# **Rethinking the Principles of Bank Regulation:** A Review of Admati and Hellwig's *The Bankers' New Clothes*

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These notes:

http://home.uchicago.edu/~rmyerson/research/newclothppt.pdf



## Overview

Importance of information and moral hazard in finance. (moral-hazard credit cycles)

Seeking strong foundations for trust in the financial system: public accountability is essential.

Admati & Hellwig's core argument for requiring more equity: Modigliani-Miller and moral hazard.

Liquidity crises and the lender (or monitor) of last resort.

Questions of accounting in bank regulation: Should equity be required for assets or for liabilities?

Dangers of risk-weighting assets in equity requirements: Generating systemic risk, intensifying its effect on small business

Conclusions.

#### From a general theory without bank failures or credit rationing

Keynes's *General Theory* discusses saving and investment at length without seriously considering financial intermediation or bank failures.

- His *General Theory* even ignores his own observations on how monetary policy can affect aggregate investment without changing interest rates.
- "There is normally a fringe of unsatisfied borrowers to whom a bank would be quite ready to lend if it were to find itself in a position to lend more. The existence of this unsatisfied fringe allows the Banking System a means of influencing the rate of investment supplementary to the mere changes in the short-term rate of interest." Keynes, Treatise on Money, 1930.
- Credit rationing seemed theoretically indefensible in 1936, but Stiglitz & Weiss derived it in 1981 from *moral hazard* and *adverse selection* in finance.
- "Twenty years ago, there was no microeconomic theory of banking, for the simple reason that the general equilibrium model was unable to explain the role of banks. Since then, a new asymmetric-information paradigm has emerged that has been useful in explaining the role of banks and pointing out weaknesses of the banking sector." X. Freixas, J.-C. Rochet (1997)

#### Importance of information and moral hazard in finance

*Moral hazard*: problems of motivating individuals to act appropriately in a transaction or relationship.

- *Adverse selection*: problems of motivating individuals to share private information appropriately in a transaction or relationship.
- In any modern industrial economy, small investors must rely on expert specialists to do the work of identifying good investment opportunities.
- Anyone with power over others' savings might be tempted to abuse this trust. Moral-hazard concerns make creditors insist that agents who control investments must have some proportionate ownership stake in the profits.
- Adverse selection can bias such experts toward issuing debt rather than equity, as outside investors can be more confident of debt's value (Myers-Majluf 1984).

When financial intermediaries and industrialists are overburdened by debt, they are less able to make new productive investments, which can cause a recession.Wealth of trusted financial agents becomes a key macro state variable (*systemic risk*) in a balance-sheet theory of recessions.

## **Responses to moral hazard yield unstable macro dynamics**

- In "Moral-hazard credit cycles," I showed how macroeconomic fluctuations can be driven by moral hazard in financial intermediation.
- Assumption: Investors can find good investments only through financial agents, who may be tempted to divert funds to their cronies' bad investments.
- Such behavior is efficiently deterred by promising big late-career rewards for agents who consistently deliver successful investments throughout a long career.The promise of a big bonus at the end can motivate good behavior throughout an agent's career.

# This need to invest through agents who have long-term career incentive plans can create complex macroeconomic dynamics.

- When there is a shortage of trusted financial agents, investment is reduced, and employment may suffer.
- But recruiting many young agents at once could create excess capacity in the future, as their responsibilities will grow until retirement under efficient incentive plans.So recovery is gradual and yields subsequent booms and recessions.Tendency of relational capital to appreciate over time destabilizes the system.

*This model has deterministic rational expectations, but financial crises can also be caused by changes in the public's understanding of moral-hazard constraints!* 

# Snapshot of the "Model of moral-hazard credit cycles" Journal of Political Economy 120:847-878 (2012). Investments handled by different cohorts of agents with 10-period careers, starting with agents investing 80% of steady state.

All rewards for risk-neutral agents are back-loaded to end of their careers. **Total investments** managed by each cohort of bankers grows in proportion to the expected present discounted value of their total end-of-career bonuses (which is not uncertain for the whole cohort).



(Model with risk-averse agents: Journal of Economic Theory 153:74-102 (2014).)

#### Seeking strong foundations for trust in the financial system

Small businesses and others who rely on banks for credit implicitly depend on bankers' ability to maintain depositors' trust.

- But small depositors cannot be expected to do all the necessary work of monitoring to certify that their banks are trustworthy.
- So there is an essential role for public regulation of banks, to maintain stable trust in channels of credit that are vital to our society.

Broad loss of trust in financial intermediaries would be economically disastrous.

As moral hazard is critical in finance, we must not assume it away in government.The financial system has enough wealth to corrupt any small group of officials, and so any system of financial regulation must be subject to public monitoring.In a democracy, the whole system must ultimately depend on informed citizens having some basic understanding about what bank regulators are supposed to do.

Regulators' rulings must be based on public information according to principles that informed citizens can understand.

Any meaningful financial regulatory reform must include a clear explanation of its principles to millions of informed citizens and investors.

## Admati & Hellwig's argument for requiring more equity

In early 20th century, US banks typically had equity worth about 25% of assets, to assure depositors that the bank was likely able to repay them.

For any given level of risk in bank's investments, probability of losses large enough to affect the depositors becomes smaller when the bank has more equity.

Modigliani-Miller (1958): The net total expected value of an investment to all claimants should not depend on what shares are financed by debt or equity.
So when creditors gain from issuing new equity, current equity owners must lose.
Borrowing becomes "addictive", as advantages of increasing the equity/debt ratio would accrue primarily to creditors, not to equity owners who control the bank.

Moral hazard: possibility of default makes owners more willing to take new risks with borrowed funds, but less inclined to invest their own capital.Owners have less incentive to avoid risks of large losses when equity is small.

- These effects become worse with deposit insurance, which reassures depositors and lets banks can borrow at low interest rates even with small equity.
- Without insurance, a bank's long-term ability to attract deposits would depend on a commitment to force the bank to increase equity when it becomes too small.
- Myers-Majluf: Even without debt, adverse selection can devalue new equity issues, but not when equity is required by regulators based on public information.

#### Liquidity crises and a lender or monitor of last resort

Liquidity regulation or capital regulation? Information is of the essence.
Because of adverse selection, investments in a bank's area of expertise become hard to sell (*illiquid*) when others with similar expertise cannot buy (*systemic crises*).
Such fire-sales can be profitable opportunities for an informed investor of last resort.

Bagehot (1873): When banks are generally short of cash, the lender of last resort should lend to solvent banks with good collateral worth more than liabilities.Bold lending then can serve as public signal that the borrowing banks have been found credit-worthy by the experts at the central bank.

#### A lender of last resort may be better understood as a monitor of last resort.

Thus, a central bank can solve liquidity problems for banks with positive equity. But the central bank's ability to evaluate banks' solvency and apply stress tests is as essential to the central bank's function as its ability to print money.

1907: Morgan as monitor/lender of last resort, also accused of using his broad financial influence to create monopolistic cartels.

The role of monitor/lender of last resort, maintaining costly expertise to provide public information, is a natural monopoly that should be publicly controlled.

#### Accounting is of the essence in bank regulation

Equity (assets-debts) requirements must be in proportion to rest of balance sheet:  $\geq$  some fraction x of assets, or fraction x/(1-x) of debt liabilities.

Netting assets with closely linked liabilities should not conceal risks. Admati-Hellwig: GAAP vs IFRS standards for netting in derivative contracts could change size of Chase's Dec 2011 balance sheet by almost 10 times equity!

Is equity regulation too complex for informed citizens to understand? If some transactions generate risks that cannot be reasonably represented in public accounting statements, perhaps such transactions should be off-limits for banks that are in the business of issuing certifiably safe deposits.

Regulatory accounting rules may differ from accounting for owners. (loan values for pledged collateral, max-loss liability for derivative contracts)

#### Defining required equity in terms of assets seems fundamentally misleading. Banks needs equity for their liabilities, to make them credible.

Basing equity requirements on liabilities could help motivate full reporting, if regulators can restrict a distressed bank's payouts on unreported liabilities. *Reported liability levels should be clearly stated to creditors in contracts*.
Off-balance-sheet creditors should not free-ride on regulatory certification.

## **Dangers of risk-weighting assets in equity requirements**

Much work of Basel Committee on Banking Supervision has aimed to make equity capital requirements finely calibrated to risks of banks' investments: Regulators use risk-weighted capital adequacy formulas, or bank's own risk models.

Why? M&M suggest social cost of requiring excess equity would be small.Goal may be to encourage banks to make safer investments, by offering to relax equity requirements when a bank made investments that seemed safe.But the basic reason for requiring equity is to guarantee that the bank's owners have a substantial incentive to invest prudently!

Any attempt to specify investments that regulators should consider safe can create serious systemic risk when assets are wrongly labeled "safe".
(AAA-rated mortgage-backed securities, sovereign debt in the euro zone,...)

Giving marketable securities lower risk weights than loans to small businesses could cause banks to shift from such loans when bank capital is scarce. Loss of credit for small business would increase unemployment in a financial crisis.

Using the bank's own models can obscure regulatory rules from public monitoring, allows manipulation and even deliberate self-blinding by bank management.

# Should we go even further toward 100% equity financing?

More radical suggestions:

Narrow banking with 100% reserves on checking accounts (Fisher 1935):

Do bank failures matter for their effect on money supply or credit channels? Require 100% equity for lending institutions? (Kotlikoff 2010)

It would need regulatory enforcement, as (by Myers-Majluf) there will always be some pressure toward debt financing when equity is not clearly required.

There is a real transactions demand for bank debt, but the price that people are willing to pay for it should decrease as its supply increases.

- There is a real moral-hazard cost to banks' issue of debt, but it should be small when equity is large enough that risk of insolvency negligible.
- Equity requirements should be a bright line somewhere in the range that can generate enough bank debt to meet basic transactions demand for deposits, but can ensure that bank owners expect to bear most investment risks.

FDIC: Banks that failed 1978-2007 generated losses averaging 19% of deposits.
When a bank's equity is less than this average, the public would expect to lose more from failure than owners, so more public oversight may be appropriate. (19% of debt liabilities = 16% of assets)

# **Conclusions (1)**

Allowing less capital for investments in "safe" marketable securities has created systemic risk, and has made small-business credit more sensitive to bank capital.

Requiring more equity is the single most effective way to ensure that a bank's owners have an incentive to manage its risks prudently.

Further control of risk can be achieved by diversification guidelines to prevent a bank from lending too much to a narrow group of favored borrowers.

May also require capital to cover losses with high probability in selected scenarios, but for most banks, only the basic liability-based capital constraint should bind. If not, then the evident inclination of many banks to take excessive risks would indicate that the basic required capital ratio should be increased.

Talking about liabilities instead of assets moves the discussion as far as possible from any question of offering lower risk-weights for some approved assets.But the equity requirement could be on debt liabilities less cash reserves, and long-term debt could have a lower equity charge than short-term debt.Accounting standards and regulatory policies to prevent liabilities from being netted or hidden off the banks' balance sheets may be essential.

# **Conclusions (2)**

Bank regulation is obviously a complex technical matter, and we need to rely on specialists for the tasks of daily monitoring and stress tests in a crisis.But with so much money at stake, there is moral hazard in financial regulation.If nobody outside the elite circles of finance can recognize a failure of appropriate regulation, then such failures should be considered inevitable.

In a democracy, the whole system must ultimately depend on informed citizens having some basic understanding about what bank regulators are supposed to do. Hope that regulators will not falsely certify unsafe banks must depend on confidence that any failure of appropriate regulation could be discovered and understood by enough voters to cause a scandal for responsible officials.

Regulatory reforms are incomplete until the rules are publicly explained well enough that officials can be held publicly accountable for implementing them.

Economics professors cannot do it alone.

Political leadership is also needed to communicate the new principles by which the public should judge its financial institutions, regulators, and politicians.

#### Moral hazard credit cycles: the formal model

A financial agent who is new at t can serve **n** periods (t,...,t+n-1), retires at t+n. An investment of size h at time t will return, at time t+1,  $\pi_{t+1}$ h if success, else 0, with

P(succ)= $\alpha$  if supervised appropriately, else P(succ)= $\beta$  if wrongly, where  $\alpha > \beta$ . Acting wrongly yields hidden benefits worth  $\gamma$ h to agent at time t. Risk-neutral agents discount future payoffs at rate  $\rho$  per period. (Assuming  $\gamma < (1-\beta/\alpha)^2$  implies wrongful action is not worthwhile in equilibrium.)

- With agent's expected rewards v from success or w from failure at time t+1, need  $[\alpha v + (1-\alpha)w]/(1+\rho) \ge \gamma h + [\beta v + (1-\beta)w]/(1+\rho)$  (*incentive constraint*),  $v\ge 0$ ,  $w\ge 0$  (*limited liability*).
- To invest h at t, the agent's minimal expected reward (*moral-hazard rent*) at t+1 is  $\alpha v+(1-\alpha)w = hM$ , with  $v = hM/\alpha$  and w=0, where  $\mathbf{M} = \alpha(1+\rho)\gamma/(\alpha-\beta)$ .

Investors supply funds elastically at rate  $\rho$ , and expect no surplus in equilibrium. Optimal contracts: new agent at t will get  $M(1+\rho)^{n-1}/\alpha^n$  at t+n if always succeeds,

will invest  $(1+\rho)^{s}/\alpha^{s}$  at t+s if always succeeds until then, else 0. (*Invest 1 at t.*) If new agents invest  $J_{t}$  at each t, total investment at t is  $I_{t} = \sum_{s \in \{0,1,\dots,n-1\}} J_{t-s}(1+\rho)^{s}$ .

Assume expected surplus at t+1 depends on investment by  $\alpha \pi_{t+1} - (1+\rho) = \mathbf{R}(\mathbf{I}_t)$ , where R(.) is a decreasing *investment-demand function*. Equilibrium condition for new agents to be hired at t:  $\mathbf{R}(\mathbf{I}_t) + ... + \mathbf{R}(\mathbf{I}_{t+n-1}) = \mathbf{M}$ .