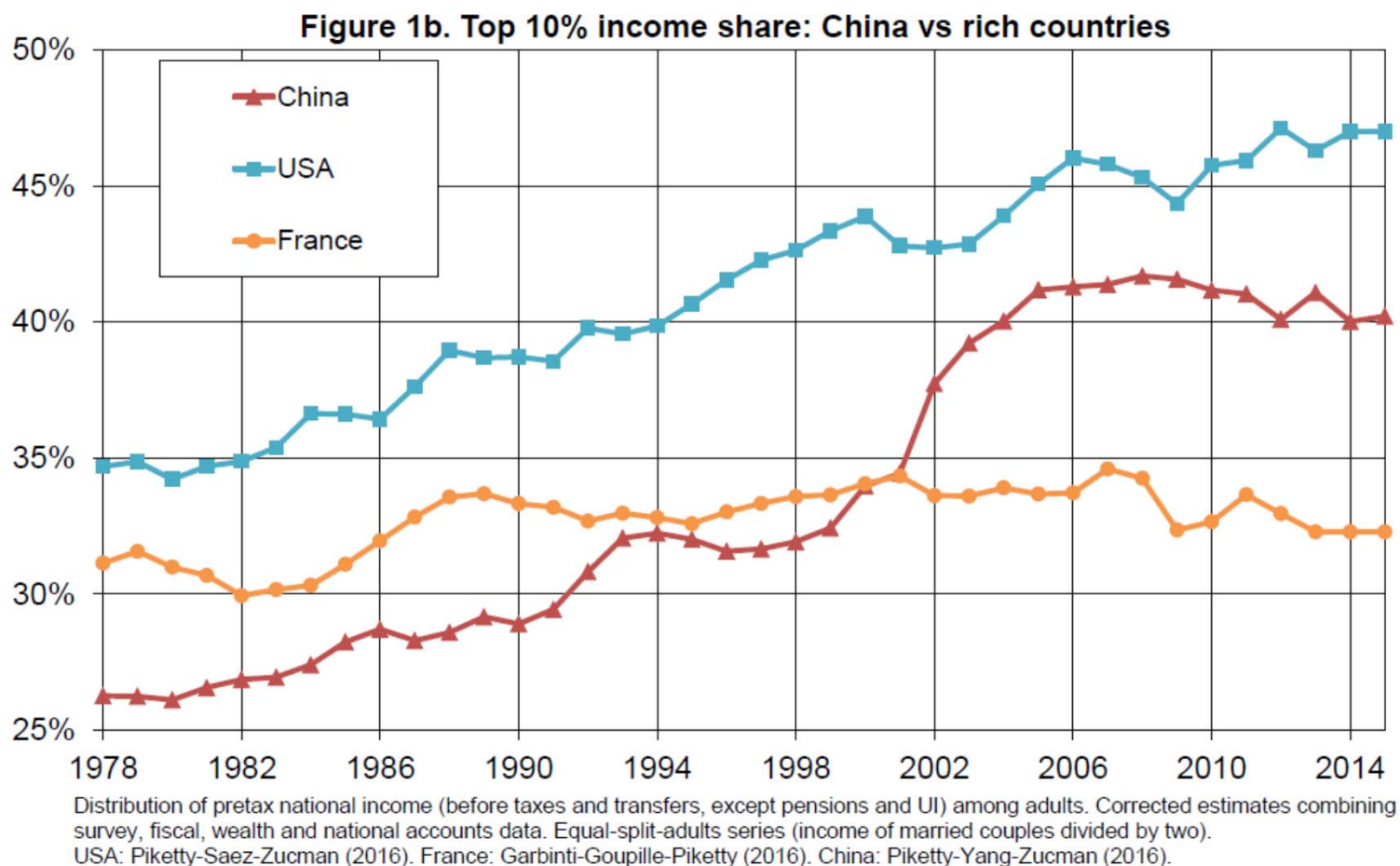
6. The outcomes are not inevitable: we can do better

Institutions matter: compare China, US, France—

- **Invest in human capital**, especially for kids (health, education, upward mobility) – how countries treat children is key
- **Tax capital income** (no K gains roll-over) same as labor income
- **More widely shared profits** –how owners treat valued workers will be important , esp. if scarce and highly productive
- **Employer labor partnerships**, post secondary education & training (eg German work sharing; Danish and EU 'ALMPs')
- **Promote shared prosperity and inclusive growth**, value firms for more than the bottom line (dignity of work, environment)
- **Give labor a voice in political discourse**

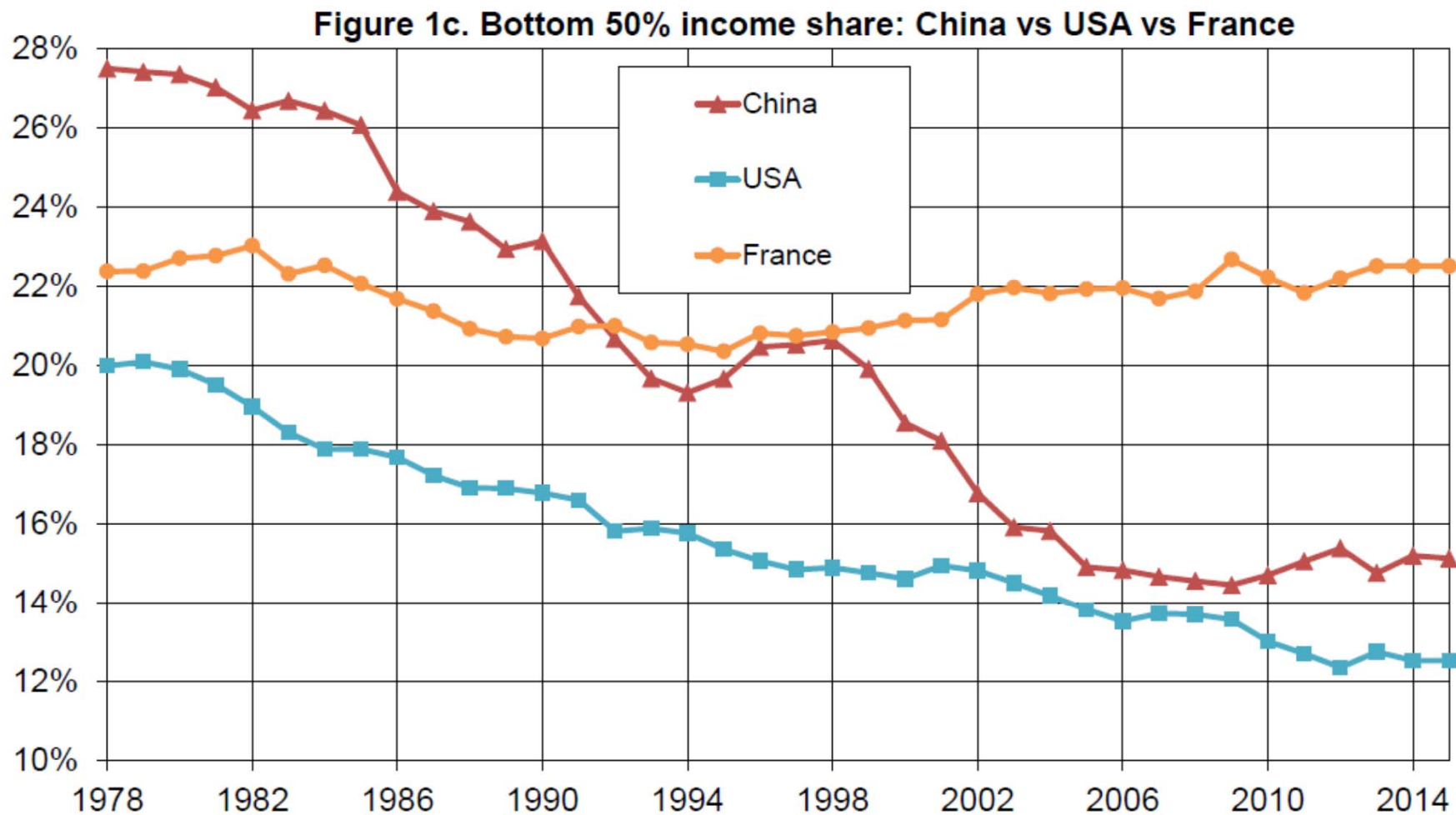
Income Inequality Trends : 1978-2014:

USA, China, France; top 10% shares



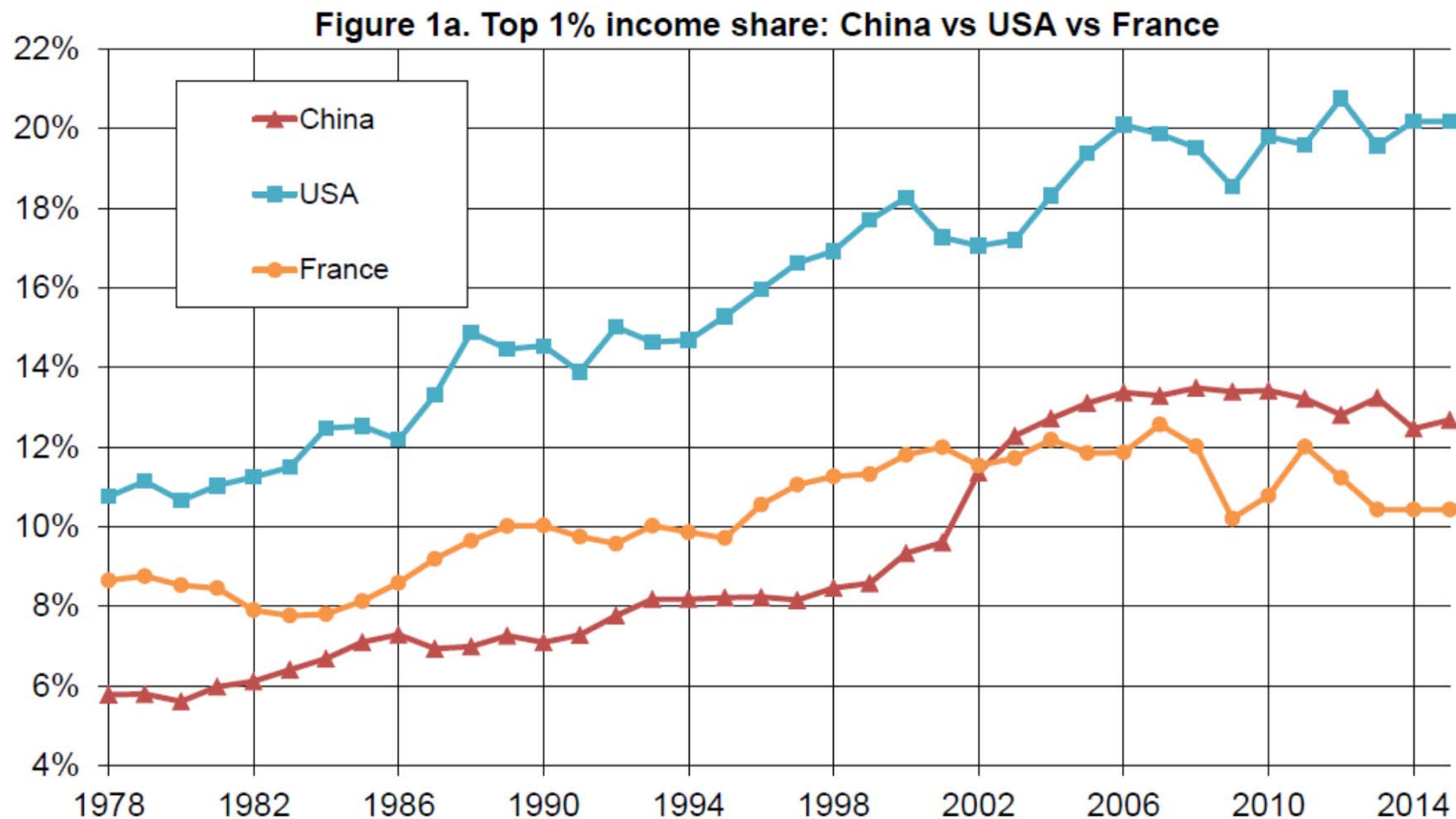
Income Inequality Trends : 1978-2014:

USA, China, France; bottom 50% shares



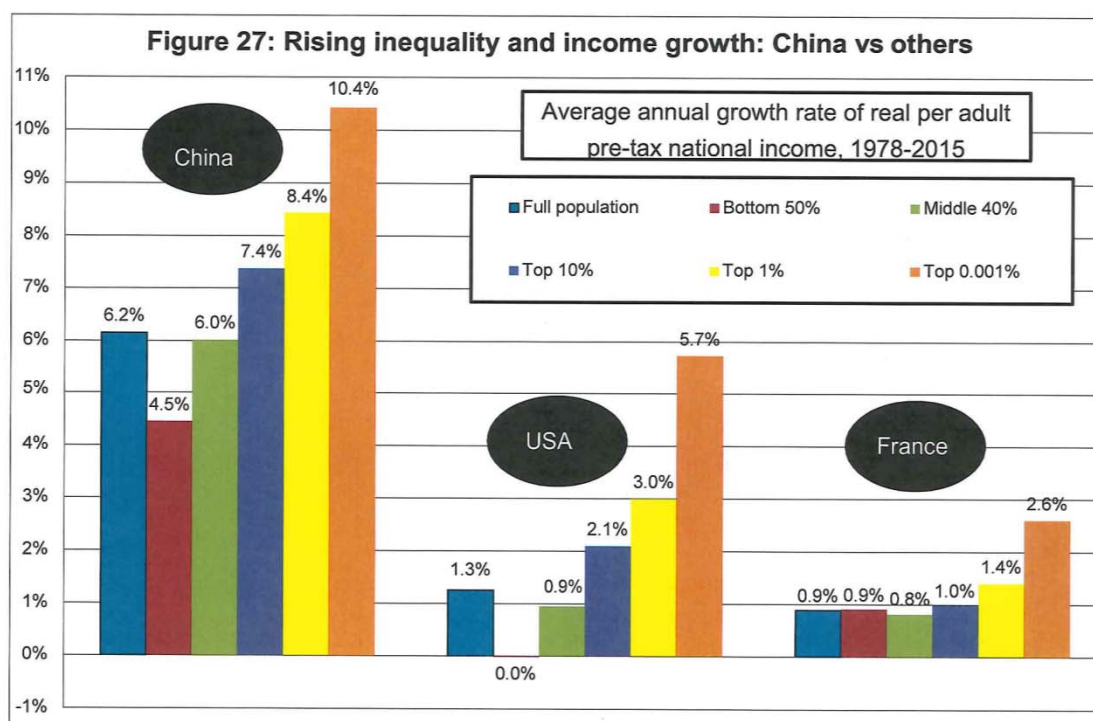
Distribution of pretax national income (before taxes and transfers, except pensions and UI) among adults. Corrected estimates combining survey, fiscal, wealth and national accounts data. Equal-split-adults series (income of married couples divided by two).
USA: Piketty-Saez-Zucman (2016). France: Garbinti-Goupille-Piketty (2016). China: Piketty-Yang-Zucman (2016).

Income Inequality Trends : 1978-2014: USA, China, France; top 1% shares



Distribution of pretax national income (before taxes and transfers, except pensions and UI) among adults. Corrected estimates combining survey, fiscal, wealth and national accounts data. Equal-split-adults series (income of married couples divided by two).
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Growth and inequality winners and losers :compare China, USA, France



Source, WTID, <http://wid.world/>

Conclude

- Technology and trade are reinforcing one another to boost US inequality to ever higher levels
- Capital wins: they own the robots, most of the financial and business wealth, and many, many politicians too
- Labor has no voice and is on the defensive
- Tax, trade and regulatory policy reinforces these trends

Additional slides

- The most recent literature on the USA (which backs up claims above)
- World inequality trends and more at <http://wid.world/> & <https://ourworldindata.org/>

THANKS--

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“Modeling Automation”

Daron Acemoglu and Pascual Restrepo . 2018. “Modeling Automation”
NBER Working Paper No. 24321 February

ABSTRACT

This paper points out that **modeling automation as factor-augmenting technological change has several unappealing implications. Instead, modeling it as the process of machines replacing tasks previously performed by labor is both descriptively realistic and leads to distinct and empirically plausible predictions.** In contrast to factor-augmenting technological change, **the substitution of machines for labor in additional tasks always reduces the labor share in national income and can reduce the equilibrium wage (for realistic parameter values).**

<http://www.nber.org/papers/w24321>

“The Rise of Monopoly Power in the United States”

G. B. Eggertsson, J. A. Robbins, E.G. Getz-Wold. 2018. “Kaldor and Piketty's Facts: The Rise of Monopoly Power in the United States ” NBER Working Paper No.24287 .January

ABSTRACT:

The macroeconomic data of the last thirty years has overturned at least two of Kaldor's famous stylized growth facts: constant interest rates, and a constant labor share. At the same time, Piketty and others have introduced several new findings.. **In this paper, we argue that these trends can be explained by an increase in market power and pure profits in the US economy, i.e., the emergence of a non-zero-rent economy, along with forces that have led to a persistent long term decline in real interest rates.** Using recent estimates of the increase in markups and the decrease in real interest rates, we show that our model can quantitatively match these new stylized macroeconomic facts.

<http://papers.nber.org/papers/w24287>

"Are US Industries Becoming More Concentrated?" YES

Gustavo Grullon, Yelena Larkin and Roni Michaely. 2016. "Are US Industries Becoming More Concentrated?" October

Abstract

More than 75% of US industries have experienced an increase in concentration levels over the last two decades. **Firms in industries with the largest increases in product market concentration have enjoyed higher profit margins, positive abnormal stock returns, and more profitable merger and acquisition deals, suggesting that market power is becoming an important source of value.** In real terms, the average publicly-traded firm is three times larger today than it was twenty years ago. **Lax enforcement of antitrust regulations and increasing technological barriers to entry appear to be important factors behind this trend. Overall, our findings suggest that the nature of US product markets has undergone a structural shift that has weakened competition.**

https://finance.eller.arizona.edu/sites/finance/files/grullon_11.4.16.pdf

“The New Class War”

Michael Lind. 2017. “The New Class War”, *American Affairs*, may

Summary

By the time of the Great Recession, 95 percent of microprocessors were manufactured by just four companies. Two-thirds of the glass bottles in the world were made by just two firms. In 2007, two firms controlled 86 percent of the global market in the financial information industry. Sixty percent of the tires in the world were made by just three companies. **These oligarchs spend a lot of their effort not in enhancing productivity but in playing nation-states off one another in search of tax breaks and subsidies. If any nation threatens to enforce a basic social contract, the companies threaten to move offshore--**

<https://americanaffairsjournal.org/2017/05/new-class-war/>

“What Do Trade Agreements Really Do ?”

Dani Rodrik. 2018. “What Do Trade Agreements Really Do?” , NBER Working Paper No. 24344, February

ABSTRACT

As trade agreements have evolved and gone beyond import tariffs and quotas into regulatory rules and harmonization, they have become more difficult to fit into received economic theory. Nevertheless, most economists continue to regard trade agreements such as the Trans Pacific Partnership (TPP) favorably. **The default view seems to be that these arrangements get us closer to free trade by reducing transaction costs associated with regulatory differences or explicit protectionism. An alternative perspective is that trade agreements are the result of rent-seeking, self-interested behavior on the part of politically well-connected firms – international banks, pharmaceutical companies, multinational firms. They may result in freer, mutually beneficial trade, through exchange of market access. But they are as likely to produce purely redistributive outcomes under the guise of “freer trade.”**

<http://www.nber.org/papers/w24344>

“Investment-less Growth: An Empirical Investigation”

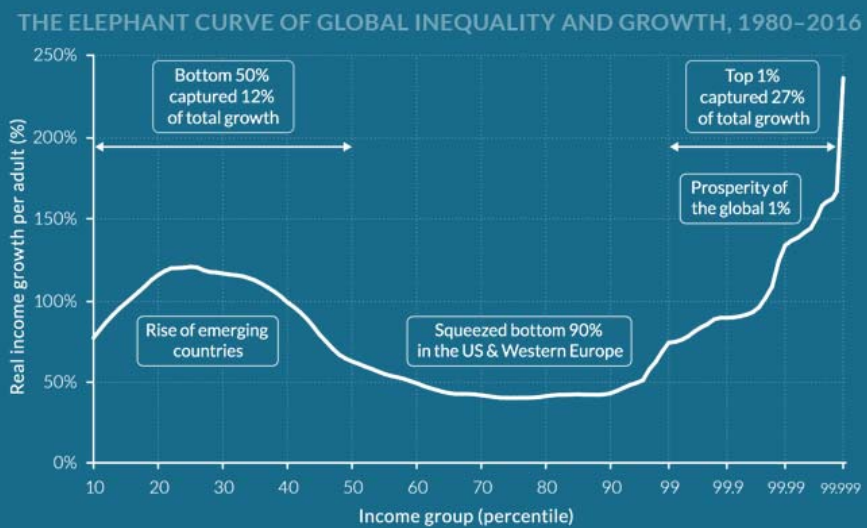
Germán Gutiérrez, and Thomas Philippon. 2017. “Investment-less Growth: An Empirical Investigation” NBER Working Paper No. 22897 (December 2016, Revised in January 2017)

ABSTRACT

We analyze private fixed investment in the U.S. over the past 30 years. We show that investment is weak relative to measures of profitability and valuation and that this weakness starts in the early 2000's. ..We use industry-level and firm-level data to test whether under-investment is driven by (i) financial frictions, (ii) measurement error (due to the rise of intangibles, globalization, etc), (iii) decreased competition (due to technology, regulation or common ownership), or (iv) tightened governance and/or increased short-termism. **-we find fairly strong support for the competition and short-termism/governance hypotheses.** Industries with more concentration and more common ownership invest less, even after controlling for current market conditions. **Within each industry-year, the investment gap is driven by firms that are owned by quasi-indexers and located in industries with more concentration and more common ownership. These firms spend a disproportionate amount of free cash flows buying back their shares**

<http://www.nber.org/papers/w22897>

World Inequality Report 2018



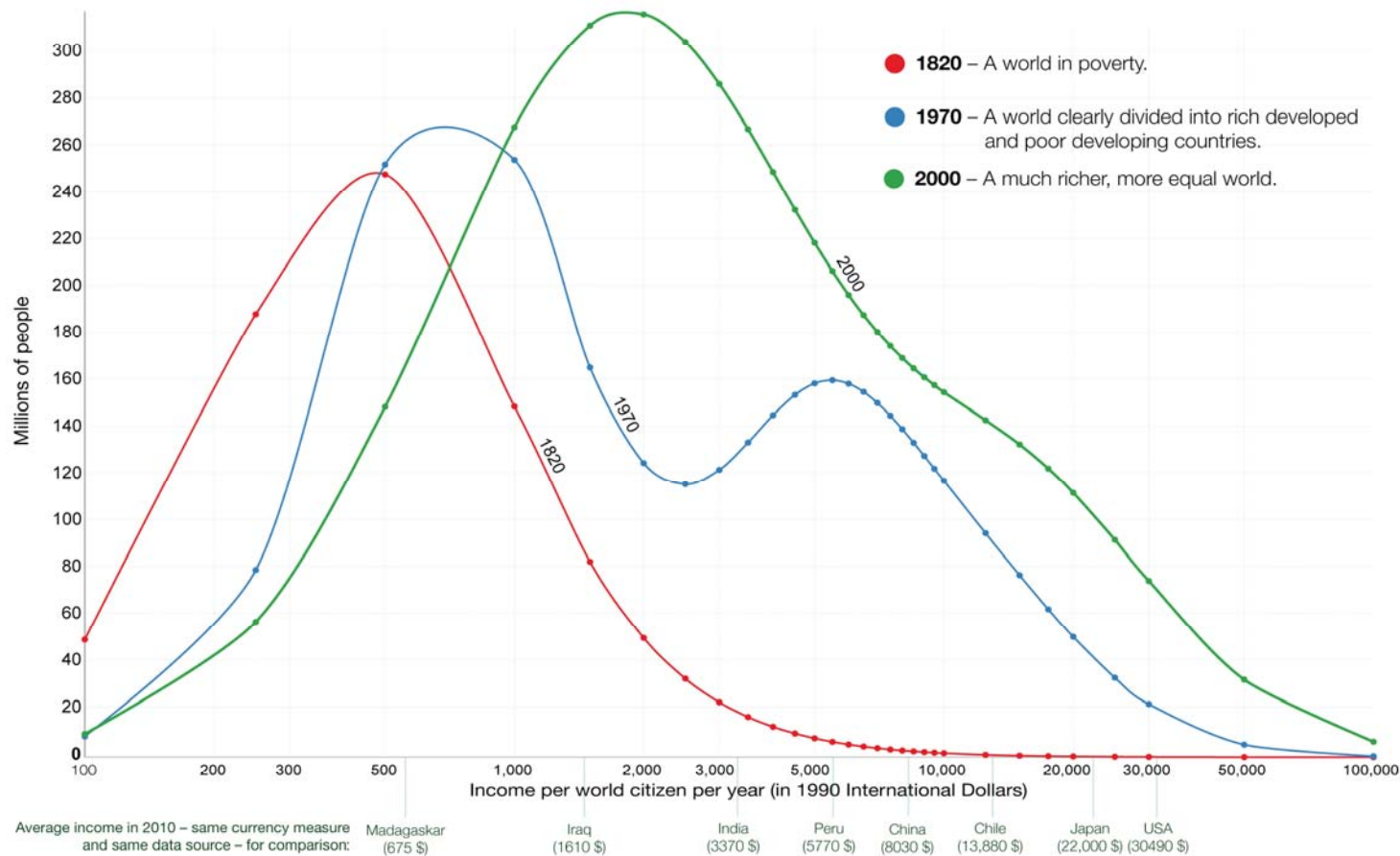
Full report available on :
wir2018.wid.world

The view of world progress from the surveys—growing global middle class

Our World
in Data

The World Income Distribution in 1820, 1970 and 2000 – by Max Roser

The yearly income of all world citizens is measured in International Dollars. This is a currency that would buy a comparable amount of goods and services a U.S. dollar would buy in the United States in 1990. Therefore incomes are comparable across countries and across time.

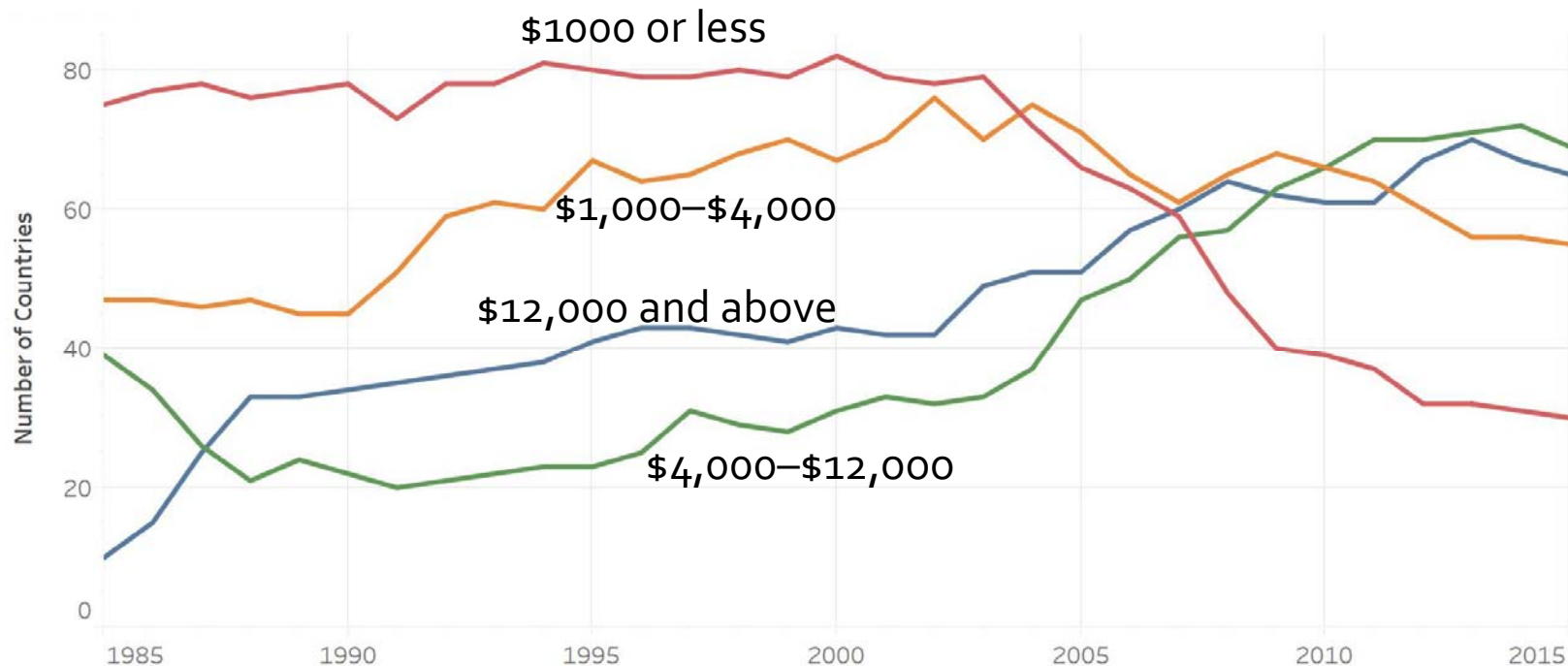


Data source: www.Clio-Infra.eu via van Zanden et al. (2014) – *How Was Life?*, OECD.

The interactive data visualisation is available at OurWorldinData.org. There you find the raw data and more visualisations on this topic.

Licensed under CC-BY-SA by the author Max Roser.

Global economic progress is accelerating (WB –income per capita)



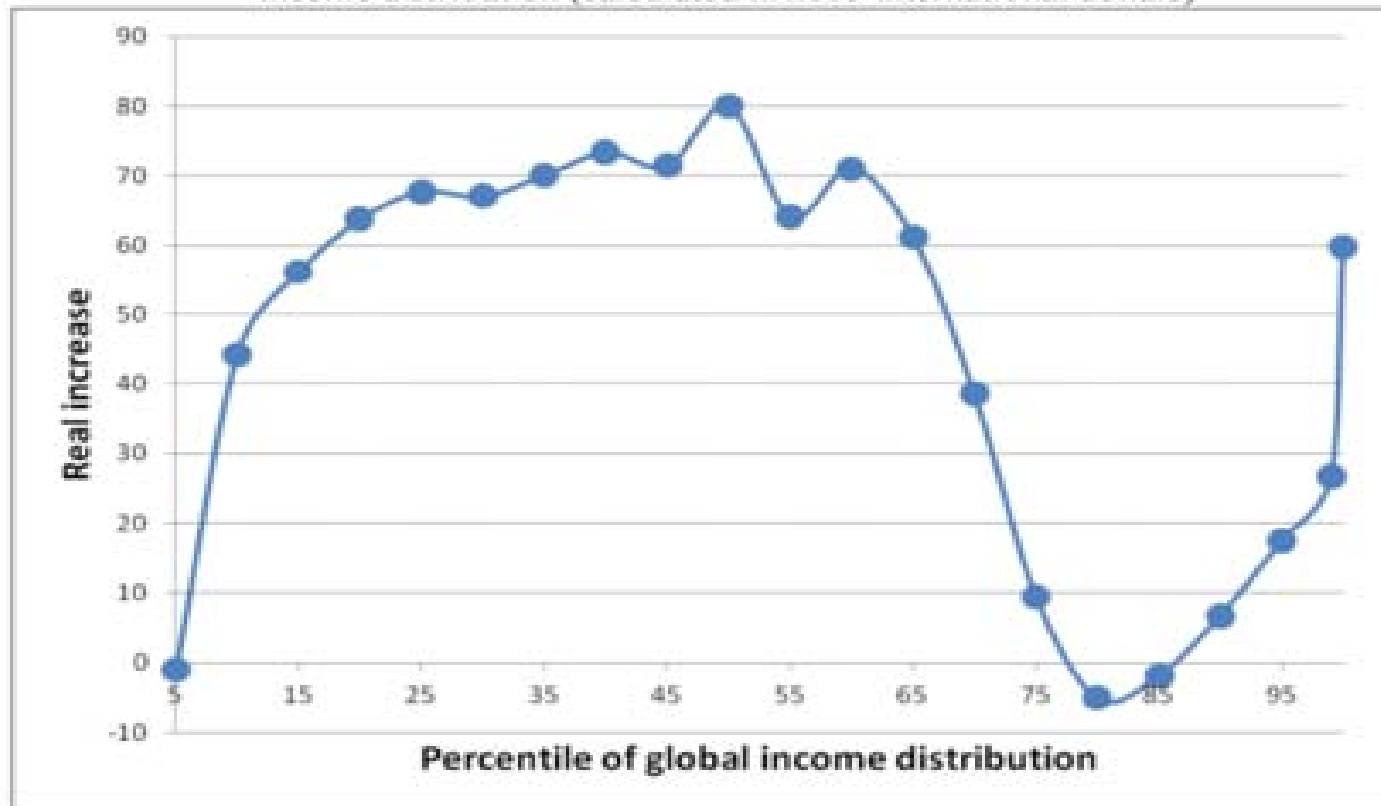
Income Category

- Low Income Country
- Lower Middle Income Country
- Upper Middle Income Country
- High Income Country

Source: Buys, et, al., 2016; World Bank

But also consider--global inequality—the elephant's nose

Figure 4. Change in real income between 1988 and 2008 at various percentiles of global income distribution (calculated in 2005 international dollars)



Note: The vertical axis shows the percentage change in real income, measured in constant international dollars. The horizontal axis shows the percentile position in the global income distribution. The percentile positions run from 5 to 95, in increments of five, while the top 5% are divided into two groups: the top 1%, and those between 95th and 99th percentiles.