

Preliminary Staff Report

SHADOW BANKING AND THE FINANCIAL CRISIS

MAY 4, 2010

This preliminary staff report is submitted to the Financial Crisis Inquiry Commission (FCIC) and the public for information, review, and comment. Comments can be submitted through the FCIC's website, www.fcic.gov.

This document has not been approved by the Commission.

The report provides background factual information to the Commission on subject matters that are the focus of the FCIC's public hearings on May 5 and 6, 2010. In particular, this report provides information on the shadow banking sector. Staff will provide investigative findings as well as additional information on these subject matters to the Commission over the course of the FCIC's tenure.

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Shadow Banking and the Financial Crisis

The purpose of this preliminary staff report is to describe the nature and scope of the *shadow banking system*. Section II offers a definition of shadow banking and an overview of its role in the crisis. Section III describes the composition, characteristics, and evolution of the shadow banking system. Section IV explains why the key episodes of the financial crisis have been described as bank-like “runs” on shadow banking markets and discusses the vulnerabilities that the crisis revealed in these markets.

I. EXECUTIVE SUMMARY

Shadow banking refers to bank-like financial activities that are conducted outside the traditional commercial banking system, many of which are unregulated or lightly regulated. Many of the activities performed within the shadow banking system take funds from savers and investors and ultimately provide them to borrowers.

Within this broad definition are investment banks, finance companies, money market funds, hedge funds, special purpose entities, and other vehicles that aggregate and hold financial assets. These entities are critical players in the markets for securitized products, structured products, commercial paper, asset-backed commercial paper, repurchase agreements, and derivatives.¹ And the activities of these firms financed substantial economic activity, albeit indirectly.

At their peaks in 2007 and 2008, shadow banking-related markets financed substantial economic activity. The U.S. repurchase agreements (repo) market was over \$4.5 trillion at its peak, asset-backed commercial paper (ABCP) was roughly \$1.2 trillion, financial commercial paper (CP) was roughly \$800 billion, nonfinancial CP was roughly \$220 billion, and securities lending was roughly \$600 billion. For reference, commercial banks’ deposits were \$7.3 trillion at the end of 2008.² Shadow banking entities also existed outside the United States. Those linked to major European banks played an important role in the crisis.

The shadow banking system was extremely vulnerable to financial stress in three ways: (1) some institutions were highly leveraged; (2) they relied disproportionately on short-term funding markets; and (3) they did not benefit from explicit government support prior to the crisis. As a result, the shadow banking system was vulnerable to panics, just as traditional banks were in the years before deposit insurance. In the panics of 2007 and 2008, many investors withdrew funds from shadow banking system entities, even entities that may potentially have been solvent. Investors knew that such entities could not survive a run, and no investor wanted to be among the last to withdraw. Withdrawals of funding forced

¹Key terms are defined in the Glossary.

²Federal Reserve Board Flow of Funds data.

entities to sell assets at depressed prices to raise cash, which had the potential to further harm firms' solvency.

This vulnerability of shadow banking entities spilled over to commercial banks. When the shadow banking entities came under pressure, major U.S. and European commercial banks were called upon to provide funds to these entities under agreements that were triggered by disruptions in the market. Thus, the commercial banks came under funding pressures themselves. Even commercial banks that had not provided these backstop agreements reduced the amount they were willing to lend in interbank or other money markets. Knowing the markets were disrupted, commercial banks began to hoard funding in case they themselves began to have trouble raising funds in wholesale markets.

These dynamics played out in three distinct episodes: (1) the liquidity crisis in the summer of 2007; (2) the failure of various liquidity markets and the run on Bear Stearns in the winter of 2008; and (3) the panic of September 2008. During each episode, as in 1930s-era depositor runs on commercial banks, investors, in large numbers, demanded their money back from various shadow banking markets and instruments. The shadow banking system suffered a debilitating loss of confidence as assets were written down and liquidity evaporated: as creditors began to doubt the solvency of an entity, they withdrew funds, prompting deleveraging and asset sales into illiquid markets, further depressing market prices, and eroding the equity of firms holding related assets.

In each of these episodes, the government stepped in to provide unprecedented funding and guarantees. In the latter part of the crisis, this aid was extended to institutions and investors that had no prior claim on taxpayer support. Critically, the Federal Reserve established a series of funding facilities that were directly aimed at improving investor confidence and liquidity in the shadow banking system. With each of these extraordinary measures, the Federal Reserve effectively extended to the shadow banking system its role as the lender of last resort, a role that the central bank had traditionally reserved for commercial banks and savings institutions. Such support was essential to restarting financing in many non-financial sectors that depended indirectly on the shadow banking system.

Shadow Bank Instruments

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|--|
| Money market funds: mutual funds that invest in short-term, low risk instruments such as government securities, commercial paper, certificates of deposit, repurchase agreements, and discount notes. |
| Hedge funds: unregistered investment companies that serve high net-worth or institutional investors and may pursue complex strategies and investments. |
| Investment banks: institutions that assist in the issuance of securities, operate as brokers and dealers for various instruments, and trade for their own accounts. |
| Finance companies: institutions that primarily extend credit to businesses and consumers but do not take deposits. |
| Asset-backed commercial paper (ABCP) conduits and structured investment vehicles (SIVs): Legal entities that hold assets and use those assets as collateral to issue debt either in the form of ABCP (ABCP conduits) or in the form of ABCP and other notes (SIVs). |
| Government-sponsored enterprises (GSEs): government-chartered institutions, including Fannie Mae and Freddie Mac, that guarantee the timely payment of principal and interest from a pool of mortgages |
| Other financial guarantors: institutions that guarantee municipal bonds and other securities. |

Shadow Banking Institutions and Entities

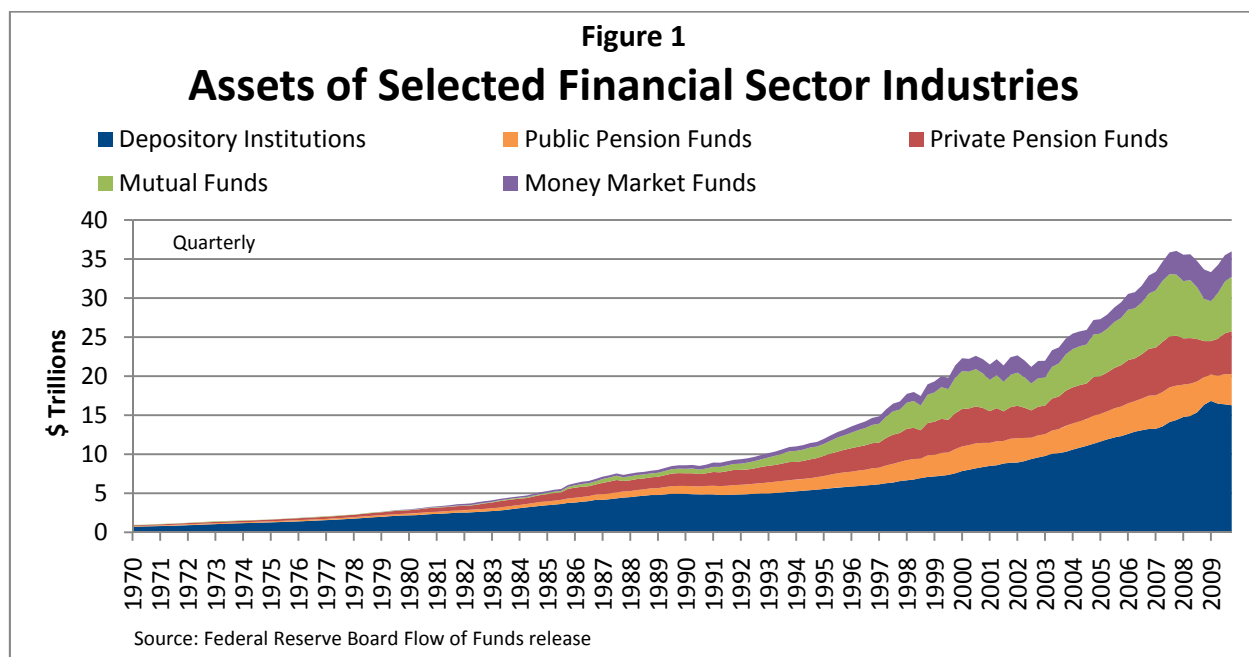
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| Unsecured commercial paper and asset-backed commercial paper (ABCP): debt securities that mature in 270 days or less; they are a major source of funding in the U.S. and abroad. |
| Repurchase agreements (or repos): an agreement whereby a market participant holding an asset sells that asset to another party and commits to repurchase the asset at a later date at an agreed-upon higher price. This transaction is economically equivalent to a loan collateralized by the asset. |
| Securities lending: transactions in which a party lends securities in order to raise cash for investment. |
| Auction rate securities: long-term bonds with floating interest rates that reset by auctions at regular intervals. |
| Derivatives: contracts whose pricing is based on a reference product, index, or other security. Some examples are interest rate swaps, exchange rate swaps, total return swaps, and credit default swaps. |

II. SHADOW BANKING

Shadow banking refers to bank-like financial activities that are conducted outside the traditional commercial banking system, many of which are unregulated or lightly regulated. Many of the activities performed within the shadow banking system take funds from savers and investors and ultimately provide them to borrowers.

Within this broad definition are investment banks, finance companies, money market funds, some hedge funds, special purpose entities, and other vehicles that aggregate and hold financial assets. These entities are critical players in the markets for securitized products, structured products, commercial paper, asset-backed commercial paper, repurchase agreements, and derivatives.

The development of the shadow banking system coincided with the proliferation of financial investment options available to households and corporations. Rather than store their savings predominantly in their local commercial bank, thrift, or credit union, households and corporations increasingly invested in mutual funds or kept their savings in pension funds and retirement programs which in turn invested outside of commercial banks. Figure 1 below depicts the increasing share of financial sector assets held outside of traditional depository institutions.



These assets funded mortgages, other consumer loans, and commercial activities – the same activities funded by the banking sector – through a variety of instruments. At its peak in

2008, the U.S. repurchase agreements (repo) market was over \$4.5 trillion,³ asset-backed commercial paper (ABCP) was roughly \$1.2 trillion, financial commercial paper (CP) was roughly \$800 billion, nonfinancial CP was roughly \$220 billion, and securities lending was roughly \$600 billion. For reference, commercial banks' deposits were \$7.3 trillion at the end of 2008.⁴ The over-the-counter (OTC) derivatives market, which will be the subject of future FCIC work, peaked at \$684 trillion in *notional value* in June 2008, representing *gross market value* of \$20 trillion.⁵

The shadow banking system facilitated securitization of a substantial fraction of consumer and business credit, including mortgages, auto loans, student loans, credit cards and small business loans. Critical to the financial crisis, the shadow banking system funded mortgages through several channels, most importantly: (1) the higher-risk tranches of mortgage-backed securities were purchased largely by hedge funds and special purpose entities such as collateralized debt obligations (CDOs); (2) the higher-risk tranches of CDOs, in turn, were purchased largely by hedge funds and other CDOs, while the lower-risk tranches of CDOs were frequently hedged through credit default swaps with AIG, a large insurance or financial services firm, or with one of the monoline financial guarantors such as MBIA or Ambac; (3) mortgage lenders financed mortgages prior to securitization, in many though not all cases, through asset-backed commercial paper and other short-term lending markets; and, (4) the investment banks that played a lead role in structuring and selling securitized subprime mortgage products financed themselves significantly through repos and other short-term markets.

Total residential mortgage-backed securities (RMBS) outstanding were approximately \$6.7 trillion in 2008, including those issued by the government-sponsored enterprises and those issued by other private entities.⁶ For comparison, at the end of 2008, total residential mortgage loans on the balance sheets of depository institutions were \$3.2 trillion.⁷

In order to understand how institutions in the shadow banking sector operate, this report will first explain the various functions of a banking system and then compare various aspects of the traditional banking sector and the shadow banking sector. The following sections describe in more detail several of the most relevant financial products and institutions within the system.

³ This figure represents only repo borrowing by broker-dealers, not repo borrowing by clients of the broker-dealers. Some research suggests that the total repo market may be substantially larger.

⁴ Federal Reserve Board Flow of Funds data.

⁵ Bank for International Settlements, *OTC derivatives market activity in the first half of 2009*, November 2009. The notional value of a derivative is the nominal value of the contract, i.e. the amount on which the payments are calculated. The notional value does not ordinarily change hands. The gross market value of a derivative is the price at which the derivative trades.

⁶ The securitization process is described in more detail in the FCIC Preliminary Staff Report, *Securitization and the Mortgage Crisis*.

⁷ Additional mortgage debt was held in the GSE portfolios, at finance companies, and by other entities.

A. SHADOW BANKS AND FINANCIAL INTERMEDIATION

The financial sector helps consumers and businesses get the funds necessary to take part in economic activity. Traditionally, commercial banks and savings institutions have accepted deposits from consumers and businesses, which become the banks' liabilities. These deposits can be withdrawn at any time with little or no penalty and, up to statutory limits, are insured by the U.S. government. In return for depositing money with the banks, savers receive interest payments. Putting these deposits to work, banks provide longer-term loans directly to borrowers (see figure 2). This activity, transforming the risk and/or timing of cash flows between savers and borrowers, is called *financial intermediation*. Over the years, as noted in figure 1, a growing fraction of financial intermediation migrated outside of commercial banks, connecting savers and borrowers through other domestic and international markets. The financial institutions and markets involved in this process comprise the shadow banking system.⁸ According to Treasury Secretary Timothy Geithner, "At its peak, the shadow banking system financed about \$8 trillion in assets... making it almost as large as the real banking system."⁹

An important aspect of financial intermediation is *maturity transformation*, which is the issuance of short-term liabilities, such as deposits, to fund mortgages, auto loans, and other long-term assets. The financial sector performs this role because businesses and consumers need to borrow money over long periods to invest in houses or factories, but prefer at the same time to hold much of their assets in easily accessible cash and near-cash instruments, such as checking accounts or money market funds.

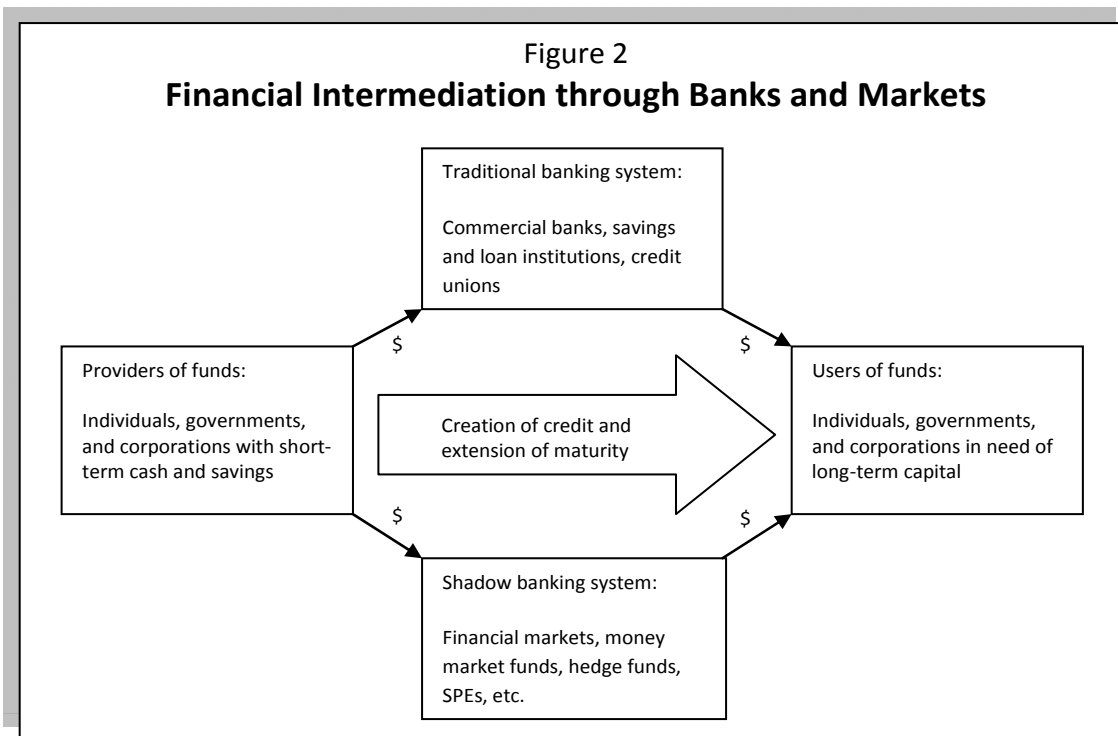
This maturity transformation, from the financial institution's perspective, creates *liquidity risk*, which is the risk that it will not be able to raise cash or liquid assets to meet demand from depositors withdrawing their money or other short-term creditors needing to be paid. Liquidity risk implies the possibility that a financial institution in need of cash may be required to sell, at distressed prices, assets that it had intended to hold to maturity.

Another primary purpose of financial intermediation is the provision of *credit*. In providing credit, both commercial banks and institutions within the shadow banking system accept and manage *credit risk*, or the potential for those funds not to be repaid in full.

⁸ The term "shadow banking system" was coined by PIMCO Managing Director Paul McCulley at the 2007 Jackson Hole Conference, sponsored by the Federal Reserve Bank of Kansas City; it has become part of the vernacular of the crisis. McCulley, *Teton Reflections*, August/September 2007.

⁹ Testimony of Secretary Timothy Geithner before the House Financial Services Committee, April 20, 2010.

Figure 2 summarizes the traditional banking and shadow banking financial intermediation channels. Through this process, short-term savings are transformed into long-term sources of capital that allow individuals, governments, and corporations to engage in economic activity. As described below, commercial banks or their affiliates often participate in shadow banking markets, supplementing their traditional banking business with new sources of revenue while exposing themselves to new types of financial risk. The two systems often overlap as institutions in both systems frequently engage in the same financial transactions.



B. REGULATION OF SHADOW BANKING

The federal government has regulated commercial banks since the National Currency Act of 1863 because of the important role that banks play in the economy. The introduction of federal deposit insurance in the aftermath of the Great Depression strengthened the case for banking supervision, in part because taxpayers may be at risk when banks fail.

Regulation of nonbanking financial institutions has tended to focus on protecting investors rather than on the safety and soundness of the financial institutions. For that reason, institutions and activities in the shadow banking system were subject to relatively little government regulation. Market participants, meanwhile, proved very adept at creating and offering a variety of financial services in this less regulated sphere.

This regulatory focus on bank safety and soundness promoted the growth of the shadow banking system in three key ways: (1) restrictions on bank activities encouraged nonbanks to develop new services; (2) capital regulations encouraged banks to transfer assets and activities into off-balance sheet vehicles; and, (3) government supervision was less intensive for nonbank financial institutions.

1. *Restrictions on bank activities*

First, and most important, there were stronger restrictions on the activities available to banks and thrifts compared to other types of financial firms capable of offering bank-like products and services. Particularly important were the limitations imposed by the Glass-Steagall Act on commercial banks' investment banking activities.¹⁰

Investment banks led the rapid growth of market-based forms of borrowing. For example, as discussed below, the commercial paper market became an increasingly popular method of borrowing outside of the traditional banking sector in the 1960s and 1970s. In the 1980s, bank regulators interpreted Glass-Steagall to allow bank holding companies, through their affiliates, to enter this and other markets.

Until 1980, Glass-Steagall also required the Federal Reserve to limit the interest rates that commercial banks could pay savings depositors, creating a market opportunity for money market mutual funds (MMFs).¹¹ Since returns on investors' shares in MMFs were not subject to the limits on interest rates, their yields exceeded the yields on bank deposits, especially during the high-interest-rate environment of the 1970s. The SEC limited MMFs to investing only in highly rated, short-term, liquid assets; this created a further opportunity for other types of money funds, such as ultra-short bond funds and enhanced cash funds, to offer higher-risk, higher-yield alternatives to eligible investors.

2. *Growth of off-balance sheet activities*

Second, banks used *credit risk transfer* mechanisms to transfer assets off of their balance sheets. These mechanisms helped firms manage their risks while providing regulatory capital benefits.¹² In many cases, however, banks retained a portion of the credit or liquidity

¹⁰The original act, as amended in 1935, did not disturb the power of banks to underwrite U.S. government securities and trade these securities for clients; it did, however, provide that a bank could not itself underwrite or deal in most other securities, for example, commercial paper, equity securities, or municipal revenue bonds, or be affiliated with a company "principally engaged" in such activities. See the FCIC Preliminary Staff Report, *The Role of the Federal Reserve in Banking Supervision and Regulation*.

¹¹The Federal Reserve's Regulation Q continues to prohibit banks from paying interest on demand deposits, under Section 11 of the Glass-Steagall Act (12 U.S.C. 371a).

¹²In a 2005 report, international bank supervisors noted that credit derivatives and CDOs helped provide liquid and transparent markets for the trading of credit risk. The report also noted that credit risk transfer mechanisms could lead to growing concentrations of risk, for example in monoline financial guarantors. See Joint Forum (2005) and Joint Forum (2008).

risk of those assets. While regulators required capital to be held against those retained risks, several banks that used these mechanisms experienced large and unexpected losses during the financial crisis, and bank supervisors have since concluded that some capital requirements prior to the crisis were not sufficient.

For example, under the Basel Capital Accord of 1988 (Basel I), banks could reduce their capital requirements by transferring assets into off-balance sheet conduits, which promoted the development of the asset-backed commercial paper market and other special-purpose entities.¹³ Banks often provided liquidity support or credit enhancements to these conduits (the structure of the conduits and the support are discussed below). Under U.S. capital rules prior to March 2005, such provisions of support were subject to minimum capital requirements that were lower than they would have been if the assets had been retained on-balance sheet.¹⁴

Similarly, capital rules effectively promoted the growth of securitization. Under Basel I, as implemented in the U.S., banks could hold less capital on securitized assets relative to the capital required to hold the same dollar amount of underlying assets. Partly in response to that incentive, banks often sold the underlying assets such as mortgages and, in their place, held the higher-rated tranches of mortgage-backed securities. Banks also transferred their credit risk via collateralized debt obligations (CDOs), which segment risk into “tranches” tailored to different types of investors.¹⁵

3. *Varying forms of prudential supervision*

Third, where prudential or safety-and-soundness supervision was introduced in the nonbanking financial sector, it was not as intensive as bank supervision.

A series of regulatory and legislative decisions in the 1980s and 1990s, capped by the Gramm-Leach-Bliley Act of 1999 (GLBA), broadened the scope for commercial bank holding companies to participate in securities underwriting and other traditional investment bank activities. By the 2000s, several commercial bank holding companies had significant nonbank subsidiaries. For prudential supervision of these companies, GLBA confirmed the Federal Reserve’s role as the “consolidated supervisor” of bank holding companies but

¹³ Firms may wish to hold less capital because capital held in reserve is not put to work purchasing profit-making assets.

¹⁴ Board of Governors of the Federal Reserve System, *SR 05-6: Risk-Based Capital Treatment for Unrated Direct Credit Substitutes Extended to Asset-Backed Commercial Paper Programs*, March 30, 2005.

¹⁵ Two observers have noted: “Banks exploited the fact that they could... get capital relief by simply switching away from loans into investments in the form of AAA-rated tranches of CDOs [collateralized debt obligations] and CLOs [collateralized loan obligations], which ... had a significantly lower capital charge. As a result, about 50 percent of all AAA asset-backed securities remained *within* the banking system.” Viral V. Acharya and Philipp Schnabl, “How Banks Played the Leverage Game,” in Acharya and Richardson (2009).

required the agency to focus on risks to the regulated and federally insured bank. As a result, activities of supervised bank holding companies outside of the bank, such as some mortgage origination and securities dealing, were not supervised intensively in the 2000s.¹⁶

In 2004, the SEC created the Consolidated Supervised Entities (CSE) program to supervise investment banks on a consolidated basis.¹⁷ Previously, the SEC supervised only the broker-dealer subsidiaries of investment banks. For example, the SEC supervised Lehman Brothers Inc., the broker-dealer, but not all of Lehman Brothers Holdings Inc, the holding company, which also owned many other subsidiary institutions. Generally, broker-dealers were required to maintain a *net capital ratio* above 2 percent.¹⁸ The net capital ratio, introduced by the SEC in 1975, was intended to ensure that broker-dealers that failed would have sufficient capital to repay customers. For that reason, the calculation of the ratio was more focused on market and liquidity risk than are bank regulatory capital ratios.

Once an investment banking holding company was accepted into the CSE program, its broker-dealer was allowed to use its own internal risk models to compute net capital ratios under the alternative net capital rule, while maintaining a minimum of \$1 billion of total equity based on another SEC-defined measure. Falling below \$5 billion in total equity would trigger the filing of an early warning notice with the SEC. Upon entry into the CSE program, the holding companies for these broker-dealers agreed to increased reporting to the SEC as well as limits on its activities. According to Appendix E to SEC rule 15c3-1, the SEC could impose additional conditions on the broker or dealer, such as “restricting the broker’s or dealer’s business on a product-specific, category-specific, or general basis; submitting to the Commission a plan to increase the broker’s or dealer’s net capital or tentative net capital; filing more frequent reports with the Commission; or modifying the broker’s or dealer’s internal risk management control procedures. The rule also allows that “if the Commission finds it is necessary or appropriate in the public interest or for the protection of investors, the Commission may impose additional conditions on either the broker-dealer, or the ultimate holding company.”

With entry into the CSE program, their holding companies were also required to report risk-based capital. According to standards agreed to by international bank supervisors in the Basel II Capital Accord, 10% is the threshold for a well-capitalized bank.¹⁹ Basel regulatory

¹⁶ The Federal Reserve has since the crisis taken a more aggressive supervisory approach to nonbanking subsidiaries.

¹⁷ The CSE program was motivated, in part, to allow US investment banks to do business in Europe. Under the European Union’s Financial Conglomerates Directive, non-EU financial institutions were essentially required to be supervised on a consolidated basis in order to do business in the EU, prompting the creation of the CSE program and the investment banks’ voluntary enrollment. (Testimony by Erik Sirri, October 4, 2007; SEC (2008)).

¹⁸ Net capital, for large firms, is a measure of equity that includes markdowns or “haircuts” based on the asset quality and liquidity of the firms’ underlying assets. The net capital ratio divides net capital by aggregate outstanding debits.

¹⁹ Basel Committee on Banking Supervision (2004).

capital standards are based on ratios of capital to risk-weighted assets rather than to total assets; as a result, required regulatory capital ratios can differ substantially from other commonly used equity-asset ratios. In September 2008, the SEC's Inspector General noted "serious deficiencies" in the CSE program in a report on the SEC's oversight of Bear Stearns:²⁰ "Bear Stearns was compliant with the CSE program's capital and liquidity requirements; however, its collapse raises questions about the adequacy of those requirements."²¹

Also, investment banks and nonbank financial companies such as AIG, GE Capital, and GMAC were not subject to the same supervisory framework as were bank holding companies. Financial institutions could own depository institutions without being legally designated as bank holding companies, thus avoiding consolidated supervision by the Federal Reserve. They could do this by chartering thrifts (subject to consolidated supervision by the Office of Thrift Supervision) or industrial loan companies (a type of bank, supervised by the Federal Deposit Insurance Corporation, which is not subject to Federal Reserve supervision at the holding company level). The five major investment banks and several other major nonbank financial institutions had ILCs, thrifts, or both, at the time of the financial crisis, which they used to acquire deposits and to access the payment system.

Financial supervisors focused on individual institutions rather than on the stability of the financial system as a whole. The Federal Reserve, as the central bank, has a financial stability mandate as well as a supervisory mandate; in the wake of the crisis, it has committed to better integrating those roles.²² The President's Working Group on Financial Markets also plays a role in promoting collaboration among supervisors in addressing systemic risks. However, no supervisor was tasked with monitoring systemwide risks that could arise from the combined activities of individual companies – for example, from the financial interconnections among market participants or the over-concentration of risks in a small number of counterparties.

²⁰ The SEC created the CSE program in response to a requirement by the European Union, in 2004, that foreign financial institutions operating in Europe must be subject to consolidated supervision in their home country. The CSE program was discontinued in 2008 after all five institutions had failed, been acquired by commercial bank holding companies, or become bank holding companies.

²¹ SEC (2008).

²² Chairman Ben Bernanke said recently: "Our supervisory approach should better reflect our mission, as a central bank, to promote financial stability. The extraordinary pressure on financial firms last fall underscored how profoundly interconnected firms and markets are in our complex, global financial system. Thus, any effort to address systemic risks will require a more systemwide, or macroprudential, approach to the supervision of systemically critical firms. More generally, supervisors must go beyond their traditional focus on individual firms and markets to try to identify possible channels of financial contagion and other risks to the system as a whole." Bernanke (2009).

C. THE SHADOW BANKING SYSTEM'S FRAGILITY

As has become clear in hindsight, many shadow banking institutions were extremely vulnerable to financial stress in three ways: (1) they were highly leveraged; (2) they relied disproportionately on short-term funding markets; and (3) they did not benefit from explicit government support prior to the crisis.²³

1. *High leverage*

Financial intermediaries use leverage, that is, they finance themselves largely through debt. Owners (equity or capital investors) face a tradeoff in setting the level of leverage with which they are comfortable. Higher leverage increases profitability for equity investors, as it allows firms to engage in more potentially profitable activities with the same amount of equity invested. However, firms with higher leverage (and thus lower capital) are more likely to become insolvent in the event of significant, unexpected losses. For that reason, governments set leverage limits or capital standards on commercial banks and thrifts in order to increase the size of the equity cushion that is available to absorb losses and to help them survive economic downturns.

However, standards were different for different types of institution. While bank holding companies were leveraged at 10- to 20-to-1 prior to the crisis, leverage for investment banks was 30- to 40-to-1.²⁴ Meanwhile, the only systematic leverage standards for conduits such as ABCP, described below, were set by credit rating agencies and the due diligence of investors. Special purpose entities created in the securitization process tended to have slim equity tranches, driving their leverage as high as 100 to 1.²⁵

When credit losses, particularly on residential mortgage loans, started to exceed expectations in 2007, both banks and shadow banking institutions were subject to losses. This problem first surfaced in thinly capitalized securitizations but quickly spread to vehicles that invested in such securitizations, and then to commercial banks, investment banks, and other market participants that supported these vehicles.

²³ William Dudley, President of the Federal Reserve Bank of New York, recently said: "At its most fundamental level, this crisis was caused by the rapid growth of the so-called shadow banking system over the past few decades and its remarkable collapse over the past two years. ... Though the shadow banking system was often credited with better distributing risk and improving the overall efficiency of the financial system, this system ultimately proved to be much more fragile than we had anticipated. Like the traditional banking system, the shadow banking system engaged in the maturity transformation process in which structured investment vehicles (SIVs), conduits, dealers, and hedge funds financed long-term assets with short-term funding. However, much of the maturity transformation in the shadow system occurred without the types of stabilizing backstops that are in place in the traditional banking sector." Dudley (2009).

²⁴ These figures are computed as tangible assets over tangible equity, based on company regulatory data. Actual leverage was higher for the largest bank holding companies and investment banks when off-balance sheet commitments, including credit derivative exposures, were included.

²⁵ Pozsar (2008). Leverage will be the subject of a future FCIC staff report.

2. *Reliance on short-term funding markets*

Commercial banks and thrifts rely heavily on customers' deposits for financing. Deposits from households and businesses are considered *retail* deposits; banks also use *wholesale* deposits, which are large volume deposits, often from other financial institutions. Retail deposits are generally considered "sticky" as customers, with the advent of deposit insurance after the Great Depression, rarely move their deposits from one bank to another. Shadow banks relied almost entirely for their funding on short-term markets such as repos, commercial paper, and securities lenders which behave more like wholesale funding at banks. Bank supervisors tend to view reliance on wholesale funding markets as a risk because such funds are not "sticky" and can be withdrawn quickly.²⁶

While short-term funding was appropriate for traditional investment banks to finance their underwriting activities, it became a source of instability as investment banks increased their exposure to long-term, illiquid assets, and the maturity of their liabilities declined to as short as one day. Lacking a core deposit base, investment banks that "borrowed short and lent long" were more vulnerable than commercial banks and thrifts to potential runs.

During a run, creditors withdraw funds or reduce their trading or credit exposure to that entity in an attempt to prevent future losses or delays in payment. If a sufficient number of creditors all demand their funds at once, even if the entity were solvent at the start, the entity may have to sell its assets into a distressed market and recognize significant losses. In this case, the creditors can cause the very default event that they were trying to avoid. Runs can be caused by potentially false rumors about the solvency or stability of an entity. Prior to and during the Great Depression, commercial bank deposit runs occurred frequently. However, since the advent of deposit insurance traditional deposit runs on commercial banks and thrifts have become rare.

3. *Lack of explicit government support*

Unlike commercial banks and thrifts, the shadow banking system prior to the financial crisis did not have access to explicit government backstop facilities. Specifically, the government provides two types of programs to the traditional banking system to mitigate liquidity risk – deposit insurance and a lender of last resort – that it has not historically provided to shadow banking institutions. The lack of these features in the shadow banking system led to substantial fragility.

For banks and savings institutions, deposit insurance mitigates the possibility that many creditors will demand their funds at the same time. At the end of 2007, an estimated 51 percent of deposits at U.S. commercial banks and savings institutions were insured by the

²⁶ Federal Reserve Board of Governors, *Commercial Bank Examination Manual*, October 2009, Section 2030.1, page 12.

FDIC.²⁷ Given that their funds are secure, insured depositors have less reason to demand their funds immediately. In contrast, funding in the shadow banking system is not federally insured. Shadow bank funding instruments include unsecured commercial paper, asset-backed commercial paper, repurchase agreements, and medium- and long-term debt. Investment banks used all of these markets for funding. In the event of an investment bank's bankruptcy, there was a hierarchy among creditors: creditors who loaned via unsecured commercial paper would typically be paid at the same time as other unsubordinated unsecured creditors. Creditors who loaned funds through instruments that operated on a collateralized basis, such as ABCP and repurchase agreements, would cover any potential losses by exercising an explicit first claim on the assets pledged as collateral.

Second, the shadow banking system did not have access to the Federal Reserve in its role as the "lender of last resort." The Federal Reserve uses the Discount Window to provide liquidity by ensuring depository institutions' access to funds, provided that they possess creditworthy assets to pledge as collateral. Until the Federal Reserve launched the temporary Primary Dealer Credit Facility in March 2008, shadow banks did not have direct access to the Discount Window.²⁸ Having a lender of last resort means that even in such a case, the bank can access cash to meet that demand by using its holdings of long-term, safe assets as collateral in return for temporary, short-term funding.

III. SELECTED COMPONENTS OF THE SHADOW BANKING SYSTEM

A. FINANCIAL INSTRUMENTS

Markets for several financial instruments grew rapidly in the years prior to the financial crisis. These include commercial paper, repurchase agreements, securities lending, and other lesser-known markets that primarily funded municipal debts. Most of these instruments trade in the *money market*, which is the wholesale market for low-risk, highly liquid, short-term debt.²⁹

²⁷ At the end of 2007, deposits comprised 72 percent of liabilities at commercial banks and thrifts. Retail deposits have been backed by the Federal Deposit Insurance Corporation (FDIC) since the banking runs of the 1930s. Each depositor is guaranteed to receive the full amount of his or her deposit up to \$250,000 (increased during the current financial crisis from \$100,000), regardless of the solvency of a commercial bank or savings institution. The figures cited do not include deposits at credit unions which are insured by the National Credit Union Share Insurance Fund.

²⁸ Note that thrifts owned by investment banks could access the Discount Window but those funds could not be used to support the parent company or any other subsidiary of the parent. The shadow banking system also did not have access to the lender-of-last-resort function of the Federal Home Loan Bank (FHLB) system, which issues federally guaranteed debt to purchase mortgages from savings and loan (thrift) institutions. During the second half of 2007, the FHLB system purchased \$235 billion in mortgages from the thrifts when the securitization market froze. See Ashcraft, Bech, and Frame (2008).

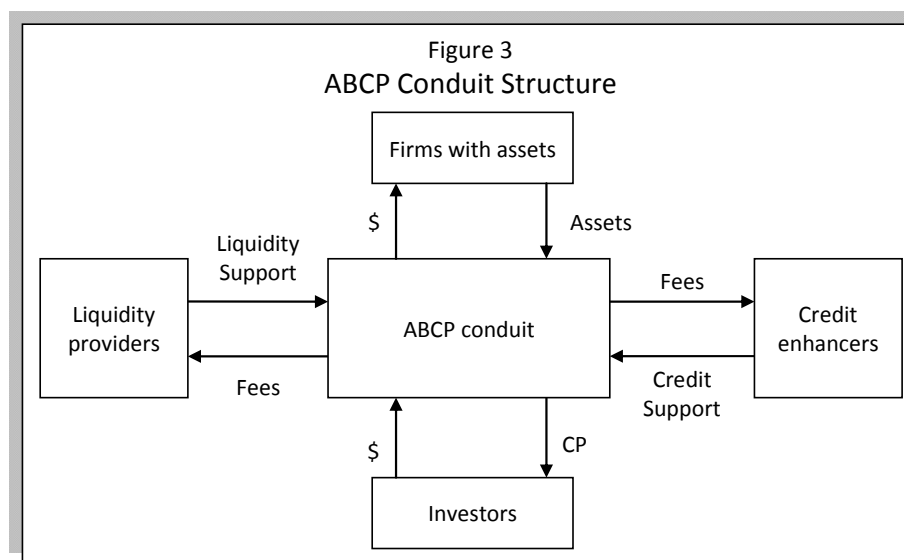
²⁹ Crescenzi and Stigum (2007).

1. *Unsecured commercial paper and asset-backed commercial paper*

Commercial paper (CP) is a debt security that matures in 270 days or less and is a major source of funding in the U.S. and abroad. Corporations and other entities can borrow by issuing CP through commercial paper programs. Even though CP is short-term debt, it is usually repaid at maturity with proceeds received from issuing new CP, a process called *rolling CP*. CP is classified into three categories based on the type of entity that issues the security: *corporate*, *financial*, and *asset-backed commercial paper* (ABCP).

Corporate CP and financial CP are *unsecured*, meaning the investor does not have a claim to specific assets of the corporation, but they are not subordinated, which means that CP investors rank ahead of subordinated debt and other more junior investors in the event of bankruptcy. Nonfinancial corporations frequently issue corporate CP to meet immediate demands such as payroll and inventory. Financial corporations frequently issue financial CP to purchase and hold financial assets. Prior to the crisis, unsecured CP and Treasury bills were the largest markets for unsecured debt financing in the U.S. money markets, each totaling about \$1 trillion outstanding in 2007.³⁰

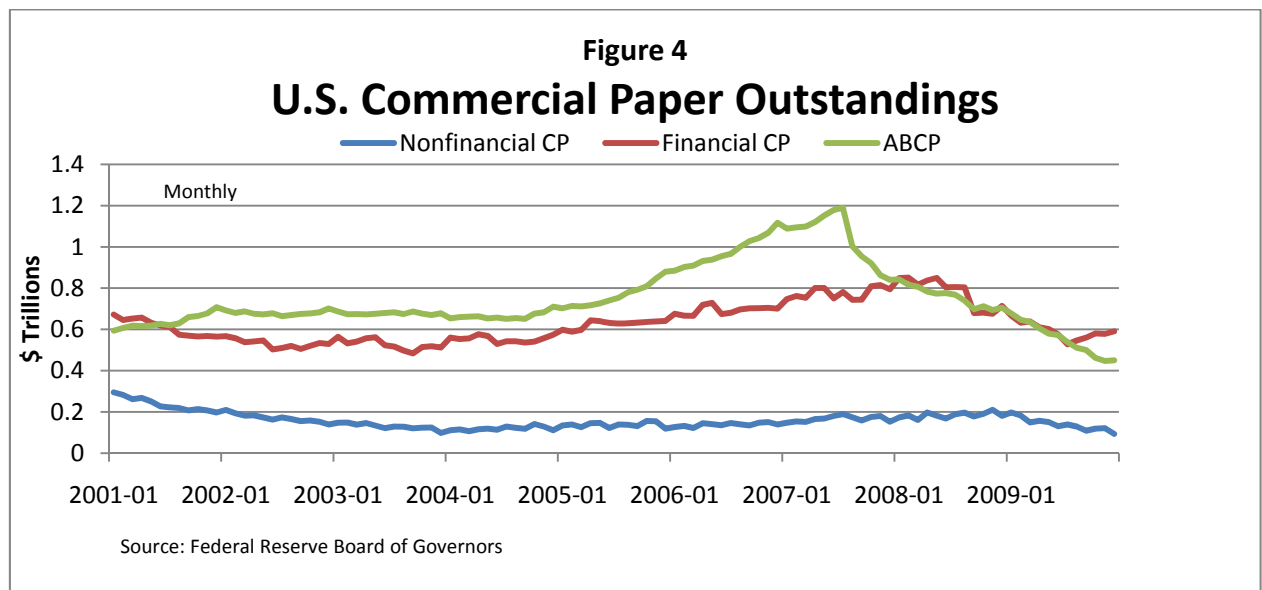
The third kind of CP, asset-backed commercial paper (ABCP), is collateralized or secured by a claim to specific assets. Typically, a sponsoring firm places assets into a special purpose entity (SPE), and creates a commercial paper program to fund them. This SPE is referred to as an ABCP conduit. Figure 3 depicts the contractual relationships in setting up an ABCP conduit. Investors lend money to the conduit by purchasing the CP. The conduit then uses those funds to buy assets, such as RMBS, from an asset seller, such as the RMBS sponsor.



³⁰ Federal Reserve Board of Governor's commercial paper release and Securities Industry and Financial Markets Association (SIFMA) statistics.

ABCP investors usually demand some sort of backstop, or assurance, from the parent firm or some other entity such as a financial institution. These backstops can take the form of credit or liquidity enhancements. In the case of credit enhancement, the parent firm or some other entity promises to reimburse ABCP investors for losses arising from changes in the credit quality of the assets in the conduit. Liquidity enhancements are promises to repay ABCP investors if the conduit has trouble rolling its paper due to disruptions in the ABCP markets, provided the collateral maintains its credit quality.

Figure 4 displays the growth of the ABCP market and the financial and nonfinancial CP market from 2001 through 2009. At its peak in 2007, the U.S. ABCP market had about \$1.2 trillion outstanding.



Commercial paper is usually rated by the rating agencies. Standard and Poor's uses the ratings A-1+, A-1, A-2, A-3, etc. to rate these short term-instruments with A-1+ being the highest rating. Moody's scale has ratings P-1, P-2, P-3, etc. with P-1 being the strongest rating. Rules for money market funds are based on whether the securities are tier 1 or tier 2: tier-1 securities are those rated "1" by at least two of the rating agencies; a tier-2 security is a security that carries a rating no lower than 2 for the agencies but is not a tier-1 security.³¹

³¹ Money market mutual funds under Rule 2a-7 may hold up to five percent of assets in tier-1 securities issued by a single issuer and no more than one percent of assets in tier-2 securities issued by a single individual issuer. Also, tier-2 securities could not constitute more than five percent of assets at the time of the crisis.

2. *Repurchase agreements*

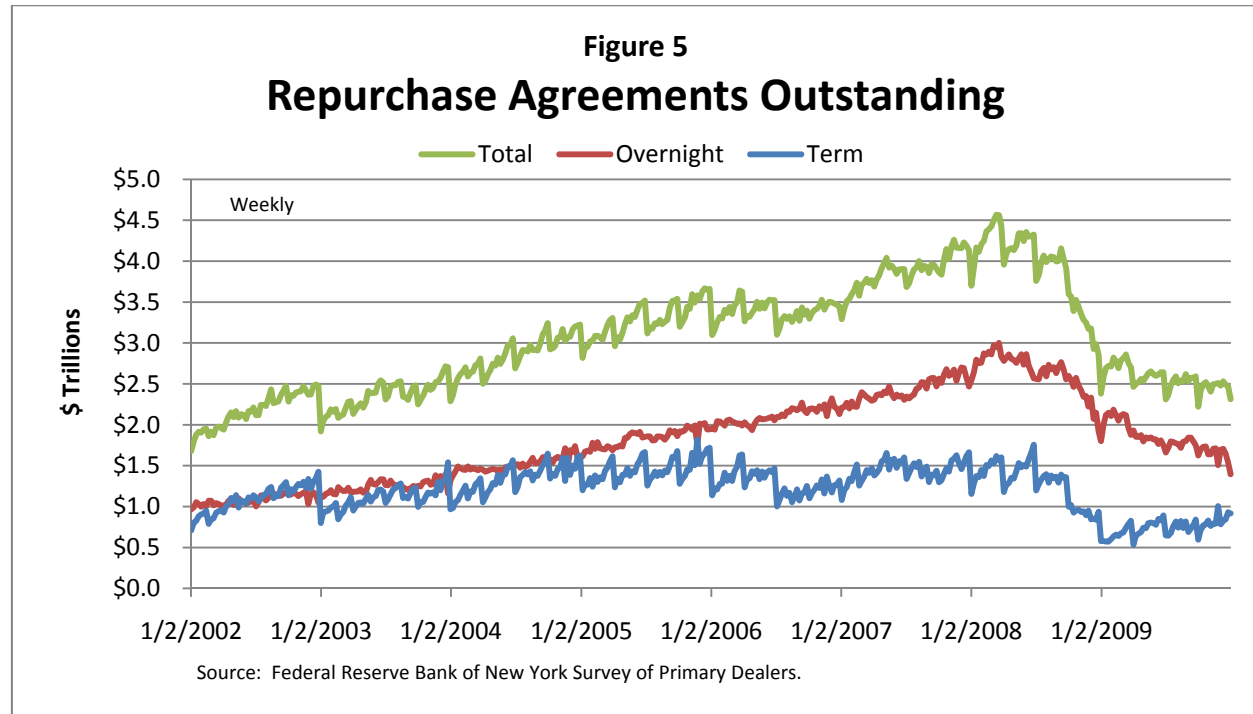
Repurchase agreements (repos) are another important source of short-term funding in the shadow banking system. In a repo transaction, a market participant holding an asset (the seller) sells that asset to another party (the buyer) and commits to repurchase the asset at a later date at an agreed-upon higher price. In this trade, the buyer is essentially making a short-term secured loan to the seller. If the seller fails to repurchase the assets as agreed, the buyer retains the asset (effectively serving as the collateral).

Through the repo market, investors with large asset holdings can lend idle assets to effectively “borrow” cash on a short-term basis. Cash borrowed in this way is collateralized by the securities loaned and this cash can be used for further investment or to pay down debts. Other market participants with large pools of cash, for example money market mutual funds, can “lend” cash in the repo market in order to earn an extra return on their cash positions. The lender of cash earns a fee but also holds (effectively “borrows”) the securities that were purchased (“pledged”) to secure the borrowed cash. These securities can be further pledged or used as collateral by the securities buyer in activities such as shorting.

It is possible for repurchase agreements to be structured to be accounted for as sales. Otherwise, repurchase agreements will be accounted for as financings or what may be referred to as secured borrowings. The transferor (lender) of securities will reclassify securities held to securities “pledged,” record the cash received and the obligation under the repurchase agreement. The transferee recognizes a repurchase agreement asset equal to the amount of cash transferred and reduces cash by an equal amount. The difference between the initial purchase price and the higher repurchase price is effectively interest on a loan. Interest on the cash loaned will be recorded at the time the repo is settled. If the repurchase agreement does not provide for the return of securities that are “substantially the same” as those loaned, the repurchase agreement cannot be recorded as a secured borrowing and will be recorded as a sale.

Many forms of securities are used as collateral in the repo market. *Traditional collateral* consists of U.S. Treasuries and agency securities. Agency securities are MBS or discount notes issued by government-sponsored entities such as Fannie Mae and Freddie Mac. Other forms of collateral are referred to as *non-traditional* and can include non-agency MBS, corporate debt, equities, etc. Depending on the type of collateral, the buyer will demand a collateral margin or haircut. For example, for safer forms of collateral, a buyer may ask for \$102 in assets for a \$100 cash loan. For riskier collateral, the margin or haircut may be larger.

Generally, repo transactions are of a short maturity and fall into one of three categories: *overnight*, *term*, or *open*. Overnight repo refers to transactions with a single-day maturity. Term maturity refers to repos that have a fixed maturity longer than one day. Open maturity repos are deals where both parties have the option to terminate the repo each day.



There are two main settlement methods for repo transactions: *bilateral* and *triparty*. In a bilateral transaction, the seller transfers the assets directly to the buyer and the cash is delivered to the seller. In tri-party repo, both parties to the transaction have cash and collateral accounts at the same third-party clearing bank. The clearing bank verifies that the collateral pledged is sufficient and meets the requirements for the deal, and all parties agree to use collateral values supplied by the clearing bank. JPMorgan Chase and Bank of New York Mellon are the two major tri-party clearing banks for repo transactions.

While estimates of the precise size of the repo market vary, the Federal Reserve Bank of New York does collect data on the positions held by the largest broker-dealers.³² From a total under \$2 billion at the beginning of 2002, broker-dealers' repo financing totaled more than \$4.5 trillion outstanding at the peak of the market in 2008. Overnight repo became increasingly prevalent as well. As described below, this market contracted sharply following the collapse of Bear Stearns.

3. *Securities lending*

Banks, insurance companies, pension funds, and other financial institutions maintain substantial investment portfolios. At the same time, hedge funds may need securities, for example, to cover short sales. Securities lending refers to the asset lenders (e.g. the pension funds) lending their securities to the securities borrowers (e.g. hedge funds) in return for

³² Federal Reserve Bank of New York Survey of Primary Dealers.

cash collateral. When the loan is terminated, the securities are returned to the lender and the cash collateral is returned to the borrower.

Securities lending transactions are very similar to repo transactions except that there is no stated maturity, securities are loaned rather than purchased, and the cash is typically reinvested by the securities lender in cash reinvestment pools.

Some financial institutions increasingly lend not only their own securities, but also securities that they hold in custody for customers, with those customers' permission. In those cases, customers share the fee income and any interest or other returns on cash collateral that is reinvested.

4. *Auction rate securities*

Auction Rate Securities (ARS) are long-term bonds that have floating interest rates that reset at regular intervals, usually less than a month. At each reset date, an auction is held in which holders of the bonds and other interested parties bid on the interest rate they will accept. The interest rate is set at a rate just high enough that a sufficient number of investors will hold the bonds. However, the holders of the bonds are not required to bid in each auction. With too few bidders, the auction can fail. In these cases, the investment banks that operate the interest rate auction traditionally would bid and thereby provide support during episodes of illiquidity. However, investment banks typically were not required to bid under the terms of the deal and, in fact, did not during the crisis.

At the end of 2007, total ARS outstanding were about \$330 billion. Municipalities were the primary issuers of these bonds, along with other similar instruments.³³ Using ARS, municipalities financed long-term debt with instruments that investors thought were short-term and relatively risk free. As a result of this maturity mismatch, ARS markets suffered from the same fragilities that were inherent in other parts of the shadow banking system. And ARS markets also suffered major stresses during the crisis.

5. *Derivatives*

There is an enormous over-the-counter (OTC) derivatives market and a number of derivatives exchanges in the U.S. and abroad; the derivatives market will be the subject of a future FCIC Preliminary Staff Report. Over-the-counter (OTC) derivatives commonly used by the financial sector include interest rate swaps, exchange rate swaps, total return swaps, equity swaps, commodity swaps, and credit default swaps (CDS). These are contracts that trade streams of cash flows referenced to some underlying asset or index in exchange for a fee. For example, a CDS is a credit derivative, a contractual agreement where one party, for a fee, agrees to pay another party if some third party defaults on a liability.

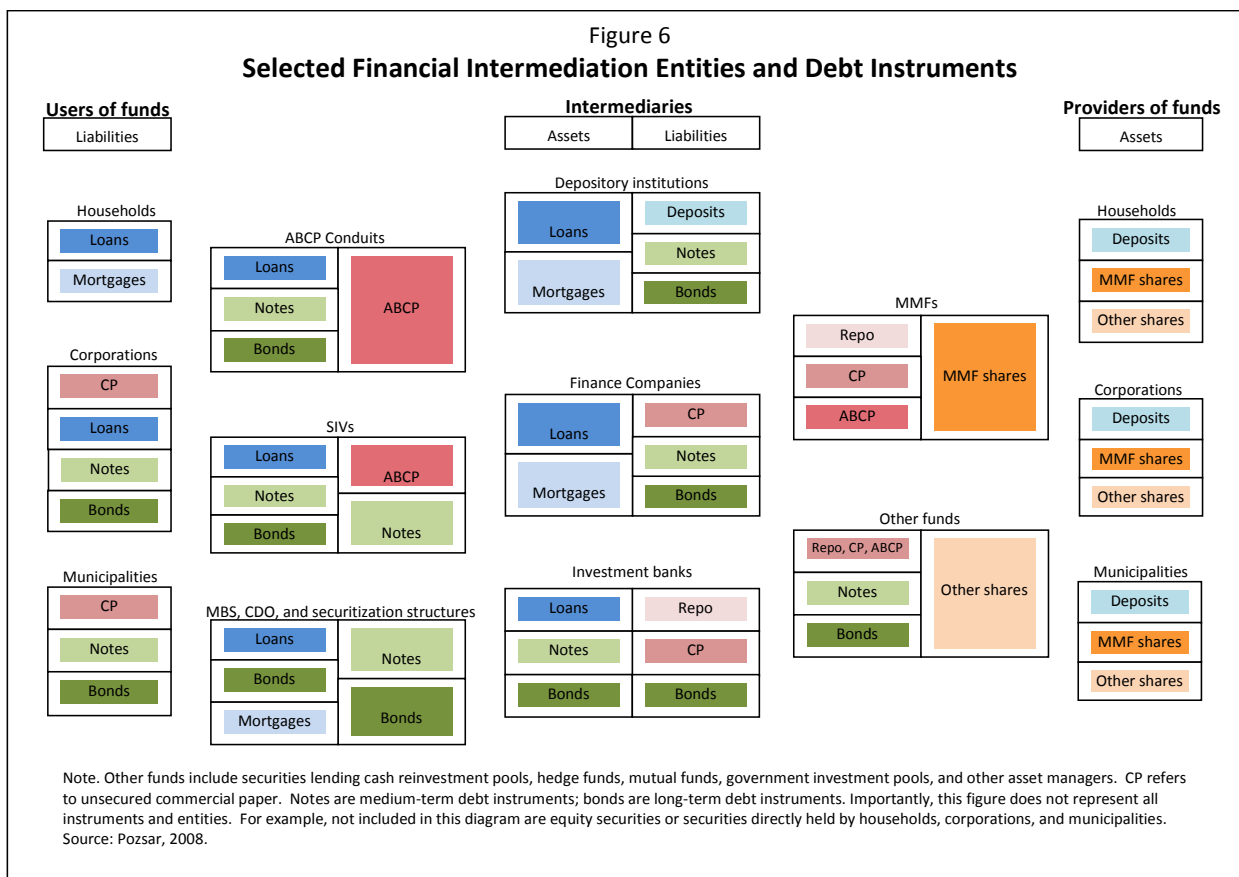
³³ Variable rate debt obligations and tender option bonds were similar short-term instruments used by municipalities to fund longer-term commitments.

Derivatives were frequently used to facilitate the issuance of ABCP, MBS, and other financial instruments. For example, monoline financial guarantors such as MBIA and Ambac, which prior to the crisis received the top rating from the credit rating agencies, sold CDS to investors of MBS and collateralized debt obligations (CDOs). Effectively, investors would replace their exposure to the credit risk of these securities with an exposure to the lower perceived credit risk of the monoline guarantor.

As another example, the growing popularity of *synthetic CDOs* created further opportunities for investors to take a bullish or bearish view on mortgage-backed securities. Synthetic CDOs are similar to traditional CDOs except that the underlying assets are long positions on credit default swaps rather than tangible assets. From 2005 to 2007, subprime MBS-backed CDOs were increasingly synthetic.

B. INSTITUTIONS AND ENTITIES

The shadow banking system consists of various types of institutions that perform financial intermediation through the instruments mentioned above. Figure 6 depicts the relationships among some of the more significant debt instruments and entities involved in financial intermediation. On the left are the liabilities of entities that need to fund short-term



expenses, consumer purchases, equipment, real estate, and capital projects. On the right are the assets of entities that have savings to invest. In the middle are several of the entities involved in the financial intermediation process. The colors identify the specific markets and instruments that these entities use. Each institution is portrayed with its assets on the left and its liabilities on the right.

1. *Money market funds*

Money market funds (MMFs) are significant participants in the shadow banking system. Households, businesses and asset managers purchase shares in these mutual funds, which in turn invest those funds in instruments such as government securities, commercial paper (CP), certificates of deposit (CDs), repurchase agreements (repos), discount notes, and other short-term securities. In figure 6, MMFs appear in the middle-right section, providing wholesale funds to money markets through repo, unsecured CP, and ABCP. MMFs are regulated by the SEC and are subject to provisions of the Investment Company Act of 1940. These provisions specify the credit quality, diversification, and maturity of securities that MMFs can purchase.

MMFs are classified based upon the clients they serve and the securities they invest in. Retail MMFs take funds from households and other small investors. In contrast, institutional funds serve corporate investors, pension funds, and other large clients. Government funds invest solely in government issued securities while non-government or prime funds invest also in corporate and other asset-backed instruments.

Table 1: Money Market Fund Family Rankings by Assets as of August 31, 2008

| Rank | Family | Assets (\$ Mill) | Market Share |
|------|---------------------|------------------|--------------|
| 1 | Fidelity | 425,663 | 12.7 |
| 2 | JP Morgan | 267,921 | 8.0 |
| 3 | BlackRock | 259,823 | 7.8 |
| 4 | Federated | 231,117 | 6.9 |
| 5 | Dreyfus | 199,097 | 6.0 |
| 6 | Schwab | 194,483 | 5.8 |
| 7 | Vanguard | 191,478 | 5.7 |
| 8 | Goldman Sachs | 183,633 | 5.5 |
| 9 | Columbia | 146,828 | 4.4 |
| 10 | Morgan Stanley | 112,583 | 3.4 |
| | Top 10 | 2,212,626 | 66.2% |
| | Total Market | 3,342,290 | 100% |

Source: CraneData

MMFs can have the look and feel of deposits at commercial banks. Investors may be able to write checks to others using the funds in the MMF, and typically funds may be withdrawn at

any time with little or no penalty. However, unlike deposits at commercial banks, MMFs are not guaranteed by the U.S. government. MMFs attempt to maintain a stable \$1 net asset value (NAV). Investors depend on the \$1 NAV and even the rumor of a fund ‘breaking the buck’ can spark a run. As a result, if a MMF drops below the \$1 NAV threshold, sometimes a parent company will provide support so that investors do not experience losses.

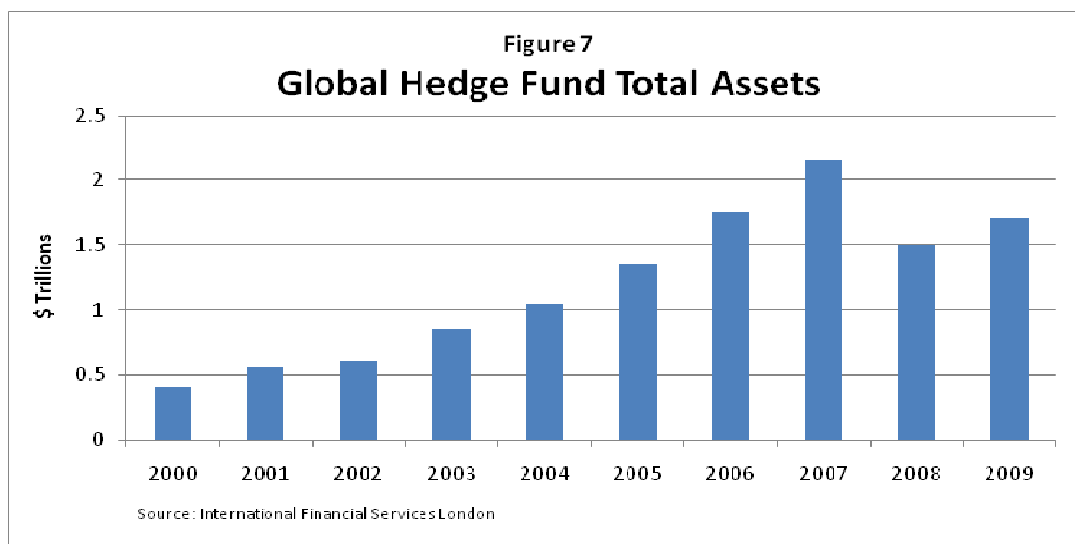
Table 1 shows the largest money market fund families and the amount of assets they managed as of August 31, 2008.

There are a number of other funds that invest in a manner similar to money market funds but are not subject to the same regulatory restrictions. These include cash reinvestment pools managed by securities lenders, sweep accounts, enhanced cash funds, ultra-short bond funds, short-term investment funds, local government investment pools, and offshore money funds.³⁴ In figure 6, these funds appear in the middle-right section as “other funds.”

The major securities lender custodian banks with cash reinvestment pools are JPMorgan, Bank of New York Mellon, State Street, and Northern Trust. Examples of major securities lenders reinvesting their own funds are AIG (prior to the crisis) and state pension funds such as CalPERS.

2. *Hedge funds*

Hedge funds are private investment companies that manage funds for high net worth individuals or institutions. Funds invest in various asset classes and use a variety of strategies.³⁵ In general, hedge funds charge investors a management fee equal to one to two



³⁴ Investment Company Institute Money Market Working Group Report, 2009.

³⁵ The term “hedge fund” refers to the original strategy of investing in equities and using short-positions and leverage to hedge overall positions. There is no official regulatory definition.

percent of assets under management and a performance fee of up to 20 percent of profits.

By restricting the investor base and not offering their securities to the public, hedge funds are exempt from registration as mutual funds with the SEC under the Investment Company Act of 1940. As a result, precise data regarding the number of hedge funds are not available. It is estimated that as of 2007 there were between 9,000 and 11,000 hedge funds with total assets of over \$2 trillion globally, representing 1.5 percent of the total assets under management at pension funds, mutual funds, insurance companies, and banks.³⁶ However, they represent a much larger fraction of the trading in certain markets such as distressed debt, leveraged loans and some credit derivative markets.³⁷

Data from one industry source is shown in figure 7. The tremendous growth in hedge fund assets since 2000 is readily apparent. Following the financial crisis, assets under management fell, but as of 2009 appear to be growing once again. Table 2 shows the ten largest hedge funds as of the end of 2007. Note that several of these funds are affiliated with commercial banks, providing one of the links from the shadow banking system to the traditional banking system.

Table 2: Largest Hedge Funds as of December 31, 2007

| Rank | Family | Assets (\$ Bill) |
|------|--------------------------------|------------------|
| 1 | JP Morgan Asset Management | 44.7 |
| 2 | Bridgewater Associates | 36.0 |
| 3 | Farallon Capital Management | 36.0 |
| 4 | Renaissance Technologies Corp. | 33.3 |
| 5 | Och-Ziff Capital Management | 33.2 |
| 6 | D.E. Shaw Group | 32.2 |
| 7 | Goldman Sachs Asset Mgmt | 29.2 |
| 8 | Paulson & Co. | 29.0 |
| 9 | Barclays Global Investors | 26.2 |
| 10 | GLG Partners | 23.9 |

Source: International Financial Services London 2008 Hedge Fund Report

Hedge funds are not generally subject to direct oversight by any federal or state agency. The SEC has the ability to oversee the managers of those funds that are required to register or that voluntarily choose to do so. In 2004, the SEC modified its regulations to require registration by a broader set of hedge fund managers. However, those rules were struck down in a 2006 federal court ruling.³⁸ As a result, most oversight is done indirectly through

³⁶ GAO (2008) for main figures. International Financial Services London says there are 11,000 funds with total assets of \$2.25 trillion; Hennessee Group LLC estimates 9,550 funds as of early 2007 with assets of \$1.9 trillion; Hedge Fund Research Inc. estimates 10,096 funds in second quarter 2007.

³⁷ GAO (2008).

³⁸ See *Goldstein v Securities and Exchange Commission*, 451 F.3rd 873 (D.C. Cir. 2006)

the large securities firms regulated by the SEC. The Commodity Futures Trading Commission (CFTC) has access to some information about hedge fund trading on the regulated futures and commodity options markets and also oversees some hedge fund operators which have registered as commodity pool advisers.³⁹

Hedge funds utilize the prime brokerage services of broker-dealers. Most hedge funds use the services of more than one prime broker; still, the prime brokerage business is very concentrated. As of year-end 2006, the top three prime brokers, Morgan Stanley, Bear Stearns and Goldman Sachs serviced 58 percent of the hedge fund accounts. The top ten brokers had over 80 percent of the market. This industry structure resulted in brokers being exposed to the hedge fund industry, and concentrated counterparty risk for the hedge funds to the brokers.

Hedge funds are also major trading partners with the large commercial banks and investment banks. For example, many hedge funds borrow cash from these financial institutions in repo transactions with the hedge funds posting their securities as collateral. Also, as already noted, several of the large banks control very substantial hedge funds. Together, these linkages through prime brokerage, as counterparties to broker-dealers, and through ownership, helped spread the crisis throughout the shadow banking system and to the traditional banking sector as well.

3. *Investment banks*

Investment banks are firms that assist in the issuance of securities, engage in market-making operations, operate brokerages, deal in derivatives, and trade securities for their own accounts. Prior to the crisis some were standalone institutions such as Goldman Sachs and Morgan Stanley, while others operated under large financial holding companies such as Citigroup and JPMorgan Chase.

Investment banks provide liquidity in markets for bonds, equities, derivatives, and repurchase agreements. They provide *prime brokerage* services, allowing hedge funds and asset managers the ability to hold, buy and sell securities. One of the key services is repo financing.

Because investment banks have large holdings of marketable securities that they generally plan to hold only for short periods, they fund a large portion of their balance sheets with repurchase agreements, in addition to unsecured commercial paper and long-term debt, as shown in the lower-middle section of figure 6.

In the 2000s, some investment banks achieved full vertical integration in markets such as mortgage finance, owning mortgage origination and securitization units, off-balance sheet funding vehicles, and mortgage-related asset management units. In this way, investment

³⁹ For a complete discussion of the oversight of hedge funds, see GAO (2008).

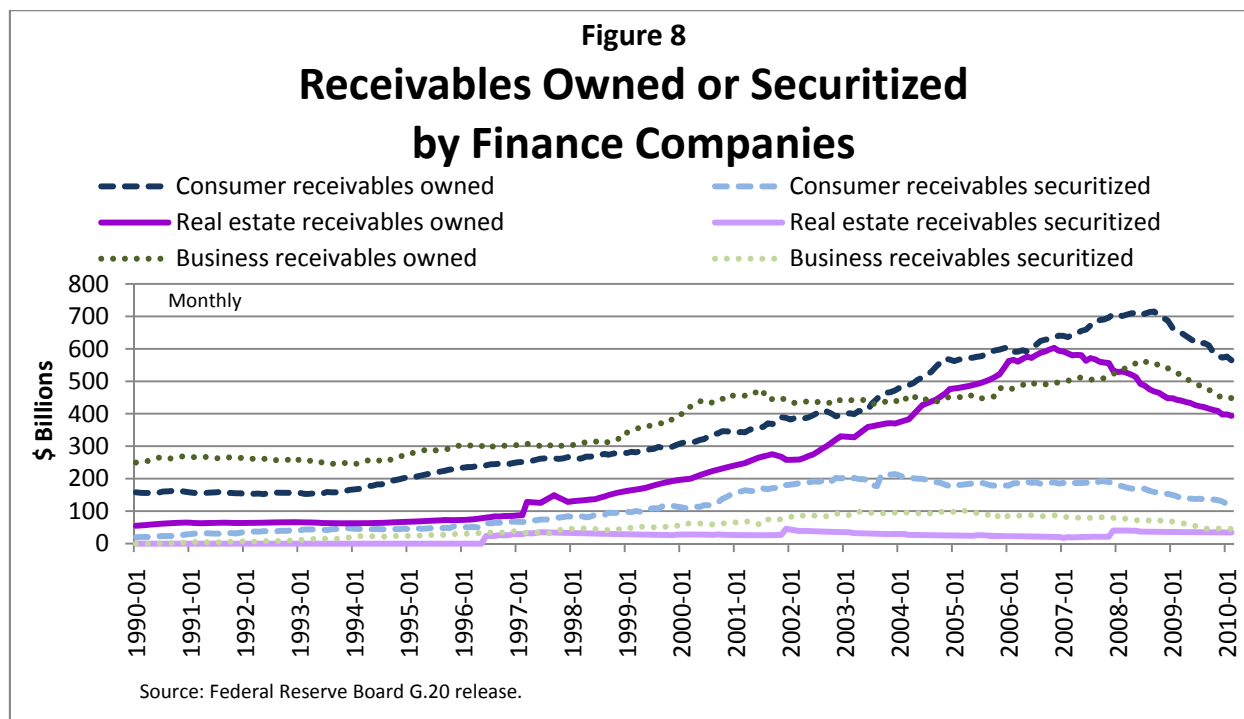
banks could replace the entire mortgage intermediation process performed by commercial banks. This business also exposed them to more credit risk and duration risk on their balance sheets than they had traditionally been willing to accept.

4. *Finance companies*

Finance companies supply credit to businesses and consumers but do not take deposits. Instead, they raise funds by issuing commercial paper and bonds. While they do securitize some of their loans, some finance companies also hold assets on their balance sheets, similar to a traditional bank.

Finance companies appear in the middle of figure 6. There are three main categories of finance companies. Captive finance companies, usually affiliated with automotive or other manufacturing companies, finance dealer inventories or consumer purchases of their products. Commercial finance companies make loans to businesses secured by the assets of the firm or the firm's receivables. Consumer finance companies make loans to consumers for furniture, appliances, and other purchases along with offering credit cards. In the years before the financial crisis, finance companies were also offering mortgages. Total receivables at finance companies at the end of 2006, before the first liquidity episode in the summer of 2007, were approximately \$1.9 trillion.

Figure 8 shows the considerable growth of consumer and real estate receivables compared to business receivables at finance companies. Real estate receivables consist primarily of mortgages on one to four family homes. Finance companies also chose to maintain the majority of their receivables on their balance sheets, instead of securitizing them. At their peak, finance companies held about \$600 billion of real estate receivables and about \$700 billion of consumer receivables on their balance sheets, before trending downward.



5. *Asset-backed commercial paper conduits*

Developments in securitization and bankruptcy-remote financing allowed the creation of funding vehicles such as ABCP conduits. These funding vehicles sell their own debt and hold assets and securities in trust. They perform credit intermediation and maturity transformation by purchasing diversified assets and funding them in short-term markets.

Table 3: Global ABCP by program type, June 30, 2007

| Program Type | Description | \$ billion |
|---------------------------------------|---|----------------|
| Multi-seller Conduits | Diverse asset types | \$626 |
| Single-seller Conduits | Single loan types awaiting securitization | \$218 |
| Securities Arbitrage | Highly rated securities | \$184 |
| Hybrid | Mixed assets | \$165 |
| Structured Investment Vehicles (SIVs) | Highly rated securities | \$104 |
| Other | CDO-issued paper; others | \$95 |
| Total | | \$1,392 |

Source: Moody's

There are several types of ABCP conduits that can be distinguished by asset holdings, depth of maturity transformation, liability structure, and enhancements. Table 3 displays these

types and describes the size and composition of their asset holdings as of June 2007. Multi-seller conduits are the largest category by outstandings and are typically used to fund credit card receivables or trade receivables for corporations that otherwise could not access CP markets.

Other categories of conduits that played a central role in the crisis are the securities arbitrage vehicles and the structured investment vehicles (SIVs). Securities arbitrage vehicles issued ABCP. SIVs issued senior debt in the form of medium-term notes, ABCP, and subordinated securities in the form of capital notes. As shown in figure 6, SIVs (and securities arbitrage vehicles) used those funds to purchase loans, notes, and bonds, including significant amounts of MBS.

6. *Government-sponsored enterprises*

Government-sponsored enterprises such as Fannie Mae and Freddie Mac perform two functions associated with shadow banking:⁴⁰ guaranteeing timely payment of principal and interest from a pool of mortgage-backed securities (MBS), and purchasing portfolios of bonds funded by the sale of short-term discount notes.

7. *Other financial guarantors*

Other financial guarantors also play a role in shadow banking. These entities, which tend to have high credit ratings, guarantee principal and interest of a bond, a process known as *wrapping*. This is useful to investors because it enhances the credit quality of the underlying bonds. A major subset of financial guarantors called *monolines* arose to wrap municipal bonds.

In the 2000s, monolines such as MBIA and Ambac began wrapping other types of bonds, including mortgage-backed securities (MBS) and collateralized debt obligations (CDOs). These wraps, often in the form of credit default swaps, allowed structured product issuers to issue securities at low interest rates and to receive high ratings from the credit rating agencies. The structured finance guarantee business came to exceed the monolines' traditional municipal business: at the end of 2006, guarantees of asset-backed securities by monoline insurers totaled \$2.2 trillion, compared with \$1.3 trillion in guarantees of municipal securities.⁴¹

⁴⁰ See the FCIC Preliminary Staff Report, *Government Sponsored Enterprises and the Financial Crisis*.

⁴¹ Barth (2009), page 28.

IV. THE CRISIS IN THE SHADOW BANKING SYSTEM

The build-up of the financial crisis from early 2007 through the end of 2008 was marked by growing concerns about the financial and economic impacts of falling housing prices, particularly on the subprime mortgage market, a gradual loss of confidence in critical markets and instruments of the shadow banking system, and ultimately a panic that led to the de facto shutdowns of the markets for many shadow banking instruments. This in turn led to fire sales of assets and doubts about the solvency of some entities.

These concerns played out in the shadow banking system in three distinct episodes: (1) the liquidity crisis in the summer of 2007; (2) the failure of various liquidity markets and the run on Bear Stearns in the winter of 2008; and (3) the panic of September 2008. These episodes highlighted the fragility of the shadow banking system. During each episode, as in 1930s-era depositor runs on commercial banks, investors, in large numbers, demanded their money back from various shadow banking markets and instruments. Similar to a run on a commercial bank, the shadow banking system suffered a debilitating loss of confidence as assets were written down and liquidity evaporated. As creditors began to doubt the solvency of an entity, they withdrew funds, prompting deleveraging and asset sales into illiquid markets, further depressing market prices, and eroding the equity of firms holding similar assets even where the assets were not sold.

In each of these episodes, the government stepped in to provide unprecedented funding and guarantees. In the latter part of the crisis, this aid was extended to institutions and investors that had no prior claim on taxpayer support. Critically, the Federal Reserve established a series of funding facilities that were directly aimed at improving liquidity in the shadow banking system during the financial crisis. With each of these extraordinary measures, the Federal Reserve effectively extended to the shadow banking system its role as the lender of last resort, a role that the central bank had traditionally reserved for commercial banks and savings institutions.

A. EPISODE I: THE LIQUIDITY CRISIS OF 2007

Following the real estate boom, house prices began to fall in 2006 and defaults on subprime mortgages began to rise.⁴² These trends continued to worsen throughout 2007 and, starting in early 2007, the credit rating agencies responded by repeatedly downgrading the credit ratings of various tranches of subprime MBS and CDOs.

In the financial markets, the first casualties of these events were subprime mortgage lenders, investment funds that focused on the subprime mortgage market, and ABCP programs with subprime exposure. Concerns spread to hedge funds and commercial paper programs

⁴² See the FCIC Preliminary Staff Report, *The Mortgage Crisis*.

during the summer, and in August global central banks took unprecedented steps to loosen monetary conditions and to provide liquidity to the CP markets.

1. *Failure of mortgage lenders*

The subprime mortgage market was distressed by early 2007. On March 5, HSBC Finance, the largest subprime lender in the U.S., reported that it had set aside \$1.4 billion as a provision for subprime credit losses in the fourth quarter of 2006, confirming warnings it had given to investors three months earlier that the decline in house prices had accelerated subprime delinquencies.^{43,44}

In a series of March announcements, New Century Financial, the second largest subprime lender, reported an expected financial loss in 2006, citing rising delinquencies, government investigations, and credit pullbacks by lenders. On April 2, the company filed for Chapter 11 bankruptcy protection after cash demands by its warehouse lenders (the banks who had provided financing for subprime mortgage loans awaiting securitization).⁴⁵

By the end of 2007, most independent subprime mortgage lenders that relied on securitization markets for their funding had failed or had been acquired. American Home Mortgage Corp., the 8th largest prime mortgage originator with a \$3.3 billion ABCP program, announced it could not fund its obligations on July 31, 2007, and declared bankruptcy on August 6. On August 31, ACC Capital Holdings announced it was closing Ameriquest, the 7th largest subprime originator, and selling its loan servicing unit (and its loan origination platform) to Citigroup.

2. *Hedge fund losses*

In the spring of 2007, two hedge funds run by Bear Stearns Asset Management began to experience rising client redemptions following weakening returns. Both of these funds, the Bear Stearns High-Grade Structured Credit Fund (High-Grade Fund) and the Bear Stearns High-Grade Structured Credit Enhanced Leveraged Fund (Enhanced Leveraged Fund), were heavily invested in subprime assets. On June 7, Bear Stearns announced that it was suspending redemptions from the funds. Creditors refused to continue to provide repo funding and, on June 22, Merrill Lynch seized \$800 million in collateral. At the same time, Bear Stearns chose to bail out the High Grade Fund. Nonetheless, both funds declared bankruptcy by the end of July. Losses from subprime assets continued to grow and on August 9, the French bank BNP Paribas announced that it would halt redemptions in three of its investment funds, claiming an inability to value the assets in the funds.

⁴³ HSBC Finance Corp., *10-K 12/31/2006*, March 5, 2007, page 30.

⁴⁴ On March 22, the Senate Committee on Banking, Housing, and Urban Affairs, held a hearing to investigate the subprime mortgage industry, based on a report by a public advocacy group that as many as 2.2 million subprime homeowners would lose their homes in the coming crisis. Center for Responsible Lending (2006).

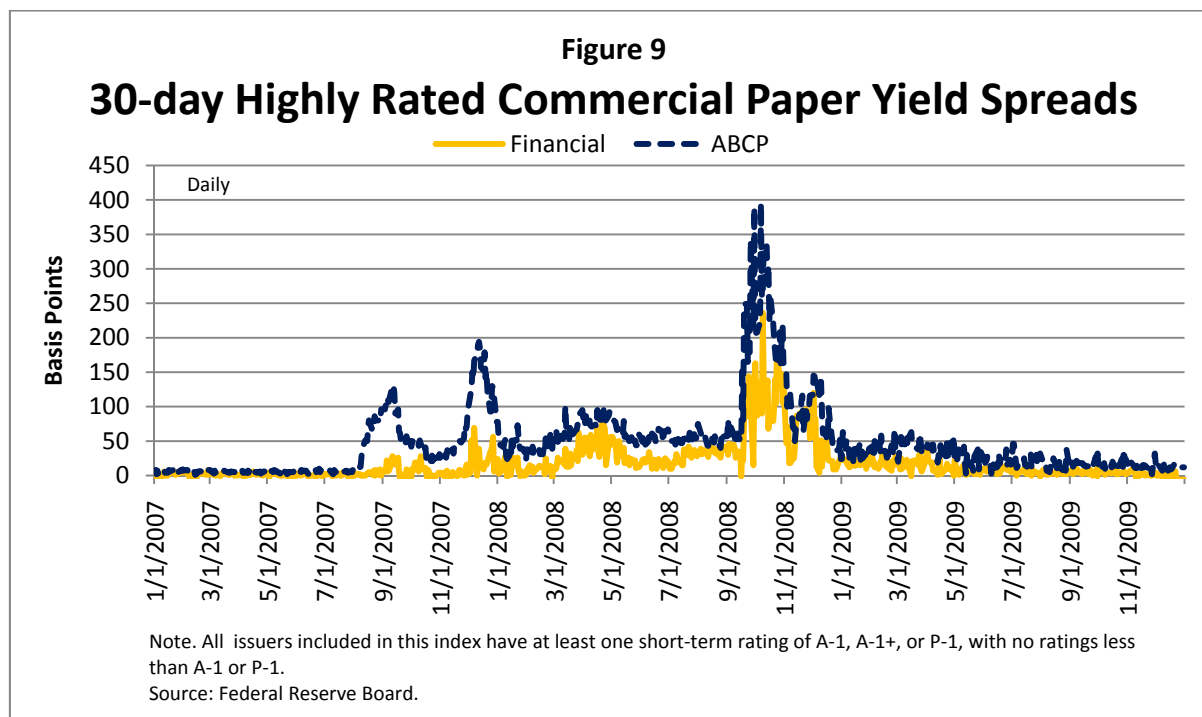
⁴⁵ Paul Muolo and Mathew Padilla, *Chain of Blame*, 2008, page 177.

From August 6 to August 8, hedge funds that invested in equities, and specifically those funds using so-called statistical arbitrage strategies, suffered severe losses, even though they appeared isolated from the troubles in the subprime market. These funds were arguably hedged and therefore should not have been vulnerable to market movements. However, market participants have argued that these funds may have been affected when Bear Stearns and other mortgage-focused funds were forced to liquidate their positions rapidly.⁴⁶

3. *The panic and the run on commercial paper*

By the summer of 2007, uncertainty in the value of MBS and CDOs began to have more severe effects on the commercial paper market and on the money market, in which financial institutions lend to each other.

In late July 2007, a conduit of the German bank IKB was unable to roll its ABCP due to concerns about the credit quality of its holdings. The bank itself did not support the conduit and a public-private bailout was arranged. The ABCP market immediately came under stress.



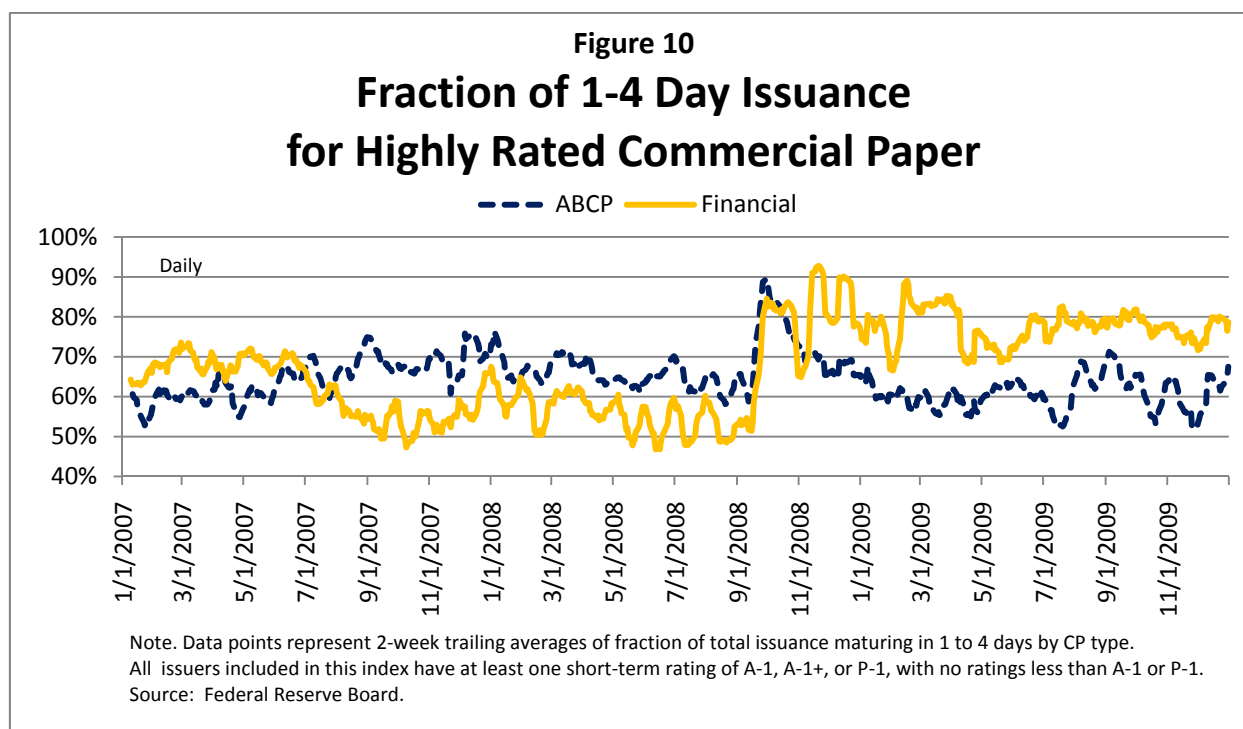
As shown in figure 9, spreads on 30-day ABCP immediately widened from near zero to almost 150 basis points in the first part of August 2007.⁴⁷ Overall issuance dropped sharply.

⁴⁶ Khandani and Lo (2007).

⁴⁷ An interest rate spread is the difference between two rates and measures the relative riskiness of the assets, rather than changes in the level of market interest rates. ABCP and financial CP spreads to

Outstanding ABCP fell \$190 billion (or 20 percent) in August alone and another \$120 billion by year end. New issuance shortened in maturity as well as lenders were unwilling to extend longer-dated credit, as shown in figure 10.

Investors withdrew from ABCP programs in early August, and the withdrawals persisted at those with perceived subprime exposures. Mortgage ABCP programs with assets from just one issuer (“single-seller programs”) fell from \$35 billion in outstanding commercial paper at the end of May to \$4 billion at the end of August.⁴⁸ Commercial paper funding for GMAC Financial Services and its subsidiary, Residential Capital Corporation, decreased by \$5 billion during this period.⁴⁹ Meanwhile, investors fled obligations of structured investment vehicles (SIVs), leading to the fear that SIVs, which held combined assets of roughly \$400 billion, would be forced to liquidate their assets at once.⁵⁰



With the markets in turmoil, other ABCP programs also suffered sharp declines. There is evidence that in the earliest phase of the crisis, runs occurred in programs not obviously tied

nonfinancial CP reflect investors’ perceptions of risk across types of commercial paper, and are a standard metric of the health and operation of those markets.

⁴⁸ Covitz, Liang, and Suarez (2009).

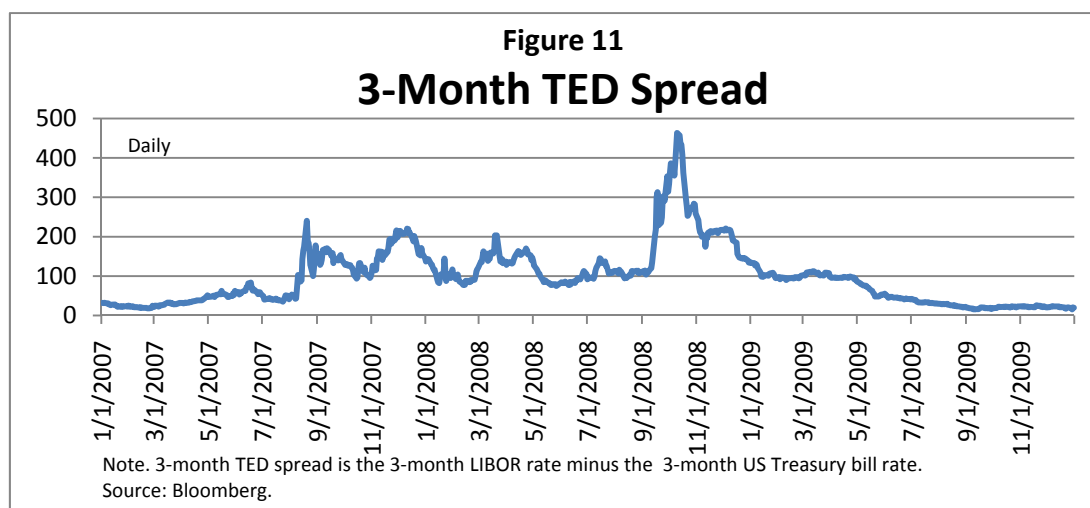
⁴⁹ Moody’s (2007a, 2007b).

⁵⁰ Contrary to market fears at the time, it eventually turned out that the unwinding of the SIVs was not detrimental. “SIVs suffered a variety of fates. Of the 29 SIVs: five were restructured; seven defaulted on payments to their senior notes; 13 were supported by the sponsoring bank – a number of which have since delevered; and Fitch estimates that the remaining four SIVs have also delevered.” See Fitch (2009).

to subprime loans. In particular, *non-mortgage* single-seller ABCP programs shrank from \$126 billion at the end of May to \$79 billion at the end of August.⁵¹ These funds continued to have trouble raising funds after the initial shock.

As the ABCP market came under stress, interbank lending markets also suffered. Market participants were concerned about the effects on banks from the credit and liquidity support that they had provided to ABCP programs. Interbank lending rates spiked in August 2007 as banks became less willing to lend to each other given the increased uncertainty. Banks built their own cash positions in case they themselves began to have difficulty raising funds in wholesale markets.

Figure 11 shows the TED spread, the difference in the 3-month London Interbank Offered Rate (LIBOR) and the rate on 3-month U.S. Treasury bills. LIBOR is a measure of the rate that banks are willing to lend to each other and therefore reflects a degree of credit risk. In contrast, U.S. Treasury bills are considered risk-free. The difference is therefore, a measure of the perceived uncertainty and credit risk when lending to other banks. Beginning on August 9, 2007, the spreads began to rise. From a historical average of 20 to 60 basis points, the TED spread peaked at 240 basis points later in August. Very quickly, troubles in the shadow banking system spilled over to the traditional banking sector.



4. *The government response*

The panic in the commercial paper markets was met by extraordinary government action. On August 17, the Federal Reserve cut the discount rate by 50 basis points, the first of many cuts aimed at increasing liquidity in the market. Notably, the Board also extended the term of Discount Window lending to 30 days in an effort to offer banking institutions a more stable source of funds.

⁵¹ Covitz, Liang and Suarez (2009).

In response to continued pressures in interbank term lending markets, the Federal Reserve, in December, announced the creation of the Term Auction Facility in December. Under the TAF program, the Federal Reserve auctioned funds to depository institutions for terms of 28 or 84 days. The loans were available to the same depository institutions that were eligible to borrow at the Discount Window and were fully collateralized with appropriate haircuts. The major advantage of the TAF, according to some analysts, was that it did not carry the same stigma as borrowing from the Discount Window, which in the past had been seen as a sign of weakness.⁵² For some TAF loans, the interest rate was below that at the Discount Window.

B. EPISODE II: GROWING ANXIETY AND THE RUN ON BEAR STEARNS

Over the course of late 2007 and early 2008, concerns grew about the ultimate cost of the mortgage crisis on the financial sector and banks reported substantial write-downs on mortgages and mortgage-related products. Rating agencies began to raise questions about the ability of financial guarantors to provide contractual protections to structured finance products. In March 2008, these fears concentrated on Bear Stearns, an investment bank which had been a leading participant in originating mortgage-backed securities and which relied heavily on the repo market for its funding.

1. *Financial guarantors*

As mortgage default rates increased and asset-backed securities lost value, financial guarantors faced mounting payment obligations. In November and December 2007, the three leading credit rating agencies issued credit outlook warnings or placed on negative watch the top financial ratings of several financial guarantors because of the companies' exposures to CDOs through credit default swaps.⁵³

In January 2008, Fitch Ratings downgraded Ambac's insurer financial strength rating from AAA to AA.⁵⁴ Moody's placed MBIA's and Ambac's Aaa ratings on review for possible downgrade in January but confirmed both ratings in February and early March after the companies raised \$1.6 billion and \$1.5 billion in new equity, respectively.⁵⁵ S&P downgraded smaller guarantors but similarly affirmed MBIA's and Ambac's AAA ratings after the equity raises.⁵⁶

⁵² SIGTARP, *Quarterly Report to Congress*, July 21, 2009, pp. 141-142.

⁵³ Moody's Investors Service, *Moody's announces rating actions on financial guarantors*, December 14, 2007; Standard & Poor's Ratings Services, *S&P Takes Rating Actions On Six Bond Insurers*, December 19, 2007.

⁵⁴ Fitch Ratings, *Fitch Downgrades Ambac; Ratings Remain on Watch Negative*, January 18, 2008.

⁵⁵ Moody's Investors Service, *Moody's confirms MBIA's Aaa rating, changes outlook to negative*, February 26, 2008, and *Moody's confirms Ambac's Aaa rating; changes outlook to negative*, March 12, 2008.

⁵⁶ Standard & Poor's Ratings Services, *S&P Takes Additional Bond Insurer Rating Actions*, February 25, 2008.

2. *Run on auction-rate securities*

The downgrades of monoline guarantors quickly ignited doubts about the credit protection of monoline-wrapped municipal bonds. Bondholders in the auction-rate securities (ARS) market rushed to liquidate their positions. Initially, leading investment banks backstopped the bond auctions, but these actions pressured their balance sheets during a severe liquidity crunch. Eventually, the investment banks simultaneously stopped bidding, thereby withdrawing liquidity support and causing auction failures. Under the terms for these securities, interest rates reset to much higher contractual limits triggered by auction failures. As a result, issuers were subjected to high short-term interest rates and some investors were unable to exit their positions.⁵⁷

3. *Bear Stearns and the run on repo and other collateral*

The collapse of the investment bank Bear Stearns in March 2008 was the next major crisis in the shadow banking system. In early 2008, spreads on agency bonds began to widen again, this time affecting Carlyle Capital, an Amsterdam-listed hedge fund. Further declines in asset prices from the liquidation of part of Carlyle's portfolio, and Bear's direct exposure to Carlyle, made the market nervous about Bear Stearns which itself had substantial exposure to mortgage-related assets. What followed was the rapid elimination of repo funding for the firm.⁵⁸ Over a week in March 2008, lenders in the repo markets either refused to roll their positions with Bear Stearns or demanded much more collateral (i.e., increased haircuts) for overnight repo loans. Though secured, investors were not well positioned to hold the collateral in volume, and thus a 'safe' asset market was not immune to panic. Between March 6 and March 13, over \$15 billion in funding was pulled from the firm.

At the same time, prime brokerage clients also withdrew their accounts from Bear Stearns. As market rumors spread about the solvency of Bear Stearns in March 2008, over-the-counter (OTC) derivatives counterparties sought collateral calls and *novations* to mitigate potential losses if Bear Stearns fell into bankruptcy.⁵⁹ Firms also entered into new derivatives contracts with Bear Stearns constructed in a way to extract cash up front, further hedging bankruptcy risks, which exacerbated the liquidity constraints that Bear Stearns already faced in the marketplace and contributed to its distress.

⁵⁷ Han and Li (2009).

⁵⁸ The firm had been under pressure for some time since the BSAM funds went bankrupt. Importantly, the maturity of its repo obligations had shortened as counterparties became less willing to provide long-term funds.

⁵⁹ In a novation, a party that wants to exit its trade position with a counterparty (for example, Bear), assigns or novates the position to a new counterparty. The former counterparty (Bear) grants consent to the novation, which essentially takes it out of the trade.

As a result, Bear Stearns was unable to meet its obligations on March 13. It arranged an emergency bridge loan from the Federal Reserve but after failing to secure additional capital, it was purchased by JP Morgan Chase, with government support, over that weekend.

4. *The fallout from Bear and the government response*

In early March 2008, the Federal Reserve announced the Term Securities Lending Facility (TSLF) and then the Primary Dealer Credit Facility (PDCF). Under the TSLF, announced just before the sale of Bear Stearns, primary dealers were able to borrow Treasury securities from the Fed by posting eligible securities as collateral; these included federal agency debt, federal agency residential-mortgage-backed securities (MBS), and non-agency AAA/Aaa-rated private-label residential MBS. They could then use those Treasury securities to obtain cash in the markets. Under the PDCF, broker-dealers could now directly borrow from the Federal Reserve at the primary discount rate. Use of the PDCF reached \$40 billion in April 2008 and then declined before spiking to over \$150 billion in September. Both of these funding programs were implemented to provide liquidity to the market and to avoid forced sales of mortgage-related assets at depressed prices in order to meet demands from their short-term funders. With these programs now in place, the primary dealers could instead obtain Treasuries or cash – the Fed had stepped in to supply liquidity in the repo market and in essence, open the Discount Window to these non-bank institutions.

C. EPISODE III: THE PANIC OF 2008

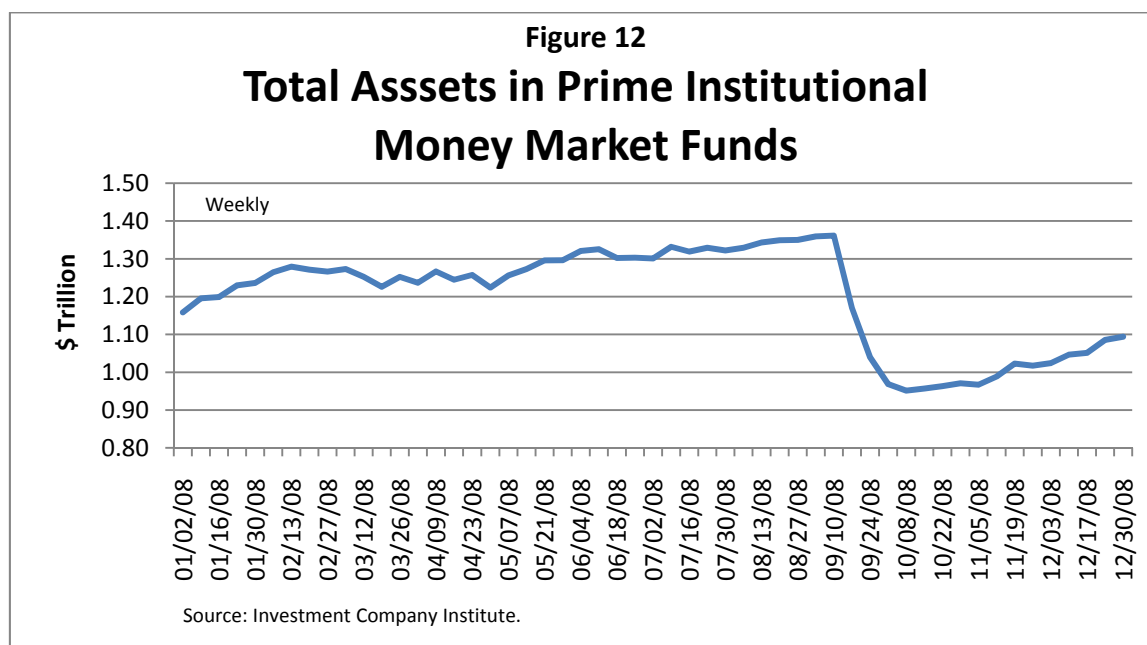
The year-long liquidity crunch and growing concerns about solvency created the conditions for full-blown panic in September 2008. The collapse of Lehman Brothers in September 2008 was the final trigger that froze the shadow banking system.

1. *The failure of Lehman*

Lehman Brothers was under pressure over the course of 2008. From March to September, Lehman was able to raise some capital to aid its liquidity position. It had also sought out potential buyers for the firm. In September, the FHFA placed Fannie Mae and Freddie Mac into conservatorship and extended \$200 billion of government support to the institutions. Later that week, Lehman came under pressure similar to Bear Stearns. On September 9, reports emerged that the Korea Development Bank would not purchase Lehman Brothers, contradicting earlier reports, and on September 10 the firm pre-announced \$3.9 billion in losses for the third quarter. Repo funding evaporated, prime brokerage clients fled, and increased demands for collateral eventually pushed the firm into bankruptcy.

The failure of Lehman Brothers had repercussions for many components of shadow banking system and the traditional banking system. Most notably, withdrawals increased substantially at money market funds, commercial paper markets came under pressure and certain hedge funds also suffered.

Immediately following Lehman's bankruptcy, one money market mutual fund, the Reserve Primary Fund, realized losses on approximately \$785 million of Lehman commercial paper and could not maintain \$1 net asset value (it "broke the buck"). In the following week, prime institutional funds experienced net outflows of \$300 billion, shown in figure 12, as investors fled possible exposures to other troubled financial institutions. The outflows caused short-term funds to reposition their portfolios, holding cash to brace for redemptions and investing in only the highest quality assets. The pullback severely disrupted liquidity and credit channels.



At the same time, commercial paper spreads, and in particular financial commercial paper, widened even further. As shown in figure 9, ABCP spreads and financial CP spreads rose to 389 and 236 basis points, respectively. Almost all issuance shortened to overnight maturities and many tier-2 issuers were unable to issue paper. As these markets froze, financial firms scrambled for funding and curtailed credit to their borrowers.

Prior to the bankruptcy of Lehman Brothers, prime brokers believed that costs associated with changing brokerages would make their client accounts relatively resilient to concerns about credit quality of the brokerage. When client assets were frozen in Lehman Brothers' London subsidiary, hedge funds transferred cash and securities out of investment banks believed to be under pressure, removing a key source of liquidity and revenue to firms already experiencing pressure from many fronts.

Cash reinvestment pools run by securities lenders also faced pricing and liquidity pressures following the Lehman failure and, as these pools shrank, less funding was available to repo borrowers. International bank supervisors, in a collaborative report on the crisis, noted:

“The severity of the risks associated with securities lending activities—as with prime brokerage—caught many participants by surprise.”⁶⁰

Soon after the failure of Lehman, Goldman Sachs and Morgan Stanley applied to become bank holding companies, under Federal Reserve supervision. With the sale of Merrill Lynch to Bank of America several days earlier, this marked the effective end of the investment banking model in the U.S.

2. *The government response*

Following the bankruptcy of Lehman Brothers and the government rescue of AIG, funding markets were in greater turmoil. The Federal Reserve and the Treasury instituted a series of additional measures to counter the runs in the money market funds, to replace the limited funding for short-term unsecured instruments, and to support securitization that had all but ceased. On September 19, the Federal Reserve announced the Money Market Investor Funding Facility (MMIFF) and the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF). Under the AMLF, the Federal Reserve would lend money to depository institutions and bank holding companies to fund the purchase of ABCP from money market mutual funds. At the same time, the U.S. Treasury Department established a temporary guarantee program for the U.S. money market fund industry, effectively insuring the holdings of any publicly offered eligible money market mutual fund – either retail or institutional – that participated in the program. These coordinated actions were meant to calm investor fears, to inject liquidity, and to create a credit backstop akin to deposit insurance for the shadow banking system following the troubles at the Reserve Primary Fund.

The Federal Reserve went even further on October 7, announcing that under the Commercial Paper Funding Facility (CPFF) it would directly purchase ABCP and unsecured CP from issuers. In November the Federal Reserve created the Term Asset-Backed Securities Loan Facility (TALF), a funding facility that would issue loans with a term of up to five years to holders of eligible asset-backed securities (ABS). The TALF was designed to support credit to consumers and business by lending money to issuers of ABS. Eligible collateral initially included highly rated U.S. dollar-denominated ABS backed by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration (SBA). These programs were all instituted to support (or replace) funds for consumer and business purchases and investments that had become unavailable, or very expensive, with the turmoil in the shadow banking system.

⁶⁰ Senior Supervisors Group (2009).

D. CREDIT MARKET IMPACTS OF THE FINANCIAL TURMOIL

Over the past forty years, the U.S. financial system evolved from a substantially bank-based system to a mixed bank and market based system in which shadow banking system components were the primary sources of funds for several kinds of consumer and business activity. As a result, the runs on shadow banking markets had a major impact on the financial system as credit for consumers and businesses was greatly reduced or hindered. This was clearest in subprime mortgage origination, but other credit markets such as car loans, student loans, municipal finance, commercial real estate and small business finance were all severely constrained in the wake of the crisis.

The decline in these markets was driven by several factors. First, the reduction in demand for asset-backed securities directly led to a decline in the availability of funds for consumer and business credit. The collapse of other markets led to a decline in direct funding for many firms. Facing unprecedented redemptions, money market funds refused to purchase CP, making it difficult for companies to raise cash. A number of tier-2 CP borrowers were hit particularly hard, and some firms are on the record pointing out that they were unable to roll their CP and as a result, were left without cash for needs such as payroll and inventory. The backstops at the commercial banks were further strained given the tumult in the market and the pressures commercial banks faced.

Second, the collapse of the shadow banking system led to the demise of many financial institutions. Many independent mortgage companies and those owned by broker-dealers went bankrupt or ceased operations beginning in late 2006. The closure of such firms led to the evaporation of the organizational capacity to extend this credit as well. Even were the funds available, the commercial banks that had traditionally funded mortgages would not have had the personnel or technology in place, at least in the near term, to replace the closed firms.

Throughout these market convulsions, many financial firms were crippled, and some only survived with substantial government assistance. Their capital was depleted and many of their revenue channels were extinguished or impaired by the decline in financial activity. This condition severely restricted their capacity to provide funding to consumers, businesses, and governments, reinforcing reductions in real economic activity around the world and magnifying the ensuing recession.

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GLOSSARY

Asset-Backed Commercial Paper (ABCP)

Short-term debt that has a fixed maturity of 270 days or less. The debt is backed by some financial asset, such as trade receivables, consumer debt receivables, or auto and equipment loans or leases. A firm that wants to issue ABCP will place assets in a special purpose entity (SPE) to issue the ABCP. The SPE, which is typically created by a bank or other financial company, is a legally separate entity from the firm.

Auction Rate Securities (ARS)

Long-term bonds that have floating interest rates that reset by Dutch auction at regular intervals, usually less than a month.

Bank Holding Company

A company that has control over any bank, or over any company that becomes a bank, as “bank” and “control” are defined in the Bank Holding Company Act of 1956. The Federal Reserve is responsible for supervising bank holding companies even if the bank that the company controls is under the primary supervision of a different federal agency.

Basel Capital Accord of 1988 (Basel I)

A set of international banking regulations put forth by the Basel Committee on Banking Supervision, which set out the minimum capital requirements of financial institutions with the goal of minimizing credit risk. Banks that operate internationally are required to maintain a minimum amount (8%) of capital based on a percent of risk-weighted assets.

Capital Note

The subordinated security in the liability structure of a structured investment vehicle (SIV).

Captive Finance Company

A company that finances dealer inventories or consumer purchases of their products – usually affiliated with automotive or other manufacturing companies.

Collateralized Debt Obligation (CDO)

A special purpose entity set up to own a pool of securities or loans, divide the pool’s cash flows into tranches based on risk, and sell investors bonds that represent an interest in a particular tranche. The securities may be mortgage-backed securities or other similar securities. The tranches are designed to redistribute the risk of default. “Senior” tranches are considered the safest. Interest and principal payments are generally made in order of seniority, so that junior tranches offer higher coupon payments to compensate for additional default risk. CDOs are a type of structured debt.

Commercial Finance Company

A non-depository financial institution that makes asset based loans (such as for buying inventory, machines and equipment, vehicles) and enters into leasing arrangements.

Commercial Paper (CP)

A short-term, unsecured promissory note issued by a large bank or corporation or a foreign government. The typical maturity is 1 to 270 days. As the note is backed only by the issuer's promise to pay, only firms with good credit ratings are able to issue unsecured commercial paper.

Consumer Finance Company

A non-depository lender that typically makes loans to consumers for furniture, appliances, and other purchases along with offering credit cards.

Credit Default Swap (CDS)

A contract that promises payments triggered by a specific credit event. The buyer of the swap makes periodic payments to the seller of the swap in return for protection against a possible default affecting the value of a specified asset. The seller agrees to buy the specified asset from the buyer at par in the event of a credit default. The asset is typically some type of security, such as a corporate bond, CDO, or mortgage-backed security.

Credit Risk Transfer

The movement of assets off of balance sheets, often with the aim of easing capital requirements for firms.

Enhanced Cash Fund

Bond funds similar to money market funds, in that they aim to provide liquidity and principal preservation, but which: aim for higher returns, have less liquidity, invest in a wider variety of assets, and are not subject to certain SEC restrictions (such as SEC Rule 2a-7).

Exchange Rate Swap

A simultaneous purchase and sale of identical amounts of one currency for another with two different value dates.

Financial Intermediation

The process of transforming the risk and/or timing of cash flows between savers and borrowers.

Glass-Steagall Act of 1933

Part of the Banking Act of 1933, Glass-Steagall mandated the separation of commercial banking from investment banking in order to address stock market speculation, self-dealing (using clients' funds for personal gain), and other abuses.

Gramm-Leach-Bliley Act of 1999 (GLBA)

Also known as the Financial Services Modernization Act, it repealed the limitations on affiliations contained in the Glass-Steagall Act. Under GLBA, bank holding companies that meet certain capital, managerial, and other requirements may elect to become financial holding companies and thereby engage in a wider range of financial activities than they could otherwise, including full-scope securities underwriting, merchant banking, and insurance underwriting and sales.

Haircut

The difference between the market value of a security and the amount of money a lender will advance against it. The haircut acts as a buffer for absorbing any decline in the collateral's value in the event the loan is not repaid.

Interest Rate Swap

An agreement between two parties where one stream of future interest payments is exchanged for another based on a specified principal amount. Interest rate swaps often exchange a fixed payment for a floating payment that is linked to an interest rate (most often the LIBOR).

Investment Company Act of 1940

Created by Congress in 1940 and enforced and regulated by the Securities and Exchange Commission, this act clearly sets out the limits regarding filings, service charges, financial disclosure and fiduciary duties of open-end mutual, exchange-traded and closed-end funds.

Liquidity Risk

The risk stemming from the lack of marketability of an investment that cannot be bought or sold quickly enough to prevent or minimize a loss.

Local Government Investment Pool (LGIP)

A state or local government pool offered to public entities for the investment of public funds.

Maturity Transformation

An aspect of financial intermediation, involving the issuance of short-term liabilities such as deposits to fund long-term assets such as mortgages.

Medium-Term Note (MTN)

A debt note that usually matures in 5–10 years and can be issued on a fixed or floating coupon basis.

Money Market

The wholesale market for low-risk, highly liquid, short-term debt, such as U.S. Treasury bills, agency securities, commercial paper, certificates of deposit, and repos.

Money Market Fund (MMF)

A mutual fund (SEC-registered investment fund) that is registered under Rule 2a-7 of the Investment Company Act of 1940.

National Currency Act of 1863

Law establishing a national currency and a new government agency, the Office of the Comptroller of the Currency, to charter and supervise a new system of national banks.

Net Asset Value (NAV)

A mutual fund's price per share.

Novation

The substitution of a new contract for an old one; or the substitution of one party in a contract with another party.

Repurchase Agreement (Repo)

The sale of securities to an investor with an agreement to repurchase the securities at an agreed upon price and date. The Federal Reserve Bank of New York's Trading Desk uses repos of eligible securities to vary the quantity of banking system reserves as part of its implementation of monetary policy.

Shadow Banking

Refers to bank-like financial activities that are conducted by unregulated or lightly regulated institutions outside the traditional banking system.

Short Term Investment Fund (STIF)

A type of fund that invests in short-term investments of high quality and low risk. The goal of this type of fund is to protect capital with low-risk investments while achieving a return that beats a relevant benchmark such as a Treasury bill index.

Special Purpose Entity (SPE)

A legal entity (usually a limited liability company) created to fulfill a narrow or temporary objective. The SPV typically holds a portfolio of assets such as mortgage-backed securities or other debt obligations. The SPV exists to hold the assets and issue a new set of claims on the

assets, making the sponsor of the SPV remote from any bankruptcy associated with the SPV and from the accounting, tax, and regulatory consequences of the SPV's activities.

Sweep Account

A bank account that automatically transfers amounts that exceed (or fall short of) a certain level into a higher interest earning investment option at the close of each business day. Commonly, the excess cash is swept into money market funds.

Total Return Swap

A swap agreement in which one party makes payments based on a set rate, either fixed or variable, while the other party makes payments based on the return of an underlying asset, which includes both the income it generates and any capital gains. In total return swaps, the underlying asset, referred to as the reference asset, is usually an equity index, loans, or bonds. This asset is owned by the party receiving the set rate payment.

Traditional Collateral

Collateral that consists of U.S. Treasuries and agency securities.

Wrapping

Process by which financial guarantors (which typically have high credit ratings) guarantee the principal and interest of a bond. This serves to enhance the credit quality of an underlying bond.