U.S. Economy in the Aftermath of the Financial Crisis

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Outline

• Financial Crisis
  – Role of Mortgage Market
  – September-October Developments
  – International Dimensions

• Real Economy Response

• Policy Options
Key Problems

• Asset bubble in housing market fueled by lax lending standards in primary market.
  – Falling Home Prices
  – Subprime-mortgage defaults
  – Mortgages are non-recourse loans in the U.S.

• Excessive leverage of major financial institutions combined with lax regulation.

• Excess risk-taking promoted by compensation system that emphasized high immediate returns.

• Emergence of a solvency crisis.
  – Uncertain condition of counterparties led to freezing of credit flows and liquidity problems.
I. Real Estate Market

• Asset price bubble
  – Fueled by easy monetary policy
  – Low global interest rates (excess saving in Asia)
  – Mortgage innovations

• Mortgage Market
  – Conforming mortgages – GSE securitization
  – Nonconforming mortgages – private securitization
  – Originate and Distribute Model
    • Low cost of funds
    • High yield spreads
  – GSE expansion beyond securitization to purchase for own account.
Real Estate Price Indices: Japan, Sweden, and the United States
(Base Year: Japan = 1985, Sweden = 1985, US = 2000)

Graph showing the price index values for Tokyo Area Condo Price, Sweden Real Estate Price Index, and US Case-Shiller Index over years from their respective base years.
US Housing Starts and Residential Investment, 1990-2008
Real Estate Market (2)

- Subprime Mortgages
  - Initially provided access to credit for minorities and marginal neighborhoods, but
  - Most subprime mortgages were for equity extraction, not home purchase
  - Alt-A loans are between conforming and subprime categories - lack documentation and have a lower credit rating of borrower.
- Housing market turned down in late 2005, and problems in subprime market were evident in 2006.
  - Rise in foreclosure rate on sub-prime mortgages
  - Home prices turn down in late 2006
The Pricing of Subprime Mortgage Risk from ABX Index Series

<table>
<thead>
<tr>
<th>Price Series</th>
<th>1-Jun-07</th>
<th>31-Dec-07</th>
<th>30-Jun-08</th>
<th>4-Nov-08</th>
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<tbody>
<tr>
<td>ABX 06-1 AAA</td>
<td>100.1</td>
<td>93.5</td>
<td>91.8</td>
<td>88.9</td>
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<td>9.0</td>
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<td>19.3</td>
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<td>4.0</td>
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*Observed market prices (as a percentage of par) by original rating
### Estimated Losses IMF

- **Subprime and Alt-A** (50% default rate)
  
<table>
<thead>
<tr>
<th>Outstanding</th>
<th>Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,400 B</td>
<td>$585</td>
</tr>
</tbody>
</table>

- **Other Mortgages**
  
  | $10,940     | $415   |

- **Other Debt**
  
  | $9,870      | $405   |

- **Total**
  
  | $23,210     | $1,405 |

- About half of projected losses have been recognized through 2008:3.
General Banking Problems

• Generalized crisis of confidence due to concerns about solvency of counterparties.
  – Lack of transparency in structured assets
  – Freezing of interbank lending
  – Hoarding of liquidity
  – Central banks substituted for interbank lending.
  – Creditworthiness issues spread beyond U.S.
General Banking Problems (2)

• Lehman and AIG
  – Solvency, not liquidity
  – Treasury problem, not FRB

• Crisis of debt-based bank model
  – Borrowed funds versus deposits
  – No equivalent of deposit insurance
  – Inability to roll over debt is equivalent to bank run.

• Deleveraging is underway
  – Many institutions will shrink or disappear.
Typical Financial Leverage

• Ratio of total assets to equity, 2007
  – GSEs - 25x
  – Brokers and Hedge Funds – 32x
  – Saving Institutions – 8.4x
  – Commercial Banks – 9.8x
Financial Leverage of Selected Banks in 2007

<table>
<thead>
<tr>
<th></th>
<th>Assets (trillion $)</th>
<th>Leverage (ratio)</th>
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</thead>
<tbody>
<tr>
<td><strong>U.S. Banks</strong></td>
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<td></td>
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<tr>
<td>Bank of America</td>
<td>1.7</td>
<td>11.7</td>
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<tr>
<td>Citicorp</td>
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<td>JP Morgan</td>
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<td>12.7</td>
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<tr>
<td>Lehman</td>
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<td>16.1</td>
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<td><strong>Foreign Banking Institutions</strong></td>
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<td>Deutsche Bank</td>
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<td>UBS</td>
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<tr>
<td>Credit Suisse</td>
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<tr>
<td>BNP</td>
<td>2.4</td>
<td>28.5</td>
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<tr>
<td>Barclays</td>
<td>2.0</td>
<td>37.8</td>
</tr>
<tr>
<td>Royal Bank of Scotland</td>
<td>3.2</td>
<td>21.7</td>
</tr>
</tbody>
</table>
III. Real Sector Effects

• Prior to September expectations of a modest recession
  – Housing decline to be offset by net exports and fiscal stimulus
  – Growth in 2008 of about 1.5%

• Situation changed in Sept-Oct
  – Severe credit disruption
  – Huge decline in household wealth
Consumption

- Prior consumption boom drove household saving to zero
- Most common explanations focus on a large rise in wealth-income ratio as capital gains overwhelmed the decline in saving
  - With decline in housing prices and equity prices, wealth-income ratio has returned to historical average
  - Implies a reduction in consumption equal to about 3 percent of GDP.
Household Wealth as a Ratio to Income, 1970-2008
Sector Financial Balances

- Large realignment of saving-investment balances
  - Expect household sector to be a net supplier of funds, but it has had a funding deficit in recent year.
    - Low saving, high housing investment
  - Business sector is normally a net user of funds, but corporate sector had a surplus prior to crisis
    - High retained earnings
Financial Balance: Saving less Investment as a Percent of GDP, 1990-2008
Current Outlook

• Expectations of severe recession
  – Negative 3-4% growth through first part of 2009
  – Limited recovery in late 2009 and into 2010
  – Based on assumption of large wealth effect and continued credit squeeze.

• Unemployment above 7% in early 2009 and peaking at about 8 percent.

• Rise in dollar and slow growth in other countries will limit some of the offset in net exports.
Policy Options

• Japan’s experience suggests that monetary policy will not be effective
  – Damaged balance sheets
  – Deleveraging process

• Small countries with financial crisis
  – Relied on export growth

• U.S. will need large fiscal stimulus
  – Temporary tax cut followed by infrastructure projects.
  – Monetary authorities will continue to be major source of liquidity
  – Treasury TARP program is proceeding slowly
Policy Options

• Budget deficit begins from a $500 base level
  – Revenue losses in FY2009 of $150B and over $200B in 2010
  – $200 – 300 fiscal stimulus
  – Budget costs of TARP of $100 – 200B

• Key problem of stabilizing housing market
  – US mortgages are nonrecourse loans.
  – Strong incentives to default with negative equity
  – As many has 1/3rd of loans will have negative equity position by yearend.