The roots of the current financial turmoil

David Marshall*
Senior Vice President
Federal Reserve Bank of Chicago
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Key Themes to the Current Financial Turmoil

1. Fundamental Macro Driver: The Housing Market
2. The Role of Financial Innovation in Financial Crises
3. The Leverage Multiplier
The Fundamental Driver: Run-up and Collapse of Housing Prices

- “Global savings glut” (Bernanke, March 10, 2005)
  - Large and growing inflow of foreign savings into the U.S.

- Massive demand for U.S. securities

- U.S. financial system went into overdrive to create financial assets to meet this demand.

- Securitizing residential capital

- Flow of fund into residential investment caused rapid increase in
  - Housing construction
  - House prices
Housing Charts: Q1 1997 – Q1 2008

Housing Starts and Case-Shiller Home Price Index

- Single Family Housing Starts
- Case-Shiller Index

House Price/Rental Ratio and the Months Supply of Unsold Houses

- Price/Rental Ratio
- Months Supply
The fundamental driver (continued)

- **Macroeconomic implications**
  - Contraction in residential investment ➔ fall in aggregate demand
  - Wealth effect decreases consumption growth
  - Growth will be weak until the overhang of unsold houses is worked off and house prices stabilize.
Role of Financial Innovation in Financial Crises
The Role of Financial Innovation in Financial Crises

Market participants face a problem of statistical control:
- Choose investments to get best risk-return tradeoff
- Requires ability to model and quantify risk
- Estimate probability distribution using historical returns

During periods of rapid financial innovation,
- Risk management models estimated from historical data may prove to be inadequate
- Without confidence in the ability to model risk, market participants shift to robust control:
  - Avoid the worst case outcome
  - May cause participants to withdraw liquidity from markets
  - → liquidity crisis
Innovations in the Current Turmoil

1. Extension of the originate-to-distribute model to subprime mortgages.
   - 2000: Subprime mortgages = 8.5% of MBSs
   - 2006: this fraction had increased to 20%

2. Complex structure
   - multiple layers of structure between original mortgage loans and ultimate providers of funds
   - extremely opaque
   - difficult to assess the true level of risk
Impact of innovations on risk modeling

Default risk

- Complexity ➔ difficulty assessing underwriting standards applied to original mortgages
- few defaults during the period of rising home prices
- little attention to evidence of lax underwriting
  - high loan-to-value ratios
  - negative amortization
  - deficient documentation
- When housing markets weakened, default rates on subprime loans rose far beyond predictions of risk management models commonly in use.
Impact of innovations on risk modeling

**Ratings risk**

- Risk models assumed AAA sub-prime MBS risk comparable to AAA corporate bond
  - Little default risk
  - Low default correlation
  - Low downgrade risk.
- In fact,
  - Higher default risk than thought
  - High default correlation
  - Major downgrade risk
    - **ratings declines of ten notches or more not uncommon**
- Investors came to distrust all ratings
  - “super-senior” CDO tranches shunned by investors
Impact of innovations on risk modeling

- Interbank liquidity became scarce

- Risk avoidance rose sharply

- Market participants became reluctant to buy many types of financial instruments, even those without sub-prime exposure.
  - Asset Backed Commercial Paper
  - Auction Rate Securities
  - Mortgage Backed Securities
  - Municipal Bonds
Banking System Stress

1 Month LIBOR-OIS Spread
(basis points)

Bank Senior CDS Spreads
(basis points)
Municipal Bonds

10-year AAA Municipal Bond Spread
(basis points over 10 year Treasury Note)
Leverage Multiplier

- Risk aversion increases and participants withdraw from the market
  - fall in prices at which financial firms carry assets on their balance sheets
  - the fall in asset valuation comes directly off capital

- Unless capital is replenished, balance sheet shrinks by a multiple of capital loss

- Example:
  - Suppose firm’s target capital ratio = 5%
  - Each dollar loss to firm reduces balance sheet by $20
Leverage Multiplier (continued)

- **Vicious circle:**
  - Reduced balance sheet capacity forces firms to sell assets in order to restore their target capital ratio (“fire sale”)
  - Asset sales further depress prices, further eroding capital inducing additional sales
  - Etc.

- **Major decrease in balance sheet capacity**
  - Estimates of mortgage credit losses $400 billion
  - Estimates of reduction in financial intermediary balance sheet capacity $2 trillion

- **Credit squeeze on the real economy**
Questions?