CS 182: Ethics, Public Policy, and Technological Change

Rob Reich
Mehran Sahami
Jeremy Weinstein
Chloe Stowell (Head TA)
Events

SPECIAL EDITION

OFFICE HOURS

WITH

Friday
March 4, 2022
3-4:30 PM

CEMEX AUDITORIUM

CS 182

MS. HAUGEN

FACEBOOK WHISTLEBLOWER

FRANCES HAUGEN

CALIFORNIA 100 HACKATHON RFP

Saturday, April 2 on Stanford Campus

https://california100.org/hackathon-rfp/
The final assignment is posted on the class website. It includes two reflection essays (500-750 words each). The first is required and challenges you to engage material from throughout the course. The second focuses on the final module on tech, diversity, and inequality – you can choose one of three questions.

The assignment is due Friday, March 11 at 11:59pm PT.

Reminder: everyone one additional late day for the final assignment.
A Reminder: Equality

• Equality is a fundamentally *comparative* concept.

• One important conception is about equality as a distributive ideal that governs how some good or benefit is allocated.

• Two distinct ideas:
  • Equality of opportunity
  • Equality of outcomes

• Mehran focused Wednesday on issues of diversity and inclusion in tech. I am going to go deeper on tech and inequality.
Today’s Agenda

1. What are the facts about inequality?
2. What role do technology and “big tech” play in the growth of inequality?
3. How is this playing out in Silicon Valley?
4. What can be done about it?
Measuring Inequality

• Compare the income of the top ten percent to the national median or average
• Use tax records to understand earnings patterns at every level of the income distribution (e.g. top 1%, 0.1%, etc.)
• Examine the gap between the bottom ten percent and the median household
• A summary measure of inequality is the Gini coefficient – ranges between 0 (equality) and 1 (inequality)
Stylized Facts about Inequality

1. The U.S. is a very unequal country.
Inequality in Comparative Perspective

**Out of the bottle**
Gini coefficients, Maximum income inequality=1

<table>
<thead>
<tr>
<th>Country</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>0.6</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.4</td>
</tr>
<tr>
<td>Nigeria</td>
<td>0.5</td>
</tr>
<tr>
<td>China</td>
<td>0.6</td>
</tr>
<tr>
<td>United States</td>
<td>0.3</td>
</tr>
<tr>
<td>Britain</td>
<td>0.1</td>
</tr>
<tr>
<td>India</td>
<td>0.2</td>
</tr>
<tr>
<td>Japan</td>
<td>0.2</td>
</tr>
<tr>
<td>Egypt</td>
<td>0.1</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Sources: National Bureau of Statistics; OECD; World Bank

**Income inequality**
Change in Gini coefficient*, mid-1980s to mid-2000s

<table>
<thead>
<tr>
<th>Country</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>0.04</td>
</tr>
<tr>
<td>Finland</td>
<td>0.02</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.02</td>
</tr>
<tr>
<td>United States</td>
<td>0.04</td>
</tr>
<tr>
<td>Germany</td>
<td>0.06</td>
</tr>
<tr>
<td>Italy</td>
<td>0.08</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.06</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.04</td>
</tr>
<tr>
<td>Japan</td>
<td>0.02</td>
</tr>
<tr>
<td>Britain</td>
<td>0.04</td>
</tr>
<tr>
<td>Greece</td>
<td>0.06</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.08</td>
</tr>
<tr>
<td>Spain</td>
<td>0.06</td>
</tr>
<tr>
<td>France</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Measure of income inequality in which 0=perfect equality and 1=perfect inequality

Source: OECD
Inequality has increased more rapidly in the U.S. than Europe
Share of national income earned by the top 10% of earners, 1980-2016

Source: WID.world (2017)
Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
Inequality in Historical Perspective

Figure I.1. Income inequality in the United States, 1910-2010

The top decile share in U.S. national income dropped from 45-50% in the 1910s-1920s to less than 35% in the 1950s (this is the fall documented by Kuznets); it then rose from less than 35% in the 1970s to 45-50% in the 2000s-2010s. Sources and series: see piketty.pse.ens.fr/capital21c.
1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
What’s Happening at the Top?

The change in real American income
For selected income groups, %

- Depression (1929-33)
- Recovery (1933-36)
- Clinton expansion (1993-2000)
- 2001 recession (2000-02)
- Bush expansion (2002-07)
- Recession (2007-09)
- Recovery (2009-12)

Percentage of total growth/loss contributed by top 1%

Source: Emmanuel Saez and Thomas Piketty
Economist.com/graphicdetail
What’s Happening at the Bottom?

The rich get richer
US, average real income after taxes and transfers
% change since 1979

1979  85  90  95  2000  05  09

Top 1%

Bottom 20%

Source: Congressional Budget Office
Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
Wealth Inequality in Historical Perspective

Top 0.1% wealth share in the U.S., 1913-2012
Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
5. Inequities are particularly pronounced by race and gender.
At similar levels of education, women, and especially women of color, earn less
Hourly wages for each demographic subgroup at the 10th percentile, median, and 90th percentile in the United States

Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
5. Inequities are particularly pronounced by race and gender.
6. Growing inequality is associated with decreasing upward mobility.
The Crash in Mobility

Growth alone isn’t enough: When inequality is high, mobility suffers
Percent of U.S. children in each cohort who earn more than their parents with simulations

1940 This cohort featured both higher growth and a more equal income distribution compared to the 1980 cohort.

Equity simulation
With the lower growth rate of the 1980 cohort but income equality of the 1940 cohort, >70% of the absolute mobility gap is closed.

Growth simulation
Having 1st cohort growth but 2nd cohort inequality does not close much of the mobility gap.

1980 Absolute mobility for this cohort is much lower than in the 1940 cohort.

Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
5. Inequities are particularly pronounced by race and gender.
6. Growing inequality is associated with decreasing upward mobility.
7. The lives of the rich and poor are diverging.
Inequality & Educational Outcomes

College completion gaps by income persist and grow
Share of students completing college in the United States by income quartile and year of birth

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
5. Inequities are particularly pronounced by race and gender.
6. Growing inequality is associated with decreasing upward mobility.
7. The lives of the rich and poor are diverging.
8. The majority of income growth is concentrated in the richest countries.
The “Elephant” Curve

Lakner and Milanovic (2013)
“Elephant” + a decade

Figure 2.1.4
Total income growth by percentile across all world regions, 1980–2016


On the horizontal axis, the world population is divided into a hundred groups of equal population size and sorted in ascending order from left to right, according to each group’s income level. The Top 1% group is divided into ten groups, the richest of these groups is also divided into ten groups, and the very top group is again divided into ten groups of equal population size. The vertical axis shows the total income growth of an average individual in each group between 1980 and 2016. For percentile group p99p99.1 (the poorest 1% among the world’s richest 1%), growth was 74% between 1980 and 2016. The Top 1% captured 27% of total growth over this period. Income estimates account for differences in the cost of living between countries. Values are net of inflation.
Today’s Agenda

1. What are the facts about inequality?
2. What role do technology and “big tech” play in the growth of inequality?
3. How is this playing out in Silicon Valley?
4. What can be done about it?
Stylized Facts about Inequality

1. The U.S. is a very unequal country.
2. The U.S. is highly unequal in historical terms.
3. The rich are getting much richer.
4. There is even more wealth inequality than income inequality.
5. Inequities are particularly pronounced by race and gender.
6. Growing inequality is associated with decreasing upward mobility.
7. The lives of the rich and poor are diverging.
8. The majority of income growth is concentrated in the richest countries.

What is driving this increase in inequality? What are the major factors that account for these patterns?
Some Candidate Explanations

- Trade and globalization
- Skill-biased technological change
- Immigration
- Decline of labor unions
- Declining value of the minimum wage
- Outsized executive compensation

Note that explanations should be able to make sense of:
- trends over time
- why it's worse in the U.S. than elsewhere
- why rich are getting richer
- why incomes of the poor are stagnating
Western and Rosenfeld estimate that the decline in labor unions is responsible for 20 to 33% of the rise in inequality.
What Does the Evidence Say?

- Increased incomes for CEOs and the financial sector account for 67% of the top 0.1% of the income distribution.
What Does the Evidence Say?

- Autor et al find that 33 to 50% of the growth in inequality is due to the declining value of the minimum wage.
What Does the Evidence Say?

- Bivens et al find that compensation gains did not keep pace with productivity gains.

Productivity grew six times faster than hourly compensation between 1979 and 2017

Productivity growth and hourly compensation growth, 1948–2017

Cumulative percent change since 1948

- 1948–1979: Productivity: 103.6% Hourly compensation: 93.6%
- 1979–2017: Productivity: 70.3% Hourly compensation: 11.1%
- 2017: Productivity: 246.6% Hourly compensation: 114.7%
Where Does Technology Fit?

• Skill-biased technological change: changes in technology raise incomes, but do so unevenly. Rewards go to highly skilled workers. We saw this in our examination of automation.

• But what is the specific role of big tech? And can it help us understand the rise of the top 1%?
  • Superstar firms and market concentration
  • Elite compensation
  • Plight of gig workers and the contractor economy
The Growth of Superstar Firms

- There has been a significant growth in concentration across U.S. industries with leading firms growing comparatively more dominant. Network effects may be a part of the story.
CEO and Executive Pay

- The growth of top executive pay has vastly outpaced what the market solution would suggest, driven by friendly boards and expansive stock options.

**CEO pay and top 1% income**

United States

- Ratio of top 1% household income to median
- Average CEO pay, $m, 2014 prices

Sources: Economic Policy Institute; Congressional Budget Office; The Economist

*Before-tax income
†Top 350 public companies by revenue
Gig Workers

• Figuring out exactly what’s going on in the gig economy has proven challenging.

• Measuring its size is difficult – by some measures, it has grown substantially, while other surveys suggest it remains a relatively modest part of the economy.

• The gig economy undoubtedly transfers risk from employers to employees, with the loss of key benefits (health, disability, retirement).

• But many in the sector still prefer gig work (78% by one survey) to a traditional job b/c they prize flexibility.
1. What are the facts about inequality?
2. What role do technology and “big tech” play in the growth of inequality?
3. How is this playing out in Silicon Valley?
4. What can be done about it?
Silicon Valley

- Has technology been good for the Bay Area? In what ways? Who has benefited? Who has been harmed?
Inequality in the Region Isn’t New

<table>
<thead>
<tr>
<th>Health Disparities</th>
<th>Education Disparities</th>
<th>Socio-economic Disparities</th>
<th>COVID-19 Disparities</th>
</tr>
</thead>
</table>
| **Average age at death**  
East Palo Alto: 61.8 years  
Menlo Park: 78.1 years  
**Difference:** 16.3 years | **8th grade education: English**  
East Palo Alto: 17% excel  
Menlo Park: 85% excel  
**Difference:** 5x | **Single parent households**  
East Palo Alto: 28.4%  
Menlo Park: 16.2%  
Palo Alto: 5%  
**Difference:** 1.8, 5.7x | **COVID-19 cases, Oct 2020**  
East Palo Alto: 4840/100K  
Menlo Park: 1230/100K  
**Difference:** 3.9x |
| Also,  
ED utilization  
Obesity  
Substance use  
Mental health | **8th grade education: Math**  
East Palo Alto: 7% excel  
Menlo Park: 79% excel  
**Difference:** 11.3x | **Children below poverty**  
East Palo Alto: 28.0%  
Menlo Park: 2.5%  
Palo Alto: 8%  
**Difference:** 11.2x, 3.5x | **COVID vaccines, Mar 2021**  
East Palo Alto: 11% of pop  
Atheron: 46% of pop  
**Difference:** 3.7x |
East Palo Alto: A Case Study

- Housing discrimination
- Segregation of schools
- Redlining
- Proposition 13
- Gentrification
- Exploitation

### TABLE 15

**COMPARISON OF SALES TAX REVENUE**

<table>
<thead>
<tr>
<th>City</th>
<th>Population 1977</th>
<th>Total Sales Tax Revenue</th>
<th>Total Sales Tax Revenue Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menlo Park</td>
<td>27,400</td>
<td>$1,320,108</td>
<td>$48.18</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>61,850</td>
<td>$3,980,054</td>
<td>$64.35</td>
</tr>
<tr>
<td>Redwood City</td>
<td>55,800</td>
<td>$2,809,303</td>
<td>$50.35</td>
</tr>
<tr>
<td>East Palo Alto</td>
<td>18,000</td>
<td>$150,000</td>
<td>$8.33</td>
</tr>
</tbody>
</table>

Sources: State Controller (R-21)
State Board of Equalization (R-16)
McDonald & Associates
And It’s Growing

San Francisco income disparity widens
Between 2007 and 2012, the gap between the average household income of poor residents and that of wealthy ones grew more in San Francisco than any other city in the country.

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Household income, 2012</th>
<th>Change, 2007-2012*</th>
<th>Percentage change</th>
</tr>
</thead>
<tbody>
<tr>
<td>20th</td>
<td>$21,313</td>
<td>-$4,309</td>
<td>-17%**</td>
</tr>
<tr>
<td>40th</td>
<td>$52,865</td>
<td>-$3,743</td>
<td>-7%**</td>
</tr>
<tr>
<td>50th (median)</td>
<td>$73,012</td>
<td>-$2,311</td>
<td>-3%</td>
</tr>
<tr>
<td>60th</td>
<td>$95,783</td>
<td>-$1,018</td>
<td>-1%</td>
</tr>
<tr>
<td>80th</td>
<td>$160,753</td>
<td>-$795</td>
<td>0%</td>
</tr>
<tr>
<td>95th</td>
<td>$353,576</td>
<td>+$27,815</td>
<td>+9%</td>
</tr>
</tbody>
</table>

* Adjusted for inflation  ** Statistically significant

Source: Brookings Institution

Todd Trumbull / The Chronicle
Figure 7: Changes in the Share of Households by Income Ranges in the Bay Area, California and the United States, 2007 to 2013

Data Source: United States Census Bureau, 2007 and 2013 American Community Survey 1-Year Summary File Estimates
Tech’s Impact on Housing Prices

Exhibit A: San Francisco Companies with Expected or Actual IPOs in 2019

<table>
<thead>
<tr>
<th>Company</th>
<th>Valuation</th>
<th>Estimated # employees in SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbnb</td>
<td>$35 bn.</td>
<td>2,300</td>
</tr>
<tr>
<td>Lyft*</td>
<td>$24 bn.</td>
<td>1,600</td>
</tr>
<tr>
<td>Pinterest*</td>
<td>$12.7 bn.</td>
<td>unknown</td>
</tr>
<tr>
<td>Postmates</td>
<td>$1.85 bn.</td>
<td>340</td>
</tr>
<tr>
<td>Slack</td>
<td>$7.1 bn.</td>
<td>750</td>
</tr>
<tr>
<td>Uber</td>
<td>$100 bn.</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>7,990</strong></td>
</tr>
</tbody>
</table>

*IPO has occurred; valuation at IPO. Others estimated by various sources and reported in media.
Sources: Number of employees reported directly in SF Business Times or indirectly through other information about leases or facilities.

Exhibit B: Impact of Six Expected IPOs on Median Housing Sale Price in San Francisco

<table>
<thead>
<tr>
<th></th>
<th>Median Value</th>
<th>$ change</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual: Feb. 2019</td>
<td>$1,304,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after 1st IPO</td>
<td>1,327,676</td>
<td>$23,476</td>
<td>1.8%</td>
</tr>
<tr>
<td>after 2nd IPO</td>
<td>1,351,574</td>
<td>23,898</td>
<td>3.6%</td>
</tr>
<tr>
<td>after 3rd IPO</td>
<td>1,375,902</td>
<td>24,328</td>
<td>5.5%</td>
</tr>
<tr>
<td>after 4th IPO</td>
<td>1,400,668</td>
<td>24,766</td>
<td>7.4%</td>
</tr>
<tr>
<td>after 5th IPO</td>
<td>1,425,880</td>
<td>25,212</td>
<td>9.3%</td>
</tr>
<tr>
<td>after 6th IPO</td>
<td>1,451,546</td>
<td>25,666</td>
<td>11.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$147,346</strong></td>
<td></td>
<td>11.3%</td>
</tr>
</tbody>
</table>
No Fault Eviction Notices Filed in San Francisco, 2007-2017

Source: San Francisco Rent Board (via SocketSite.com)
Are Lower-Wage Workers Benefiting?

How much Silicon Valley wages changed from 1997-2017

By income percentile

- 10th: -0.7%
- 20th: -7.7%
- 30th: -8.6%
- 40th: -12.1%
- 50th: -
- 60th: -
- 70th: -9.0%
- 80th: -5.4%
- 90th: 0.7%
Why is This Happening?

• “Governing a City of Unicorns” offers a story with plenty of villains

  - Venture capitalists – strong incentives to create the conditions for unicorns
  - VCs and technologists turn economic power into political influence – tech coalition to make SF an “innovation capital”
  - Secure political office through favored candidates (e.g. Mayor Ed Lee)
  - Shape policy to their interests (e.g. end payroll tax, business friendly redevelopment, exemption from hospitality tax)
Regional Concentration

Metros by change in share of total innovation sector jobs

Share of innovation sector jobs change, 2005-17
- 0.4% - 2.0%
- 0.0% - 0.4%
- 0.0%
- -0.1% - 0.0%
- -0.7% - -0.1%

Innovation sector jobs, 2005
- Top 5% of metros
- Next 5%
- Next 15%
- Bottom 75%

Source: Brookings and ITIF analysis of Emsi data
Today’s Agenda

1. What are the facts about inequality?
2. What role do technology and “big tech” play in the growth of inequality?
3. How is this playing out in Silicon Valley?
4. What can be done about it?
Action to Tackle Inequality

- Do you think it’s important to reduce inequality? By how much?
- How would you go about achieving this?
The Rebirth of Unions

Alphabet Workers Union
New Models of Capitalism

From Shareholder Primacy to Stakeholder Capitalism
A Policy Agenda for Systems Change

How Amazon's new minimum wage stacks up

- Federal minimum wage: $7.25
- Retail salesperson median: $10.28
- Current Amazon median: $13.68
- New Amazon starting pay: $15.00
- Warehouse worker median: $15.53

Note: Current Amazon median pay is for all employees, including corporate.

Sources: Bureau of Labor Statistics and Amazon
A Wealth Tax

The Tax That Could Fix Us

A progressive wealth tax could fund a more just and humane society.

**THE PLAN:** A 2% tax on wealth over $50 million affects only the top 0.1%.

$2.75 trillion over 10 years

Enough to pay 10 years of:

- **Universal Child Allowance**
  - $900 billion

- **Universal Day Care**
  - $700 billion

- **Free Public College**
  - $470 billion

- **Paid Family Leave**
  - $300 billion

Sources: Saez and Zucman; FAMILY Act; American Family Act; proposals from Warren and Sanders campaigns; estimates from IWPR, Moody's Analytics, Columbia University. 2019 Infographic: Tracy Matsue Loeffelholz
A New Era for Government?

Projected 2021 SPM Poverty Rates, at Baseline and Under Selected American Rescue Plan Act Policies

- Baseline: 13.7%
- Unemployment Insurance benefits: 12.6%
- SNAP benefits: 13.6%
- Recovery rebates: 10.2%
- Advance portion of child tax credit: 12.8%
- Four policies combined: 8.7%

Source: Urban Institute projections as of March 2021, using the Analysis of Transfers, Taxes, and Income Security (ATTIS) model.
Note: Poverty is measured with the Supplemental Poverty Measure (SPM); we generally follow US Census Bureau methods for applying the SPM to American Community Survey data but use benefits and taxes simulated by ATTIS. The baseline reflects expected 2021 policies as of January 2021, including the additional unemployment insurance benefits and SNAP policies enacted in December 2020.