An Incentive-Robust Program for Financial Reform

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Why Post-Crisis Reforms Often Fail

• Reformers often construct laundry lists of specific symptoms of the crisis they just experienced, and try to prohibit them from recurring, without recognizing, much less addressing, the core incentive problems that gave rise to them (e.g., new rules on derivatives, securitization, proprietary trading, etc.).

• Successful reform requires identifying **fundamental incentive problems** at the heart of a crisis (unless it was not just bad luck) and addresses them in ways that are **incentive-robust**, by which I mean that the design of reforms takes into account and is robust to the incentives of market participants, supervisors and politicians.
Causes of the (banking!) crisis

Loose monetary policy’s effect on all risk pricing
   Equilibrium vs. irrational exuberance?
History tells us this is necessary but **not sufficient**
   for this sort of **bank-leveraged** bubble to develop

Mortgage risk subsidization
   **Government mandates’ key role** (rising mortgage leverage tolerances, no docs, mortgage mitigation protocols, 2006 legislation to encourage rating agencies to be lenient, put options in securitization market by Fan and Fred)

**Protection of bank liabilities** combined with **ineffective** banking and IB **regulation of risk taking**

**Buy-side agency problems** reflected **poor internal risk management**, lack of discipline of mid-level management (note cross-sectional variation!). UBS vs. Credit Suisse. (Regulatory lessons not clear yet.)
Government Housing Policies

- Huge increases in leverage tolerances (changing from a 20% downpayment standard to a 3% standard) by Fannie, Freddie, FHA during boom were **driven by quotas**, increasingly chasing low-quality risks within the pool of low-income borrowers.
- Fannie and Freddie were given expanding portfolio share goals for “low and moderate” income, “special affordable” and “underserved.”
- Housing policy changes were **endogenous to these expanding quotas** (leverage, no-docs, foreclosure mitigation, anti-notching rules).
## Fannie (Wallison 2010)

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>2001</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fannie Low &amp; Moderate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>40%</td>
<td>50%</td>
<td>53%</td>
</tr>
<tr>
<td>Actual</td>
<td>45%</td>
<td>51%</td>
<td>57%</td>
</tr>
<tr>
<td><strong>Fannie Special Affordable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>12%</td>
<td>20%</td>
<td>23%</td>
</tr>
<tr>
<td>Actual</td>
<td>15%</td>
<td>22%</td>
<td>28%</td>
</tr>
<tr>
<td><strong>Fannie Underserved</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>21%</td>
<td>31%</td>
<td>38%</td>
</tr>
<tr>
<td>Actual</td>
<td>25%</td>
<td>33%</td>
<td>43%</td>
</tr>
</tbody>
</table>
## Subprime Composition 2008 (Pinto 2010)

<table>
<thead>
<tr>
<th>Category</th>
<th>Mortgages</th>
<th>Unpaid Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fannie and Freddie</td>
<td>12.0 million</td>
<td>$1.8 trillion</td>
</tr>
<tr>
<td>FHA and other Govt.</td>
<td>5.0 million</td>
<td>$0.6 trillion</td>
</tr>
<tr>
<td>CRA + HUD programs</td>
<td>2.2 million</td>
<td>$0.3 trillion</td>
</tr>
<tr>
<td><strong>Total Government</strong></td>
<td><strong>19.2 million</strong></td>
<td><strong>$2.7 trillion</strong></td>
</tr>
<tr>
<td>Private Label</td>
<td>7.8 million</td>
<td>$1.9 trillion</td>
</tr>
</tbody>
</table>
Reform Housing Subsidies

1. Wind down Fannie Mae and Freddie Mac and FHA and Federal Home Loan Banks, phase in of higher minimum downpayments, and replace government leverage subsidies with means-tested downpayment matching assistance to low-income first-time homebuyers and do so openly in the government budget (perhaps along with other means-tested assistance for interest rate swaps and tax-favored home savings accounts).
Risk Management: Ellul and Yerramilli (2010)
Risk Management Failings

• Cross-sectional evidence shows that there was not a common crisis experience.
• It is unclear precisely what regulatory actions would be most effective in promoting good risk management.
  – Compensation rules for middle managers;
  – Compensation rules for risk managers (beware the “Lucas critique”);
  – Other?
• But creating incentives that reward good risk management (through the various reforms I propose) is part of the solution.
Ineffective Banking and IB Regulation

• Prudential Regulation’s failure to measure risk:
  – Not a leverage arbitrage story about mortgages in MBS and IBs, but a deeper risk mis-measurement story about commercial bank and IB risk measurement regulations (a subject of extensive academic criticism for over 20 years; attempts to reform rejected politically).
    • On balance sheet measurement of risk flawed
    • Off-balance risk underestimated in 2000, 2004 through capital requirements.
• Also, especially after March 2008, moral-hazard related to too-big-to-fail problems which prevented proper increases of capital in response to losses, which were feasible.
Main Prudential Reg. Reform Issues

• Micro prudential reform should focus on **credible measurement of risk**. “Capital, capital, capital” is not enough; many failed banks had more than newly mandated required capital (Citibank vs. Goldman Sachs).
  – Unbelievably, **we still just ask banks themselves and rating agencies to tell us what the risk is!**

• Credible (politically time consistent) resolution policy.
  – Most promising idea is to find a way to reduce need for failure by incentivizing **timely replenishment** of capital after losses.
  – Also, need to have **orderly** failure process for **transfer of control**.

• These **problems are related** (proper management of capital and risk would reduce needs for intervention, and credible intervention would improve incentives for managing risk and capital ex ante).
Micro Prudential Discipline Specifics

• 2. Reform the use of credit ratings to either eliminate their use or require NRSROs to predict PD, rather than give letter grades, and hold them accountable for accuracy using “sit outs.” (Calomiris 2009)

• 3. Use loan interest rates in measuring the risk weights applied to loans for purposes of setting minimum capital requirements on those loans. (Ashcraft, Morgan 2003, Argentine experience in 1990s). Would have made a big difference in subprime crisis.

• 4. Establish a minimum uninsured CoCo requirement for large banks (a specially designed class of contingent capital), which improves risk management and capital raising incentives. (Calomiris, Herring 2011 based on Flannery)
Ratings Shopping

- Incentive to inflate ratings from buy side, due to regulatory use of ratings.
- **Proposed Rule:** For each class of rated debt (e.g., credit card securitized debts) BBB is defined as an estimate of a 2% 5-year PD, and A as an estimate of a 1% 5-year PD, with defined tolerance for errors. If a 3-year moving average of actual PD for the rated BBB instruments in this class exceeds 4%, then the BBB ratings will be considered to have been egregiously high. The NRSRO will have a six-month “sit out” in rating that class of debts so that it can recalibrate its ratings.
CoCos (Calomiris and Herring 2011)

• If designed properly (with sufficient conversion dilution risk), CoCos would incentivize **timely recapitalization** of bank to avoid dilutive conversion of CoCos.

• If credibly designed, yield changes would signal **risk ex ante** to regulators and market.

• Would reduce debt service costs in bad states of the world.

• **Key point:** A combination of common equity and CoCo requirement can achieve more than a common equity requirement alone.
CoCos (Cont’d)

- **Require CoCos = Some % of quasi market value assets** (quasi MVA = face value debt + MVE).
- **Use market-based trigger (credible, predictable, timely)** based on the *moving average* of (MVE/quasi MVA).
- **Dilution risk must be sufficient** to force voluntary preemptive issues of common stock ahead of triggers (large amount of CoCos, all converting at par or worse).
- Design Prompt Corrective Action (PCA) trigger on lower (MVE/quasi MVA) trigger.
- **How would this have worked** in crisis (counterfactual is understated given higher downside beta in presence of regulation)? **Very well.**
  - With 4% CoCo trigger, clearly adequate incentive and time to raise capital in 2007 and early 2008.
  - Even better if capital ratios are raised, and CoCos trigger set higher (e.g., 8% trigger).
For large American financial institutions that received SCAP infusions

- Citigroup
- AIG
- Bank of America
- Lehman Brothers
- Bear Stearns
- Merrill Lynch
- Wells Fargo
- Morgan Stanley
- Wachovia
- WAMU
- 4% Trigger
- 2% Trigger
90 Day Rolling Market Cap to Pseudo Market Value of Assets

For large American financial institutions that did not receive SCAP infusions
Micro Reforms (Cont’d)

• 5. Limit bailouts of creditors, requiring 10% minimum haircuts when bailouts occur. This would not undermine ability to stop spread of a financial crisis as part of the hybrid reliance on bankruptcy with special resolution authority triggered by determination of real systemic risk (as under Dodd-Frank).

• 6. Get realistic about ring fencing and set clear divisions of authority over assets, liabilities and operations in advance as part of “living wills.”
Liquidity and Macro Prudential Requirements

7. Simple 20% of assets remunerative cash liquidity requirement. Liquidity requirements have important role in prudential standards and are not merely substitutes for capital for four reasons (Brazil in 2008).

8. Vary capital, provisioning and liquidity requirements based on macro prudential signals, using simple dual threshold model of credit growth and asset price growth (Borio and Drehman 2008, Colombia in 2008), based on an “enforce or explain” mandate.
Liquidity Requirement? Theory

- In a frictionless world (with perfect information, no transaction costs) a liquidity standard would add nothing to a capital standard (two ways to skin the cat of target default risk on bank debt).
- But in the real world, it could add a lot.
  - Lack of substitutability of debt capacity for cash during times of need due to financing frictions associated with asymmetric information (Almeida, Campello and Weisbach 2004, Acharya, Almeida and Campello 2006, Denis and Sibilkov 2007, provide empirical evidence that cash is not a perfect substitute for debt capacity). This is especially true of banks (ABCP, repos, Libor)!
  - Observability of cash is better for moral hazard prevention after unrecognized losses than for capital (important given regulatory incentives to hide losses, and asymmetric information problems about loans).
  - Buffer against noisy signals (Calomiris and Kahn 1991).
  - Reduce dependence on LOLR (and accumulation of assets by central bank during crisis) by having banks self-insure against liquidity risk.
Two Ways to Skin the Cat of Target Default Risk of Banks
Brazil’s Crisis Response in 2008-2009

- Compulsory reserves were reduced by R$100 b
- Private deposit insurance was “encouraged” to extend its coverage for a special assessment
- The private deposit insurance fund was “encouraged” to purchase some loans from banks
- Liquid (large) banks were “encouraged” to lend to illiquid (smaller) banks
- Currency swaps from Federal Reserve were passed through to banks
- Tier one capital requirements were relaxed by allowing excess provisioning to count as tier one capital
- Emergency measures were reversed in 2009 and 2010
- No LOLR lending was employed, as bank reserves took pressure off of the LOLR
Proper Design of Requirements

• Remunerative (no reason for a new tax).
• Note partial offset via risk-based capital.
• Would be relaxed by regulator during crisis.
• Imposed on banks, and perhaps on non-bank intermediaries for whom liquidity risk is high (safe harbor for non-banks that don’t rely on repos or CP to finance more than x% of assets).
• No arm twisting on interbank lending by government. Liquidity requirements do not prevent breakdown of interbank market, and so LOLR is still needed.
• Allow it to be met in part (say, up to 25%, similar to successful system in Argentina in the 1990s) through standby letters of credit by qualified institutional investors (which promotes transparency and market discipline).
**Basel III on Liquidity Risk (2012 or 2014)**

- **Liquidity coverage ratio** – measures the ability of a bank to meet all its required cash outflows during an acute funding stress lasting a month. Liquid assets = cash and unencumbered government securities.

- **Net stable funding ratio** – measures the “stickiness” of funding sources; funding that isn’t prone to flight in a crisis. Fed funds, commercial paper, and repo are not considered stable funding sources.

- **Stable funding** = retail deposits, long-term debt, and equity capital.

- **US banks are not compliant with either the liquidity coverage or net stable funding ratios.** Estimates of either gap depend on a number of key assumptions regarding the timing of any adjustment, as well as future bank asset (and liability) composition and growth.
Barclay’s Estimates of Impact on US Banks

• To meet their liquidity coverage ratio, US banks would need increase their liquid holdings by about $900bn
  – Purchase US Treasuries
  – Hold cash at the Federal Reserve
  – Reduce the amount of debt/obligations that mature within 1m – repo, commercial paper, and fed funds

• To meet stable funding ratio requirement, US banks would need to alter the composition of their liabilities and liabilities to close current gap in stable funding of $1.7trn
  – Raise retail deposits
  – Reduce reliance on repo, commercial paper, and fed funds (wholesale funding still accounts for more than 20% of large bank liabilities)
  – Alter the composition of their assets
    • Securities holdings require lower net stable funding than loans
    • Required funding for Treasuries, agencies, and MBS = 5-20%
    • Long-term loans = 100%
    • Unused commitments = 10%
Macro Prudential Case Study: Colombia 2008

- Financial system loans annual growth rose from 10% in December 2005 to 27% by December 2006.
- Core CPI rose gradually relative to credit (from 3.5% in April 2006 to 4.8% in April 2007).
- Real GDP growth in 2007 was 8%.
- Current account deficit rose from 1.8% GDP in second half of 2006 to 3.6% GDP in first half of 2007.
- Monetary authority reacted directly to credit growth in real time: Interest rates were increased 400 bps from April 2006 to July 2008.
- But central bank saw too small a market response to this, so it
  - increased reserve requirements for banks and
  - convinced superintendency to raise provisioning for credit,
  - imposed measures to raise costs of borrowing short-term from abroad (deposit requirement reactivated), and
  - limited not only currency mismatches of banks and other FX exposure in the system, but also gross currency positions (to avoid counterparty risks).
- Credit growth fell to 13%; risk-weighted capital ratio for banks was 13.9%, and first half 2008 was 4.9% above first half of 2007, fell to about 3.5% for 2008 as a whole.
OTC Counterparty Risk Management and Establish Guidelines to Limit Crisis Aid

9. The enactment of regulatory surcharges (via capital, liquidity, or provisioning requirements) that encourage the clearing of OTC transactions through clearing houses. (Not for all products; let market decide whether to pay the regulatory tax; this preserves innovations of OTC)

10. Principles and guidelines (e.g., matching requirements) to limit nature of additional government assistance to banks during crises.
# Incentive Scorecard of Proposed Reforms

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Market Incentives?</th>
<th>Political /S&amp;R Incentives?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Require NRSROs to use numerical forecasts of PD, with “sit out” penalties for egregious errors.</td>
<td>Rating agencies will have strong incentives to make estimates accurate, and will resist buy-side pressures to inflate ratings.</td>
<td>Avoids micro-managing NRSROs. Transparency and accountability of enforcement.</td>
</tr>
<tr>
<td>3. Use loan interest rates to help set capital ratios.</td>
<td>Loan pricing reflects risk, and will continue to do so.</td>
<td></td>
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<tr>
<td>5. Minimum haircuts of 10% When government limits losses to creditors.</td>
<td>Enhances market discipline.</td>
<td></td>
</tr>
<tr>
<td>8. Macro prudential changes based on dual threshold.</td>
<td>Anticipation improves incentives to manage risk.</td>
<td>Easy to enforce =&gt; credibly enforced.</td>
</tr>
<tr>
<td>9. Encourage exchange clearing.</td>
<td>Promotes stability, innovation.</td>
<td>Easy to enforce =&gt; credibly enforced</td>
</tr>
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