The Current Crisis in Perspective

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The Great Depression and the Financial Transformation

The current structure of financial markets and regulation came into being after the Great Depression.

Before the Great Depression

- Banks were small and deposits were not insured.
- Mortgages were short and households made large down payments.
- Banks and securities markets were much less tightly regulated.

After the Great Depression

- Bank deposits were insured and Bank risk-taking was regulated.
    - Security market activities were turned over to Investment Banks.
- FNMA or Fannie Mae was created to make a secondary market in mortgages and later securitized them.
    - Banks would like to dump their bad mortgages, so FNMA would only accept prime mortgages
    - Prime $=$ high credit score (FICO) $+$ good loan-value-ratio ($<.80$)
    - MBS were sold with a guarantee.
- The SEC was created to regulate securities markets.

Deposit Insurance and Regulation

Deposit Insurance

- Banks borrow largely short-term via deposits.
- Banks lend largely long-term.
- This maturity mismatch allows for rollover (banking) crises.
- Government insurance on deposits designed to prevent banking crises.

Insurance Requires Regulation

- Because deposits are insured, depositors have little reason to care about risk taking by their Bank.
- Hence, Banks don't face standard risk pricing and have an incentive to engage in risky activities.
- Example:
  - Gross interest rate is 1 and projects last 1 period
  - Each loan projects requires $100 today.
  - Loan 1 yields 105 for sure tomorrow, so net is 5.
  - Loan 2 yields 200 with probability $1/4$ and 0 o.w.
    - Loan 2 expected return is .25*200 - 100 = -50.
    - expected payoff to Bank is .25*(200-100)=25
    - extra coming from expected deposit insurance payment of .75*100=75.
  - The Bank likes Loan 2 and Society likes Loan 1.
- *Problem is due to lack of bondholders loses.*

Regulation

- Capital Requirements:
  - Reduce Banks' risk-taking incentive by requiring invest own funds.
  - Example: if the Bank had to fund \$30 of the \$100 loan, it would no longer prefer Loan 2.
    - Loan 2: .25*(200-100) - .75*30 = 2.5.
    - Now loan 2 nets 2.5 and Loan 1 nets 5 for the Bank.
- Restrict Risk-taking:
  - Capital requirements alone aren't enough.
  - Example: find an even more risky loan:
    - Loan 3 pays 325 with probability .15 and 0 o.w.
    - Bank nets .15*(325-100) - .85*30 = 8.25.
    - Loan 3 is preferred to Loan 1 even with capital requirement of 30.
    - Despite Loan 3 having worse expected return than Loan 2.
- *Insolvent Bank is like a negative capital requirement.*

Ways Banks Undo Regulation

- Be "too big" or "too important"
  - Convince the regulators that you're too * to fail and hence they should bail you out.
    - With bailout, Loan 2 again nets 25 and is preferred to Loan 1.
  - Easier to motivate bailout if period of overall crisis - hence regulated banks really like *aggregate risk*
- Hire yourself a congress person or get appointed as a regulator.
- Estimate risk yourself - i.e. self-regulation - and under estimate it
  - SEC relied on self-regulation for Investment Banks during 2000s.
  - Permitted under Basel II accords
  - Under estimation of risk could come from over optimism or strategy.
- *History suggests it's easy to undo a lot of regulation.*

Fool me once, shame on you, Fool me twice, shame on me.

All these points have been well known for a long time.

Many had shown themselves in the S&L Crisis of 1980s and 1990s.

Savings and Loan Crisis of the 1980s & 90s

- Value of mortgages reduced and deposits made more expensive by
  - high inflation of late 1970s
  - Volker's high interest rates to fight inflation.
  - development of NOW accts and brokered deposits
- Congress enacted legislation to allow S&L's to recover by seeking higher yields.
  - In 1980 thrifts allowed to make consumer and commercial loans and to issue transaction (credit card) accounts.
  - In 1981, thrifts allowed to sell their mortgage loans and use the cash generated to seek better returns.
- Housing boom ended and many S&L's went under.
- US General Accounting Office estimated cost of the crisis to be around $160.1 billion.
  - Congressional action and Regulator forbearance made cost larger.

Events leading to Current Crisis

- During the 1990s and 2000s
  - Fannie and Freddie directed to increase lending to below median income households.
  - Also, low interest rates and large foreign inflows fuel increases in homeownership and prices.
- Investment banks began to sell Sub-Prime MBS securities
  - Initially worked well – had low loan-to-value ratios and pretty good borrowers - which lead to good ratings
- History made mortgage market appear safe but becoming unsafe.
  - Poorer quality borrowers with high long-to-value ratios
  - Subprime mortgages also featured low initial rate and later high variable rate, plus large prepayment penalty
  - Creates feedback cycle between defaults and housing prices.
  - Increase sensitivity to shocks means end of house boom will be ugly.

Unstable Finances

- Fragile Financing Structure
  - Short-term borrowing used to finance MBS holdings
  - High leverage levels
  - Under-regulated Shadow Banking sector developed which held mortgages through MBS.
  - Subprime mortgages make default attractive
- Underestimation of *extent* of default risk and *correlation* in default risk
  - correlation undoes tranching to remove risk in MBS
  - correlation undoes default insurance since everyone goes down together.
- AAA rated MBS treated as risk-free
  - no one paid attention to extent of the exposure

Regulatory Contribution to Crisis

- Out-sourced regulation: Private ratings agencies determine safety for regulators
  - Rating arbitrage to find most compliant rating agency
  - Rating agencies only estimating total, not *aggregate*, default risk
    - MBS already diversified so largely aggregate risk left
- Banks, etc. face tighter restrictions on holding low rated securities.
  - MBS offer higher yields since aggregate risk is priced.
  - Aggregate shocks more likely to be bailed out.
  - So Banks and Investment Banks load up.
- Political pressure limits regulators

Boom Ends

- When the housing boom ends mortgage and MBS holders end up with big loses and no insurance.
    - Widespread defaults undoes tranching and bankrupts insurers
- Big surprise is how badly the big and informed players got hit
    - overoptimism?
    - poor risk management - didn't know extent of risks?
    - deliberately choose to take on large aggregate risk?
- Government bails almost everyone out extending insurance coverage to much of the financial sector.

Root Causes of the Crisis

- Extending home ownership more broadly drew in poorer and less secure borrowers who were highly leveraged.
  - Increased cyclical sensitivity of mortgage defaults
- Financial innovation led to new products that were poorly understood.
  - Risks were misestimated, especially aggregate risk
- Regulators failed to exercise much oversight
  - confusion and lack of transparency prevented understanding of risks
  - over optimism and naive belief in "the market"
  - excessive reliance on ratings agencies
- Given large exposure to mortgages and high leverage in the midst of housing boom, *current crisis is not surprising*.
- Current mess a lot like Japan in the 1990s - reason to worry.

Future Issues Going Forward

1. History suggests bailouts are inevitable.
    - Hence, extent of implicit insurance may be much larger than explicit.
2. Insured institutions need to be heavily regulated. But system that requires widespread strict regulation is unstable (and inefficient).
    - Periods of tranquility lead to over optimism, including by the regulators, and sow seeds of future crises.
    - Hence shrinking insurance coverage is key.
        - Tax "too big" institutions to pay for their insurance.
        - Separate key functions like market making from risky ones.
3. We need short-term liabilities like demand deposits for transactions.
    - But excessive reliance creates instability.
    - Distinguish between deposit issuing entities and others.
        - Insure the former.
        - Prevent Asset-Liability mismatch in the latter.