Inequality, Leverage and Crises

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1 Introduction

- **Empirical Motivation:** Similarities of the decades preceding the 1929 and 2007 crises
  - Sharply increasing income inequality.
  - Sharply increasing debt leverage among lower and middle classes.
  - Perception of unsustainably high leverage was a key factor causing a large financial and real crash.

- **Plan of our paper:**
  - Review the *literature* on inequality and crises.
  - Present the *stylized facts*.
  - Build a *model* to make sense of the facts.
2 Literature on Alternative Causes of the 2007 Crisis

- Most recent literature focuses on the final years preceding the crisis:
  - Excessive financial liberalization.
  - Easy monetary policy.
  - Global current account imbalances.

- Rajan (2010), our work: Much of this was simply a manifestation of an underlying and longer-term dynamics driven by income inequality
  - Rajan: Growing inequality created political pressure for easy credit. This stresses the demand for credit.
  - Our work: Growing income inequality simultaneously created
    1. Additional **demand for credit** to sustain living standards of the lower and middle class.
    2. But also additional **supply of credit** due to the extra income of the top income group looking for a place to go.
3 Stylized Facts
Income Inequality and Household Leverage:
(i) Moved up together pre-crisis.
(ii) Both pre-1929 and pre-2007.
Male Annual Earnings by Income Decile:

(i) Over 40% cumulative increase for the rich.
(ii) Over 30% cumulative decrease for the poor.
(iii) 5%-10% cumulative decrease for the median.

Source: Heathcote, Perri and Violante (2010), based on micro-level data from the U.S. Consumer Population Survey. Male annual earnings includes labor income plus two-thirds of self-employment income. Male hourly wages are computed as male annual earnings divided by annual hours. The price deflator used is the Bureau of Labor Statistics CPI-U series, all items.
Source: Survey of Consumer Finance (triennial), 1983-2007. Debt corresponds to the stock of all outstanding household debt liabilities. Income corresponds to annual income before taxes, including capital gains and transfers, in the year preceding the survey.

**Debt to Income Ratios:**

(i) Lower or flat for the rich.

(ii) Sharply higher for the remainder.
Sources: Private Credit to GDP from World Bank Financial Structure Database (real private credit by deposit banks and other financial institutions, relative to GDP). Value Added GDP Share of Financial Sector from Philippon (2008).

Size of the U.S. Financial Sector:

(i) Private Credit to GDP more than doubled.
(ii) Banks’ share in GDP more than doubled.
4 A Theoretical Model to Explain The Data

- Economy consists of two separate household groups, the top income group ("investors") and the lower and middle class ("workers").
- Economy experiences a highly persistent decrease in the income bargaining powers of the lower and middle class.
- Response of the top income group (top 5% of incomes):
  1. Higher consumption.
  2. Higher physical (equity) investment.
  3. Much higher financial investment = recycling gains back to lower and middle class as loans.
- Response of the lower and middle class (bottom 95% of incomes):
  1. Lower consumption, but consumption drops by less than income.
  2. Much higher borrowing from the top income group = higher leverage over decades.
- Result: Higher financial fragility ⇒ risk of financial crisis ⇒ eventual crash.
Baseline Scenario

- Highly persistent decrease in workers’ bargaining power.
- Financial and real crisis in year 30.

- Real wage drops persistently.
- Return to capital increases persistently.
Baseline Scenario

- Highly persistent decrease in workers’ bargaining power.
- Financial and real crisis in year 30.

- Investors consume more.
- Investors invest more in equity.
- Investors make more loans.
Baseline Scenario

- Highly persistent decrease in workers’ bargaining power.
- Financial and real crisis in year 30.

**Workers' Consumption:**
- Workers' leverage increases.
- This increases the probability of crises.

**Graphs:**
- Bargaining Power
- Real Wage
- Return to Capital
- Investors' Consumption
- Investors' Physical Investment
- Investors' Loans
- Workers' Consumption
- Workers' Debt-to-Income Ratio
- Crisis Probability
An Improved Scenario: Orderly Debt Restructuring

- Highly persistent decrease in workers’ bargaining power, as before.
- Financial crisis in year 30, but real crisis is mostly avoided.

Real wage collapse at crisis time is now very much smaller.

The drop in leverage at crisis time is therefore much more substantial.

But immediately afterwards leverage starts rising again.
A Much More Sustainable Scenario: Restoration of Workers’ Bargaining Power

- Highly persistent decrease in workers’ bargaining power, as before.
- But in year 30 workers’ bargaining power is restored to its original level.
- Financial and real crisis is thereby avoided.

Recovery in real wage gives workers the means to service their debts.

Leverage therefore goes on a sustained downward path.
• Discussion: How Can This Policy Be Implemented?

1. Higher Pre-Tax Wages through Higher Bargaining Power:
   – Strengthening collective bargaining rights?
   – Difficulties: Wage competition from China and other countries.
   – Payoffs: Avoiding further crises.

2. Higher After-Tax Wages through Lower Taxes:
   – Switch from labor income taxes to other taxes?
   – Difficulties: Higher capital income taxes would drive investment elsewhere.
5 Summary

- Empirical Link in 1929 and 2007: Higher income inequality $\Rightarrow$ higher leverage $\Rightarrow$ large crises.

- Theoretical Model:
  - Key shock: Decrease in workers’ bargaining powers over incomes $=$ smaller “share of the pie”.
  - Key mechanism: Recycling of investors’ income gains back to workers as loans.

- Conclusion:
  - Only an improvement of workers’ bargaining power leads to a sustained reduction in crisis probability.
  - Solutions to financial fragility that leave bargaining power (or alternatively taxation) untouched run into the problem that investors’s surplus funds will keep pushing loans and therefore crisis probability higher.
Is Government Debt a Separate Issue?

- Not really.

- A significant share of government debt has just been another (indirect) way for the lower and middle classes to borrow from the top income group.

- Much spending was on governmental programs that went to the majority, while much of the resulting debt is held by the top income group.

- In other words, problems of high government debt have an important income distribution dimension.

- Major exception: Government debt held by foreigners.
Financial Asset Shares of the Top 5% Income Group

Direct Bond Holdings Share (in %)

Mutual Funds Holdings Share (in %)

Retirement Accounts Share (in %)
7 How About Foreign Debt?

- Empirical regularities for major economies:
  - More inequality almost always accompanied by CA deterioration.
  - Major exception: China.

- Explanation in general:
  - Workers borrow from both domestic and foreign investors.
  - Capital account surplus implies current account deficit.

- Explanations for China: Chinese workers face borrowing constraints, so Chinese investors deploy their savings overseas.
Change in Income Share of Top 5% (x-axis) and Change in CA Balance (y-axis)

R² = 0.6321