

SYSTEMIC RISK

The Future of Financial Regulation

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I. INTRODUCTION

(At least) two meanings of systemic risk:

(a) *Domino effects*

Created by:

- mutual exposures
[OTC markets, money market, etc.]
- absence of centralized exchange
[Amaranth 2006 vs. Lehman or AIG 2008].

Highly endogenous.

Peer monitoring and domino effects two sides of the same coin?

(b) *Overall macroeconomic fragility*

- ✓ Increased reliance on markets (securitization, money market):
 - traditional institutions (commercial banks, broker-dealers)
 - shift from bank-based system to market-based system (shadow banking system: conduits, hedge funds, investment banks, monolines; mutual funds: threats of redemptions).

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- ✓ Strong monetary policy reaction:
 - \$4,400 billion commitments through various Fed facilities
 - Fed funds rate almost 0.

Emmanuel Farhi-Jean Tirole

"Leverage and the Central Banker's Put" (*AER P&P* 2009)

+ larger paper (in progress)

Transformation, interest rate vulnerability and monetary bailout

Key insight

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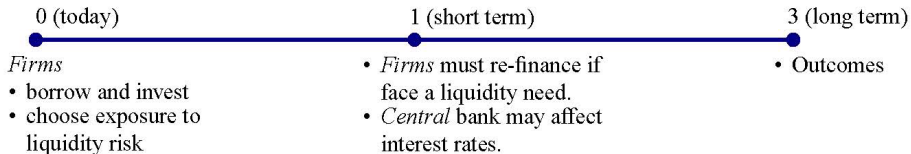
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Private leverage choices strategic complements through reaction of monetary policy

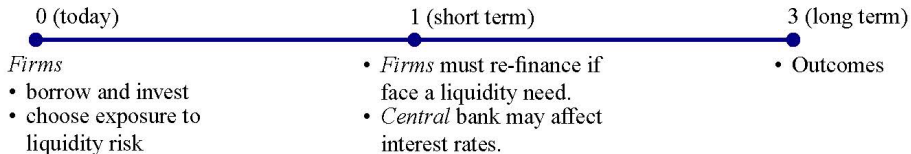
Corollaries

- Private leverage decisions highly sensitive to macroeconomic conditions.
- Private sector interest-rate vulnerability may *increase* when bad news about future liquidity needs accrue.
- Monetary policy time-inconsistent, *not* for standard inflation-bias reason.
- Need for macro-prudential supervision.

II. DESCRIPTION OF MODEL



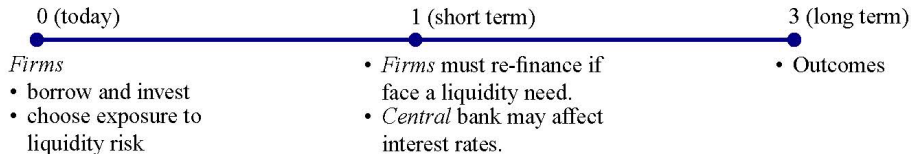
II. DESCRIPTION OF MODEL



Choice of exposure to liquidity risk = choice between two technologies: "risky" and "safe". In practice:

- reliance on securitization.
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Risky technology allows larger investment.

Objective function

$$W = V + \beta U \quad \text{with } \beta \leq 1$$

consumers' utility firms' utility

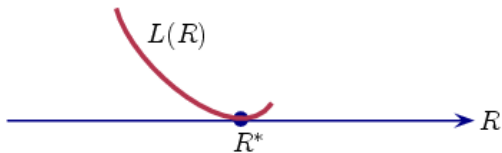
CENTRAL BANK

Objective function

$$W = V + \beta U \quad \text{with } \beta \leq 1$$

↑ ↑
consumers' firms'
utility utility

- Can distort consumers' marginal rate of substitution between dates 1 and 2, and lower (one plus) rate of interest $R < R^*$. Distortion cost (MRS \neq MRT): $L(R) = \text{loss}$
(-)



MONETARY BAILOUTS

If firm

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Refinancing constraint:

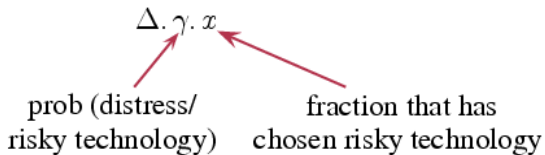
$$\frac{\text{pledgeable income}}{R} \geq \text{reinvestment need} \quad (*)$$

Lower interest rate facilitates refinancing. Let $R_0 < R^*$ satisfy (*) with equality.

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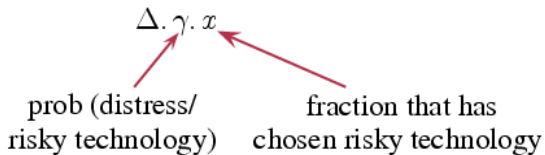
- ✓ Benefit of low interest rate policy is *proportional* to number of firms that have chosen risky technology and are in distress:



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$$- [\text{reinvestment need} - \frac{\text{pledgeable income}}{R^*}]$$

- ✓ Benefit of low interest rate policy is *proportional* to number of firms that have chosen risky technology and are in distress:



- ✓ Cost of low interest rate policy $L(R_0)$ is *fixed* (independent of x)

Non-targeted policy

Result #1.

If

$$\Delta\gamma_x \geq L(R_0)$$

monetary bailout.

Strategic complementarities

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(different from standard TI, à la Kydland-Prescott).

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Result #3 *Monetary bailout*

Risky corporate behavior more likely if

- higher weight of corporate sector in central bank's objective (β high)
- liquidity shocks more likely (γ high) \rightarrow contrast with commitment solution.

Regulating leverage

- ✓ With commitment, no need for leverage regulation:
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- ✓ With commitment, no need for leverage regulation:
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- ✓ Without commitment, leverage regulation to alleviate temptation to bail out.

Macro-prudential regulation

FISCAL BAILOUTS

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- ✓ Monetary and fiscal bailouts. May be complements.