Thoughts on the Crisis, Bailouts and Stimulus

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Intro

This talk:
- What is the problem?
- How did we get into crisis?
- What happened?
- What did the bailouts do and not do?
- What should we have done?
- What did / does Obama / stimulus / Geithner do and not do?
- What else should be done?
- What’s next?

Acknowledgments:
- Learned and borrowed from several of my colleagues.
- Particularly, Erik Hurst, Anil Kashyap, Raghu Rajan.
What is the problem?

- Look at a typical bank balance sheet.
- Deposits, short-term debt, long-term debt and equity fund
- Loans (cash, and investments in securities).
  - Include mortgages and mortgage-related securities.
- Roughly $23 trillion in assets at U.S. Fin’l Institutions.

<table>
<thead>
<tr>
<th>Loans</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits</td>
<td>70</td>
</tr>
<tr>
<td>Short-term Debt</td>
<td>10</td>
</tr>
<tr>
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<td>10</td>
</tr>
<tr>
<td>Equity</td>
<td>10</td>
</tr>
</tbody>
</table>
What is the problem?

- Mortgage (and other?) losses are substantial at financial institutions.
- Losses are meaningful relative to equity bases of levered institutions.
- Restoration requires rebuilding capital base of these institutions.

<table>
<thead>
<tr>
<th>Loans</th>
<th>100</th>
<th>90?</th>
</tr>
</thead>
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<tr>
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<tr>
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<td>10</td>
<td></td>
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<tr>
<td>Equity</td>
<td>10</td>
<td>2?</td>
</tr>
</tbody>
</table>
Once there is concern, then bigger problems

- When equity capital is low, financial institutions can:
  - Sell loans.
  - Raise equity.

- They usually sell assets first.
  - When equity goes down, bank becomes overleveraged.
  - Selling loans (at book value) and paying down debt reduces leverage.
What is the problem?

- Sell loans of 50 for 50.
- Still highly leveraged but:
  - less highly leveraged. 4% equity (not 2%).
  - have substantially reduced lending. 92 to 42.

<table>
<thead>
<tr>
<th>Loans</th>
<th>100</th>
<th>92</th>
<th>42</th>
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<tbody>
<tr>
<td>Deposits</td>
<td>70</td>
<td>30</td>
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<tr>
<td>Equity</td>
<td>10</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Unfortunately:
- Hard to sell loans at book value.
- Selling loans and assets depresses prices of other loans and assets.
  » Which in turn reduces the equity capital of all banks.
- Selling loans, i.e. “deleveraging,” reduces amount of bank lending.

More unfortunately:
- When lenders and other counterparties question solvency of a financial institution, they stop lending and transacting with it.
  » This is a particularly big problem if the bank / institution relies on short-term debt. (E.g., Lehman.)
  » In good times, very tempting to use short-term debt because it is cheap.
- So you can have a “bank run” even if the institution is solvent (or would be solvent) under normal conditions.
At the peak of the crisis in September:
  – Everyone suspicious of everyone else.
  – No short-term credit available.
    » Banks will not lend to each other short-term.
  – Lots of mini-runs.
    » Rumors of trouble lead to runs on deposits, short-term debt.
  – ==> Downward spiral.
Key Issue: What are loans really worth?

- Could be worth 90 because of bank run type behavior.
  - I.e., fear, distressed selling.
  - If markets calm, may really be worth 100.
- Could fundamentally be worth 90.
- Could be worth less than 90, say 80?

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<th>80?</th>
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<td>0?</td>
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<tr>
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<td>10</td>
<td>0?</td>
<td>0?</td>
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</table>
How did we get there / here?
How did we get here?
No one culprit: (many) mistakes were made

- Excessive credit:
  - Accommodative monetary policy.
    » Greenspan and Fed kept interest rates low when all indications were they should have been higher.
    » Strong credit growth = Asset prices up, especially housing.
    » Similar effects in other countries.
      - Not just US – Ireland, Spain, UK…
  - Global mismatch between desired savings and realized investment.
    » “Capital Glut.”
    » Emerging markets and developing countries have lots of $ relative to investment needs.
Emerging and Developing Country Current Account
Accommodative regulatory policy.

- Political system wanted to make housing available to more lower income borrowers (even if they could not really afford it).
- HUD increased affordable housing mandate for Fannie and Freddie.
  » From 42% to 50% (in 2000) to 56% (in 2004) of loans must be to low and moderate income borrowers.
- American Dream Downpayment Act (late 2003).
  » $200 m annually for downpayment assistance to low-income first-time homebuyers and increased loan limit for FHA insurance for purchasing multifamily units in high cost areas.
- Fannie and Freddie viewed this as a way to build political support.
- SEC allowed investment banks to overleverage.
Financial innovation: Originate-to-securitize.

- Mortgages pooled together and then sold in the capital market.
- These pools were broken up into different tranches of debt with different seniority.
- Based on past returns and housing prices, senior tranches were considered safe.
- Broadened market of potential purchasers.
  - Distributed globally.
- Very complicated.
  - Ok in stable markets.
  - Problematic in defaulting markets.

Rating agencies provided ratings that were too high.

- Just got it wrong by extrapolating historical housing prices.
- Just got it wrong by not understanding systemic risk / correlations.
- Had incentives to get it wrong because fees paid by relatively few issuers.
Accommodative incentives.
- Incentives for individuals to package loans.
  » Up front fees, annual bonuses, etc.
- Incentives for some banks to make iffy mortgage loans.
  » Annual bonuses, earnings pressure.
- Incentives to sell mortgage backed securities.
  » Annual bonuses, etc.
- Incentives for individuals to buy loans / mortgage backed securities.
  » Annual bonuses, etc.

Poor risk management at the top.
- CEOs and top executives of banks did not understand what was going on below.
- Not a CEO pay / incentive problem.
  » Most lost a lot of money.
Some scary pictures.
From Hatzius, Kashyap et al.

<table>
<thead>
<tr>
<th>Year</th>
<th>FHA/VA</th>
<th>Conforming</th>
<th>Jumbo</th>
<th>Sub-prime</th>
<th>Alt-A</th>
<th>HEL</th>
<th>ARMs</th>
<th>Refinances</th>
<th>Total Loans ($Bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>7.9%</td>
<td>57.1%</td>
<td>20.1%</td>
<td>7.2%</td>
<td>2.5%</td>
<td>5.2%</td>
<td>16.0%</td>
<td>58.6%</td>
<td>2215</td>
</tr>
<tr>
<td>2002</td>
<td>6.1%</td>
<td>59.1%</td>
<td>19.8%</td>
<td>6.9%</td>
<td>2.3%</td>
<td>5.7%</td>
<td>23.5%</td>
<td>63.1%</td>
<td>2885</td>
</tr>
<tr>
<td>2003</td>
<td>5.6%</td>
<td>62.4%</td>
<td>16.5%</td>
<td>7.9%</td>
<td>2.2%</td>
<td>5.6%</td>
<td>26.2%</td>
<td>72.0%</td>
<td>3945</td>
</tr>
<tr>
<td>2004</td>
<td>4.5%</td>
<td>41.4%</td>
<td>17.5%</td>
<td>18.2%</td>
<td>6.3%</td>
<td>12.2%</td>
<td>50.1%</td>
<td>54.7%</td>
<td>2920</td>
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<tr>
<td>2005</td>
<td>2.9%</td>
<td>34.9%</td>
<td>18.3%</td>
<td>20.0%</td>
<td>12.2%</td>
<td>11.7%</td>
<td>47.8%</td>
<td>50.4%</td>
<td>3120</td>
</tr>
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<td>2006</td>
<td>2.7%</td>
<td>33.2%</td>
<td>16.1%</td>
<td>20.1%</td>
<td>13.4%</td>
<td>14.4%</td>
<td>45.0%</td>
<td>49.0%</td>
<td>2980</td>
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<tr>
<td>1Q06</td>
<td>2.7%</td>
<td>33.5%</td>
<td>14.6%</td>
<td>19.9%</td>
<td>14.9%</td>
<td>14.5%</td>
<td>42.1%</td>
<td>49.4%</td>
<td>705</td>
</tr>
<tr>
<td>2Q06</td>
<td>2.5%</td>
<td>34.4%</td>
<td>15.8%</td>
<td>20.6%</td>
<td>13.0%</td>
<td>13.8%</td>
<td>49.0%</td>
<td>47.8%</td>
<td>800</td>
</tr>
<tr>
<td>3Q06</td>
<td>2.9%</td>
<td>31.9%</td>
<td>17.0%</td>
<td>21.2%</td>
<td>12.1%</td>
<td>15.0%</td>
<td>44.0%</td>
<td>48.7%</td>
<td>755</td>
</tr>
<tr>
<td>4Q06</td>
<td>2.6%</td>
<td>33.1%</td>
<td>17.1%</td>
<td>18.8%</td>
<td>13.9%</td>
<td>14.6%</td>
<td>44.3%</td>
<td>50.3%</td>
<td>720</td>
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<tr>
<td>1Q07</td>
<td>2.8%</td>
<td>40.1%</td>
<td>14.7%</td>
<td>13.7%</td>
<td>14.4%</td>
<td>14.3%</td>
<td>35.3%</td>
<td>57.1%</td>
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<tr>
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<td>44.9%</td>
<td>16.4%</td>
<td>7.7%</td>
<td>13.2%</td>
<td>14.4%</td>
<td>30.1%</td>
<td>51.6%</td>
<td>730</td>
</tr>
<tr>
<td>3Q07</td>
<td>4.6%</td>
<td>50.2%</td>
<td>14.6%</td>
<td>4.9%</td>
<td>9.5%</td>
<td>16.3%</td>
<td>29.1%</td>
<td>46.1%</td>
<td>570</td>
</tr>
<tr>
<td>4Q07</td>
<td>6.9%</td>
<td>61.0%</td>
<td>9.8%</td>
<td>3.0%</td>
<td>6.0%</td>
<td>13.3%</td>
<td>21.8%</td>
<td>52.0%</td>
<td>450</td>
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Source: Inside Mortgage Finance, Morgan Stanley.
## Distribution of Subprime Loans

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<thead>
<tr>
<th>Year</th>
<th>All</th>
<th>AAA</th>
<th>AA</th>
<th>A</th>
<th>BBB</th>
<th>BB/Other</th>
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<tbody>
<tr>
<td>Subprime</td>
<td>100%</td>
<td>80.8%</td>
<td>9.6%</td>
<td>5.0%</td>
<td>3.5%</td>
<td>1.1%</td>
</tr>
<tr>
<td>2005</td>
<td>625</td>
<td>505</td>
<td>60</td>
<td>31</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>1Q06</td>
<td>140</td>
<td>113</td>
<td>13</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>2Q06</td>
<td>165</td>
<td>133</td>
<td>16</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>3Q06</td>
<td>160</td>
<td>129</td>
<td>15</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>4Q06</td>
<td>135</td>
<td>109</td>
<td>13</td>
<td>7</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>1Q07</td>
<td>95</td>
<td>77</td>
<td>9</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2Q07</td>
<td>56</td>
<td>45</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3Q07</td>
<td>28</td>
<td>23</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4Q07</td>
<td>14</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total:</td>
<td>1,418</td>
<td>1,145</td>
<td>135</td>
<td>71</td>
<td>51</td>
<td>16</td>
</tr>
</tbody>
</table>

Subprime-prime interest spread from 2001 to 2007, after controlling for loan characteristics (from Demyanyk and Hemert (2007))
The Shadow Financial System Contracts

ABS Issuance

Source: JP Morgan
**Banks Reduce New Lending**

Figure 1: Total Loan Issuance, US Corporate Loans

Compiled from DealScan database of loan originations.

Panel A: Total amount of loans issued (Billion USD)

Source: Ivashina and Scharfstein (2009)
## Leverage of Various Financial Institutions as of 9/2008

<table>
<thead>
<tr>
<th>Institution</th>
<th>Assets ($bn)</th>
<th>Liabilities ($bn)</th>
<th>Capital ($bn)</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial banks</td>
<td>11194</td>
<td>10050</td>
<td>1144</td>
<td>9.8</td>
</tr>
<tr>
<td>Savings Inst</td>
<td>1815</td>
<td>1607</td>
<td>208</td>
<td>8.7</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>759</td>
<td>672</td>
<td>87</td>
<td>8.7</td>
</tr>
<tr>
<td>Finance Companies</td>
<td>1911</td>
<td>1720</td>
<td>191</td>
<td>10.0</td>
</tr>
<tr>
<td>Brokers/hedge funds</td>
<td>5597</td>
<td>5390</td>
<td>207</td>
<td>27.1</td>
</tr>
<tr>
<td>GSEs</td>
<td>1669</td>
<td>1598</td>
<td>71</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>Total - Leveraged Sector</strong></td>
<td><strong>22945</strong></td>
<td><strong>21037</strong></td>
<td><strong>1908</strong></td>
<td><strong>12.0</strong></td>
</tr>
</tbody>
</table>

**Source:** Authors’ calculations based on 2008 Q4 Flow of Funds, FDIC Statistics on Banking, Adrian and Shin (2007), and balance sheet data for Fannie Mae, Freddie Mac, and broker-dealers under Goldman Sachs equity analyst coverage.
There were two sides of the US Investment banks balance sheet:

- The left side and the right side.
- On the left side, there was nothing right; and
There were two sides of the US Investment banks balance sheet:

- The left side and the right side.
- On the left side, there was nothing right; and
- On the right side, there was nothing left.
**Key Issue: What are loans really worth?**

- Could really be worth 100. (Trading at 90 because of bank run fear.)
  - I.e., fear, distressed selling.
  - If markets calm, may really be worth 100.
- Could fundamentally be worth 90.
- Could be worth less than 90, say 80?

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<td>10?</td>
<td>0?</td>
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<tr>
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<td>0?</td>
</tr>
</tbody>
</table>
What did the first U.S. bailout plan do?

- Bailout allowed Treasury to buy illiquid financial assets.
  - Will provide liquidity to financial institutions.
  - Will stabilize loan values(?)

- Would this help?
  - Helps if problem is liquidity.
  - Does not help much if problem is solvency.
Will First Bailout Help?

- If Loans = 90, Equity = 0 even in calm markets, goal is to re-equitize banks and financial institutions.
- If buy loans at market value, does not help.
- If buy loans above market value, then helps a little.
  - But not very efficient.
    » Have to pay 15 to infuse equity of 5.

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<td>10</td>
<td></td>
</tr>
<tr>
<td>Old Equity</td>
<td></td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>
What Happened?

- The first U.S. bailout plan failed.
- Problem was solvency.
  - Market worried that loans not worth 100 or even 95.
- We got TARP-2.
What did TARP-2 do?

- U.S. Treasury infused over $250 billion equity into banks.
- FDIC guaranteed short-term bank loans.

What happened?
- Realized we had a solvency problem.
- Injected equity.
- Stopped the panic, but:
  » implemented poorly.
    - e.g., no dividend restrictions.
  » explained / marketed poorly.
Did TARP-2 Help?

- Pretty clear loans not worth 100.
- If Loans = 90, Equity = 0, goal is to re-equitize banks and financial institutions.
- Bailout helped.
  - Banks no longer insolvent.
  - Short-term debt is guaranteed.
  - Paid 5 and potentially got 5 of equity.

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</table>
## Data on Major Institutions in TARP ($ billion)

Data as of September 2008 (except Morgan Stanley and Goldman Sachs as August)

<table>
<thead>
<tr>
<th>Name</th>
<th>Total Assets</th>
<th>Total Commitments</th>
<th>Lending</th>
<th>Real Estate</th>
<th>Credit Card</th>
<th>Other Consumer</th>
<th>Equity/Assets</th>
<th>Dividend Payout</th>
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</thead>
<tbody>
<tr>
<td>JPMORGAN CHASE</td>
<td>2,251.5</td>
<td>1,223.6</td>
<td>57.8%</td>
<td>19.2%</td>
<td>25.3%</td>
<td>3.0%</td>
<td>6.5%</td>
<td>5.67</td>
</tr>
<tr>
<td>BANK OF AMERICA</td>
<td>1,836.5</td>
<td>1,423.1</td>
<td>73.3%</td>
<td>29.4%</td>
<td>28.8%</td>
<td>3.0%</td>
<td>8.8%</td>
<td>5.84</td>
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<td>MERRILL LYNCH</td>
<td>875.8</td>
<td>123.7</td>
<td>20.0%</td>
<td>8.8%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>4.4%</td>
<td>2.22</td>
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<td>STATE STREET COP</td>
<td>286.7</td>
<td>50.9</td>
<td>20.3%</td>
<td>7.4%</td>
<td>1.1%</td>
<td>2.7%</td>
<td>4.6%</td>
<td>0.41</td>
</tr>
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<td>CITIGROUP</td>
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<td>1,560.0</td>
<td>65.0%</td>
<td>12.4%</td>
<td>32.9%</td>
<td>4.3%</td>
<td>6.1%</td>
<td>3.49</td>
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<td>BANK OF NY MELLON</td>
<td>267.6</td>
<td>45.5</td>
<td>33.4%</td>
<td>9.9%</td>
<td>0.2%</td>
<td>0.4%</td>
<td>10.3%</td>
<td>1.10</td>
</tr>
<tr>
<td>WELLS FARGO</td>
<td>1,382.9</td>
<td>476.9</td>
<td>75.5%</td>
<td>45.7%</td>
<td>6.2%</td>
<td>5.2%</td>
<td>7.0%</td>
<td>4.52</td>
</tr>
<tr>
<td>MORGAN STANLEY</td>
<td>987.4</td>
<td>162.0</td>
<td>15.8%</td>
<td>21.9%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>3.6%</td>
<td>1.20</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>1,081.8</td>
<td>78.5</td>
<td>9.3%</td>
<td>8.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>4.2%</td>
<td>0.55</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11,020.3</strong></td>
<td><strong>5,144.3</strong></td>
<td><strong>54.5%</strong></td>
<td><strong>21.1%</strong></td>
<td><strong>19.3%</strong></td>
<td><strong>2.6%</strong></td>
<td><strong>6.3%</strong></td>
<td><strong>25.0</strong></td>
</tr>
</tbody>
</table>
Since TARP-2

- TARP - 2 stopped the financial panic at the end of September, but --

- Real economy worsened significantly in 08 Q4.
  - Consumer reduced consumption.
  - Companies responded with layoffs.

- Insolvency questions again in 09 Q1.
What Should Have Been Done?
Lots of buzz words:
- Nationalize.
- Good bank/bad bank.
- Buy toxic assets.
- "Ring fence" assets.
- Insure losses.
- Equity infusions.

All schemes amounted to taking stand on how losses and gains due to existing assets allocated to government and existing creditors.

No one great solution.
Situation was something like this

- If Loans worth less than 90, need to re-equitize and restructure.
  - Equity is worth 0 - 5.
  - Long-term debt worth less than promised value of 10.
    » Debt overhang problem.
  - Short-term debt guaranteed.

<table>
<thead>
<tr>
<th>Loans</th>
<th>100</th>
<th>85 - 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposits</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Short-term Debt</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>10</td>
<td>5 - 9</td>
</tr>
<tr>
<td>Equity</td>
<td>10</td>
<td>0 - 3</td>
</tr>
</tbody>
</table>
Put in equity?

- If Loans worth less than 90, need to re-equitize and restructure.
  - Equity is worth 0.
  - Long-term debt is really worth less than promised value of 10.
- Putting in equity is expensive way to solve the problem.
  - Put in 15 to get 10 of value.
  - It is a give-away of 5 to long-term debt.

<table>
<thead>
<tr>
<th>Loans</th>
<th>100</th>
<th>85</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deposits</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term Debt</td>
<td>10</td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>5</td>
</tr>
<tr>
<td>New Equity / Pfd.</td>
<td>10</td>
</tr>
<tr>
<td>Equity</td>
<td>10</td>
</tr>
</tbody>
</table>
Convert long-term debt into equity?

- If Loans worth less than 90, need to re-equitize and restructure.
  - Equity is worth 0.
  - Long-term debt is really worth less than promised value of 10.
- Need to:
  - restructure debt to equity.
  - raise new equity. (Get $5 for $5).

<table>
<thead>
<tr>
<th>Loans</th>
<th>Deposits</th>
<th>Short-term Debt</th>
<th>Long-term Debt</th>
<th>Equity for Debt</th>
<th>New Equity from Cash</th>
<th>Old Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>70</td>
<td>10</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Should Have Been Done?

- Ideally, convert long-term debt into equity.
  - Constrained by complicated / inadequate resolution options.
    » International differences / constraints.
    » Derivative interconnectedness.

- Over-equitize banks.
  - But, do not exert control and promise to sell quickly.
  - More efficient than overpaying for assets.
  - Difficult to implement politically.
What Was Done?

- Lots of guarantees.
  - AIG, Citi
  - Short-term debt.

- Long-term debt supported / subsidized.

- Dividends allowed to be paid / equity depleted.
Did Obama Help?

- No.
  - Did not deal with bank solvency immediately.
  - Free fall continued in 09Q1.
  - Instead, went to stimulus package first.
Did the Stimulus Package Help?

- Rationale:
  - Resources are sitting idle in the economy.
  - Government spending replaces consumer and business spending.
  - “Multiplier Effect” (put people back to work so they will spend more).

- Drawbacks:
  - Government spending is “inefficient.”
  - Will lead to large deficits (which will have costs to the economy).
## The American Recovery and Reinvestment Act of 2009

### Amounts in Billions of Dollars

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2009</th>
<th>2010</th>
<th>2009 – 19</th>
<th>% of Total in 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Infrastructure” Outlays</td>
<td>29</td>
<td>117</td>
<td>359</td>
<td>8.1</td>
</tr>
<tr>
<td>Income Support Spending</td>
<td>60</td>
<td>73</td>
<td>168</td>
<td>35.7</td>
</tr>
<tr>
<td>Tax Cuts – Total</td>
<td>80</td>
<td>167</td>
<td>292</td>
<td>27.4</td>
</tr>
<tr>
<td>For Individuals</td>
<td>14</td>
<td>113</td>
<td>185</td>
<td>7.6</td>
</tr>
<tr>
<td>For Businesses</td>
<td>66</td>
<td>54</td>
<td>107</td>
<td>61.7</td>
</tr>
<tr>
<td>Overall Total</td>
<td>169</td>
<td>357</td>
<td>819</td>
<td>20.6</td>
</tr>
</tbody>
</table>

*Source: CBO and JCT (with Morgan Stanley estimate for the $3 billion of mass transit outlays that were added after the official estimates were prepared)*
- Only modest stimulus in short run.
  - Value is engaging resources that would not otherwise be engaged.
  - Very little has gone out to idle resources.

- Some hurt in short run:
  - Pay caps on financial institutions are just stupid.
    » Best employees are leaving / will leave as soon as they can.
    » Banks that can will return capital.
    » Banks that need capital will not want it.
    » No way to attract new people.
  - First, but not last, example of government reneging.
    » “We’re from the government. We’re here to help.”
Hurts in the medium / long run.
- Increases permanent deficit.
- Welfare spending back to pre-Clinton incentives.
  » Brings back welfare as we knew it?
- More government involvement / cost to health care.

Not to mention pro-union actions:
- Issued executive orders to benefit unions:
  » Private contractors on federal projects should hire union workers.
  » Puts non-union contractors, especially small minority companies at disadvantage.
    » Bars federal contractors from being reimbursed for expenses incurred in trying to persuade employees not to form a union.
    » Forces contractors to retain workers when taking over a project from another contractor.
- Nominated a union ally as labor secretary.
- Picked union lawyer to head the National Labor Relations Board.
Most stimulus infrastructure projects will have union workers.
- Given higher labor costs, fewer construction workers currently unemployed will find work.

"prevailing wage" required on federal projects by the Davis-Bacon law will apply to all projects.
- Usually turns out to be the higher union wage.
- So fewer workers will be employed even on non-union projects.

Taxpayers pay a lot more for construction projects than they should.
Then, Why Did the Free Fall Stop?

- The Fed
  - Insured debt (short-term debt of banks).
  - Pushed interest short-term rates to 0.
    » Makes banks very profitable on loans that are paid.
  - Bought long-term Treasuries to keep long rates down.
  - Bought commercial paper.
  - Started TALF.
The Fed’s Balance Sheet

Fed assets, including Treasury holdings
$ billions

Total assets on Fed balance sheet

Treasury holdings on Fed balance sheet

2004 2005 2006 2007 2008 2009
What About The Geithner Plan?

- Stress test.
- PPIF: Public-Private Investment Fund for legacy loans.
- TALF: Term Asset-Backed Securities Loan Facility for ABS.
Stress Test
- In very adverse scenario, assets will decline 7%
- Offset by earnings and asset sales of 6%
- Left capital need / shortfall of only 1%

Positive:
- Require banks to have sufficient equity.
  » Private first.
  » Government next.
- Banks not so insolvent as people feared.

Negative:
- Not much of a test.
  » Two grades: Pass and Pass. (See Saturday Night Live.)
- Is 7% asset decline realistic? Is it enough equity?
- Lots of taxpayer subsidies from Fed / Treasury.
- Had to wait 3 1/2 months to find out.
Public-private investment fund. (PPIF)

- Details:
  » FDIC provides 5/6 non-recourse leverage.
  » Treasury provides 1/12 equity.
  » Private investors provide 1/12 equity.

- Problems:
  » Provides incentives for buyers to overpay (at taxpayer expense).
    - Even Krugman and Stiglitz understood this.
  » Same problems as with TARP-1.
    - Very expensive and inefficient way to address solvency problem.
    - Taxpayer probably loses.
  » Will the government allow buyers to make money?
**PPIF?**

- If Loans = 85, Equity = 0.
- If buy loans above market value, not obvious that is solves problem.
  - All value goes to long-term debt.
  - Bank still undercapitalized.

<table>
<thead>
<tr>
<th>Loans</th>
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<th>85</th>
<th>75</th>
</tr>
</thead>
<tbody>
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<td></td>
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<tbody>
<tr>
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<td>10</td>
</tr>
<tr>
<td>Long-term Debt</td>
<td>5     10</td>
</tr>
<tr>
<td>Old Equity</td>
<td>10    0</td>
</tr>
</tbody>
</table>
TALF

- Details:
  » $1 Trillion from Fed to support commercial real estate, auto, student, and other loans.
    ■ Fed provides 90% debt, non-recourse.
  » Goal to revive shadow banking system/ support securitization.
  » Large investors -- including hedge funds and private-equity firms -- obtain cheap credit from Fed and use money to buy newly issued securities backed by such loans.

- Problems:
  » Very expensive way to address solvency problem.
  » Same financial engineering that caused problems?
Are these good ideas?
- If banks will not sell, TALF / PPIF are not helpful.
- If banks will sell, TALF / PPIF are very expensive for taxpayers relative to alternative of debt restructuring / equity investment.

Who wins? Who loses?
- Winners
  » Seems to give too much to long-term debt investors and, even, bank shareholders.
  » Govt. afraid to put banks in bankruptcy after Lehman.
    ■ Chapter 11 / nationalization is complicated.
- Losers = U.S. taxpayers.
How Do We Ensure This Does Not Happen Again?

- Surprisingly, this is an easier problem to solve.

- Part of the problem is overleveraging.
  - Particularly the investment banks who were leveraged 30 to 1.
  - Part of the solution should require banks to make sure they have sufficient equity and to increase that equity in booms.
    » In Spain, banks were forced to reserve extra equity capital in the boom for precisely this reason.
    » Spanish banks are relatively healthier.
Part of problem is difficulty of restructuring long-term debt outside of bankruptcy, i.e., forcing long-term debt to convert into equity when equity has little or no value.

- Bankruptcy is very messy because of derivatives contracts.
- Bankruptcy is very messy because of international legal differences.
- Solution is contingent equity / capital.
  » Force banks to raise long-term debt that automatically converts into equity when there is a systemic crisis.
  » Effectively increases bank equity by 10% of assets in crisis.
  » Would restore trust.
What’s Next? 3 Scenarios

- **V shaped**
  - Inventory adjustment comes to an end.
  - Stimulus kicks in.
  - Central bank / bond markets provide credit and banks cleaned up.
  - Confidence returns.

- **U shaped**
  - Households continue increasing savings / not spending.
  - Financial sector not cleaned up quickly.
  - Too many bailouts and political conflict.
  - Unemployment goes to 10-12%.

- **L shaped (or worse - the D word)**
  - Political paralysis.
  - Protectionism.
  - Societal conflict.
L-shaped or D not going to happen.
- Fed’s response has been too strong and swift.
  » Not like Great Depression.
  » Not like Japan in the 1990s.
- Credit / risk spreads coming down.
- Volatility (VIX) coming down.
- Recession will be longer than other post-war recessions, but not a lot deeper.
**Some Facts (From January 2009)**

<table>
<thead>
<tr>
<th>Recession (Years)</th>
<th>Jobs Lost (Millions)</th>
<th>Jobs Lost (Percent)</th>
<th>Unemp. Rate (At Peak)</th>
<th>Change in Unemp. Rate</th>
<th>Length (Month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-58</td>
<td>2.3</td>
<td>4.4%</td>
<td>7.3%</td>
<td>3.4 points</td>
<td>14</td>
</tr>
<tr>
<td>74-75</td>
<td>2.2</td>
<td>2.8%</td>
<td>8.8%</td>
<td>3.3 points</td>
<td>9</td>
</tr>
<tr>
<td>81-82</td>
<td>2.8</td>
<td>3.1%</td>
<td>10.8%</td>
<td>3.6 points</td>
<td>17</td>
</tr>
<tr>
<td>07-09</td>
<td>4.4</td>
<td>3.2%</td>
<td>8.1%</td>
<td>3.4 points</td>
<td>15</td>
</tr>
<tr>
<td>07-10</td>
<td>4.2*</td>
<td>3.1%*</td>
<td>8.8%*</td>
<td>4.1 points*</td>
<td>36*</td>
</tr>
</tbody>
</table>

* CEA Projections As Of December 2008
A Picture (from January 2009)

Job losses in six recessions
Percent decline in payroll employment from peak month

SOURCE: BUREAU OF LABOR STATISTICS
Unfortunately, V-shaped recovery not likely either.
- Does not seem likely financial sector will clean up quickly.
  » Geithner plan allows weak banks to muddle along.
- Consumer still shaky.
- Lots of uncertainty from Washington.
- Financial crisis recessions usually followed by slower recoveries.
Recovery unlikely to be quick

Source: IMF staff calculations.
Leaves us with the U-shaped recovery?

- Economy seems to have stabilized.
- Budgets set.
- Companies no longer frozen, beginning to make decisions.
- That would be good.
Worry about the reverse J or (getting caught on a fish hook).

- Economy recovers, but takes a long time to return to where we were.
- Long-term growth rates return to ‘70s levels.
Why a reverse J?  Washington

- Greater power to unions.
  - Jobs fail to return. Production continues to move overseas.
  - Specter of card check.
- Greater taxation of all kinds.
  - Reduced incentives to work and to invest.
  - Capital flees overseas.
- Failure to respect property rights / rule of law.
  - Stimulus compensation restrictions.
  - Strong arming of Chrysler secured creditors.
  - Firing of Waggoner at GM.
  - Antitrust ramp up.
- Healthcare.
- Large deficits.
- Demonization of financial institutions / business.
Net effects (in the medium term):
- Reduced productivity.
- Increased uncertainty.
- Reduced investment.
- Permanently lower growth.
- Inflation.

Unnerving parallels to 1930s.
- FDR did much of this in the ‘30s and created a second depression.
AE Housman:
- And while the sun and moon endure
- Luck's a chance, but trouble's sure,
- I'd face it as a wise man would,
- And train for ill and not for good.
What does this mean?

- CIMITYM.
What does this mean?

- CIMITYM.
- Cash Is More Important Than Your Mother.
Summary

- What is the problem?
  - Solvency problem at financial institutions.
  - Exacerbated by retreat of consumer.
- How did we get into crisis?
  - Many mistakes were made.
    » Central banks, regulators, and markets.
  - Lots of blame to go around.
- What happened?
  - Not a lot of pretty pictures.
- What did the bailouts do and not do?
  - TARP-1 misguided (as well as PPIF).
  - TARP-2 necessary.
    » But implemented badly.
What should we have done?

- Forced the long-term debt into equity; or
- Inject more equity, not exert control, sell.

What did / does Obama / stimulus / Geithner do and not do?

- Very expensive.
- Inefficient at solving problem.

What else should be done?

- Contingent capital to make sure this never happens again.

What’s next?

- U-shaped recovery?
- Reverse J / fish hook?