

**The Political, Regulatory and Market
Failures that Caused the
US Financial Crisis: what are the lessons
and what to do now**

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**These are personal views—they do not
necessarily reflect the views of the World Bank**

Part I. Causes of the Crisis

- A. Political and Regulatory Problems with Fannie Mae and Freddie Mac
- B. Political, Regulatory and Market Failure Problems with the Private Banks
- C. The Myth of Deregulation

Part II. Dealing with the Crisis

- A. Misdiagnosis of the Problem—it is Solvency not Liquidity
- B. The Government Bailout plan and estimates of the Losses—Too Big to Bail?
- C. What Should be Done?
- D. Why the Big Banks are not too big to fail.
- E. Credit Default Swaps: part of the solution, not part of the problem

Part III.
Policy Recommendations

I. Failure to Regulate Fannie Mae and Freddie Mac

- While fixing the S&L crisis, Congress recognized it can not allow private institutions to take excessive risks with a government guarantee.
- Many realized Congress must regulate the private “government sponsored enterprises” (GSEs) whose debts were implicitly guaranteed by the US Government.
- But the GSEs avoided typical bank prudential regulation—how?

The GSEs and the Widening of Ownership Mission

- The GSE deal: loan at lower standards to widen home ownership and Congress will not regulate with normal bank supervision for safety.
- Congress use GSE projects like “pork” projects in their districts.
- For example, press release from Senator Schumer’s office in 2006:
“Schumer announces up to \$100 million Freddie Mac commitment to address Fort Drum and Watertown Housing Crunch.”
- Fannie Mae contributed to reelection campaigns. It had 51 regional offices that organized for Congressional supporters at election time, along with ACORN.

Efforts to Regulate in 2003-2004

- The Fed and the Congressional Budget Office called for greater regulation of the GSEs. **Fed studies showed that the GSEs were not lowering mortgage interest rates—the reason for their creation.** The Senate Finance Committee sent a bill to the Senate floor.
- Risk managers at the GSEs warned in internal memos against the risky mortgage standards—they were fired.
- But Rep. Barney Frank on the GSEs in Sept 2003:
- *“I do not think I want the same kind of focus on safety and soundness....I want to roll the dice a bit more toward subsidized housing.”*
- The GSEs fended off regulation--instead increased their share of risky mortgages from 8% in 2003 to over 30% in 2008.
- US government cost of guaranteeing the GSEs debt is estimated at \$1.5 trillion (Pinto, 2008)

How to efficiently widen home ownership

- Bhagwati and Ramaswami (1963): apply incentives at the relevant margin
- As in the Australian targeted program: subsidized down payments for **first time low income** home buyers.
- Australian program costs are on budget
- Off budget mandates requiring banks to lower standards had much higher costs-- contributed to bank insolvency and the financial crisis—and allowed bank subsidies to be used by unintended (wealthier) borrowers

Political Failure in lack of GSE regulation

- Congress addressed the S&L problem but chose to ignore the GSEs—why?
- Unregulated GSEs allowed Congress to use GSE resources for their narrow political interests; Congressmen got to announce pork projects and the GSEs and community action groups organized on their behalf at election time—a political failure
- Congress put the subsidies off budget to hide the costs

II. Regulatory Failure—Banks Pressured to Act Perversely

- The GSEs bought about 50% of the toxic mortgages (Pinto, 2008).
- Why did the private sector buy the other 50%?
- **1. Regulation: Widening Home Ownership Mission again**
- To increase home ownership, regulations enforcing the Community Reinvestment Act were changed and phased in from 1995-1997.
- Required banks to use “flexible and innovative standards” to address credit needs of low and moderate income (LMI) borrowers.
- Banks to be judged on outcomes not efforts.
- Failure to comply would result in denial to merge.

Risky Mortgages Spread to Wealthier Borrowers

- Crucially—lower bank standards spread to the wider market, not just low and moderate income borrowers—alt-A mortgages appeared, not just sub-prime.
- Bank regulators were disarmed by the new regulations and could not oppose similar risky mortgages to wealthier borrowers
- Between 2001 and 2006, the share of conventional mortgages fell from 57% to 33% (Wallison, 2008).

Regulation failure—banks pressured to act perversely

- *“From the current handwringing, you’d think that the banks came up with the idea of looser underwriting standards on their own, with regulators just asleep on the job. In fact, it was the regulators who relaxed these standards—at the behest of community groups and “progressive political forces.”*
- **Professor Stan Leibowitz, University of Texas, 2008**

2. Market failures: Securitization and Moral Hazard

- Banks figured out how to make money on these toxic mortgages.
- “Securitization” around since the mid-1970s to address the adverse selection fear that made mortgages illiquid.
- Securitization is the pooling of assets, getting the pool rated by a Credit Rating Organization (CRO) and selling them on the secondary market.
- These are Mortgage Backed Securities, sliced up with different default rights as “Collateralized Debt Obligations” (CDOs)
- Banks had a “moral hazard” problem since they earned large fees for badly underwritten mortgages.

3. Market Failure: Credit Rating Organization (CRO) Moral Hazard

- The CROs underestimated the risks—why?
- The banks paid the CROs for rating the pools of mortgages.
- The CROs got large fees for the ratings and the business was repeat business.
- Banks also did “rating shopping” and gave the business to high raters.

4. Market Failure: Asset Managers—the Principal-Agent Problem

- CDOs were primarily bought by asset managers of mutual and pension funds on behalf of their clients—
- Calomiris (2008): these managers knew the CDOs were not AAA.
- Asset managers were constrained to invest in AAA securities and there was more money coming in than there was real AAA securities to buy.
- If they did not invest in CDOs, they would have to return the money and lose fees.

5. Regulatory Failure: Incentives for the Homeowner

- Home mortgage interest is deductible, but consumer interest is not.
- Consumers rationally used home equity loans to finance consumer expenditures
- By the end of 2006, 86% of home mortgage refinancing was “cash out” refinancing, i.e., no equity in the house.
- State laws make mortgages “without recourse” or too difficult to enforce
- When equity is negative, more likely for consumers to walk away from the house.

III. Myth of Deregulation

- **Clear need for new regulation and there were missed opportunities for regulation.**
- But US financial market deregulation was not the cause of the crisis.
- The private market problems originate in securitization and sub-prime lending.
Securitization had been around since the 1970s
- Sub-prime lending was inappropriately facilitated by regulation changes in the mid-1990s, but not as an act of financial market deregulation.

Graham-Leach-Bliley Act of 1999

- Repealed part of the 1933 Glass-Steagall Act. The main impact was to allow commercial banks and investment banks to merge.
- Allowed J.P. Morgan to acquire Bear Stearns
- Allowed Bank of America to acquire Merrill Lynch (Fed encouragement)
- Allowed Morgan Stanley and Goldman Sachs to convert to bank holding companies.
- Banks raised \$434 billion in the year ending Sept 2008, compared with \$3 billion per year in the S&L crisis—why?

SEC Rule Change of 2004 on net capital requirements

- This was a regulatory error.
- Capital reserves were determined by riskiness of assets and AAA rated mortgage backed pools of securities only needed 1.6 percent—too low since the assets were overrated.
- Some mistakenly call this deregulation. Rather it was the antithesis: globally coordinated regulation
- Designed to implement the “Basel Rules” for a common set of internationally coordinated global standards
- Caution against internationally coordinated regulation—rather than deregulation

Part II.

Addressing the Crisis

Obama Administration misdiagnoses the problem as liquidity not solvency and leaves us with zombie banks-- so prolongs the recession

- Administration (Geithner, Bernanke and others) have characterized the U.S. financial crisis as a **liquidity** problem.
- That means, banks are solvent, but lenders are afraid to lend—just need to jump start lending somehow—especially securitization.
- Many others (e.g., Kane, Pomerleano, Stiglitz, Krugman) maintain it is a **solvency** problem—bank losses are staggering

- If the problem is liquidity—Treasury purchases of bank illiquid assets will solve the problem
- If the problem is that the banks are insolvent, Treasury purchases at market value do not solve the problem.

Estimates of Private Market Debt Losses

- Fed stress tests on 19 largest banks: up to \$599 billion **more** in losses for 19 largest banks.
- Pomerleano—Obama Administration in denial on the extent of the problem
- \$2.2 trillion by the IMF
- \$3.6 trillion by Nouriel Roubini
- \$10 trillion by Hussman (not just mortgage losses, but pension fund and insurance company losses included)

What are the Principal Toxic Asset Purchase Programs?

- **The Troubled Asset Relief Program (TARP)**
- October 3, 2008, **\$700** billion to buy preferred stock and warrants to buy common stock. Yesterday 10 banks won right to repay and buy back the warrants.
- **Term Asset Backed Loan Securities Facility (TALF)**
- March 17, 2009, Federal Reserve plan to loan **\$200** billion to banks for asset backed securities for consumer loans (like securitized credit card debt, auto loans or student loans). Could expand to **\$1 trillion**.
- **Public-Private Investment Program (P-PIP)**
- On March 23, 2009, the Treasury announced its P-PIP, designed to purchase from **\$500 billion to \$1 trillion** in toxic assets from banks. The Treasury would commit \$75-\$100 billion in TARP money with the Federal Deposit Insurance Corporation (FDIC) providing the bulk of the financing

How the P-PIP Works

- Banks put up toxic assets for auction and receive the proceeds of the auction
- Investors who win the auction, pay 8%
- US Treasury pays 8%
- FDIC provides a non-recourse loan for 84%
- Investors and the US Treasury share up side gains. FDIC bears the losses on the down side, beyond the 8% of the investor and Treasury.

P-PIP: A Scam on the US Taxpayer

- Administration using auctions to ‘determine value’ of the toxic assets –it claims it is avoiding a subsidy
- But numerous authors, including Stiglitz, Sachs, Young and Krugman, have explained that P-PIP involves substantial subsidies, i.e., investors will pay more than the value of the assets due to the non-recourse loan of the FDIC that limits down-side losses.
- Keller (2009) estimates the program will bankrupt the FDIC
- FDIC Chairman Sheila Blair: “Her staff told her there would not be losses to the FDIC.”

P-PIP Scam

- Moreover, Sachs has shown that the system can be gamed to lead to huge gains to the banks selling the toxic assets, e.g., banks overpaying for each others assets. Then much larger subsidies
- End run around Congress –Obama Administration did not want to ask Congress for more money for the banks—so it used the FDIC with P-PIP and Fed with the TALF

Obama Administration program— does not revive lending and risks U.S. govt credit rating

- Stiglitz: Obama Administration program is a “recipe for Japanese style malaise”
- Krugman—”depressed...zombie ideas have won in the Obama Administration financial market program.”
- Pomerleano—”Obama Administration is in denial on the extent of the problem.”

Are the Banks Too Big to Bail?— Costs of the Bailout Program

- Total of all Treasury, FDIC and Federal Reserve capital infusions and guarantees exceeded \$4 trillion as of April 2009. (Congressional Oversight Panel Report, April 2009).
- For top 10 banks alone—need to buy \$4.5 trillion in toxic assets at a loss to the US govt. of \$1.2 trillion or more. Veronesi and Zingales (2009)
- Including Fannie, Freddie, AIG and others in the bailout program, cost to the U.S. govt. could be \$4 trillion if the default rate is high. Whallen (2009)
- Threatens the credit rating of the U.S.—fear of long term inflation

William Buiter—we will have long term inflation, the Fed will monetize the Treasury debt.

- *The result will be a build-up of public debt of such magnitude, that the markets will force the government to choose between inflation and default. The state will choose inflation. It always has done to in the past when the debt burden was exceptionally high.*

What Should be Done?

- Insolvent financial institutions requiring sustained subsidies must be reorganized: either by the FDIC or by the courts in bankruptcy.
- Create viable financial institutions, not by overpaying for toxic assets, but by forcing the bondholders to take a haircut, i.e. lowering liabilities.
- Simon Johnson (2009): IMF standard recipe would call for the government to take over the troubled banks.

What Happens in a FDIC takeover

- 1. Customer Deposits are defended and access is provided as soon as possible—usually quickly
- 2. Fire the failed management and bring in new.
- 3. Wipe out shareholder equity entirely
- 4. Operate the institution on an interim basis, eventually selling off or reissuing the institution to private owners
- 5. Crucially--**Bondholders take a haircut** but obtain any residual payments.
- 6. Note—the institution does not fall into disarray

Corporate Reorganization Option

- Good bank—bad bank plan after FDIC takeover (Bulow and Klemperer, 2009)
- Good new bank is created. Bad old bank holds enough of the liabilities so that the new bank is well capitalized. Bondholders take a haircut but become the shareholders of the new bank.
- Advantage—not necessary to find a buyer for the new bank. Avoids increase in bank concentration, which for the big banks concerns some analysts.

Are the Big Banks too Big to Fail?

- FDIC has taken over about 8 banks per month in 2009. These are smaller banks.
- Obama Administration seems afraid to allow a big bank to fail—systemic problems for financial markets feared.
- What can we learn from the 4 huge financial institution failures of September 2008?
- Fannie Mae, Freddie Mac, Washington Mutual and Lehman Brothers all failed in Sept 2008.
- Did the financial markets seize as alleged in the press?

Washington Mutual—6-7 times larger than largest bank failure in U.S. history

- Previous largest bank failure was Continental Illinois National Bank and Trust with \$41 billion in assets and \$30 billion in deposits, when it failed in 1984.
- When Washington Mutual failed in September 2008, it had \$310 billion in assets and \$182 billion in deposits.
- Washington Mutual placed in FDIC receivership.
- FDIC wiped out the stockholders and most of the bondholders—then without bondholder liabilities, *sold the bank's assets along with the customer liabilities* to J.P. Morgan for \$1.9 billion, and handed those proceeds over as partial recovery for the senior bondholders.
- **All done so quickly and efficiently that it has hardly even been noticed—Senior Financial Supervisors Group ignored it. No negative impact on broader financial markets.**

- Credit Default Swap explanation here

Lehman Brothers Bankruptcy—6 times larger than previous largest bankruptcy and key player in the counterparty operations

- WorldCom bankruptcy previous largest in U.S. history, with \$100 billion in assets
- When Lehman Brothers filed for bankruptcy on September 15, 2008, its \$600 billion in assets, made it six times larger than the WorldCom bankruptcy

Lehman Brothers Credit Default Swap (CDS) holdings

- Lehman was an intermediary (both offering protection to buyers on default of another company and buying protection) on:
 - \$390 billion (in gross value) in CDS on Mortgage Backed Securities
 - \$190 billion in CDS on government securities
 - Plus, there were \$72 in CDS sold by others on the possibility of a Lehman default

Fear of Systemic Financial Market Meltdown from Credit Default Swaps

- Many worry about systemic financial market failure from a key player in the counterparty transactions, notably, the credit default swaps.
- Alleged that responsible banks who bought insurance through credit default swaps, might be forced into bankruptcy from the failure of a central player in the counterparty operations (e.g., Jaffe and Perlow, Economist's Voice, 2008)

Lehman failure alleged to have created massive problems

- Lehman was the third largest user of CDS in the world when it failed.
- Many press reports that attribute financial market problems to the Lehman failure
- Paul Krugman: “Financial markets seized after the Lehman failure”
- Timothy Geitner: “The results of the Lehman failure on financial markets were “catastrophic.”
CongressioTestimony of October 29. 2009.

Senior Supervisors Group investigation (2009)

- Senior financial regulators from US, Japan, Switzerland, Germany, UK, France and Canada investigated the four most worrisome financial institution failures of 2008: Lehman Bros, Fannie, Freddie and Landsbanki Islands bank.
- Note they did not even consider Washington Mutual worthy of investigation.
- U.S. represented on the group by the Comptroller of the Currency, the Federal Reserve Board of Governors, the Federal Reserve Bank of New York, and the Securities and Exchange Commission.

Senior Supervisors Group conclusion: no real problems

- **Concluded that these “credit events were managed in an orderly fashion with no major operational disruptions or liquidity problems.”**
- **Unanimous opinion of all regulatory institutions in the Group—including all four US regulatory institutions (and the one supervised by Tim Geitner).**
- **Why the disconnect in official versus popular opinions**

Why is the popular view on the impact of Lehman so wrong?

- Failure to understand credit default swaps—in particular, they do not add risk to the system given the existence of the original debt
- Failure to understand the role of the DTCC—it insures resolution of the CDS
- Misattribution to credit default swaps and the Lehman failure the fact that markets suddenly realized that Mortgage Backed Securities were toxic and many banks become close to insolvent independent of Lehman.

Credit Default Swaps—Insurance on Outstanding Debt—Not new Debt

- Wallison figure here

Depository Trust and Clearing Corporation (DTCC) guarantees most CDS

- **DTCC says that it and its subsidiaries “are ‘central counterparties’ guaranteeing that most trades outstanding at the time of a bankruptcy of a member firm like Lehman are settled on its original terms.”**
- **www.dtcc.com/news/newsletters/dtcc/2008/nov/Nov08@dtcc.pdf**
- **DTCC states that 95% of all CDS worldwide are traded through the DTCC or one of its subsidiaries.**
- **How did this guarantee play out in the Lehman bankruptcy?**

DTCC settled all the Lehman CDS on their original terms rapidly, without loss to its members

- Of the \$390 billion in Lehman CDS on MBS, DTCC netted out 90 percent within a few days (Lehman both bought and sold CDS).
- Lehman posted collateral on its CDS when it sold CDS
- Thus, a DTCC subsidiary sold the remaining CDS over the next few weeks on their original terms with no loss to the members of DTCC.
- Similar resolution on the Lehman CDS on govt securities

CDS on Lehman itself

- Of the \$72 billion in gross notional value of CDS written on default of Lehman itself, the net amount was much less. And the Lehman bonds paid 9 cents on the dollar.
- It was necessary to pay out \$5.2 billion as a result of the Lehman bankruptcy.
- These payments were made by the parties on the terms of the original contracts.

Conclusions

1. Eliminate the GSEs

- Studies show the GSEs do not achieve the purpose for which they were established: lowering home mortgage rates.
- They add a great deal of risk to the system.
- They incur costs without benefits

2: Fix the perverse incentives in CRA regulation

- Change the enforcement procedures in the Community Reinvestment Act back to what they were in the 1980s, so that banks are not compelled to take on risky mortgages.

3. **Systemic Financial Failure from Letting a Big Bank or Key Player in the Counterparty Transactions Fail is Grossly Exaggerated.**

- The Washington Mutual failure shows that a big **depository** bank can fail with almost no systemic impact and the situation can be managed smoothly.
- Lehman Brothers bankruptcy shows that a big investment bank and central player in credit default swaps can fail without systemic problems to the financial system.

4. Safety net subsidies must be limited

- Otherwise banks will recognize the incentives and generate the next crisis.
- Very difficult to devise regulation to protect against excessive risk taking if banks can get taxpayers to cover large losses.
- It is crucial that financial institutions internalize the risks. Bailing them out is a sure way to encourage them to undervalue risks.

5. Failing Banks should be taken over with bondholder haircuts

- Take depository financial institutions that cannot survive without substantial and continued infusion of public funds into receivership.
- Bondholder haircuts will allow the big banks to emerge from receivership as viable institutions capable of leading an economic recovery.
- Otherwise zombie banks will not lend.

6. Regulators can not be trusted to adequately assess financial institution risk

- FDIC Improvement Act of 1991 expanded regulator power over depository financial institutions to avoid the next crisis.
- Under this authority, Comptroller of the Currency officials worked inside Citibank for years—to what end?
- Office of Thrift Supervision ignored Congressional warnings about IndyMac
- Are US financial regulators culturally captured?

7. Use markets to inform regulators—2 options

- (i). Use price of credit default swaps on the debt or solvency of the bank to inform regulators of the viability of the bank. When the price of the CDS moves above a critical level, require the bank to acquire more equity in a certain time. If it fails to acquire the equity, take it over and reorganize.
- (ii). Impose a minimum “subordinate” debt requirement. (“Senior” bondholders get paid first in case of bank failure.) The price of these bonds will inform regulators of the safety of the bank. Similar response as to CDS would ensue by the regulators.

If regulators fail to act based on these signals, they have to explain to Congress.

8. Increase capital requirements— general agreement

- Banks can easily raise capital in good times, but very little in a financial crisis
- Develop new debt instruments that convert to equity when the institution becomes too risky.
- The subordinated debt instrument could play this role—when its price suggests the bank is too risky, regulators trigger a conversion of the bond to equity.

9. Other good regulatory proposals

- Tie bonuses of managers in regulated financial institutions to the market's assessment of the risk of failure.
- Require financial institutions to have an “unwind over the weekend” plan on file with the regulator

10. Progressive home mortgage incentives

- Consider small subsidies for home ownership for low and moderate income households.

Existing incentives are regressive, since low income households don't pay taxes and don't benefit from the mortgage deduction.

The mortgage deduction is a distortion that leads to excessive leverage and is regressive.

Obama Administration Program

- Some positive steps in increasing capital requirements, but
- Fails to take steps to eliminate the government failures that could lead to the crisis (GSEs and CRA)
- Implicitly or explicitly proposes that the government should bail out large financial institutions, not just depository institutions
- Fails to address regulatory incompetence or regulatory capture.

No mandate for widespread regulation

- Fix regulation in the financial sector
- But deregulation has contributed to the dynamism of the US economy in the past 20 years.
- Striking examples are: Airline fares; long distance telephone services; long distance trucking services; and brokerage fees

- The following slides are for clarification as needed, not part of the central presentation.

How the P-PIP Works—example

- Assume Citibank has a pool of Mortgage Backed Securities (MBS) with a face value of \$2 million.

Say the MBS pool has:

- 50 percent chance of paying \$2 million
- 50 percent chance of being worthless
- Citibank decides to auction the MBS pool under the P-PIP program.

Example of P-PIP

- A risk neutral investor would pay \$1 million for the pool. Under P-PIP:
- the private investor puts up \$80,000
- the Treasury puts up \$80,000
- the FDIC provides a “non-recourse” loan for \$840,000.

Example of P-PIP

- If the assets pay \$2 million
- Citibank keeps its \$1 million from the sale
- Treasury and the private investor pay off the FDIC loan and split the \$1 million in profits.

Example of P-PIP

- If the assets are worthless:
- Treasury loses its \$80,000
- Private investor loses \$80,000
- FDIC loses \$840,000 (loan is “non-recourse)
- Citibank keeps its \$1 million.

Outcome of P-PIP example

- Expected losses to the FDIC are $\$420,000 = 0 - (.5) * \$840,000$.
- Because of the non-recourse loan by the FDIC, the expected value to the investor is .5 times
- $\$420,000 = \$500,000 - \$80,000$. Investors thus profit from paying more than the true market value of the assets and will bid more than \$1 million and increase the losses to the government.

Bank facing a possible liquidity problem

- **Assets**

- Good but illiquid assets \$100

- Total assets \$100

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$20

- Total Liabilities \$100

Government purchases of illiquid assets at market value helps to resolve liquidity problem

- **Assets**

- Good but illiquid assets \$90
- Cash \$10

- Total assets \$100

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$20

- Total Liabilities \$100

Zombie Bank Balance sheet before write down to market value of toxic assets

- **Assets**

- Good assets \$50
- Toxic assets \$50

- Total assets \$100

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$20

- Total Liabilities \$100

Zombie Bank Balance sheet after “mark to market” write down of toxic assets

- **Assets**

- Good assets \$50
- Toxic assets \$30

- Total assets \$80

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$0

- Total Liabilities \$80

Zombie Bank Balance sheet after government purchase of some toxic assets at market value. Liquidity problem is resolved, but bank will not want to take new lending risks. Buying toxic assets can create healthy banks only if they are purchased at a price above market value.

I • **Assets**

- Good assets \$50
- Toxic assets \$20
- Cash \$10

- Total assets \$80

• **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$0

- Total Liabilities \$80

Bank Balance sheet after “mark to market”
write down of toxic assets and purchase of
preferred stock by the govt.

- **Assets**

- Good assets \$50
- Toxic assets \$30
- Cash \$20

- Total assets \$100

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$20

- Total Liabilities \$100

Zombie Bank Balance sheet after write down to market value of toxic assets (again)

- **Assets**

- Good assets \$50
- Toxic assets \$30

- Total assets \$80

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$0

- Total Liabilities \$80

Restructured and recapitalized bank after bondholders become the new shareholders

- **Assets**

- Good assets \$50
- Toxic assets \$30

- Total assets \$80

- **Liabilities**

- Customer Deposits \$50
- Shareholder Equity \$30

- Total Liabilities \$80

Zombie Bank Balance sheet after write down to market value of toxic assets (again)

- **Assets**

- Good assets \$50
- Toxic assets \$30

- Total assets \$80

- **Liabilities**

- Customer Deposits \$50
- 2 year Bonds \$20
- 1 month Bonds \$10
- Shareholder Equity \$0

- Total Liabilities \$80

Restructured and recapitalized bank after bondholders become the new shareholders

- **Assets**

- Good assets \$50
- Toxic assets \$30

- Total assets \$80

- **Liabilities**

- Customer Deposits \$50
- Shareholder Equity \$30

- Total Liabilities \$80