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THE U.S. HOUSING BUBBLE AND THE GLOBAL FINANCIAL CRISIS: VULNERABILITIES OF THE ALTERNATIVE FINANCIAL SYSTEM

Introduction. This report explains how weakness in the U.S. housing sector morphed into a global financial crisis that began last August. Using the framework for analyzing asset bubbles that was introduced in a previous report,¹ this report examines stage two – credit expansion (microeconomic factors related to financial services) and stage six – financial panic and crisis management.²

Alternative financial system. During the last three decades, an alternative financial system evolved to the traditional bank-centric system that had characterized developed economies since the Renaissance. This alternative financial system is based on **structured finance**.³

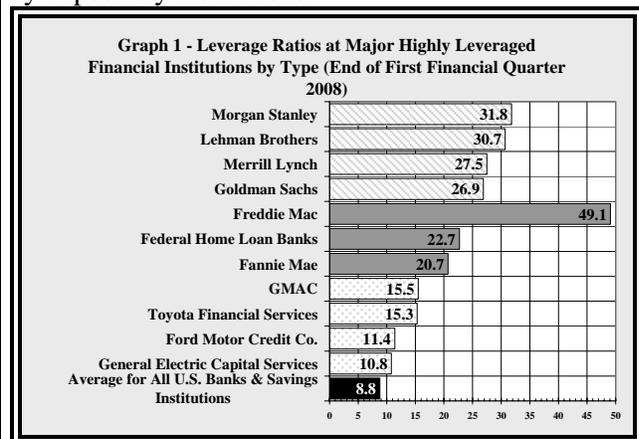
The most common form of structured finance is the **securitization** of loans, leases, and receivables from households and non-financial firms that cannot access credit markets directly by issuing debt securities. **Originators** extend loans, leases, and receivables to households and non-financial firms. **Issuers** buy these loans, leases, and receivables, place them as collateral into **special purpose vehicles (SPVs)** that are legally separate from the issuer, and sell **derivative securities** in the SPVs. This “securitizes” the collateral.

When derivative securities in a SPV have *equal and undifferentiated* interests in the cash flow from the underlying collateral, such securities are known as **asset-backed securities (ABS)**, or **residential mortgage-backed securities (RMBS)** when the collateral consists of residential mortgage loans.

Alternatively, when SPVs are divided into tranches of derivative securities that have *unequal and differentiated* interests in the cash flow from the underlying collateral, such securities are known as **collateralized debt obligations (CDOs)**, or **collateralized mortgage obligations (CMOs)** when the collateral consists of residential mortgage loans.

Highly leveraged non-depository financial institutions. Highly leveraged non-depository financial institutions (HLNDFIs) include **finance companies**,⁴ **financial government-sponsored enterprises (GSEs)**,⁵ **hedge funds**,⁶ **investment banks**,⁷ and **bank-sponsored off-balance sheet entities (OBSEs)**.⁸ In general, these institutions “borrow short” through commercial paper, repurchase agreements (repos), reserve repurchase agreements (reverse repos), and other debt securities to “lend long” by investing in medium- and long-term debt and derivative securities, many of which have limited market liquidity.⁹ Many of these institutions make their funding and investment decisions based on complex mathematical models that try to discern predictable relations between various prices, different interest rates, and other market indicators. Unfortunately, these relations often break down under extreme conditions in financial markets.

Since 1980, this alternative financial system has grown rapidly to rival the bank-centric system. In 2007, the \$12.7 trillion of U.S. financial assets held by HLNDFIs almost equaled the \$13.5 trillion held by depository institutions.¹⁰



In general, HLNDFIs have significantly higher leverage ratios (i.e., debt and other liabilities to equity) than banks and other depository institutions.

Graph 1 compares the leverage ratios of the four largest finance companies, the four largest independent investment banks, and the three largest financial GSEs with the average leverage ratio at all U.S. banks and savings institutions.¹¹ Of course, high leverage ratios simultaneously increase both potential returns and credit risk in HLNDFIs.

Intermediation and liquidity and maturity transformation. HLNDFIs are now performing the same economically vital, but inherently risky functions of **intermediation** and **liquidity and maturity transformation**, which banks and other depository institutions have traditionally performed. During the 19th and early 20th centuries, largely unregulated and unsupervised banks and other depository institutions were frequently subject to runs (i.e., the simultaneous demand from a large number of depositors to convert their deposits into cash). Bank runs often became contagious, triggering financial panics that were characterized by asset price declines, credit contractions, bank failures, and financial stress among households and non-financial firms. Financial panics usually caused recessions or even depressions. Bitter experience taught policymakers in the United States and other developed economies that the banking system requires an appropriate regulatory and supervisory framework, including:

- **Capital adequacy regulation** (i.e., a minimum capital ratio, defined as equity plus certain reserves to assets) that caps the leverage in banks and other depository institutions;¹²
- **Central banks** that serve as “lenders of the last resort” to illiquid, but solvent banks and other depository institutions in order to check contagious bank runs and to prevent widespread financial panics and the resulting damage to the economy;
- **Deposit insurance** that prevents runs by guaranteeing depositors against losses if their bank or other depository institution should fail; and
- **Prudential supervision** that detects fraud and other misconduct in banks and other depository institutions, monitors their financial condition, and provides an early warning system for institution-specific or systemic financial problems so that central banks, regulators, and finance ministries can take corrective actions before financial crises develop.

Microeconomic factors – regulation and supervision. Two regulatory and supervisory factors contributed to the credit expansion that inflated an unsustainable housing bubble in the United States:

- **Inherent limitations in value-at-risk models used to assess credit, market and operational risk exposure.** Large banks, HLNDFIs, and regulators use these models to estimate credit, market, and operational risks and to determine the capital adequacy given these risks at banks, other depository institutions, and HLNDFIs. The lack of sufficient performance data for new financial products especially under stressful market conditions caused value-at-risk models to underestimate risk exposure. Consequently, banks, other depository institutions, and HLNDFIs continued to fund the rapid expansion of residential mortgage credit long after it should have been curtailed.
- **Failure to incorporate off-balance sheet entities within the regulatory perimeter.** Bank regulators failed to include bank-sponsored off-balance sheet entities within the regulatory perimeter for assessing capital adequacy. Banks sponsored these entities to reduce costs and increase profits by circumventing capital regulations and employing higher leverage. These entities allowed banks to disguise their actual leverage and their potential exposure to credit, liquidity, and market risk. When these entities suffered from funding illiquidity, this risk exposure was actualized.

Two regulatory and supervisory factors contributed to the resulting global financial crisis after the U.S. housing bubble popped:

- **Fragmentation.** The regulation and supervision of financial services firms is highly fragmented among eight federal agencies¹³ and the states¹⁴ and does not reflect the rise of the alternative financial system and its integration with the bank-centric system. Because of the lack of prudential supervision of highly leveraged non-depository financial institutions, the Federal Reserve and other central banks were surprised by large funding liquidity problems among these institutions. The Federal Reserve was forced to act as the lender of the

last resort to these institutions to check financial contagion once the crisis began.

- **Mark-to-market accounting for level three assets.** Under generally accepted accounting principles, fair value accounting (often called mark-to-market accounting) requires financial institutions to use (1) market prices to value liquid financial assets (referred to as level one or level two assets) and (2) theoretical models based on price inputs to value illiquid financial assets (referred to as level three assets). Mark-to-market accounting increases transparency in financial institutions, but is also pro-cyclical. Because of the inherent limitations in these theoretical models, mark-to-market accounting may exaggerate the decline in the fair value of level three assets under stressful market conditions. Moreover, mark-to-market accounting forces financial institutions to write-down paper losses on debt and derivative securities that these institutions do not intend to sell, reducing their equity. During the global financial crisis, mark-to-market accounting triggered fire sales of some debt and derivative securities that accelerated their fall in value.

Microeconomic factors – private firms.

Three misalignments of private incentives in the alternative financial system as well as one significant methodological error contributed to the credit expansion that inflated the U.S. housing bubble and exacerbated the vulnerability of the alternative financial system to a global crisis:

- The **“originate to securitize”** business model of mortgage banks tempted them to weaken their credit standards for extending loans that were going to be securitized. Originators maximized their income by extending and selling as many loans as possible to issuers, while the credit losses from the neglect of good credit standards accrued to the buyers of derivative securities.
- The **“issuer pays”** business model for credit rating agencies, in which the issuers of debt and derivative securities pay credit rating agencies for their ratings, tempted these agencies to give overly favorable credit ratings to derivative securities to win contracts from major investment banks that were issuing a very large volume of derivative securities.

- **“Up front” incentive compensation plans,** which rewarded investment bankers for the volume of their transactions in a single year rather than the long-term profitability of their transactions for the investment bank or its customers, tempted investment bankers to take excessive risk by underwriting as many debt securities and derivative securities as possible regardless of their long-term profitability.

In addition to these misalignments of private incentives, the both Financial Stability Forum and the IMF found that credit rating agencies employed flawed methodologies in assessing the default risk in derivative securities. Simply put, credit rating agencies systemically underestimated the likelihood that defaults on the underlying collateral would happen at the same time (e.g., declining housing prices would cause many subprime borrowers to become delinquent and default simultaneously). Because of this error, credit rating agencies awarded excessively high credit ratings to many derivative securities.¹⁵

Ignition of a financial panic. After the housing bubble burst in the second quarter of 2006, soaring delinquency and foreclosure rates for subprime residential mortgage loans reduced the market value of subprime-related RMBS and tranches of subprime-related CMOs. Consequently, their market liquidity shriveled.

On August 9, 2007, BNP-Paribas suspended cash redemptions from three hedge funds that it had sponsored because of uncertainty about the value of subprime-related RMBS and tranches of subprime-related CMOs in these funds. This suspension triggered a severe global financial crisis that has made borrowing more difficult and costly for all but the most creditworthy households and non-financial firms.

Losses in highly rated subprime-related RMBS and tranches of subprime-related CMOs undermined investor confidence in credit ratings and triggered a general reassessment of risk that boosted credit and market liquidity risk premiums across the board.

Real estate loans comprised 60.2 percent of all loans and leases in all U.S. banks and savings institutions on March 31, 2008. Largely because of this concentration, the average seasonally adjusted delinquency rate for loans and leases in U.S. banks jumped from 1.51 percent in the second quarter of 2006 when the housing bubble popped to 2.83

percent in the first quarter of 2008. Moreover, the average annualized seasonally adjusted charge-off rate for loans and leases in all U.S. banks increased from 0.42 percent in the second quarter of 2006 to 0.97 percent in the first quarter of 2008.¹⁶

Banks became uncertain about the credit risk in lending to other banks. This uncertainty increased the spread of the three-month London Interbank Offer Rate (LIBOR) over the effective federal funds rate from 9.0 basis points on August 9, 2007, to 89.5 basis points the next day. This spread has remained high (68.6 basis points on June 6, 2008).

Bank-sponsored off-balance sheet entities that had heavily invested in subprime-related RMBS and tranches of subprime-related CMOs were unable to rollover their asset-backed commercial paper. Thus, asset-backed commercial paper outstanding fell by 38.4 percent from \$1.195 trillion for the week ending August 8, 2007 to \$753 billion for the week ending June 4, 2008.

Because of this funding illiquidity, these off-balance sheet entities drew down their back-up lines of credit with sponsoring banks, and sponsoring banks were forced to absorb OBSE assets onto their balance sheets. This involuntary increase in bank assets, the rapid escalation in charge-offs on subprime residential mortgage loans, mark-to-market write-downs on subprime-related RMBS and tranches of subprime-related CDOs reduced the regulatory capital ratios at many banks.¹⁷

In response, banks have tightened their credit standards to strengthen their balance sheets (see Table 1).¹⁸

Commercial & Industrial Loans	
Large Non-Financial Firms	55.5%
Small Non-Financial Firms	51.8%
Commercial Real Estate Loans	78.6%
Prime Residential Mortgage Loans	62.3%
Subprime Residential Mortgage Loans	77.7%
Home Equity Lines of Credit	70.3%
Consumer Installment Loans	44.4%
Credit Cards	32.4%
Source: Federal Reserve Survey of Senior Bank Officers	

As the market value of subprime-related RMBS and tranches of subprime-related CMOs plummeted, banks increased their “haircuts” and made margin calls on lines of credit to highly leveraged non-depository financial institutions especially hedge funds (see Table 2). For example, the amount that such institutions could borrow

under lines of credit by pledging Treasuries as collateral fell from 99.75 percent of their value in early 2007 to 97 percent of their market value in April 2008.

Security	Jan-May 2007	April 2008
U.S. Treasuries	0-25	3
Investment-grade Bonds	0-3	8-12
Non-investment-grade Bonds	10-15	25-40
Equities	15	20
Investment-grade CDS	1	5
Synthetic-super-senior	1	2
Senior Leveraged Loans	10-12	15-20
Second-lien Leveraged Loans	15-20	25-35
Mezzanine Level Loans	18-25	35+
AAA ABS CDOs	2-4	15
AA ABS CDOs	8-15	30-50
A ABS CDOs	8-15	30-50
BBB ABS CDOs	10-20	40-70
Equity ABS CDOs	50	100
AAA CLO	4	10-20
AAA RMBS	2-4	10-20
Alt-a MBS	3-5	20-50

Sources: Citigroup and IMF Staff Estimates

Larger haircuts and margin calls on lines of credit reduced the funding liquidity in many HLNDFIs. Some of these institutions dumped some of their debt and derivative securities in “fire sales.” Deleveraging increased interest rate spreads for most debt securities over Treasuries with comparable maturities.

Banks and other depository institutions have also increased their interest rate margins on most loans to households and non-financial firms to restore profitability. Consequently, interest rates paid by households and non-financial firms have not generally decreased as the Federal Reserve has reduced the cost of funds for banks and other depository institutions.

Monetary response. The Federal Reserve has been forced to take extraordinary measures to maintain liquidity and keep credit markets functioning. First, the Federal Reserve has aggressively eased monetary policy. From August 16, 2007 to April 30, 2008, the Federal Reserve reduced its discount rate by 400 basis points from 6.25 percent to 2.25 percent. From September 16, 2007 to April 30, 2008, the Federal Reserve slashed its target federal funds rate by 325 basis points from 5.25 percent to 2.00 percent.

The Federal Reserve has also created new loan programs to alleviate the funding liquidity crisis. To provide more than overnight funding for banks

and other depository institutions, the Federal Reserve established the **Term Discount Window Program** on August 17, 2007 through which banks and other depository institutions could borrow on terms similar to the overnight discount window for up to ninety days. After funding liquidity conditions worsened, the Federal Reserve established the **Term Action Facility** on December 12, 2007. Under this facility, banks and other depository institutions bid every two weeks for a predetermined amount of funding that is repayable in 28 days.

On March 11, 2008, the Federal Reserve established a term auction funding facility, known as the **Term Securities Lending Facility** for primary dealers.¹⁹ Five days later, the Federal Reserve created an overnight funding facility, known as the **Primary Dealer Credit Facility** for primary dealers.

Banks and primary dealers have readily used these new facilities as other sources of funding liquidity have become more costly and difficult to secure. This has greatly changed the composition of the assets on the Federal Reserve's balance sheet (see Table 3).

	6-27-07	Percent	6-18-08	Percent
U.S. Treasuries	\$790,497	87.6%	\$478,734	51.0%
Repurchase Agreements	\$20,000	2.2%	\$133,500	14.2%
Term Auction Credit	\$0	0.0%	\$150,000	16.0%
Discounts to Depository Institutions	\$187	0.0%	\$13,744	1.5%
Discounts to Primary Dealers	\$0	0.0%	\$8,145	0.9%
Float	-\$152	0.0%	-\$1,781	-0.2%
Other Assets	\$40,233	4.5%	\$103,820	11.1%
Gold Stock	\$11,041	1.2%	\$11,041	1.2%
SDR	\$2,200	0.2%	\$2,200	0.2%
Treasury Currency	\$38,526	4.3%	\$38,833	4.1%
Off-Balance Sheet – Like Securities Lent to Primary Dealers				
Overnight Facility	\$0	0.0%	\$4,361	0.5%
Term Facility	\$0	0.0%	\$114,457	12.2%

Bear Stearns. On Thursday March 13, 2008, Bear Stearns executives informed the Federal Reserve and the Securities and Exchange Commission that Bear Stearns' funding liquidity position had deteriorated during the week from \$18 billion on Monday to \$2 billion on Thursday.

Unless alternative funding could be arranged, Bear Stearns would have to file for bankruptcy the next day. Lacking the financial intelligence about Bear Stearns that supervision would have provided, the Federal Reserve was blindsided by this declaration.

A bankruptcy court would have frozen all liabilities of Bear Stearns for months while the bankruptcy proceedings unfolded. With billions of dollars owed to banks and other financial institutions through repos and lines of credits, an extended freeze could have caused extreme credit losses in many other financial institutions, possibly leading to a global financial meltdown of catastrophic portions.

Although the FDIC can resolve a failing bank overnight to avoid the freeze problem inherent in bankruptcy, there is no quick resolution alternative to bankruptcy for highly leveraged non-depository financial institutions. This lacuna prompted the Federal Reserve to exercise its emergency lending power and arrange the involuntary acquisition of Bear Stearns by JPMorgan-Chase.

On Friday March 14, 2008, the Federal Reserve arranged a 28-day line of credit through JPMorgan-Chase. Over the weekend, JPMorgan-Chase agreed to acquire Bear Stearns for \$2 per share, a small fraction of what its shares were valued early in the week. The Federal Reserve agreed to take up to \$30 billion of securities owned by Bear Stearns onto its books. To avoid shareholder litigation, JPMorgan-Chase subsequently increased its offer to \$10 per share. JPMorgan-Chase also agreed to compensate the Federal Reserve for any losses on its portfolio of former Bear Stearns assets up to \$1 billion dollars.

Fiscal response. On February 13, 2008, President George W. Bush signed the *Recovery Rebates and Economic Stimulus for the American People Act of 2008*. The act:

- Provides a refundable 10 percent rebate on the first \$6,000 of taxable income (\$12,000 for couples) that is phased out at a 5 percent rate for incomes over \$75,000 (\$150,000 for couples) plus an additional \$300 per qualifying child if eligible for a rebate;
- Allows 50 percent bonus depreciation for business purchases of qualifying equipment in 2008;
- Increases the amount of eligible investment (generally equipment) expensing from

\$128,000 to \$250,000 and the phase-out threshold from \$510,000 to \$800,000 for 2008;

- Increases the conforming mortgage loan limits for Fannie Mae and Freddie Mac up to \$729,750 for loans originated between July 1, 2007 and December 31, 2008; and
- Allows the Federal Housing Administration (FHA) to insure mortgages in high-cost areas up to \$729,750 through December 31, 2008.

Regulatory response. To date, the major thrust has been to assist delinquent subprime borrowers in refinancing their residential mortgage loans on more favorable terms and to provide more liquidity in the RMBS market through Fannie Mae and Freddie Mac.

On October 10, 2007, Secretary of the Treasury Henry Paulson announced the administration had brokered an alliance, known as HOPE Now, among mortgage bankers, RMBS issuers, servicers, counselors, and investors. This Alliance issued a statement that identifies subprime mortgagors that are in danger of defaulting and outlines refinancing, loan modifications, and loss mitigation steps consistent with the governing Pooling and Service Agreements for the RMBS or CMOs into which these mortgages have been placed. Through April 2008, 1.56 million home owners have arranged work-out plans through the HOPE Now program.²⁰

The Bush administration created the FHA Secure program to help households refinance their adjustable-rate subprime mortgage loans if the borrowers fell behind in payments after a rate adjustment. Subprime borrowers that qualify can refinance through a fixed-rate FHA-insured residential mortgage loan up to 97.5 percent of the current market value of their residence. Over 100,000 home owners have benefited from the FHA Secure program.²¹

On March 19, 2008, the Office of Housing Finance Enterprise Oversight announced that it lowered the capital surplus requirements for Fannie Mae and Freddie Mac from 30 percent to 20 percent. This change allows Fannie Mae and Freddie Mac to purchase up to \$200 billion of RMBS and tranches of CMOs.

Global credit losses and likely effects on U.S. economy. The U.S. housing bubble and resulting global financial crisis have harmed the American economy. In April 2008, the IMF forecast that the global credit losses from the financial crisis will be

\$945 billion (which is equivalent to 6.83 percent of U.S. GDP in 2007).²² These massive credit losses have triggered a severe credit crunch as banks rehabilitate their balance sheets. Despite the extraordinary measures taken by the Federal Reserve, the IMF estimates that this credit crunch will reduce U.S. real GDP by 1.4 percentage points below what it would have otherwise been for up to three quarters.²³

The Federal Reserve reported that declining U.S. housing prices reduced owners' equity in residential real estate in the household and non-profit sector by 8.8 percent from its peak of \$9.997 trillion on March 31, 2007 to \$9.117 trillion on March 31, 2008. This loss contributed to a 3.8 percent reduction in the net worth of the household and non-profit sector from its peak of \$58.2 trillion on September 30, 2007 to \$56.0 trillion on March 31, 2008.²⁴ The negative wealth effect on consumption expenditures by households due to declining net worth is likely to remain a drag on economic growth so long as housing prices continue to decline.

Conclusion. This report investigates the development of an alternative financial system to the traditional bank-centric system during the last three decades. This alternative financial system, which is based upon securitization and highly leveraged non-depository financial institutions, performs the same economically vital, but inherently risky functions of intermediation and liquidity and maturity transformation that the traditional bank-centric system does without the same safeguards. The vulnerabilities of this alternative financial system to a modern version of bank runs and financial contagion became apparent during the global financial crisis that began on August 9, 2007.

The report also examines the global financial crisis and the response from federal policymakers. The opacity inherent in structured credit products and the lack of supervision of HLNDFIs slowed the recognition of the gravity of the global financial crisis. However, federal policymakers have generally responded appropriately once its severity became apparent.

Since the Fed-assisted acquisition of Bear Stearns by JPMorgan-Chase in March 2008, funding liquidity for most banks, other depository institutions, and HLNDFIs has improved, and the

elevated spreads in credit markets have eased somewhat.

¹ Robert P. O'Quinn, *The U.S. Housing Bubble and the Global Financial Crisis: Housing and Housing-Related Finance* (Prepared for the Joint Economic Committee, 110 Cong., 2nd sess., May 2008). Found at: <http://www.house.gov/jec/news/Housing%20Bubble%20study.pdf>.

² Charles P. Kindleberger devised a seven-stage framework of assets bubbles. See generally, Charles P. Kindleberger, *Manias, Panics, and Crashes: A History of Financial Crises* (1978; 4th ed., New York: John Wiley & Sons, 2000).

³ Structured finance refers to the pooling of credit risk from multiple borrowers into a different credit product.

⁴ Finance companies are non-depository financial firms that lend to consumers and non-financial firms.

⁵ Financial government-sponsored enterprises (GSEs) are financial institutions that provide credit to specific groups or economic sectors. Financial GSEs include the Federal Home Loan Banks, Fannie Mae, Freddie Mac, Sallie Mae (Student Loan Marketing Association, since 1997 a subsidiary of SLM Holding Corporation, a private company), the Farm Credit System, Financing Corporation (FICO), and Resolution Funding Corporation (REFCORP).

⁶ Hedge funds are private investment companies that are open only to qualified investors to avoid regulation under the *Investment Company Act of 1940*.

⁷ Investment banks are security/broker dealers.

⁸ Off-balance sheet entities (OBSEs) are asset-backed commercial paper (ABCP) conduits and special investment vehicles (SIVs) sponsored by banks. See *World Economic and Financial Surveys, Global Financial Stability Report: Containing Systemic Risk and Restoring Financial Soundness* (Washington, D.C.: International Monetary Fund, April 2008), 70-72.

⁹ A "repo" is a repurchase agreement in which one party sells securities to a second party with an agreement to repurchase these securities at a fixed higher price on a specified future date (usually overnight). This is essentially a loan with the interest rate implied by the difference between the sale price and the higher repurchase price. A "reserve repo" is a reserve repurchase agreement in which one party purchases specific securities from a second party with an agreement to resell these securities at a fixed higher price at a specific future date (usually overnight). This is essentially a security loan with the interest rate implied by the difference between the purchase price and the higher sale price.

¹⁰ Federal Reserve Flow of Funds statistics for September 30, 2007, and IMF estimates for hedge funds and OBSEs.

¹¹ Leverage ratios in hedge funds vary tremendously from as little as 2.0:1 to as much as 30.0:1.

¹² Under the Basel II capital standards, the regulatory capital ratio for banks refers to the ratio of either Tier I or Tier II capital to risk-weighted assets. Tier I capital includes common stock, perpetual, non-cumulative preferred stock, and retained earnings. Tier II capital includes all items in Tier I capital plus undisclosed reserves, revaluation reserves, general and specific credit loss reserves, hybrid debt-capital instruments and subordinated term debt with a term of five years or more. Under Basel II, risk-weighted assets may be calculated through a standard formula (for small banks) or through an internal rating approach (for large banks).

¹³ The eight federal agencies are (1) Board of Governors of the Federal Reserve System (Federal Reserve), (2) Commodity Futures Trading Commission (CFTC), (3) Federal Deposit Insurance Corporation (FDIC), (4) National Credit Union Administration (NCUA), (5) Office of Federal Housing Enterprise Oversight (OFHEO), (6) Office of the Comptroller of the Currency (OCC), (7) Office of Thrift Supervision (OTC), and (8) Securities and Exchange Commission (SEC).

¹⁴ Insurance is regulated by insurance commissioners in each state instead of the federal government.

¹⁵ *Global Financial Stability Report* (April 2008), 59-64.

¹⁶ Federal Deposit Insurance Corporation, *Quarterly Banking Profile* (First Quarter 2008).

¹⁷ The average risk-weighted Tier I capital ratio for all U.S. banks and savings institutions fell from 10.4 percent on June 30, 2007 to 10.1 percent on March 31, 2008. FDIC.

¹⁸ Board of Governors of the Federal Reserve System, *Senior Loan Officer Survey on Bank Lending Practices* (January 2008). Found at: <http://www.federalreserve.gov/boarddocs/SnLoanSurvey/200801/table1.htm>.

¹⁹ A primary dealer is a bank or securities broker-dealer that may trade directly with the Federal Reserve.

²⁰ HOPE Now website.

²¹ Department of Housing and Urban Development. Found at: <http://www.hud.gov/news/release.cfm?content=pr08-024.cfm>.

²² *Global Financial Stability Report* (2008), 10.

²³ *Ibid.*, 35.

²⁴ Federal Reserve/Haver. Percent calculation by author.