

Global Financial Instability: Sources and Systemic Solutions

Lucjan T. Orłowski

Professor of Economics, Sacred Heart University

Advisory Council Member, CASE

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The main goals of this presentation

- To identify of the main *sources* and the *scope* of the 2007/08 **crisis of asset securitization**, spurred by the subprime mortgage crisis in the United States
- To propose *systematic* policies for mitigating financial risks and stabilizing predicted inflation along with other key monetary variables (the USD value in the leading foreign currencies, long-term interest rates, term spread on US sovereign bonds, interest rate swap rates, etc.)

Definitions of key terms

- Prime mortgages – traditional mortgages to borrowers with good credit, guaranteed repayments and fully-documented income
- Subprime mortgages – those to borrowers with low credit scores, uncertain (undocumented) income prospects and high default risk
- Near-prime mortgages – those smaller than jumbo mortgages (< \$417K) to borrowers who qualify for credit above subprime, but have uncertain income prospects or are unable to provide traditional down-payment
- Collateralized debt obligations (CDOs) – structured credit products backed by pools of other assets, apportion credit risk by assigning cash flows to different tranches, with cash flow going first to lowest risk tranche
- Collateralized mortgage obligations (CMOs) – type of CDOs backed by mortgages, enable banks to divest risk and avoid holding regulatory capital (Tier I capital/risk-weighted assets >4%)
- Structured investment vehicles (SIVs) – off-balance-sheet vehicles that issue short-term commercial paper and medium-term notes invested in high-yield (high risk) mortgage-backed securities and credit card debt; don't appear on balance sheets of banks, enable to bolster profits and reduce risk; earn profit on spread between yield on paper issued and the investments

The sources of subprime turmoil

- Easy monetary policy during the 2003-2005 period (federal funds rate FFR was kept at 1% from July 03 to July 04, then steadily increased to 5.25 in Jan 07 kept till July 07, since then reduced in several steps to the current 2.25%)
- Also, during 2003 and 2004, international liquidity was plentiful due to large net savings from the Far East (including China) and from oil-exporters, prompting international investors to seek yield and safety in U.S. Treasury securities and agency-issued (Fannie Mae and Freddie Mac) residential mortgage-backed securities (RMBS);
- Yields on long-term US bonds were depressed by heavy international demand
- U.S. investment banks stepped-in with sales of high-yielding private-label RMBS and derivatives backed by pools of mortgages; mortgage brokers searched for higher-risk borrowers.
- With such low interest expenses, banks moved to higher interest income lending more risky assets, interest margins became high (see FDIC quarterly reports), so were bonuses of bank executives
- The high risk of subprime mortgages was transferred to investors through CMOs (IMF Global Financial Stability reports praised their expansion in subsequent issues till April 2007)

Results of subprime risk-taking

- Result: considerable propagation of market risk (Market Volatility Index VIX: daily average January-July 2007 = 13.25, August 2007-March 2008 = 23.25)
- Investment banks creating a ‘perpetual bubble’.

They generated pro-cyclical leverage since 1980 by: borrowing low-cost reserves → using reserves to buy securities → using securities as collateral to raise more debt and buy more securities (US financial assets were 4.5 times greater than US GDP in 1980, but 11 times greater than US GDP in 2007)

Sources of global liquidity

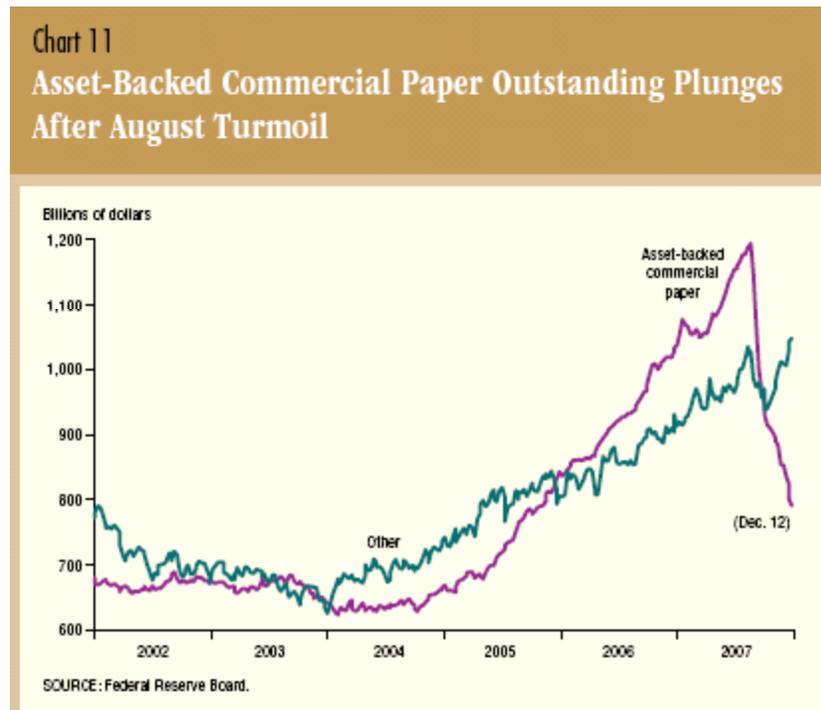
- Approximation of global managed assets in 2007 (\$trn): pension funds 23, mutual funds 19, insurance companies 18, official reserves 7, sovereign-wealth funds (SWFs) 4, hedge funds 3, private equity 2, = total 76 (almost 6 times of US GDP=\$13.8trn)
- Heterogeneity of SWFs, their types and sources: stabilization funds, savings funds, reserve investment corporations, development funds, pension reserve funds.
- The largest SWFs (2007 assets \$bln, IMF GFS Oct.07): Abu Dhabi Investment Authority (875), Norway Govt. Pension F. (308), Saudi Arabia Funds (250+), Kuwait Inv. Authority (250), China Investment Corp. (CIC) (200), Russia Oil Stabilization Fund (127), Singapore Govt. Investment (100+), Singapore Temasek (100), +others
- Criticism of SWFs by governments over recent losses (CIC losing so far \$1bln from investing in Blackstone); some supervision is under way

Unparallel rise of subprime mortgages - key facts

- In 2007, 80% of mortgages were classified as prime, 14% as subprime and 6% as near-prime (FRB Dallas Ec. Letter no.11/07) . **However,**
- 40% of new mortgages in 2006 were sub- or near-prime (comparing to 9% in 2001)!
- Mortgages to low- or no-documented income borrowers soared; comprised 81% of near-prime, 55% of jumbo, 50% of subprime and 36% of prime borrowers in 2006
- Share of subprime mortgages past-due rose from 11% in 2005 to above 15% at the end of 2007
- 1.3 million properties were affected by default notices, auction notices and bank repossessions in 2007 alone (a 75% increase over their 2006 level), the majority of them had adjustable-rate subprime mortgages.
- Correspondingly, inventories of existing homes increased from 3.5 months supply of unsold homes in Dec 2004 to 12 months in January 2008
- *A positive, albeit temporary factor:* homeownership rate of U.S. households rose from the lowest level of 63.8% in 1994 to a record of 69.2% in 2004

Impact on the housing market (1)

- Higher interest rates in 2005-07 drove up effective rates on adjustable-rate mortgages, lowered CMOs coupon payments to investors making them less attractive,



Source: DiMartino, D., Duca, J.V., Rosenblum, H. Federal Reserve Bank of Dallas, Economic Letter vol. 2, no.12.

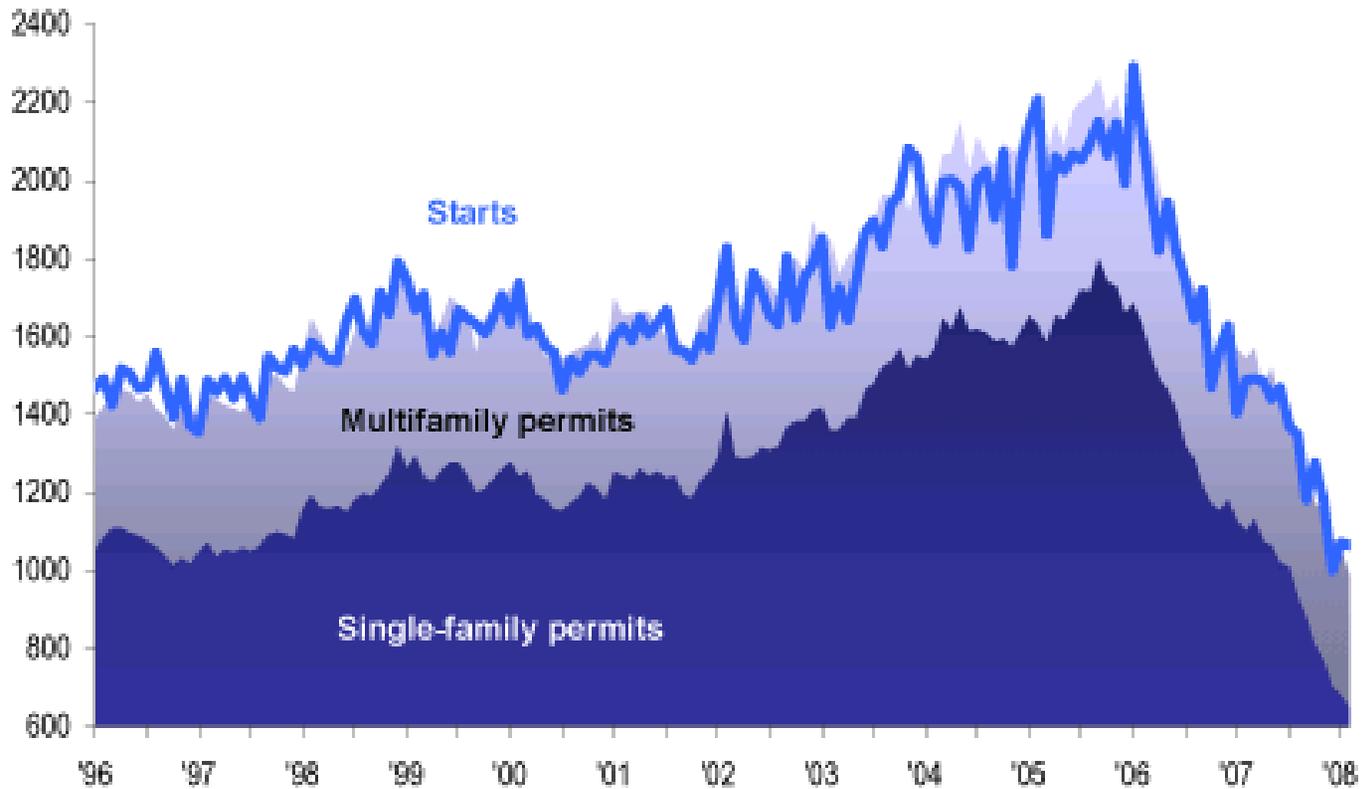
Impact on the housing market (2)

- The housing bubble is now imploding (see graphs below)

Chart 3

Housing Starts and Permits Continued to Fall

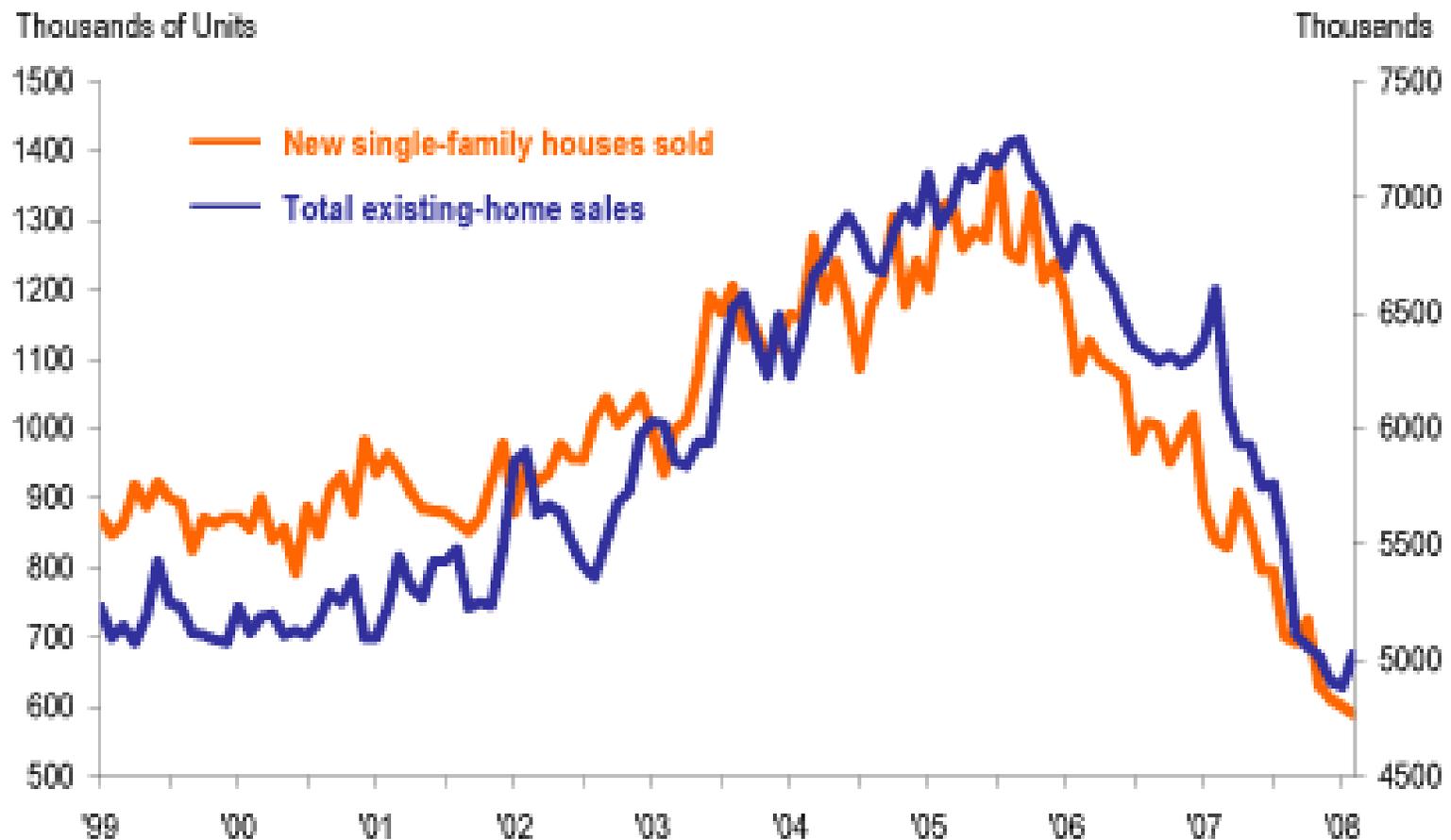
Thousands of Units



SOURCE: Census Bureau.

Chart 4

Existing-Home Sales Edged Up in February



SOURCES: Census Bureau and National Association of Realtors.

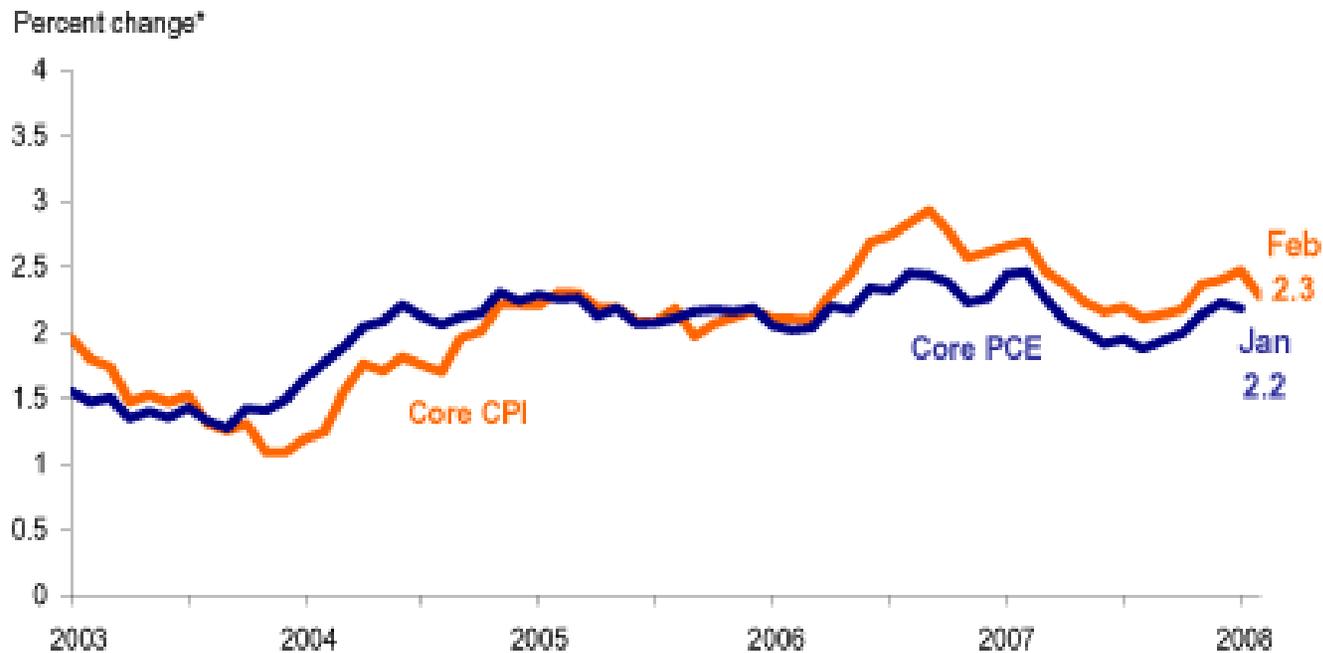
Monetary policy response (The Grand Easing of 2008)

- Radical infusion of liquidity - target FFR lowered from 5.25% in Aug 07 to 3.0% in Jan 08 and 2.25% in March 08, discount window primary credit rate also lowered to 2.5% and cash infusion through special swap arrangements low-quality assets for cash =\$250 bln
- Is the FOMC giving up its inflation targets (specified by Chairman Bernanke on 2/14/07 and 11/14/07 for core personal consumption expenditure PCE inflation at annualized rate of 1.75 – 2.0 % for 2008)?
- Rising current inflation and elevated forecasts (Dec.07 annualized CPI inflation at 4.1%)
- The Fed easing aims at reducing the burden of ARMs resetting and at preventing acceleration of foreclosures
- The danger of signaling effect – information asymmetry, the Fed may know more about financial distress than the markets do (ref. Allan Drazen, NBER WP 5892/1997)
- Is the Fed shifting the asset bubble from derivative securities into gold, crude oil and other commodity futures? Their soaring prices uplift inflation expectations

Fed inflation objective variable – Core PCE: rising above the target range

Chart 5

Twelve-Month Core Consumer Inflation Edged Down in February



*Seasonally adjusted, annualized rate.

SOURCES: Bureau of Labor Statistics and Bureau of Economic Analysis.

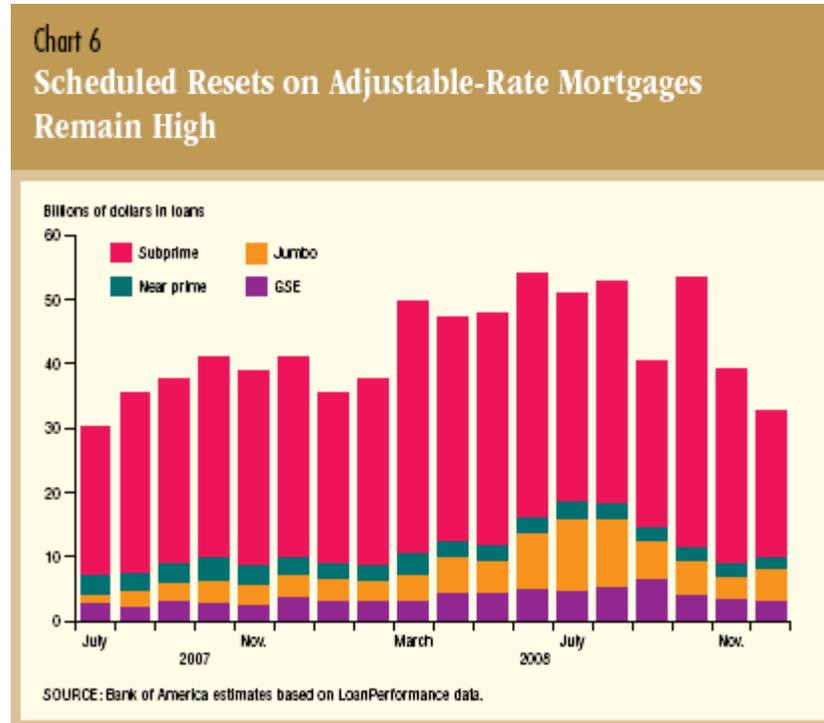
Is the Fed responding too slowly?

Differences in risk perception between the financial markets and the FED

- Traders and portfolio managers adjust their actions to current information, while the Fed relies more on historical data and forecasts (see W. Poole, FRB of St. Louis Review, 2008)
- Financial firms have a wider array of strategies to mitigate risk (derivatives, etc.) than the Fed does; they also seem to have sufficient equity capital for further writedowns (see FDIC Quarterly Banking Report IVQ07)
- Financial institutions determine market risk, the Fed accepts it
- The Fed policy objective of long-run price stability is not always consistent with short-term profit max of firms
- Market sentiments about economic conditions and forecasts change more quickly than the Fed judgment
- The action lag responding to disturbances is longer for the Fed than for the markets
- The markets have not fully anticipated the recent Fed actions (volatility of market indexes, gold prices, exchange rates prove it)

The banking crisis isn't over yet

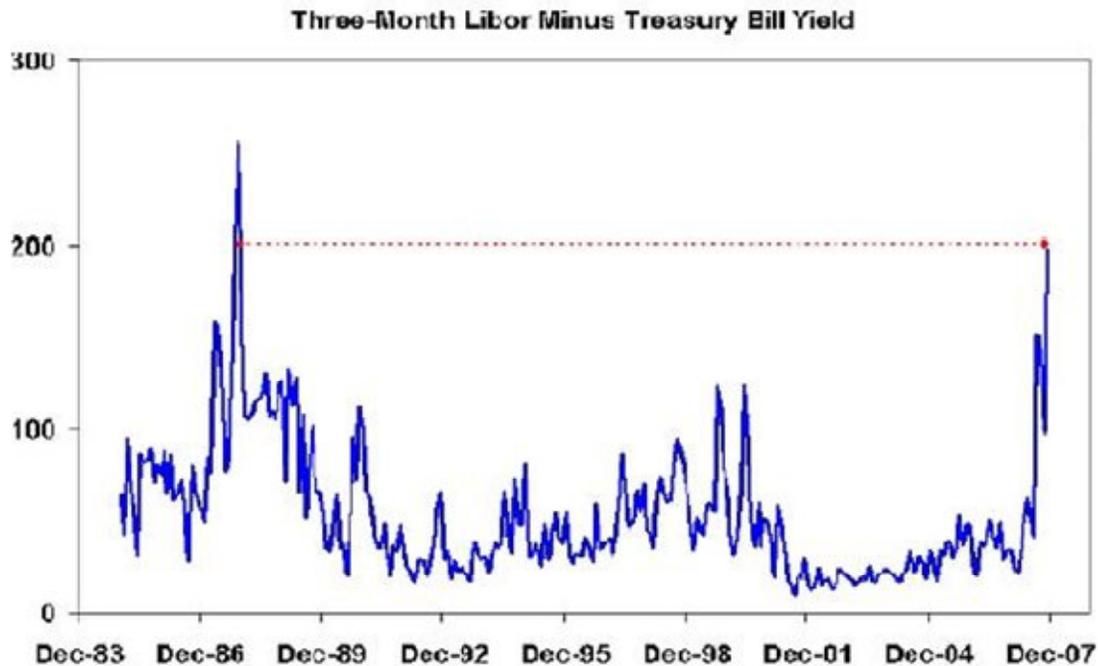
- The peak of ARMs resetting is forthcoming (March-Aug 2008) (see also IMF GFS Oct07, p.8 for the analysis of longer-time series);
- Spillover effects into propagation of credit card defaults and non-performance of Level 3 assets are very likely, as well as spillover effects on smaller banks
- Write-downs against non-performing assets are not over yet



Source: Di Martino, et al.

Have the banks begun to trust each other again?

TED spread (3M LIBOR – 3MTBill) at the end of Dec 07 nearing its peak from 1987 market crash, was back to 100 bps on Feb.5, 2008 after the Fed January easing, but it's up again! March 24: 200 bps (2.61 3MLIBOR - .61 3MTbill), April 2: 128 bps (2.70 – 1.42)



Source: Bloomberg

Demise of Bear Stearns: causes and lessons

- Bear Stearns stock value: \$205 in Aug07, \$160 in Jan08, \$2 on March 17, 2008
- Bear policy mistakes:
 1. Largest exposure to mortgage markets among the Big5 Wall Street investment banks
 2. Excessive reliance on risky short-term funding from wholesale markets
 3. Collapse of its two hedge funds last year
 4. Insufficient liquidity in relation to equity (liquidity/equity ratio of only 145%, 4X less than Lehman Brothers)
 5. Failure to shore up funding since summer 2007
- Result: massive bank run on Mar14,08 = \$17 billion liability withdrawal
- Response: fire sale to JP Morgan/Chase (acting as FRB NY conduit to buy Bear), \$2/share offer on March 17, raised to \$10 on March 25
- Bear may not be too big to fail, but it is too entangled to fail (with significant position in interest rate swaps); its failure could reverberate across the financial system causing a domino effect of other failures
- In a different vein: Should the bail-out be so complete?
- Weathering-off potential contagion: fully transparent teleconference of Lehman Brothers CFO (Ms. Erin Callan) on March 24. Without doubt: transparency, managerial skills and high liquidity pool have saved Lehman

Monetary policy – constraints and systemic remedies

- Stick to forward-looking inflation targeting; a disciplinary anchor (inflation target) is needed for a credible policy
- The current ‘Grand Easing’ is shifting the bubble from derivatives and residential property toward gold and commodities
- Inflation Forecast Targeting (IFT) (L. Svensson, J.Monetary Ec.,1999) combines discretion with a disciplinary rule, helps instill confidence in the future value of money
- IFT cannot be too rigid, i.e., based on a ‘mechanical’ Taylor rule, because of leptokurtosis of most financial variables (exacerbated volatility at turbulent times)
- The recent Fed easing is ‘inter-temporally inconsistent’, as the policy action is inconsistent with the inflation projection; the aim of reducing the burden of ARMs resetting shall be explained as a temporary detour from IFT
- Forecast Targeting (FT, not IFT) prescribed by M. Woodford (J.Ec.Persp., 2008) - pragmatic but dilutes the policy discipline, would have to be highly transparent to reduce the deepening information asymmetry between the Fed and the markets, entails potentially large market risk
- Relative Inflation Forecast Targeting (RIFT) (L. Orłowski, J. Pol. Modeling, 2008) - a policy framework for the economies converging to a common currency

Bank-level remedies

- More holistic approach to risk management, view it as a team-effort; compensate portfolio managers for company-level balance of risks
- Emphasize market risk, not just individual credit risk (VaR analysis is insufficient – it underestimates losses in the case of leptokurtic, long-tailed distribution)
- A more parsimonious approach: stick to ‘plain-vanilla’ debt securities (those based on a guaranteed reimbursement of the principal with the return not linked to derivatives), and basic derivatives; in particular, stay away from ‘derivatives on derivatives’ with complicated option characteristics, i.e. CDO or CDO-squared products
- What to do with CDOs? CDO total outstanding value = \$900 bln (as of July 07), of which CDO-squared \$28 bln (Credit Suisse data). CDOs entail significant information asymmetry and adverse selection problem
- Strengthen internal control over security trading (Why did Soc.Gen. allow Jerome Kerviel to generate EUR5 bln loss from relatively straightforward exchange-traded futures contracts? Why has Bear Stearns incurred such exorbitant losses? Why should the Fed and the U.S. taxpayers bailout defunct banks?)
- Further the ARCH-class methodology for time-varying volatility analysis

Techniques to mitigate risk in stressful circumstances

- More generous up-front margin requirements from investors and margin calls
- Stress tests in the banking sector augmenting market risk models
- Regulatory risk-based capital requirements
- Automatic position and stop-loss risk limits
- More detailed guidelines for risk committees reactions to market losses
- Hedge funds guidelines for flexible reactions to market risk

Concluding remarks

- The financial market vicissitudes are not over yet, the ‘conundrum’ is still unwinding
- Liquidity is plentiful, so are market risks, mainly due to uncertainty about the U.S. business cycle
- Some features of robust monetary policy:
 1. an official quantified inflation target, treat the current easing as temporary
 2. clear specification of the policy goals and loss function parameterization
 3. forward-looking character (IFT for the U.S., RIFT for emerging markets)
 4. not over-promising in terms of growth and employment
 5. transparency
- Tighter regulation and supervision as well as massive bailouts of financial institutions will not resolve the financial instability problems, but their internal discipline and search for prudent strategies and policies will