Economics 435
The Financial System
(12/4/2014)

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UW Madison
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An interpretation of the 2000’s

- Conventional capital flow cycle
- Excess saving abroad
- Low interest rates induce borrowing
- Borrowing by sovereign due to tax cuts, “global war on terror”
- Deregulation/non-regulation of the financial sector (incl. shadow banking system)
- Interaction with the tax system
Government and national borrowing

Note: Budget balance is net lending. Source: BEA
Real interest rates

Source: Federal Reserve Board, Philadelphia Fed SPF
The “Disappearance” of Risk

Figure 3. Advanced and Emerging Markets: Sovereign and Corporate Bond Spreads, 1998–2008
(In basis points)

Source: IMF, WEO update, 11/6/08
Household debt (I)

Source: BIS, Annual Report (2011)
Household debt (II)

Source: BIS, Annual Report (2011)
Lending in the shadow system booms

Source: Federal Reserve Board
Housing boom (I)

Note: Rescaled to 2001Q4=1.
Source: BIS, Annual Report (2011)
Housing boom (II)

Note: Rescaled to 2001Q4=1.
Source: BIS, Annual Report (2011)
Financial Turmoil Timeline (March 2008-May 2008)

11-Mar Term Securities Lending Facility (TSLF) is introduced and swap lines with the ECB and SNB are increased.

14-Mar Fed approves purchase of Bear Stearns by JPMorgan.

15-Mar Credit spread between the primary credit rate and target fed funds rate is cut to 25 bp.

16-Mar Primary Dealer Credit Facility (PDCF) is created.

18-Mar Target fed funds rate is lowered 75 bp to 2.25%.

20-Mar Bear Stearns receives emergency lending from the Fed via JPMorgan.

24-Mar JPMorgan’s purchase price for Bear Stearns increases to $10/share.

30-Apr Target fed funds rate is lowered 25 bp to 2%.

2-May TAF and swap lines increase.

5-May TSLF eligible collateral expands to include AAA rated ABS.

7-Mar SEC proposes a ban on naked short selling.

19-Mar Fannie Mae and Freddie Mac capital requirements are eased to allow for increases in lending.

Mar 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 Apr 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 May 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Spreads Rise

Exhibit 2.2 Jumbo Mortgage Spread

Source: BankRate.com.
Exhibit 2.3 Asset-Backed Commercial Paper (ABCP) Yields

Asset-Backed Commercial Paper Yields:
- Overnight
- 1 Month

Source: Federal Reserve Board.

Exhibit 2.4 Commercial Paper Outstanding

Commercial Paper Outstanding:
- Total
- Asset Backed

Source: Federal Reserve Board.
Credit Tightening

Exhibit 2.5 Senior Loan Officer Survey

Net Percentage of Banks Reporting Tightening of Standards:
- Mortgage
- Prime Mortgages
- Subprime Mortgages
- Credit Cards
- Commercial & Industrial

Source: Federal Reserve Board.
Trust Disappears

Exhibit 2.8 Treasury-Eurodollar (TED) Spread

Source: Financial Times. Federal Reserve Board.
Derivatives Downgrade

Exhibit 2.12 ABX Indices (AAA rated vintages)

Source: Goldman Sachs.
Arising from Declining House Prices

Exhibit 3.1 Falling Prices Leave Homeowners with Negative Housing Equity

Note: All data as of December 2006.
Source: First American CoreLogic, Inc.
Foreclosures and House Prices

Exhibit 3.6 Foreclosures Triple in the Housing Bust

Source: Mortgage Bankers Association.
# Real Estate Debt and Finance

**Exhibit 3.7: Home Mortgage Exposures of US Leveraged Institutions**

<table>
<thead>
<tr>
<th>Home Mortgage Debt</th>
<th>Billion ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>11,028</td>
</tr>
<tr>
<td><strong>US Leveraged Institutions</strong></td>
<td></td>
</tr>
<tr>
<td>Commercial banks</td>
<td></td>
</tr>
<tr>
<td>Direct</td>
<td>1,935</td>
</tr>
<tr>
<td>RMBS</td>
<td>946</td>
</tr>
<tr>
<td><strong>Savings Institutions</strong></td>
<td>1,148</td>
</tr>
<tr>
<td>Direct</td>
<td>895</td>
</tr>
<tr>
<td>RMBS</td>
<td>253</td>
</tr>
<tr>
<td><strong>Credit Unions</strong></td>
<td>361</td>
</tr>
<tr>
<td>Direct</td>
<td>300</td>
</tr>
<tr>
<td>RMBS (estimate)</td>
<td>61</td>
</tr>
<tr>
<td><strong>Brokers and Dealers</strong></td>
<td>213</td>
</tr>
<tr>
<td>Direct</td>
<td>0</td>
</tr>
<tr>
<td>RMBS (estimate)</td>
<td>213</td>
</tr>
<tr>
<td><strong>Government-Sponsored Enterprises</strong></td>
<td>987</td>
</tr>
<tr>
<td>Direct</td>
<td>457</td>
</tr>
<tr>
<td>RMBS (estimate)</td>
<td>530</td>
</tr>
</tbody>
</table>

Source: Federal Reserve Board. FDIC. Authors' calculations.
Positive Feedback Loops

Exhibit 4.3 The Leverage Circle

Target Leverage

Stronger Balance Sheets

Increase B/S Size

Asset Price Boom

Target Leverage

Weaker Balance Sheets

Reduce B/S Size

Asset Price Decline
Additional Channel

*Figure 4*

The Two Liquidity Spirals: Loss Spiral and Margin Spiral


*Note:* Funding problems force leveraged investors to unwind their positions causing 1) more losses and 2) higher margins and haircuts, which in turn exacerbate the funding problems and so on.
## Leverage

### Exhibit 4.5 Leverage of Various Financial Institutions

<table>
<thead>
<tr>
<th></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>10793</td>
<td>9693</td>
<td>1100</td>
<td>9.8</td>
</tr>
<tr>
<td>Savings Inst</td>
<td>1914</td>
<td>1687</td>
<td>227</td>
<td>8.4</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>748</td>
<td>659</td>
<td>89</td>
<td>8.4</td>
</tr>
<tr>
<td>Brokers/hedge funds</td>
<td>5397</td>
<td>5226</td>
<td>171</td>
<td>31.6</td>
</tr>
<tr>
<td>GSEs</td>
<td>1633</td>
<td>1567</td>
<td>66</td>
<td>24.7</td>
</tr>
<tr>
<td><strong>Leveraged Sector</strong></td>
<td><strong>20485</strong></td>
<td><strong>18804</strong></td>
<td><strong>1681</strong></td>
<td><strong>12.2</strong></td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on 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 analysts’ coverage.
Exhibit 5.2 Instrumental Variable Estimates of GDP Growth and DNFD

<table>
<thead>
<tr>
<th>Dependent Variable Quarterly GDP Growth (at an annual rate)</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.904</td>
<td>0.590</td>
<td>1.530</td>
</tr>
<tr>
<td>GDP Growth_{t-1}</td>
<td>0.247</td>
<td>0.118</td>
<td>2.100</td>
</tr>
<tr>
<td>GDP Growth_{t-2}</td>
<td>0.242</td>
<td>0.111</td>
<td>2.190</td>
</tr>
<tr>
<td>GDP Growth_{t-3}</td>
<td>-0.264</td>
<td>0.110</td>
<td>-2.410</td>
</tr>
<tr>
<td>4 quarter DNFD Growth_{t-1}</td>
<td>0.338</td>
<td>0.176</td>
<td>1.920</td>
</tr>
</tbody>
</table>

Exhibit 5.3 GDP Growth with Actual and Fitted Growth in DNFD

Source: Department of Commerce. Authors' calculations.
Losses to Financial System

Figure 1.12. Bank Writedowns or Loss Provisions by Region
(In billions of U.S. dollars unless indicated)