The Economic Crisis: Understanding the Tools in Place to “Fix” Financial Markets

Julie Stackhouse
Senior Vice President
Federal Reserve Bank of St. Louis
May 22, 2009

The views expressed are those of Julie Stackhouse and may not represent the official views of the Federal Reserve Bank of St. Louis or the Federal Reserve System.
Today’s Challenges are Tied to Overuse of Debt in an Unsustainable Housing Market

- Large amounts of international capital flowed into our financial markets resulting in low long-term interest rates.

- Low rates combined with excess liquidity led to a boom in the credit markets.

- Much of this excess liquidity flowed into the housing market. With so much liquidity, credit standards eased and subprime mortgages grew. The “originate to distribute model” largely kept the assets off the lenders’ balance sheets.

- These mortgages were transformed into complex structured financial products that were underestimated or misunderstood by investors and by credit ratings agencies.

- As house prices began to fall, losses ensued.
The Size and Growth of the Non-Prime Mortgage Market

Mortgage Originations

Quarterly figures for 2007 and 2008 expressed at an annual rate.
The Size and Growth of the Non-Prime Mortgage Market

Mortgage Originations

Quarterly figures for 2007 and 2008 expressed at an annual rate.
The Elements of Risk Layering: Adjustable Rates

Share of Mortgages with Adjustable Rates, Including Hybrids

Percent

0 25 50 75


Sources: Mortgage Bankers Association, Loan Performance Corp.
The Elements of Risk Layering: Reduced Documentation

Share of Subprime Mortgages Underwritten With Reduced Documentation

Source: Loan Performance Corp.
The Elements of Risk Layering: Nominal Equity at Risk

Combined Loan-To-Value Ratio For Subprime Mortgages
Includes all mortgage debt on property

Source: Loan Performance Corp.
The Elements of Risk Layering: Cash-Out Refinancing

Share of Subprime Mortgages That Were Cash-Out Refinances

Source: Loan Performance Corp, Freddie Mac.
The Elements of Risk Layering: 3\textsuperscript{rd} Party Originators

Share of Subprime Mortgages Originated Through Broker or Wholesale Channel

Source: Loan Performance Corp.
Cash Flows From Questionable Mortgages were Transformed into Securities and Derivative Products – often with AAA Ratings

Subprime MBS becomes part of many CDOs

House Prices Appreciated Beyond Sustainable Levels

US House-Price Appreciation: S&P/Case-Shiller Home-Price Index
Percent per year

80-Year Historical Annual Average: 5 Percent
Percent per year

Sources: S&P, Fiserv, and MacroMarkets LLC, Haver Analytics
Over Time, Consumers Forgot how to Save

% of disposable income

% of disposable income
And then, House Prices Fell – Major Market Prices Down 29%

S&P/Case-Shiller Composite-10 Metro-Area House-Price Index set equal to 100 in May 2006

Actual data

June 2006

Forward curve on Mar. 2, 2009, based on contracts traded at the Chicago Mercantile Exchange

December 2008
Mortgage Delinquency Rates Accelerated

![Graph showing Residential 90+ Day Delinquency Rates (%) for different types of loans: Prime Fixed, Prime Variable, Subprime Fixed, Subprime Variable. The graph illustrates the significant increase in delinquency rates for subprime variable loans from 2007 onwards.](source: McDash Analytics, Loan Performance)
The Financial System Faced a Crisis

3-Month LIBOR-OIS Interest Rate Spread
Percentage points

1-Month LIBOR-OIS Interest Rate Spread
Percentage points

Source: Haver Analytics
## The Fed’s Response to the Crisis

<table>
<thead>
<tr>
<th>Financial Institution Facilities</th>
<th>Lender</th>
<th>Current Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Credit</td>
<td>District Reserve Banks</td>
<td>Federal Funds plus 25 basis points</td>
</tr>
<tr>
<td>Secondary Credit</td>
<td>District Reserve Banks</td>
<td>Primary Credit rate plus 50 basis points</td>
</tr>
<tr>
<td>Seasonal Credit</td>
<td>District Reserve Banks</td>
<td>Published</td>
</tr>
<tr>
<td>Term Auction Facility</td>
<td>District Reserve Banks</td>
<td>Set at auction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 13(3) Facilities</th>
<th>Lender</th>
<th>Date of Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPM/C/Bear Stearns</td>
<td>FRB New York</td>
<td>March 16, 2008</td>
</tr>
<tr>
<td>Primary Dealer Credit Facility</td>
<td>FRB New York</td>
<td>March 17, 2008</td>
</tr>
<tr>
<td>AIG</td>
<td>FRB New York</td>
<td>September 16, 2008/November 10, 2008</td>
</tr>
<tr>
<td>AIG - Collateralized Debt Obligations Facility</td>
<td>FRB New York</td>
<td>November 10, 2008</td>
</tr>
<tr>
<td>CPFF - Commercial Paper Funding Facility</td>
<td>FRB New York</td>
<td>October 7, 2008</td>
</tr>
<tr>
<td>TALF - Term Asset-Backed Securities Loan Facility</td>
<td>FRB New York</td>
<td>November 25, 2008</td>
</tr>
</tbody>
</table>
Changes in the Fed’s Balance Sheet

Federal Reserve Assets

- Other Loans
- Currency swaps and other assets
- Commercial Paper Funding Facility (CPFF)
- Money Market Mutual Fund Liquidity Facility (AMLF)
- Primary Dealer Credit Facility (PDCF)
- Primary Credit
- Term Auction Facility (TAF)
- Repurchase Agreements
- Term Securities Lending Facility (TSLF)

Securities held outright minus those lent

Billions of dollars
Congressional Response to the Crisis: $700 Billion
TARP and the Financial Stability Plan

- Capital Purchase Program (CPP)
- Stress testing of the largest banking organizations and Capital Assistance Program (CAP)
- Public-Private Investment Program (P-PIP)
- Consumer and Business Lending Initiative (Super TALF)
- Targeted Investment Program (TIP)
- Auto Industry/Auto Supplier Program
- Systemically Significant Failing Institutions Program
- Affordable Housing Support and Foreclosure Prevention (Making Homes Affordable Program)

Source: www.financialstability.gov/roadtostability/programs.htm
## Transaction Report as of May 13, 2009

<table>
<thead>
<tr>
<th>Program</th>
<th>May 13, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Purchase Program (CPP)</td>
<td>$197.8 billion</td>
</tr>
<tr>
<td>Capital Assistance Program (CAP)</td>
<td>$0</td>
</tr>
<tr>
<td>Consumer and Business Lending Initiative (Super TALF)</td>
<td>$20 billion in LLC</td>
</tr>
<tr>
<td>Public-Private Investment Program (P-PIP)</td>
<td>$0</td>
</tr>
<tr>
<td>Targeted Investment Program (TIP) – Citi, BoA</td>
<td>$40 billion</td>
</tr>
<tr>
<td>Asset Guarantee Program - Citi</td>
<td>$5 billion</td>
</tr>
<tr>
<td>Auto Industry/Auto Supplier Program – GM, GMAC, and Chrysler</td>
<td>$35.6 billion</td>
</tr>
<tr>
<td>Systemically Significant Failing Institutions - AIG</td>
<td>$69.8 billion</td>
</tr>
<tr>
<td>Affordable Housing Support and Foreclosure Prevention (Making Homes Affordable Program)</td>
<td>14 servicers Incentive caps of $15.1 billion</td>
</tr>
</tbody>
</table>

Source: [www.financialstability.gov](http://www.financialstability.gov)
More about the Capital Purchase Program and Capital Assistance Program

- **Capital Purchase Program** (10/14/2008)
  - 579 institutions currently participating (as of 5/13/2009)
  - Total purchases: $199 billion
  - Total repayments: $1.3 billion
  - Investments:
    - **Preferred Stock**: Pays cumulative dividends of 5% per year (first 5 years); 9% per year after 5 years
      - May not be redeemed for three years except with the proceeds from a “Qualified Equity Offering” (sale of Tier 1 qualifying perpetual preferred stock or common stock for cash)
    - **Warrants**: Treasury can purchase common shares of stock with an aggregate market price equal to 15% of the Preferred Stock amount on the date of investment.
      - Term: 10 years
More about the Capital Purchase Program and Capital Assistance Program

**Capital Assistance Program** (2/10/2009)
- “Big 19” were primary participants via stress tests. Other publicly traded banks may apply (deadline: 6/9/2009)
- Investments:
  - **Convertible Preferred Securities**: Convertible to common equity at a 10 percent discount to the prevailing price prior to February 9 (with regulator approval).
    - Carry a 9% dividend yield
    - Automatically converts to common equity after 7 years
    - Recipients must submit a plan on how they intend to “preserve and strengthen their lending capacity”. Banks must submit detailed monthly lending reports which will be made public.
    - Includes restrictions on the payment of dividends (maximum of $0.01 per share per quarter), repurchasing shares and pursuing cash acquisitions
  - **Warrants**: Treasury receives warrants to purchase shares of common stock with an aggregate market value equal to 20% of the Convertible Preferred amount on the investment date.
    - Term: 10 years
Congressional Response to the Crisis: Expanded FDIC Insurance Coverage and an Economic Stimulus Bill

- Federal Deposit Insurance Coverage increased to $250,000 per owner through December 31, 2009; banks also had option to fully cover all non-interest bearing accounts
- Temporary government guarantee of participating money market mutual funds until September 19, 2009
- $800 billion economic stimulus package
Economists Estimate that Stimulus Might Save One-Third to Half a Year’s GDP

SAAR, Bil.
Chn.2000$

$ 11.6 Trillion
$ 7.1 Trillion
Is the Current Crisis as Bad as the Great Depression?

S&P 500
Great Depression versus 2008/2009 Recession

Great Depression total Stock Mkt Return: -52%
08/09 Recession Stock Mkt Return to date: -43%
Is the Current Crisis as Bad as the Great Depression?

Inflation: Great Depression versus Current Recession

Indexed CPI Growth

Months into Crisis

Current Recession
Great Depression
Is the Current Crisis as Bad as the Great Depression?

Industrial Production Still Stronger than Great Depression

Automotive Industry Could drag Industrial Production Further Down

- Industrial Production decline since 2007: -11.4%
- Automotive Industrial Production decline since 2007: -37%
- Industrial Production growth during Great Depression: 46%

Indexed Return

Index = 1 at approximate start of crisis

Years into Crisis

The Great Depression
Current Recession
Current Recession -- Automotive Products
Is the Current Crisis as Bad as the Great Depression?

House Prices In Current Recession Steeper than Great Depression
Nominal House Prices

Indexed Return
Index = 1 at approximate start of crisis

Years Into Crisis

- House price depreciation during The Great Depression: -16%
- House Price depreciation, 2007 - present: -20%

Current Recession
Great Depression
Impact for the Future: The Market for Private-Label Mortgage-Banked Securities is Gone

Net Lending Via Private-Label ABS

Impact for the Future: The Cost to Banks and Investors Has been Significant

<table>
<thead>
<tr>
<th>Loans</th>
<th>Outstanding</th>
<th>Implied Cumulative Loss Rate</th>
<th>Implied Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Billions of $</td>
<td>(Percent)</td>
<td>Billions of $</td>
</tr>
<tr>
<td>Residential mortgage</td>
<td>5,117</td>
<td>8.4</td>
<td>430</td>
</tr>
<tr>
<td>Commercial mortgage</td>
<td>1,913</td>
<td>9.8</td>
<td>187</td>
</tr>
<tr>
<td>Consumer</td>
<td>1,914</td>
<td>14.2</td>
<td>272</td>
</tr>
<tr>
<td>Corporate</td>
<td>1,895</td>
<td>5.2</td>
<td>99</td>
</tr>
<tr>
<td>Municipal</td>
<td>2,669</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>Total for loans</td>
<td>13,507</td>
<td>7.9</td>
<td>1067</td>
</tr>
</tbody>
</table>

| Securities             |             |                             |                |
|                        |             |                              |                |
| Residential mortgage   | 6,940       | 14.3                        | 992            |
| Commercial mortgage    | 640         | 34.8                        | 223            |
| Consumer               | 677         | 14.2                        | 96             |
| Corporate              | 4,790       | 7                           | 335            |
| Total for securities   | 13,047      | 12.6                        | 1644           |
| Total for loans and    |             |                             |                |
| securities             | 26,554      | 10.2                        | 2709           |

Source: International Monetary Fund
Impact Today and in the Future: The Number of Bank Failures is Rising

Number of Failed and Assisted Banks and Thrifts
The Size of Failed Banks has Dwarfed the 1980s

Assets in Failed and Assisted Banks and Thrifts

- Assisted
- Failed
Where Does the Economy Stand?
(based on the views of Blue Chip Forecasts)

Percent

Real GDP Growth
Top 10 Blue Chip Forecasts (As of 5/10)
Bottom 10 Blue Chip Forecasts (As of 5/10)
Post-Recovery Implications

- The IMF is now expects that “the deleveraging process will be slow and painful, with economic recovery likely to be protracted.
- As predictable in a recession, credit standards have tightened considerably, although some recent improvements have been seen in the corporate debt markets for financially strong firms.
- Riskier and larger credits were often securitized or syndicated. Those markets remain weak. The market for securitized subprime mortgages may not return for a long time. This has implications for recovery of the housing market.
- The positive effects of the recently passed economic stimulus legislation will take time to work through the economy.
Excellent Resources

- Financial Crisis Timeline: http://timeline.stlouisfed.org/


- Credit Card and Mortgage Delinquency Maps: http://data.newyorkfed.org/creditconditionsmap/
