
A Macro-Prudential Approach to Capital Regulation for Financial Firms

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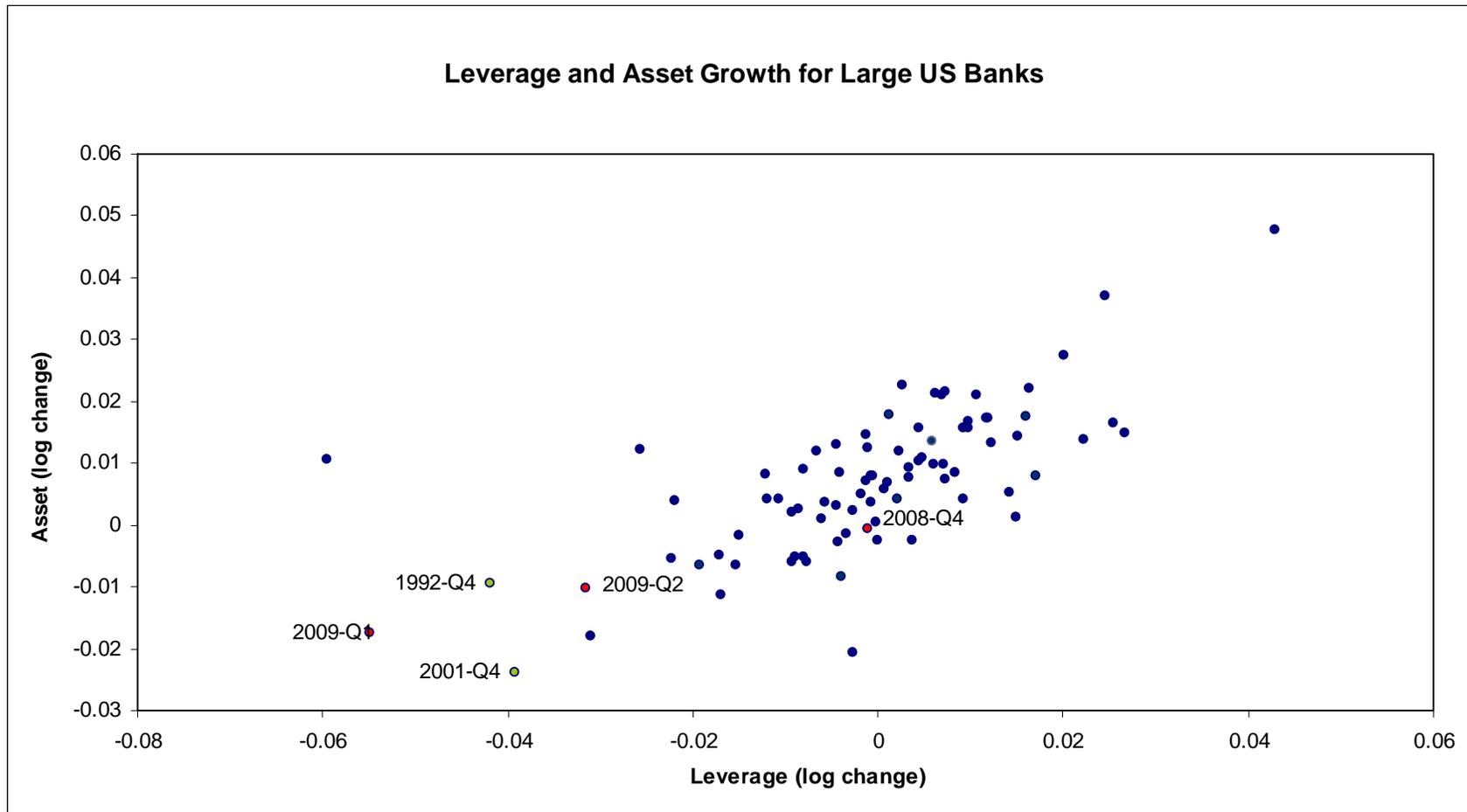
Traditional Approach Has Been Micro-Prudential, or Deposit-Insurer-Centric.

- Each bank should hold high enough ratio of capital to assets to ensure that losses to deposit insurance fund are highly unlikely.
 - And if things start to go bad, banks must adjust capital ratios quickly to get back in line: Prompt Corrective Action.
 - Problem with this approach:
 - If bank distress is not idiosyncratic, one bank's adjustment to negative shocks may impose externalities on others.
 - Systemic costs may be large even if deposit insurer remains protected.
 - The need for a more macro-oriented approach is increasingly well-appreciated.
 - "Capital requirements....should reflect the large negative externalities associated with....rapid deleveraging..."
 - From Treasury white paper on financial regulatory reform.
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Example

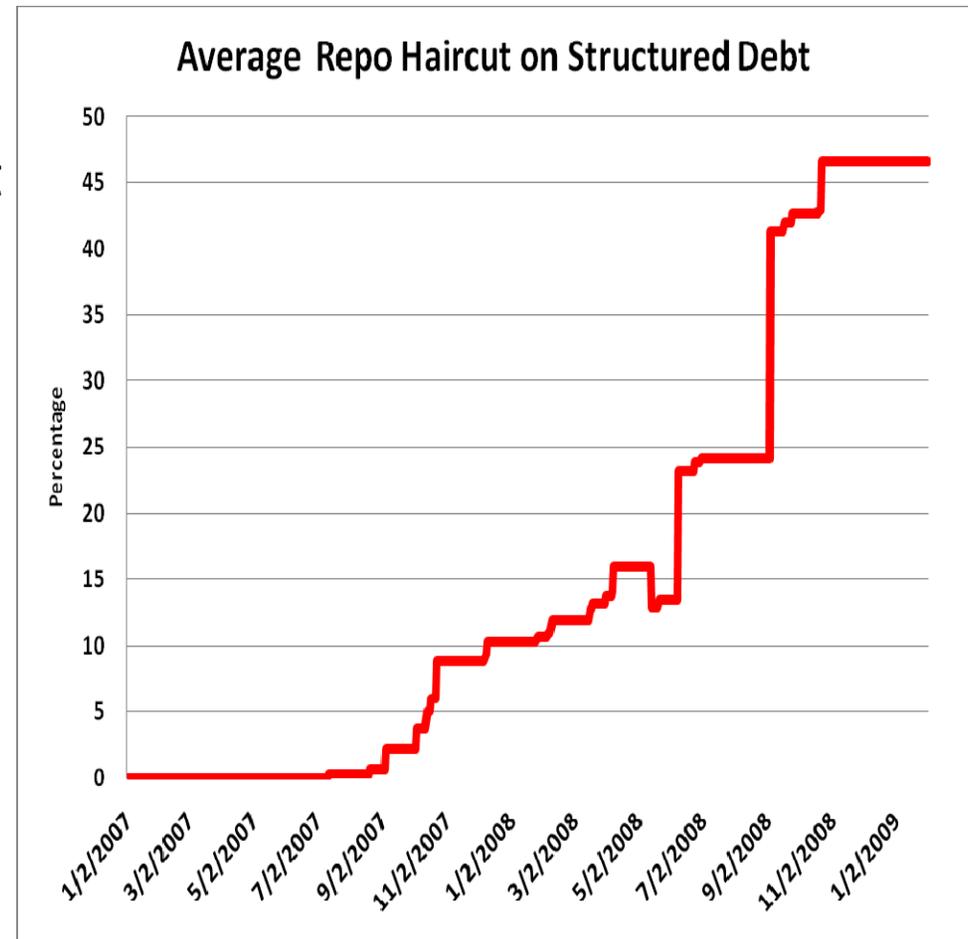
- Bank faces minimum capital ratio of 8% and initially has:
 - 100 of assets (e.g. mortgage-backed securities)
 - 90 of debt (short and long-term)
 - 10 of capital (preferred stock and equity).
 - Suppose we stipulate that losses never exceed 6.
 - In one-period world, deposit insurer is fully protected. But what else happens in this case?
 - If bank does not raise new capital, assets must fall to 50.
 - Assets fall further if: i) capital requirements are risk-based and risk weights go up; ii) market requires more capital than regulators in adverse scenario.
 - In other words, if banks delever (raise ratio of capital to assets) in bad times.
 - Delevering of this sort is prominent in the data.
 - In an environment of generalized distress, the resulting asset shrinkage creates two sorts of externalities: fires sales and credit crunch effects.
 - Of course, banks may raise some new capital.
 - But are constrained by debt overhang and asymmetric info. Given externalities, shrink by more than is socially optimal.
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The Deleveraging Phenomenon



Deleveraging is Amplified if Debt is Short Term and Haircuts Rise

- If haircuts (margin requirements) go up, may have to liquidate assets that can no longer be funded—even if capital constraint does not bind.
- An important feature of the current crisis.
 - Haircuts on structured products (e.g. AAA-rated asset-backed securities) rose dramatically.



Potential Elements of a Macro-Prudential Approach

- 1. Time-varying capital requirements.**
 - Build a buffer in good times that can be drawn down.
 - 2. More ex ante emphasis on “quality” of capital (common vs. pref).**
 - More common reduces overhang, facilitates recapitalization as opposed to shrinkage.
 - 3. Prompt corrective action oriented to forcing troubled banks to raise given *dollar* amount of equity, rather than repairing capital *ratios*.**
 - New equity offerings, dividend cuts, bonus holdbacks.
 - 4. Contingent capital schemes.**
 - Another way to recapitalize in bad times.
 - 5. Liquidity regulation.**
 - Maturity structure of debt is also key to fire sales.
 - 6. Regulating the shadow banking system.**
 - Fire sales and accompanying credit contraction can arise here; easily cross boundaries between banks and non-banks.
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Time-Varying Capital Requirements: Some Challenges

- Market-imposed capital, not regulatory requirement, may bind in bad times.
 - To matter, regulatory requirement in good times must be higher than bad-times market level.
 - Discomfort with giving regulators discretion—and a mechanical rule is hard to write.
 - A possible fix: “cap-n-trade”. Tradable capital relief certificates (Kashyap-Stein 09).
 - Regulator sets initially high capital requirement—say 14%.
 - Banks are granted permits. Each permit can be counted by a bank towards \$1M of its requirement.
 - Initially, enough permits are granted to bring effective requirement down to a lower value, say 12%.
 - Permits trade freely among banks—though no bank can use permits to buy down to below say 10% capital ratio.
 - Price of permits reveals shadow value of bank capital: precisely the item of interest to policy-makers.
 - Can now have discretionary policy that is disciplined by objective data.
 - When price of permits rises, capital is scarce and might want to relax capital requirement.
 - Note analogy to monetary policy:
 - Reserves are like permits for issuing insured deposits—i.e. permits that allow banks to expand short-term leverage.
 - Reserves trade freely among banks in funds market, and Fed uses funds rate as a signal re whether supply of reserves should be expanded or contracted.
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Why Quality of Capital Matters

- Banks can satisfy Tier 1 capital requirements with a combination of common equity and preferred, with presumption that common will be “predominant” form of capital.
 - In static protect-FDIC world, composition of capital is irrelevant so long as policymakers are actually willing to tolerate losses on the preferred ex post.
 - In dynamic world where goal is to have banks recapitalize rapidly in face of losses, common is ex ante more desirable.
 - Classic debt overhang problem: a large layer of preferred in the capital structure makes it harder to raise new capital, especially in bad times.
 - Nevertheless, even if capital is all initially in the form of common, banks’ willingness to tap external markets in bad times is likely to be limited—especially once debt value is meaningfully impaired.
 - Shareholders don’t want to be diluted in order to benefit creditors.
 - A rationale for regulators to compel new equity issues.
 - In macro-prudential setting, want prompt corrective action around *absolute quantity* of capital, not capital ratios.
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Focus Corrective Action on *Dollar Values* of New Equity, not on *Capital Ratios*.

- This was one of the best macro-prudential ideas in the SCAP (the stress tests).
 - Another dramatic SCAP lesson: when banks have no choice but to raise a lot of dollars of equity, can often do so with minimal market impact.
 - “Dilution” concerns seem to abate: think of Bank of America.
 - Exactly what adverse-selection theory of equity issues would predict: no choice = no negative info content.
 - Giving banks discretion to adjust capital ratio via either issuance of new equity or asset shrinkage makes adverse selection problem re-appear.
 - A tough regulatory hand can make everybody better off.
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Contingent Capital Schemes

- Reverse convertibles: debt that converts to equity in a pre-specified bad state of the world.
 - Flannery (05), Squam Lake working group (09).
 - Capital insurance: a lock-boxed insurance policy that pays off in a pre-specified bad state.
 - Kashyap-Rajan-Stein (08).
 - Economic rationale: holding large amounts of excess capital on the balance sheet is expensive—say due to taxes or agency problems. Contingent schemes only deliver capital in those states when it is most needed.
 - Analogy: don't insure against a fire burning your house down by keeping \$500K in a cookie jar—too much temptation to waste it.
 - The challenge: designing a workable trigger.
 - Based on stock prices?
 - Other measures of bank fundamentals?
 - Or regulator has discretion to declare a trigger event?
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The Need for Liquidity Regulation

- Thought experiment: would Bear Stearns, Lehman have survived with 2 percentage points more capital?
 - Heavy reliance on short-term wholesale funding a big part of the problem.
 - Jamie Dimon: “There is one financial commandment that cannot be violated. Do not borrow short to invest long.”
 - But firms do not internalize all costs of excessive maturity transformation—e.g., those associated with fire sales.
 - A fundamental question for liquidity regulation: should it be organized around institutions or individual assets?
 - Institutional approach: require a bank to have big enough buffer of (truly) liquid assets so that it can survive a serious liquidity stress scenario.
 - Loss of xx% of wholesale funding, drawdowns of yy% of credit lines.
 - Micro-prudential in focus: survival of the institution.
 - Asset-level approach: might, e.g., regulate haircuts on individual assets.
 - Note that this goes outside domain of just banks, or even of large financial firms—would apply to *any* investor in the assets.
 - A move towards regulating shadow banking system.
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Regulating the Shadow Banking System

- In many ways, the most challenging part of the problem—and the one where least progress has been made.
 - As capital and liquidity requirements on banks go up, will be increased pull of activity towards less-regulated shadow banking world.
 - And fragility in this part of the system has been a big contributor to the crisis.
 - Need an integrated and coherent approach to regulating banks and shadow banks. Easier said than done.
 - Though broad-based regulation of haircuts on e.g. ABS may be one important element.
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