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Mundell-Fleming Lecture

**Lessons from a Crisis: Crisis Management
and the Future of Financial Regulation**

Jean Tirole
IDEI and MIT

Presented at the 9th Jacques Polak Annual Research Conference
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III. Crisis management: 2. Recapitalization

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III. Crisis management: 2. Recapitalization

IV. The future of financial regulation

[next Saturday's G20 Washington summit: towards a new Bretton Woods?]

I. WHAT WENT WRONG?

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- failure of consumer protection
- risk taking (exposure to real estate price and interest rate).

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[boom-bust cycle]

(2) *Risky real-estate and other loans*

- failure of consumer protection
- risk taking (exposure to real estate price and interest rate).

(3) *Excess securitization*

- benefits of securitization: (a) diversification, (b) certification (ratings, investment banks), (c) transformation of dead into live capital (creation of stores of value)
- loss of accountability: evidence of moral hazard.

(4) *Rating agencies*

- wrong models
- incentive misalignment (including conflicts of interest)
- lack of normalization.

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including by entities wo. or w. little stable retail deposits

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High sensitivity to interest rates.

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High sensitivity to interest rates.

(6) *Imperfect/evasion of prudential capital requirements*

- measurement of risk
- implicit exposures
- risky credit lines, off-balance sheet vehicles
- (strategic) overconfidence in ratings.

(7) *Procyclical regulation*

[MTM and the fire sales spiral/negative bubble.]

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[Example: Sovereign funds invest their \$2 or \$3,000bn of free cash flow into safe T securities. Money market funds, banks with liquidity,... have large deposits at CBs.]

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(10) *Mutual exposures and unregulated entities' access to taxpayer money*

[yesterday: LTCM; today: Bear Stearns, Lehman's "close call"; tomorrow: GE Capital, hedge fund?]

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 - financial institutions, industrial companies and households hold low-yield T bills and other ST assets
 - [– risk free rate puzzle. Negative real rates today!
 - Contrast Keynes, Hicks, Gurley-Shaw: “liquid assets allow investors to better weather income shortages”.]

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 - [– risk free rate puzzle. Negative real rates today!
 - Contrast Keynes, Hicks, Gurley-Shaw: “liquid assets allow investors to better weather income shortages”.]
 - same players spend billions of \$ on risk management, CDS,...

A conceptual framework

Based on joint research with Bengt Holmström, in particular *JPE* 1998 article and book in progress *Inside and Outside Liquidity*.

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- some of the proceeds attached to an investment cannot be pledged to uninformed investors
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- can write financial claims only on pledgeable income.

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 - initial wealth (equity) A
 - technology:

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- ✓ Determinants of wedge $z_1 - z_0$:
 - larger when riskier project, when possibility of asset substitution
 - reduced by intermediation, transparency (going public), collateral pledging,...
- ✓ Interesting questions in corporate finance relate to trade-offs between value z_1 and pledgeable income z_0 .

No liquidity needs: solvency requirement

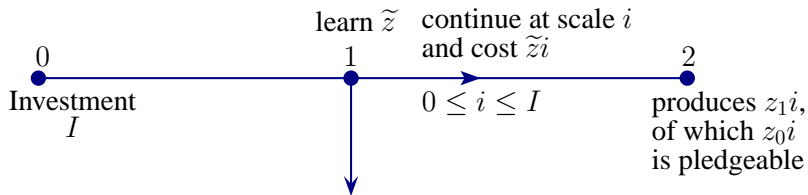
Investors' RoR condition:

$$I - A \leq z_0 I \implies I = \frac{A}{1 - z_0}$$

- Multiplier increases with pledgeability

Intermediate liquidity need: liquidity demand

✓ Illustration:



- ✓ liquidate $I - i$,
no liquidation value
($p(I - i) = 0$)
- ✓ no date-1 income
($r = 0$)

✓ \tilde{z} can take two values



$$[f_L + f_H = 1]$$

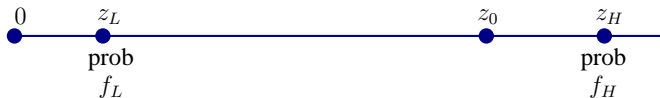
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- date-1 income (\tilde{r})
- funding liquidity (\tilde{z}_0)
- market liquidity (\tilde{p})

[funding and market liquidity can be shown to be correlated.]

Key insight:

returning to capital market at date 1 (issuing new securities) yields at most $z_0 i \implies$ cannot weather high shock without having hoarded liquidity at date 0.

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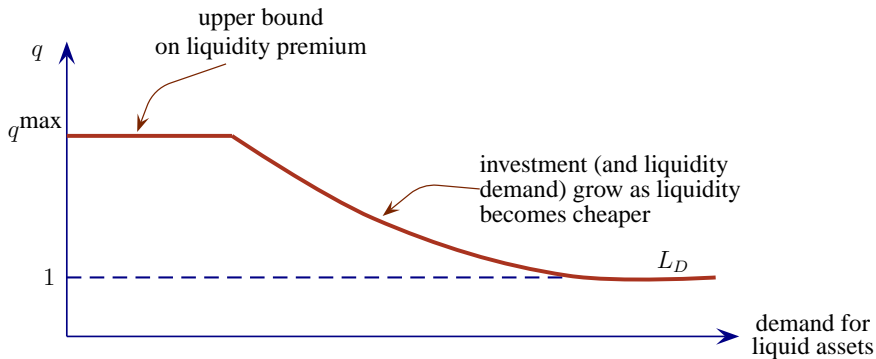
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- Let $q \geq 1$ denote the date-0 price of liquid assets (stores of value yielding 1 at date 1)

[liquidity premium if $q > 1 \iff r < 0$ where $q = \frac{1}{1+r}$]

DEMAND SIDE



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[analogy with current money market]
Wasted liquidity.
 - Instruments for contractual redispaching:
 - credit lines
 - X holdings, conglomerates
 - CDS/swaps/risk management tools

- ✓ A2. (also general). *No* for sufficiently large macroeconomic shock.

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- Private sector can/must then invest in low-yield, liquid projects that yield cash at date 1.
- Alternative = outside liquidity.

(2) Outside liquidity: public supply

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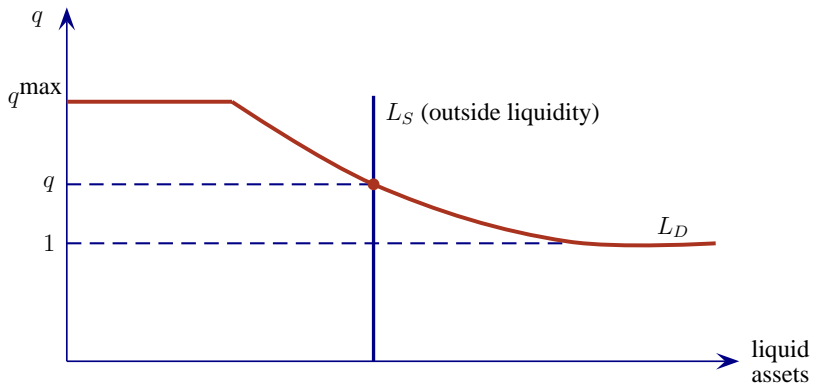
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- ✓ In practice, creates a large amount of liquidity, most of it state-contingent:
 - monetary policy (low interest rates in bad times)
 - discount window, bailouts
 - guarantees in interbank, money and other short-term markets
 - asset repurchases (Paulson plan)
 - non-indexed deposit and unemployment insurance
 - fiscal policy, etc.

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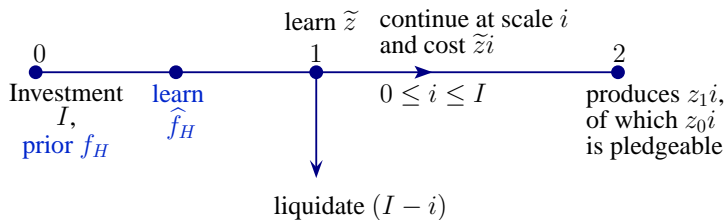
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Government provision much more efficient for rare events (f_H low)

Equilibrium in market for liquid assets



✓ Application#2: bad news (news $\hat{f}_H > f_H$)



Short-term impact (I fixed): $|\hat{r}| \simeq |r| \frac{\hat{f}_H}{f_H}$

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- Alone in taking massive gamble on wholesale borrowing market \implies no “Bernanke put”
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Source of funding liquidity that is not reliable however:

- financial muscle of buyers depleted in bad times
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Add “financial stability” (in sense of pre-emptive bubble avoidance) to the Fed’s mandate?

[chairman of MS Asia, FT October 28, 2008. Contrast Bernanke 2001/2002]

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Working paper with Emmanuel Farhi. Bubbles

- boost investment, while crash induces recession,
- exhibit a liquidity discount if stochastic,
- have larger impact on low z_0 firms,
- are more likely in countries with underdeveloped financial markets.

III. RECAPITALIZING THE FINANCIAL SYSTEM

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Discussion of three (non-exclusive) interventions.

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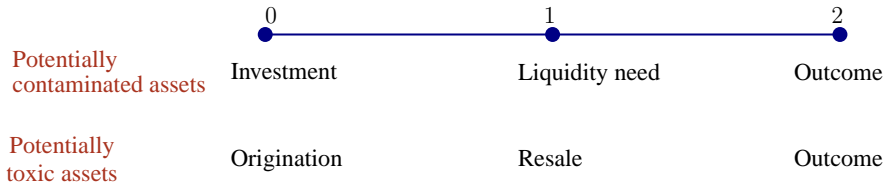
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(3) *Direct recapitalization*

- last minute: set equity at 0, remove management
[ex post efficient + defines an unfavorable end game for management and shareholders]
- before failure: desirable, but stigma avoidance
[like discount window, Japan 90s, IMF CCL,...]

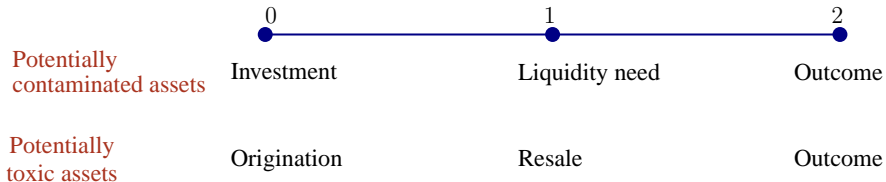
Ongoing research with Jean-Charles Rochet

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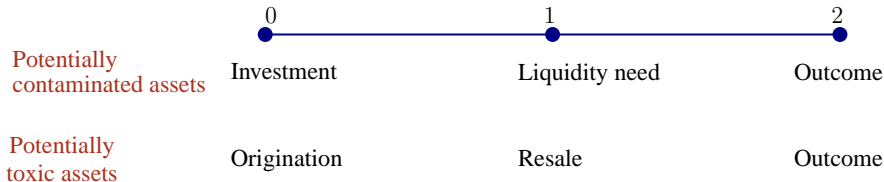
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- Suppose that in absence of government intervention at date 1, lemons problem in resale market \rightarrow breakdown \rightarrow contagion to rest of balance sheet
- Optimal public policy (mechanism design)?

Public intervention must mitigate selection problem:

(Privately known)
quality of
assets in place



Superior: do not participate in plan.
Crucial that plan not be encompassing, as
inclusiveness raises the cost of intervention

Mediocre: government brings capital in the form of debt

Toxic: asset repurchases at inflated price. Incentives
restored by clean slate.

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[Bank of France-TSE conference on January 29-30, 2009]

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What is regulation about?

- Normal times: protect small depositors, insurance policy holders, pension plan holders, retail investors.

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- *Systemic risk* is currently paramount. Should not have become so prominent! (Endogenously) opaque system of mutual exposures \implies can't prevent non-regulated sphere from contaminating regulated one.

Ring fencing: “Keeping toxic products away from public places”

[Jean-Charles Rochet]

Use capital adequacy requirements to encourage:

- standardization of products

[exchanges \gg OTC from a regulatory viewpoint. For all their flaws, fair value accounting and ratings are key to regulatory assessment of risk]

- centralized markets with known and limited counterparty risk.

(2) *Fair value accounting*

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My current view:

- keep fair value accounting
 - use dynamic provisioning
- [good theoretical reasons for this.]

(3) *Rating agencies*

Large failure, not the first one...

- Needed: just “let banks make their own judgment” won’t work.
[(a) hard to get more than 3 agencies; will thousands of institutions have enough expertise? (b) can regulators believe internal assessments?]

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 - [imagine failure of large swiss or dutch bank]
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- Define rules ex ante, ex post determination of burden sharing harder. Europe:
 - centralize supervision?
 - absence of a Treasury (and X-subsidies problem).

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V. CONCLUDING REMARKS

✓ *Policy*

- Very worrisome situation, yet an opportunity to lay down new rules.
- Resist both political pressure (highly technical issues) and business as usual (which would prepare next crisis).

✓ *Research*

Call for macro-prudential regulation:

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Call for macro-prudential regulation:

- Supervisors and economists interested in prudential matters have long ignored macroeconomic aspects.
- Macroeconomists have paid insufficient attention to micro-foundations of prudential rules, solvency and liquidity.

Current crisis demonstrates need for unification.

Thank you very much!