

Inequality

What Really Happened in Japan (and the World)?

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I. Introduction

Introduction

- General interest on **inequality** expanding all over the world
 - 経済格差 or 不平等
- But inequality of *what*?
 - Several aspects of inequality: e.g., BLM
 - Race, gender, political freedom, opportunity, health, education, residence, generation, earnings (labor income), income (total, disposable), consumption (expenditures), wealth (real/financial asset) etc.
- Main focus of this lecture: *economic* inequality
- Economic inequality of individuals/households/country level

II. Economic Growth

Economic Inequality in the World

- Economic condition (prosperity) of each county
 - Usually measured with **per capita GDP** (一人あたり GDP)
 - Definition: GDP/population
 - Approximately per capita income
- Why is inequality so important?
 - There are different views: opportunity vs results
 - See Rawls (1999), Sandel (2007), etc.
- John Rawls: **Veil of Ignorance**
 - Thought experiment: you reborn somewhere in the world

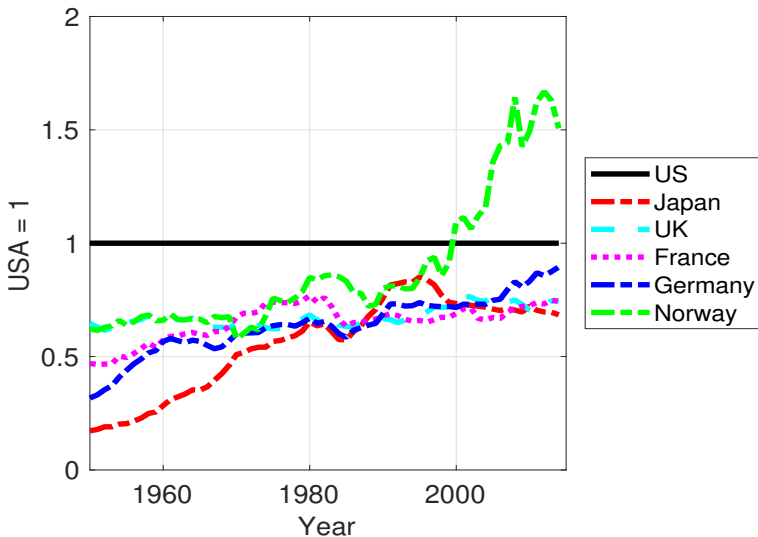
Two observation

1. Per capita GDP differs among countries
2. Per capita GDP growth rate also differs among countries

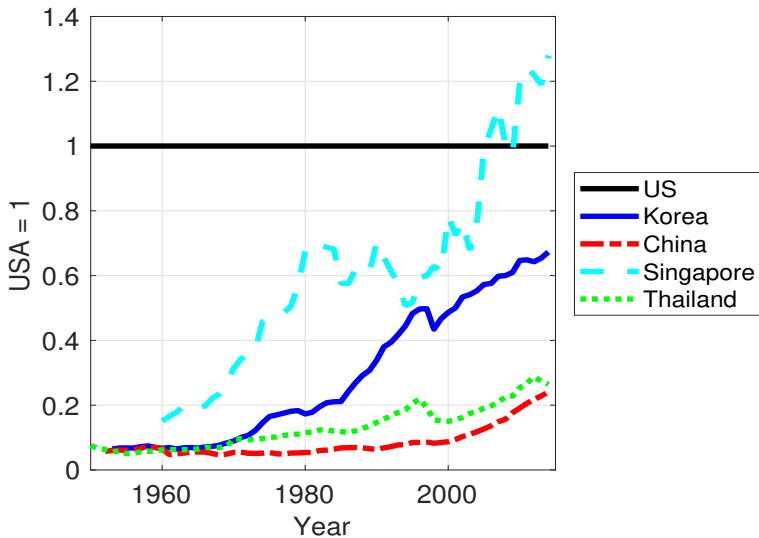
Economic Growth

- Mechanism?
 - ⇒ **neoclassical growth theory** (新古典派經濟成長理論)
 - Convergence hypothesis (収斂仮説)
 - Per capita GDP level converges to *steady state*
- Can we observe the convergence in data?
 - Partially YES, but...
 - Durlauf and Quar (1999) ⇒ Polarization
- What's the keys to understand economic growth?
 - Capital, human capital, population, education, technology, democracy, institute, geography etc.
 - See Acemoglu and Robinson (2012)

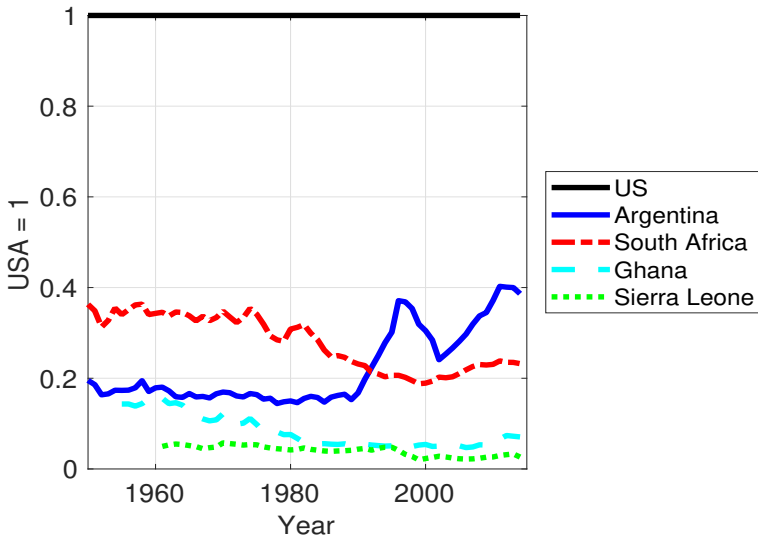
Evidence of Convergence (1)



Evidence of Convergence (2)



Evidence of Non-convergence



Economic Growth and Inequality

Is countries with high inequality (within-inequality) harmful for economic growth rate?

- Probably yes, but the results are mixed
 - Alesina and Rodrik (1994), Persson and Tabellini (1994)
 - IMF: IMF and Income Inequality (link)
- **Kuznets Hypothesis**
 - Inversed U-shaped
 - Probably does not hold based on recent research

More on Economic Growth

- If you are interested in the reason why there are so large differences among per capita GDP and per capita economic growth rate,
 - Study **Economic Growth and Development**
 - Elementary level will be covered in Economics B/Macroeconomics
 - Cutting edge: “new” economic growth theory
 - See Warsh (2006): a story of Paul Romer, a founder of the new growth theory
 - See also J-PAL: <https://www.povertyactionlab.org/>

III. Super Rich

Thomas Piketty and Top 1%

- Thomas Piketty (2013): *Capital in the 21st Century*
 - Over 700 pages, fat book (originally in French)
 - Best seller in Economics: over 2 million over the world!
- Focus on **top 1%** (0.1%, 0.01%)
 - Population size in Japan: 126,000,000
 - Super rich: Jeff Bezos, Earon Mask, Mark Zuckerberg, Bill Gates etc.
 - Japan: 孫正義、柳井正、三木谷浩史 etc.
- Occupy Wall Street in 2011
 - “We are the 99%”
 - Wall street: the central place of financial transactions
- Donald Trump won the presidential election in 2016

Thomas Piketty and Top 1% (cont.)

Focus on labor share

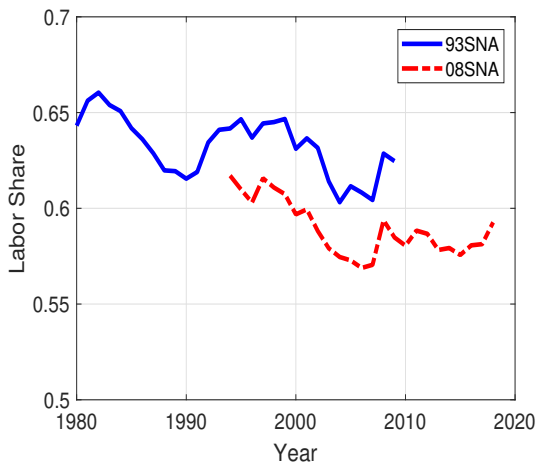
- Labor share vs capital share: 0.6–0.7 vs 0.3–0.4
 - 労働分配率 vs 資本分配率
- Labor income growth rate \approx economic growth rate (g)
- Capital income = real return from asset = real interest rate (r)

Piketty's (one of) main findings

Historically $r > g \Rightarrow$

Super rich, who have a huge amount of wealth, becomes richer

Long-term Trend of Labor Share



- Data: author's calculation from the System of National Account.

IV. Japanese Economy

Time Series Dimension

More on economic inequality in Japan

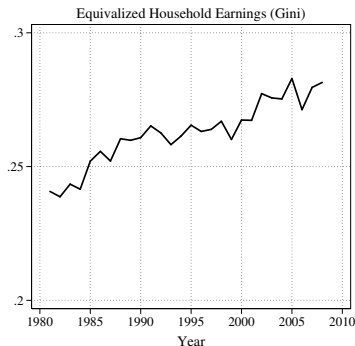
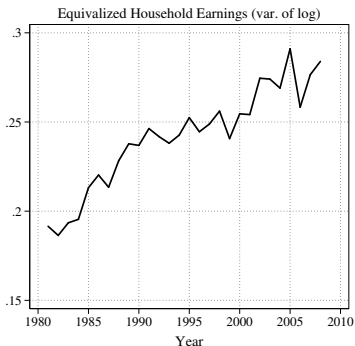
- From households' view
- Data: **Family Income and Expenditure Survey (FIES)**
 - 家計調査
 - Micro data collected by the Ministry of Internal Affairs and Communications (総務省)
 - GDP \leftarrow macro data
 - Use data between 1981 and 2008
- Lise, Sudo, Suzuki, K. Yamada, and T. Yamada (2014): "Wage, Income and Consumption Inequality in Japan, 1981-2008: from Boom to Lost Decades," *Review of Economic Dynamics*, 17, 582-612.

Measurement

How to Measure Economic Inequality using Micro Data?

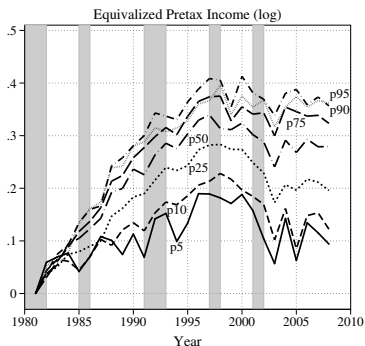
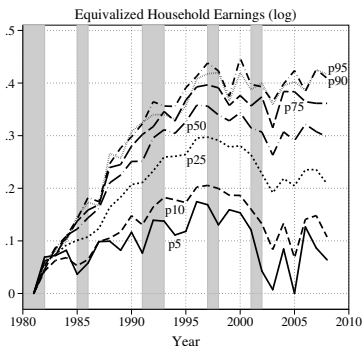
- Mean (average): \bar{x}
- Percentiles ratio
 - E.g., 20 percentile means top 2,000 of sorted 10,000
- **Gini coefficient**
 - Ranged between 0 and 1
 - Definition: $\frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2n^2 \bar{x}}$
- Variance (of logarithm)
 - Another popular measure for measuring economic inequality
 - Definition of variance: $\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2$

Equalized Household Earnings



- Left: var. of logarithm, Right: Gini
- Equalized means “per capita”: adjusted by family size

Equivalized Household Earnings



- Left: earnings, Right: disposable income

Finding: FIES

- Inequality of equalized earnings (and disposable income) increased for 28 years
- Why?
 - 1981-1997: rich becomes richer
 - 1997-2008: poor becomes poorer
- US: Rich becomes super rich
- **Different policy implications**

Life Cycle Dimension

Different data set

- Kitao and Yamada (2019): “Dimensions of Inequality in Japan”
- Understanding the inequality in earnings, income, and wealth
 - time trend: macroeconomic view point
 - gender, employment status, family, and marital status
- **National Survey of Family Income and Expenditure (NSFIE)**
 - 全国消費実態調査
 - by the Ministry of Internal Affairs and Communications
 - sample size: approximately 60,000 “households”
 - incl. one-person households and two-or-more person households
 - sample period: 1984-2014 (every five years)

Definition

Definition of variables

- Earnings:
 - before-tax labor/business income of household (including employees and self-employed)
 - equalized: using OECD equivalent scale
- Income:
 - before-tax annual income including
 - labor, business, capital, transfers and other income
- Wealth:
 - (gross) *financial* assets
 - net wealth: gross assets – debt (excl. mortgage)
 - housing and other real assets not included in the current version

◀ MORE

Summary of Inequality

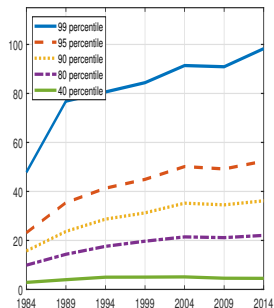
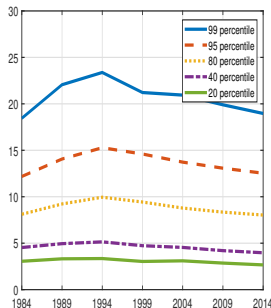
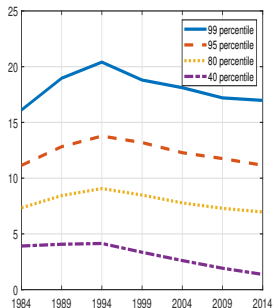
	1984	1994	2004	2014
Earnings				
Mean (1,000JPY)	4,984	5,696	4,518	3,765
1%/median	3.46	3.92	4.59	5.82
10%/median	1.98	2.20	2.55	3.10
Gini	0.38	0.45	0.53	0.58
Income				
Mean (1,000JPY)	5,882	7,049	6,288	5,620
1%/median	3.54	3.82	3.93	4.01
10%/median	1.95	2.05	2.11	2.15
Gini	0.32	0.35	0.34	0.35

Summary of Inequality (cont.)

	1984	1994	2004	2014
Wealth				
Mean (1,000JPY)	6,873	12,075	13,916	14,118
1%/median	12.07	11.79	12.49	14.38
10%/median	3.96	4.20	4.81	5.29
Gini	0.58	0.59	0.61	0.63
Net Wealth				
Mean (1,000JPY)	6,500	11,538	13,272	13,517
1%/median	12.83	12.38	13.12	14.92
10%/median	4.15	4.40	5.01	5.49
Gini	0.62	0.62	0.66	0.68

◀ FIGURE

Levels at Percentiles

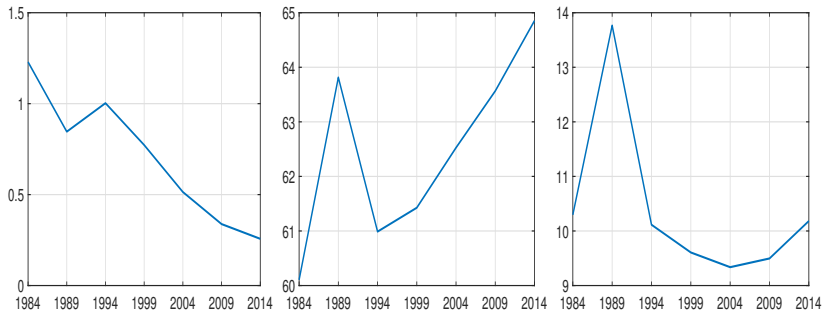


- Left: earnings, Center: income, Right: wealth, Unit: million yen

Fact: Piketty and Japanese Economy

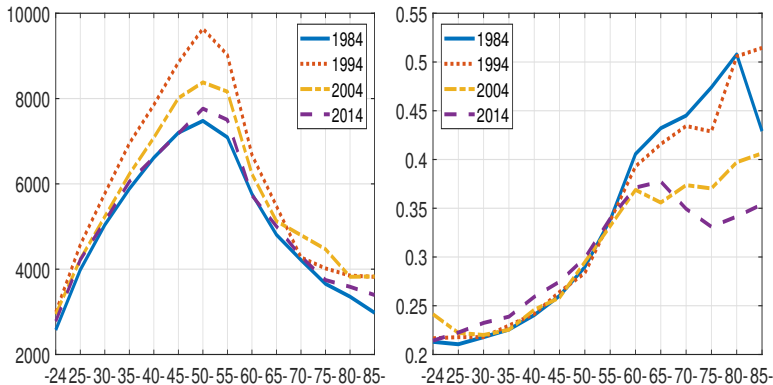
- Piketty's suggestion, $r > g$, matters in Japan?
 - Probably No
- Cannot find any evidence on the concentration of wealth to super rich
 - partially due to data limitation
 - other countries investigate the time trend of super rich's wealth based on tax data \Rightarrow need more research
- Why does the earnings/wealth inequality expand recently?
 \Rightarrow Partially because of **population aging**

Share of Wealth held by Households



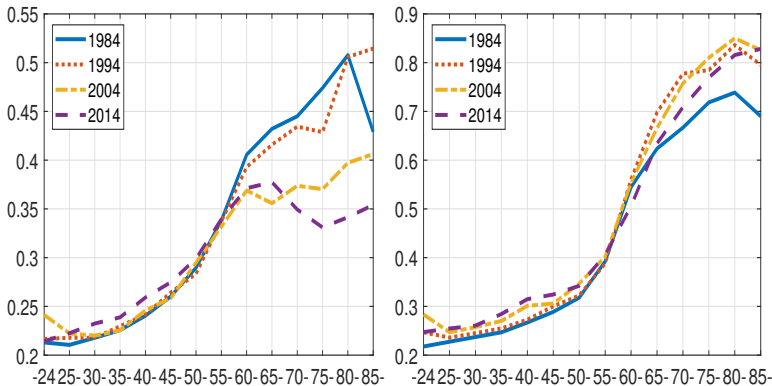
- Left: bottom 20%, Center: top 20%, Right: top 1%, Unit: share of total wealth

Income Level and Inequality by Age



- Left: level (unit: 1,000 yen), Right: Gini

Income Inequality excl. Public Pensions

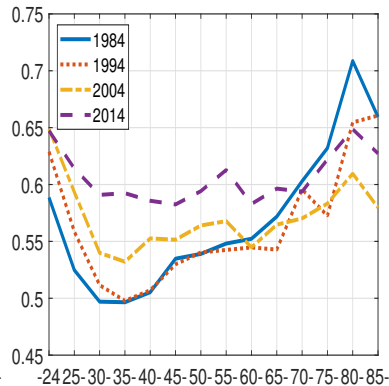
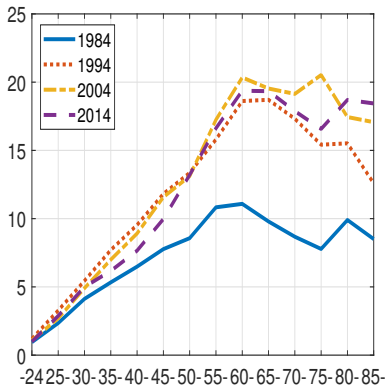


- Left: without public pension, Right: with public pension

Fact: Public Pension

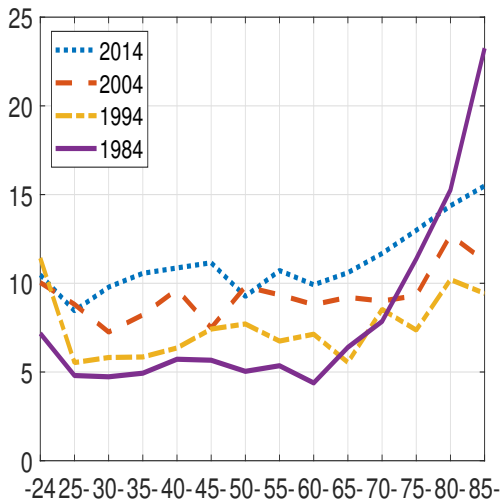
- Public pension system (公的年金制度) redistributes total income of retirees, and the income inequality of retirees shrinks

Wealth Level and Inequality by Age



- Left: level, Right: Gini

Households with Zero Wealth



V. What's Next?

Summary: Policy Issues

How to fight against expanding inequality?

- Saez and Zucman (2019)'s answer ⇒
(extremely high level of) **progressive tax system**
 - 累進課税制度
 - optimum level: 60%
 - almost 100% !? in their book
- Need international cooperation
 - Piketty (2014) also claims importance of the international cooperation
 - **Tax heaven and paper company**: incentive to reduce tax rate
- Different views:
 - Not all inequalities are really “problem”
 - Education: inequality of opportunity
 - Social security reforms, etc.

Recommended Books

- Acemoglu, D. and J. Robinson (2012): "Why Nations Fail," Currency.
- Milanovic, B. (2016): "Global Inequality," Belknap Press.
- Piketty, T. (2014): "Capital in the 21st Century," Belknap Press.
- Rawls, J. (1999): "A Theory of Justice Revised Edition," Belknap Press.
- Saez, E. and G. Zucman (2019): "The Triumph of Injustice," WW Norton & Co Inc.
- Sandel, M. (2007): "Justice: A Reader," Oxford University Press.
- Warsh, D. (2006): "Knowledge And The Wealth Of Nations," WW Norton & Co Inc.

Reference: Academic Papers (Hard to Read)

- Alesina, A. and D. Rodrik (1994): “Distribution Politics and Economic Growth,” *Quarterly Journal of Economics*, 10, 465-490.
- Durlauf, S. and D.T. Quah (1999): “The New Empirics of Economic Growth,” in J.B. Taylor and M. Woodford eds., *Handbook of Macroeconomics*, Vol. 1A, Elsevier.
- Kitao, S. and T. Yamada (2019): “Dimensions of Inequality in Japan: Distributions of Earnings, Income and Wealth between 1984 and 2014,” *RIETI Discussion Paper Series*, 19-E-034
- Lise, J., N. Sudo, M. Suzuki, K. Yamada and T. Yamada (2014): “Wage, Income and Consumption Inequality in Japan, 1981-2008: from Boom to Lost Decades,” *Review of Economic Dynamics*, 17, 582-612.
- Persson, T. and G. Tabellini (1994): “Is Inequality Harmful for Growth?,” *American Economic Review*, 84, 600-621.

Study Economics in English

- Freakonomics: <https://freakonomics.com/>
- Institute for Fiscal Studies: <https://www.ifs.org.uk/>
 - Research institute in the UK
- VoxEU: <https://voxeu.org/>
 - “Research-based policy analysis and commentary from leading economists”
- Microeconomic Insights:
<https://microeconomicinsights.org/>
- Raj Chetty (Harvard)'s class:
<https://opportunityinsights.org/course/>

Data (Links)

- [OECD Data](#)
- [Penn World Table](#)
- [The Chartbook of Economic Inequality](#)
- [World Inequality Database](#)
- [Maddison Historical Statistics](#)
- [National Transfer Accounts](#)
- [European National Transfer Accounts](#)
- [Tax Justice Now](#)
- [The Opportunity Insights](#)

More Detailed Definition (in Japanese)

Definition (cont.)

Definition of Variables:

- Earnings (E):
 - labor income: 勤め先からの収入 (本給・諸手当・賞与)、内職などの収入
 - business income: 農林漁業収入、農林漁業以外の事業収入
- Income (I):
 - capital income: 家賃・地代収入、利子・配当金
 - キャピタルゲインは除く
 - transfers: 公的年金・恩給、企業年金、親族などからの仕送り
 - others: その他収入 (健康保険や雇用保険給付・児童手当などを含む)、現物消費 (自家産物の消費、勤め先からの現物支給)

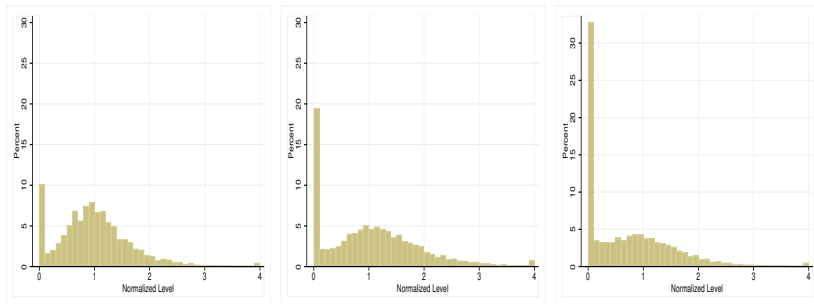
Definition (cont.)

Definition of Variables:

- Wealth (W):
 - 預貯金 (普通預金・定期預金、銀行・郵便局・その他の金融機関)、保険 (生命・損害・簡易、振込総額)、貸与・金銭信託 (額面)、株式・株式投資信託 (時価)、債券・公社債投資信託 (額面)、その他 (社内預金など)
- Net wealth: gross financial wealth – debt (excl. mortgage)
 - debt: 月賦・年賦の未払い残高 (カードローン、キャッシング残高)、その他の借入金残高 (教育ローンなど生活に必要な資金、事業に必要な開業資金など)
 - 住宅・土地購入のための借り入れを除く

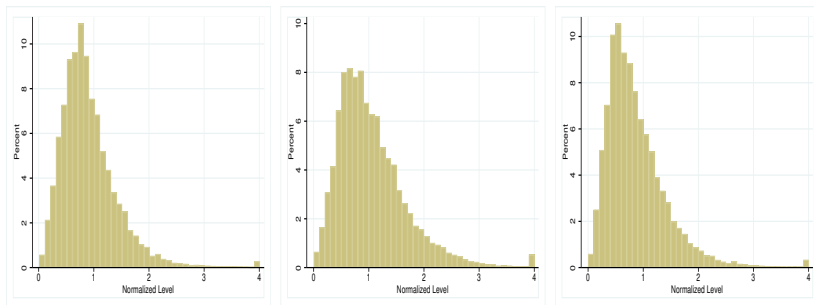
◀ RETURN

Distribution of Earnings



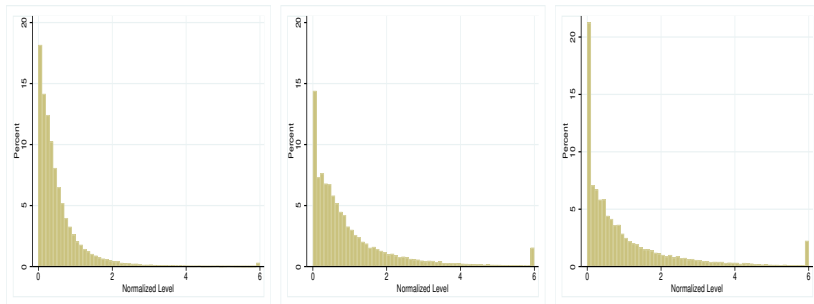
- Left: 1984, Center: 1999, Right: 2014

Distribution of Income



- Left: 1984, Center: 1999, Right: 2014

Distribution of Wealth



- Left: 1984, Center: 1999, Right: 2014