Financial Innovation for Rent Extraction

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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

- ...

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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
Motivation

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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**

![Diagram of the Edgeworth box with Autarky equilibrium point labeled as $w^{BP}$]
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
Combining Walrasian Market and Transfers

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Rent Extraction

Rent Extraction Equilibrium

\[ w^{RE} \]

\[ w_{bL} \]

\[ w_{hH} \]

\[ w_{bH} \]

\[ w_{hL} \]
Rent Extraction

Rent Extraction Equilibrium (zoomed out)
Mixed Strategy Rent Extraction

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.

Credits 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
$\rightarrow$ 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

\[ e_{2b} \]

\[ e_{1b} \]

\( Ins \)
Production Economy

Production Economy – Rent Extraction Regime

\[ e_{2b} \]

\[ e_{1b} \]

\[ RE \]
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