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Financial Innovation for Rent Extraction

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Johns Hopkins and NBER

Motivation

Observation 1:

Financial losses during crises magnified by financial innovation:

- Numerous “innovations” to leverage bailouts from deposit insurance:
 - ▶ rise of repos
 - ▶ effective seniority through short-term liabilities
 - ▶ ...
- “Innovations” to circumvent capital adequacy requirements
- “Innovative” types of mortgages
- Role of CDSs in the demise of AIG
- ...

Motivation

Observation 1:

Financial losses during crises magnified by financial innovation

Observation 2:

Unprecedented losses have led to unprecedented bailouts

Key Message of the Paper:

- This is not by coincidence, but by design
- Financial innovation massively increases the scope for rent extraction from government guarantees

→ understanding this mechanism allows us to better counteract it

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Key Considerations

- 1 study an economy with bankers and households
- 2 two forms of financial market incompleteness:
 - ▶ bank net worth is essential for economic activity
 - ▶ incomplete insurance between bankers and households
- 3 analyze two mechanisms to transfer resources between the two:
 - ▶ market created by financial innovation
 - ▶ bailouts

Key Results

- 1 insurance markets and bailouts are close substitutes:
 - ▶ both can allocate resources to agents who really need them
 - *bailouts reduce incentive for beneficial innovation*
- 2 if both are present, however, arbitrage opportunities arise
 - *bailouts induce financial innovation for rent extraction*
- 3 aggregate implications:
 - ▶ large bank profits in good times, large losses in bad times
 - ▶ redistribution from households to bankers
 - ▶ higher output volatility and negative NPV investments
 - ▶ increased consumption volatility
 - ▶ increased risk premia
- 4 delineate policy lessons

Literature

Contribution to the Literature:

- Literature on bailouts and “moral hazard:”
e.g. Bagehot (1873), ...
- Literature on financial innovation:
e.g. Allen and Gale (1989, 1991), Simsek (2011), Kondor and Koszegi (2016), ...
- Literature on rent extraction by financial sector:
e.g. Akerlof and Romer (1993), Philippon and Reshef (2009), Acharya et al. (2010, 2011, 2013), ...

Prequel: Bailouts in a Traditional Economy

Traditional bank assets such as bank loans:

- = bundles of payoffs across all states of nature
- risk-shifting naturally limited – you cannot take on tail risk *without investing more than desired in other states of nature*

Key Observation: financial innovation removes this constraint

- design securities that concentrate bailout risk

This paper: studies implications in a 2 x 2 economy

Benchmark Model

Benchmark model:

- two types of agents: households and bankers
- two states of nature: high and low
- three dates:
 - ▶ initial date 0: collect endowments
 - ▶ intermediate date 1: insurance market and/or bailout transfers
 - ▶ final date 2: production and consumption
 - banker net worth is essential for economic activity

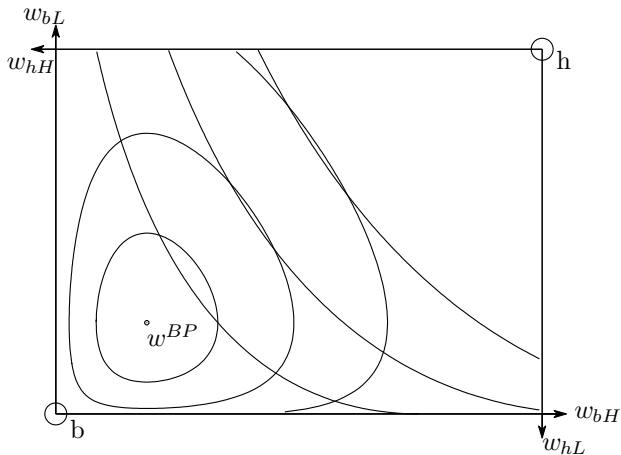
Autarky

Autarky equilibrium:

- No insurance markets, no bailouts
- Bankers just keep 'endowment' that they earn

Autarky

Autarky equilibrium in Modified Edgeworth box



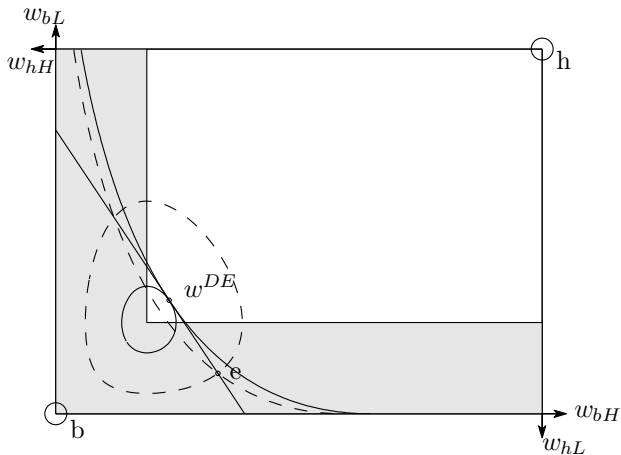
Walrasian Market

Insurance market:

- Market allows for insurance between high/low state
- lower fluctuations in bank net worth
- generally higher welfare for all agents

Walrasian Market

Decentralized Equilibrium:



Bailout Allocation

Bailout Transfers:

- Consider economy in which insurance market does not exist
- Assume endowment earned by bankers is low in low state

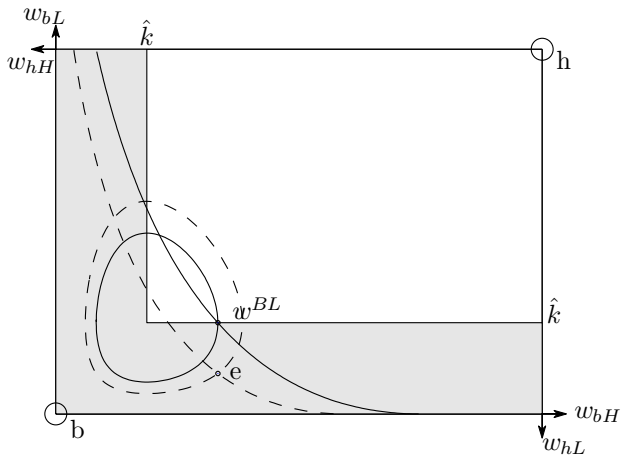
Lemma (Pareto-Improving Bailout)

If bank net worth falls below a critical threshold, workers are better off providing a bailout than suffering from the resulting credit crunch.

→ model of endogenous optimal bailouts

Bailout Transfers

Pareto-Improving Bailout Transfer:



Combining Walrasian Market and Transfers

Assume both insurance market *and* bailout transfers are present (and assume no commitment by households):

Focus on symmetric equilibria

Banker can follow two strategies:

- 1 **Insurance regime:** trade to optimally insure
 - 2 **Rent extraction regime:** trade to maximize bailout transfers
- choose strategy that maximizes utility

Note: insurance regime replicates the insurance allocation

Combining Walrasian Market and Transfers

Rent Extraction Regime:

- Bankers sell maximum number of claims against low state
- until the *high-state* endowment of households is exhausted

Proposition (Rent Extraction Regime)

The rent extraction regime is more desirable

- 1 *the lower bankers' endowment*
- 2 *the lower the probability of the low state and*
- 3 *the higher the extractable high-state endowment of households*

Rent extraction leads to real volatility and risk premia

Key Insight: bankers appropriate all surplus in the high state

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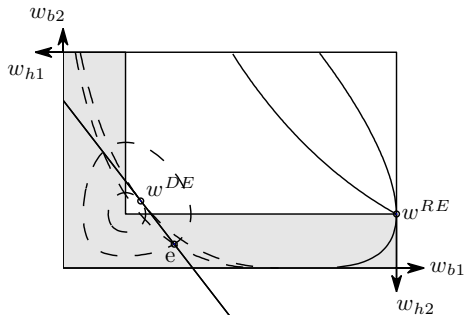
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Rent Extraction

Rent Extraction Equilibrium (zoomed out)



Mixed Strategy Rent Extraction¹

Note: symmetric equilibrium leaves money on the table

Mixed-Strategy Equilibrium:

Bankers may find it optimal to split into two groups:

- 1 one group extracts maximum bailout transfer in the low state
- 2 the other group extracts maximum transfer in the high state

Proposition (Mixed Strategy Rent Extraction)

In a mixed strategy rent extraction equilibrium, bankers place bets so as to extract the entire economic surplus in both states of nature.

¹Credits to AIG and Goldman for the inspiration

Market Structure and Financial Innovation

Assume bankers can create market between $s = L, H$ at a fixed cost f (see e.g. Allen and Gale, 1988, 1991)

Proposition (Financial Innovation for Rent Extraction)

Bankers are willing to pay a higher fixed cost f to create a market if they do so for rent extraction than if they do so for insurance.

Note: financial innovation directed at creating an arbitrage opportunity

- bailout \approx Arrow-Debreu security at zero (underpriced) cost
- traded securities sell at a positive price

→ modern financial markets extremely efficient at arbitrage

Market Structure and Financial Innovation

Proposition (Reduced Incentives for Beneficial Innovation)

If bailouts are available, bankers are willing to pay a lower fixed cost f to create a market for insurance.

Intuition:

- bailouts are substitutes for markets
- less incentive to create a market if substitute already exists

→ bailouts increase incentives for “bad” innovation

→ reduce incentives for “good” innovation

Effects on Output

In the rent extraction regime:

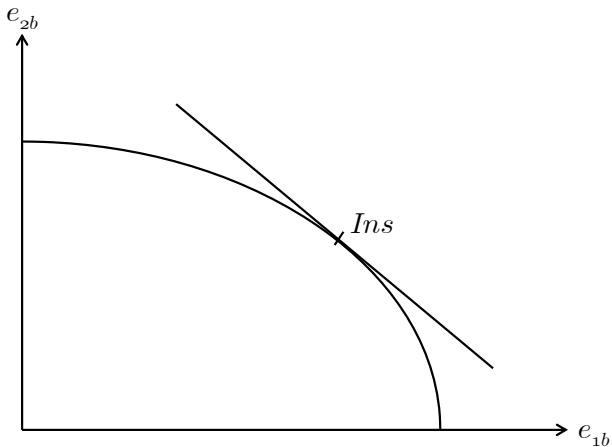
- bankers prefer highly pro-cyclical investment opportunities
- intuition: distorted state prices induce them to value only the payoffs in the high state

→ massively negative NPV production takes place

Example: housing bubbles

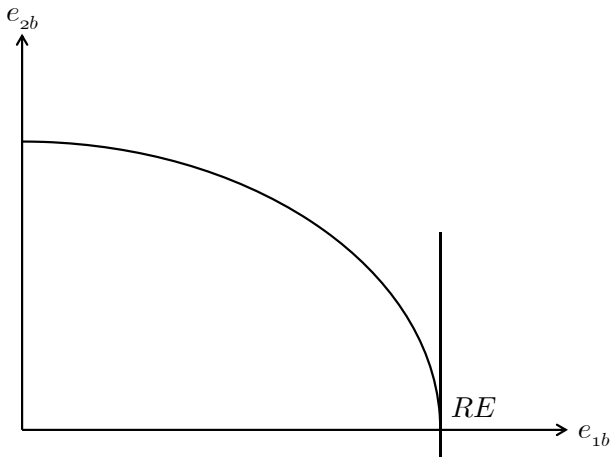
Production Economy

Production Economy – Insurance Regime



Production Economy

Production Economy – Rent Extraction Regime



Policy Measures against Rent Extraction

Traditional policies more important under financial innovation:

- Limits on bailouts:
 - ▶ maximize limited liability: impose losses on claim holders
→ reduces scope for shifting rents into the high state
 - ▶ maximize losses imposed on owners (and managers)
→ increases cost of the low state
 - Policies that reduce appeal of rent extraction regime:
 - ▶ require more capital
 - ▶ impose progressive taxation
 - ▶ remove interest deductibility of debt
- may have discontinuous effects when banks switch regime

Policy Measures against Rent Extraction

New policies against financial innovation for rent extraction:

- Taxes/quantity regulation on state-contingent trades:
 - ▶ risk models, stress tests, ...
- BUT: very difficult to fine-tune:
 - taxes that leave the low-state security merely *underpriced*, still leave open the arbitrage opportunity
- Limits on financial innovation

Conclusions

- 1 Financial innovation is most profitable if directed at rent extraction
→ creates arbitrage opportunity when bailouts underpriced
- 2 Rent extraction equilibria:
 - ▶ redistribute lots of surplus to bankers *in good states*
 - ▶ increase volatility and reduce efficiency
 - ▶ lead to negative NPV investments
- 3 Even if regulation makes rent extraction costly, small mispricing may lead to massive rent extraction