5 Financial Developments

5.1 Major Financial Markets

5.1.1 Sovereign Debt Markets

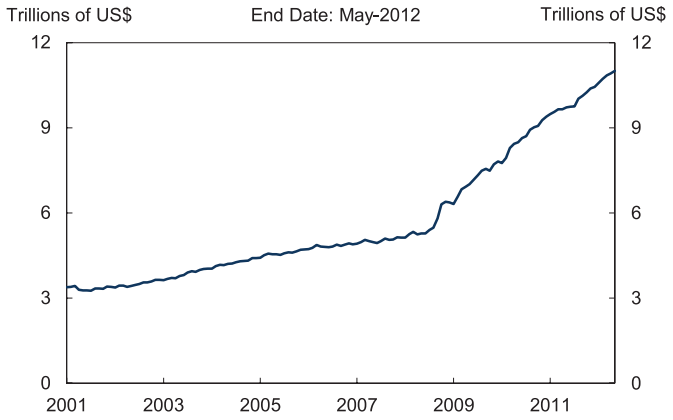
Developments in sovereign debt markets during the last year were heavily influenced by the escalation of uncertainty in euro area sovereign and banking sectors and by continued concerns about the domestic and global growth outlook. While sovereign debt from the euro area periphery remains stressed, yields for sovereign debt from the United States, the United Kingdom, Germany, Switzerland, and Japan are at record or near-record lows, reflecting flight to quality and continued expectations of accommodative monetary policy.

U.S. Sovereign Debt

The total amount of outstanding U.S. sovereign debt has risen to $11.0 trillion as of May 31, 2012 **(Chart 5.1.1)**. Despite this increase in supply, the U.S. sovereign yield curve flattened considerably since mid-2011, with a decline in longer-term yields driving this change **(Chart 5.1.2)**. The historically low levels of longer-term yields are a reflection of both flight to quality and continued monetary policy accommodation associated with the weak pace of economic growth and the elevated unemployment rate.

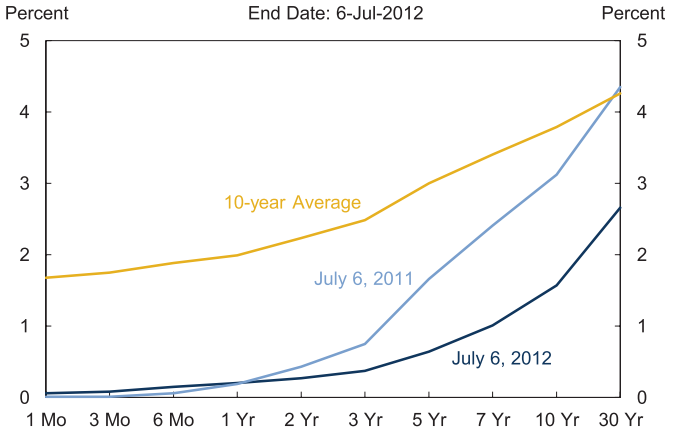
Foreign holdings of U.S. debt remain substantial, with over $2.2 trillion of U.S. Treasury securities held by China and Japan and almost $3 trillion across other foreign holders in April 2012 compared to about $2 trillion and $2.4 trillion, respectively, in April 2011 **(Chart 5.1.3)**. Nearly three-quarters of these holdings are by foreign official entities.

Chart 5.1.1 Federal Debt Outstanding Held by Public



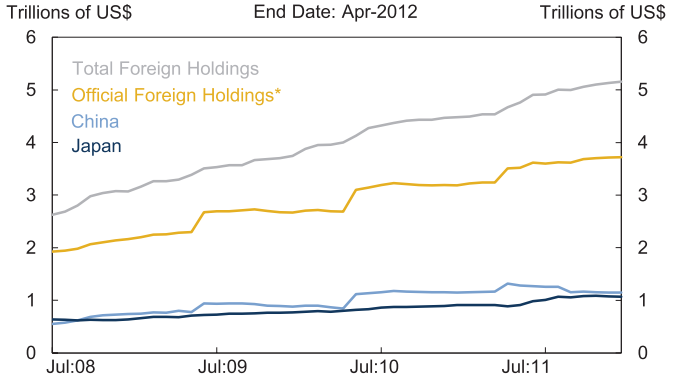
Source: U.S. Department of Treasury

Chart 5.1.2 Yield Curve



Source: U.S. Department of Treasury

Chart 5.1.3 Foreign Holders of U.S. Federal Debt



*Official institutions = governments and multinational institutions involved in international monetary policy.

Source: U.S. Department of Treasury

Note: Data based on annual survey results. June benchmark surveys each year represent most accurate information.

BOX A: IMPACTS OF DOWNGRADE OF U.S. TREASURY SECURITIES

On August 5, 2011, Standard & Poor's (S&P) lowered their long-term sovereign credit rating on the United States of America to AA+ from AAA and reaffirmed their short-term rating of A-1+. S&P stated that the downgrade reflected their opinion that the Budget Control Act, which was signed into law on August 2, fell short of what would be "necessary to stabilize the government's medium-term debt dynamics." They further stated that, "More broadly, the downgrade reflects our view that the effectiveness, stability and predictability of American policymaking and political institutions had weakened at a time of ongoing fiscal and economic challenges."

Before the downgrade, there was significant market focus on the debt ceiling debate in Congress. As the deadline approached, there were dislocations in the front end of the Treasury yield curve, and some T-Bill yields rose dramatically then normalized after the debt limit was raised.

Because of widespread speculation in the market that S&P would take action, and the relatively minor scale of the downgrade, Treasury market participants were prepared, and there were no reports of forced selling. Also, many institutions' portfolio restrictions specifically carved out "obligations of the U.S. government" rather than specifying a level or degree of credit rating.

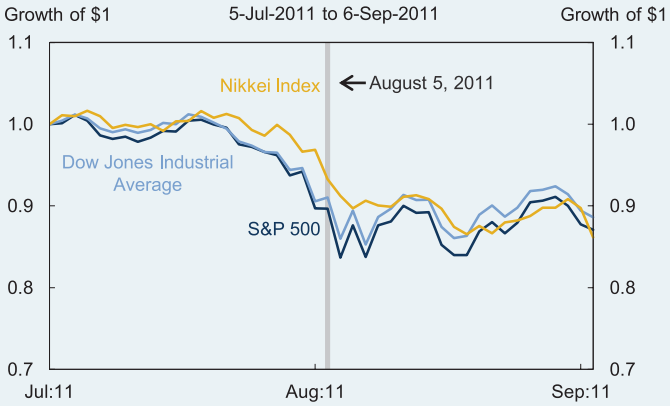
Treasury yields fell immediately following the downgrade, while major stock indices declined, indicating that investors were less concerned with the inherent riskiness of Treasury securities than with the potential consequences of fiscal retrenchment for the near-term macroeconomic recovery. Specifically, on Monday August 8 (the business day immediately following the downgrade), the 10-year Treasury yield closed down 24 basis points. The cumulative yield changes through August 11 for the two-year, five-year, and ten-year yields were -10 basis points, -23 basis points, and -22 basis points, respectively **(Chart A.1)**. Risky securities lost value following news of the downgrade, with the S&P 500 index registering a 6.8 percent decline and the Nikkei index falling by 2.2 percent by close of trading August 8 **(Chart A.2)**.

Chart A.1 S&P Downgrade of U.S. Debt: Flight to Quality

Source: Bloomberg, Haver Analytics

*Note: Spread to Treasuries.

Chart A.2 S&P Downgrade of U.S. Debt: Effect on Equities



Source: Bloomberg

In addition to the U.S. sovereign rating, several other entities were downgraded shortly after August 5. These included clearinghouses, highly rated insurers, and various government related entities and their debt.

There was little market reaction to a move by the Chicago Mercantile Exchange (CME) to increase haircuts on U.S. Treasury securities just before the downgrade, and most clearinghouses did not adjust their haircuts on Treasury securities even after the downgrade.

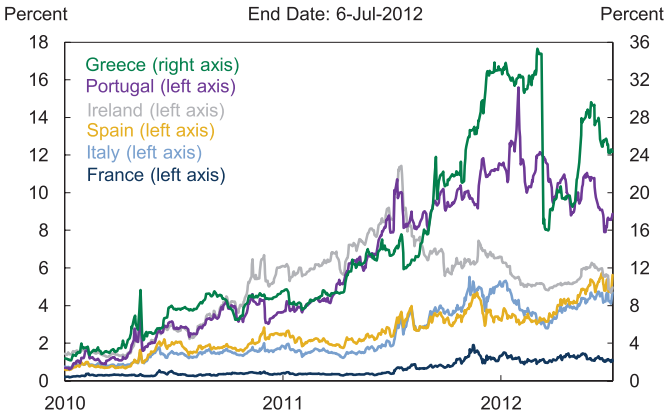
European Sovereign Debt

Over the last 12 months, the European fiscal crisis intensified as concerns about the sustainability of public finances in peripheral European countries escalated and banks struggled to obtain financing. (See Section 4.4.) In July 2011, euro area authorities proposed a voluntary debt exchange on Greek sovereign bonds. This, along with weakening growth prospects and fiscal slippage, led to a surge in Greek government bond yields **(Chart 5.1.4)**.

As discussed in Section 4.4, European authorities responded to these developments with a number of policy measures. The private sector exchange of Greek sovereign debt, which was largely concluded in March of this year, involved a significant principal write-down and additional official disbursements of aid financing through early 2016. The insertion and triggering of collective action clauses for the purpose of the debt exchange caused credit default swaps (CDS) contracts written on Greek sovereign debt to be triggered, which occurred without any significant market disruptions. The participation rate in this exchange was over 95 percent. **(See Box B: Greek Sovereign Debt Restructuring.)**

More recently, market pressure on Spain intensified. On May 11, the Spanish government announced a series of measures to address vulnerabilities in the Spanish banking sector, including enhanced provisioning requirements on real estate related loans, clear separation of problem real estate assets into independently managed asset management vehicles, and plans to have independent external auditors evaluate the quality of bank assets. This was followed two weeks later by an unexpectedly large capital support request from Bankia, Spain's fourth largest bank, and on June 9 by Spain's announcement of its intent to request European support for bank recapitalization (for which European authorities agreed to provide up to €100 billion). **(See Box C: Recent Fiscal and Banking Developments in Spain.)**

Chart 5.1.4 Euro Area 10-Year Yield Spreads to German Debt



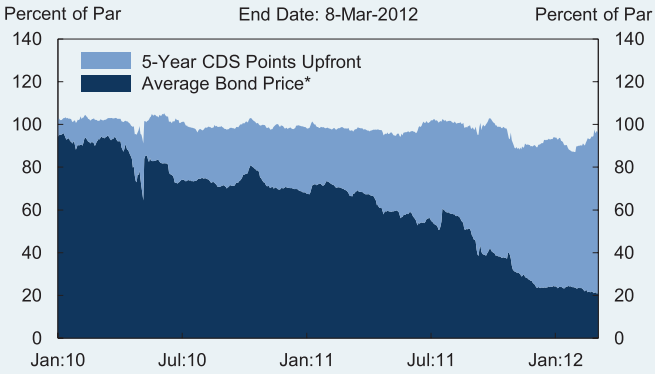
Source: Bloomberg

Note: After Oct-2011, Ireland switched to a 9-yr benchmark bond. Other series are 10-yr benchmark yields.

BOX B: GREEK SOVEREIGN DEBT RESTRUCTURING

In March and April 2012, Greece restructured approximately €199 billion in government and government-guaranteed debt through a discounted exchange of instruments. Due to the use of collective action procedures, the restructuring was subsequently deemed a credit event by the International Swaps and Derivatives Association (ISDA), triggering payouts on Greek credit default swaps (CDS). In the aftermath of the Greek restructuring event, the CDS market largely functioned as intended. Despite early attempts to achieve a purely voluntary restructuring that would have circumvented a CDS trigger, low preliminary participation rates indicated a need to trigger collective action clauses to force higher participation, which in turn triggered CDS payouts **(Chart B.1)**.

Chart B.1 Greece: Average Bond Price and CDS

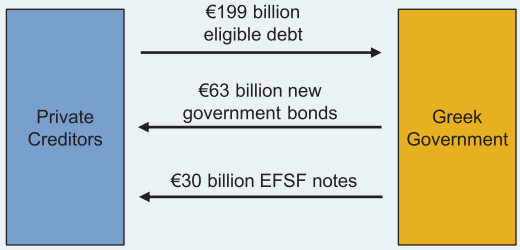


Stacked chart: points upfront plus price sum to approximately 100.
*Unweighted average, constructed hybrid of pre- and post-exchange bonds.

Source: Bloomberg, Markit

The exchange reduced Greece's debt held by the private sector by €106 billion, equivalent to 53.5 percent of the tendered debt. Creditors participating in the exchange received a combination of new Greek government bonds (31.5 percent for a total of €63 billion) and short-term European Financial Stability Facility (EFSF) notes (15 percent for a total of €30 billion) **(Chart B.2)**. Participating creditors also received detachable GDP warrants, which pay up to 1 percent of the outstanding bonds' face amount in years when real GDP growth and nominal GDP exceed specified targets. Taking into consideration the lower coupons and extended maturities of the new bonds, the exchange entailed net present value losses for participating creditors estimated at 75-80 percent. CDS protection sellers subsequently paid out only an estimated $2.5 billion to protection buyers, reflecting the relatively small net exposure to outstanding CDS contracts.

Chart B.2 Greece: Debt Exchange



Source: Greek Public Debt Management Agency, FRBNY calculations

As with all International Monetary Fund (IMF) programs, sustainable debt dynamics were a pre-condition for European Union (EU) and IMF lenders to disburse funds under a second official sector aid program. Greece's debt restructuring helped to achieve this, putting Greece's high public debt burden (165 percent of GDP in 2011) on a path toward 120 percent by 2020. Although the debt exchange substantially reduced Greece's outstanding debt to private sector creditors, Greece's overall debt burden is expected to remain quite heavy, reflecting continued borrowing from official sector creditors to finance the debt exchange, bank recapitalization costs related to losses resulting from the debt exchange and deteriorating asset quality, and continued deficit financing. As a result, public sector creditors are projected to hold nearly three-quarters of Greek sovereign debt by end of 2012. The new Greek bonds trade at distressed levels; yields hovering near 20 percent reflect Greece's heavy indebtedness and the high degree of uncertainty about the outlook for implementation of Greece's reform program. On June 17, parties supporting the EU/IMF aid program won enough seats in the Greek Parliament to form a governing majority, easing fears about a near-term exit from the euro and confirming Greece's commitment to reform.

The strains in the peripheral euro area sovereign debt and bank funding markets also caused additional pressure in some core countries, such as France. In August 2011, the central banks of the euro system recommenced purchasing euro area sovereign bonds, including Spanish and Italian bonds, in the context of the Securities Markets Programme (SMP), to address the severe tensions in some market segments that had been hampering monetary policy transmission. This activity occurred in the context of intensified strains in peripheral sovereign debt markets, widening credit spreads and bid-ask spreads, particularly for Spanish and Italian sovereign debt, and sharply higher liquidity risk premia. As funding markets tightened further, euro area governments announced plans for enhanced fiscal and structural reforms, while central banks announced the extension and repricing of U.S. dollar swap lines, and the European Central Bank (ECB) implemented two unprecedented three-year longer-term refinancing operations (LTROs), as discussed in Section 4.4.

These various measures helped stabilize markets in late 2011 and early 2012, as new governments were elected in Spain and Italy. However, general uncertainty over conditions in the euro area has increased once again over the past few months, as the sustainability of the strategies currently being undertaken in the hardest hit countries is called into question. Sovereign debt and bank credit spreads increased for Spain and Italy, after having narrowed over the first quarter of 2012. Credit spreads remain elevated in many sovereign debt and bank funding markets—notably for bank maturities beyond the ECB LTRO period of three years—and market functioning remains irregular with marked recent pressure on spreads in Italy and Spain. The primary buyers of Italian and Spanish sovereign debt in recent months have been their own domestic banks, which in turn rely on ECB financing and support. Private foreign investors, such as prime money market funds (see Section 5.3), have continued to reduce participation in euro area

BOX C: RECENT FISCAL AND BANKING DEVELOPMENTS IN SPAIN

Spain announced on June 9 that it intends to request European Union (EU) assistance to recapitalize its troubled banking sector. Euro area finance ministers indicated they would support the request for up to €100 billion (10 percent of GDP), which is expected to cover estimated stress-case capital needs plus an additional safety margin. On June 21, independent consultants engaged by the Spanish government estimated the recapitalization needs of Spanish banks at up to €62 billion under an adverse macroeconomic scenario. The formal request is expected to follow this estimate, which is within the range of most private estimates of capital needs (€50 billion to €100 billion). Although the announcement stipulates that no additional explicit conditionality will be imposed with regards to fiscal policy, Spain must meet existing fiscal and structural reform commitments, which were previously agreed with the EU.

On June 29, euro area heads of government agreed to use euro area funds to support Spanish banks. The region's finance ministers subsequently announced that the agreement would be signed on July 20 and an initial tranche of €30 billion would be disbursed by the end of July. The funds will be channeled through the EFSF to the Spanish government, and then transferred to the European Stability Mechanism (ESM) once it is fully operational. Direct ESM funding to Spanish banks will become available only after the establishment of a single supervisory mechanism for euro area banks. It was further agreed that aid for the Spanish banking sector would not be subject to the preferred creditor status embedded in the ESM treaty.

Separately, Moody's, S&P, and Fitch downgraded the Spanish sovereign by several notches into the BBB range within the last two months, largely reflecting concerns about the Spanish banking sector and fiscal performance. The sovereign downgrades were followed by downgrades of the banks themselves. Notably, the International Monetary Fund (IMF) concluded from its stress tests that Spain's largest banks appear sufficiently capitalized to withstand a significantly weaker macroeconomic environment, given their substantial earnings generation from international operations.

Concern about Spanish fiscal performance has persisted, fueling doubts about the prudence of adhering to strict budget targets amid deepening recession. As a result, euro area finance ministers agreed on July 9 to ease Spain's deficit objectives, raising the 2012 target by one percentage point to 6.3 percent of GDP and giving the government an additional year—to 2014—to lower the deficit below 3 percent of GDP. The agreement will be made official at the next Eurogroup meeting on July 20.

The relaxation of fiscal targets follows two revisions to the 2011 fiscal deficit. On May 20, the Spanish government revised its 2011 budget deficit upward to 8.9 percent of GDP from a previous 8.5 percent estimate, a major deviation from the 6 percent target. Both the overrun and the latest revision were driven by the deficits of regional governments, exposing the difficulty of reining in these regional deficits. Market reaction to developments in Spain subsequent to the assistance request was generally negative, with yields on 10-year Spanish sovereign debt exceeding 7 percent, a euro era high.

sovereign and bank funding markets. European pension funds and insurance companies also have reduced exposures to the periphery, including to Spanish and Italian sovereign debt.

Other Sovereign Debt

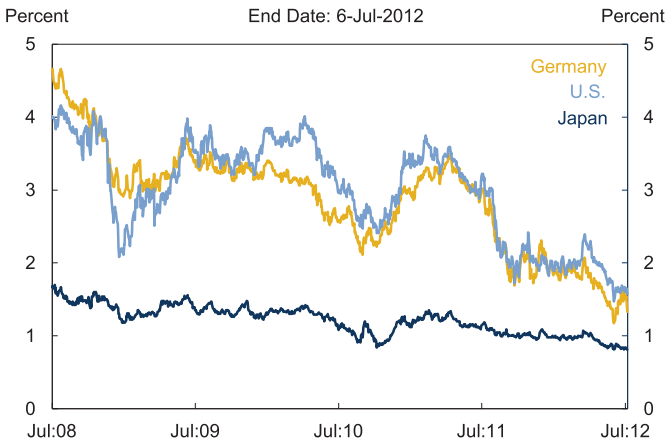
The decline in yields across a range of developed countries' sovereign bonds has been further reinforced by strong investor interest in high credit quality assets and more accommodative monetary policies. Through early July 2012, 10-year nominal U.S. Treasury yields had declined more than 150 basis points since July 2011, in part reflecting both the lower expected path of short-term interest rates and a fall in the term premium. The pattern of decline in yields has been similar for German, Swiss, and U.K. sovereign debt. In Japan, 10-year sovereign debt yields, which were already close to 115 basis points, declined more modestly to just below 85 basis points over the same period **(Chart 5.1.5)**.

Emerging European market spreads to Treasury yields as measured by the Emerging Markets Bond Index Plus (EMBI+), have widened over 100 basis points over the past year through early July—largely in line with U.S. BBB corporate credit spreads—reflecting global growth concerns and the pull-back in risk appetite, as well as specific developments in certain countries. The spreads on bonds for other emerging markets also fluctuated in response to stresses and policies in external markets **(Chart 5.1.6)**. Some differences across emerging market economies are likely associated with country risk and growth prospects, as well as their policies for managing capital inflows and outflows.

5.1.2 Other Asset Markets

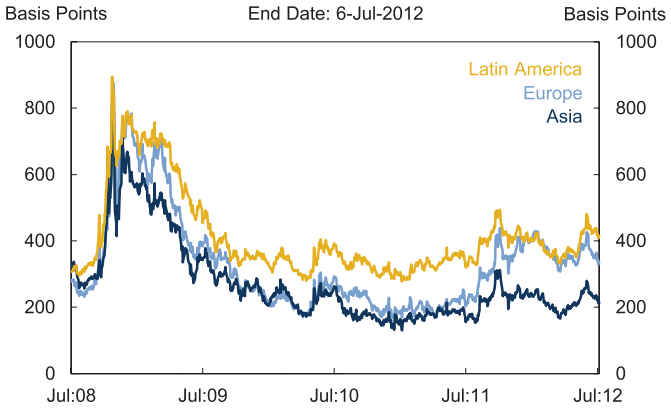
Asset markets outside of sovereign debt have also been heavily influenced by developments in the euro area and the growth outlook, with the notable exception of agricultural land and some commodities. Corporate debt spreads widened over the past 12 months, with spreads for financial firms increasing more than for nonfinancial firms. The dollar appreciated against the euro, reflecting continued concerns with euro area peripheral sovereign debt.

Chart 5.1.5 10-Year Sovereign Debt Yields



Source: Financial Times, Haver Analytics, U.S. Department of Treasury

Chart 5.1.6 Emerging Market Bond Spreads



Source: JP Morgan, Haver Analytics

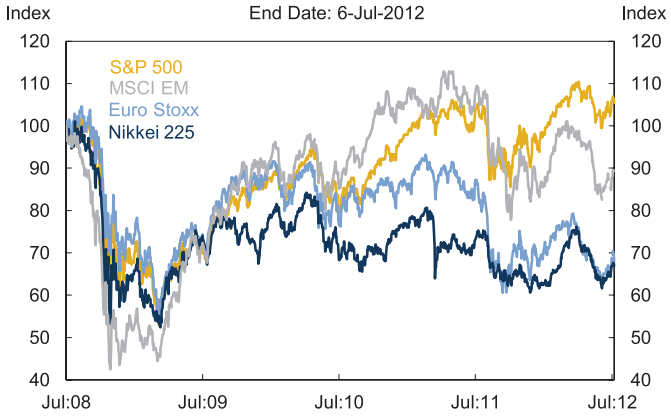
Note: JP Morgan EMBI+ Sovereign Spreads indices for each region.

Chart 5.1.7 Price Changes in Selected Equities Indices

	Change from 30-Jun-2011 to 6-Jul-2012	Change from Post-Crisis Low to 6-Jul-2012
Major Economies		
U.S. (S&P)	-3%	100%
Euro (Euro Stoxx)	-22%	24%
Japan (Nikkei)	-8%	28%
U.K. (FTSE)	-5%	61%
Selected Europe		
Germany (DAX)	-13%	75%
France (CAC)	-20%	26%
Italy (FTSEMIB)	-32%	9%
Spain (IBEX)	-35%	11%
Emerging Markets		
Brazil (Bovespa)	-12%	87%
Russia (RTS)	-29%	173%
India (Sensex)	-7%	115%
China (Shanghai SE)	-19%	30%

Source: Capital IQ

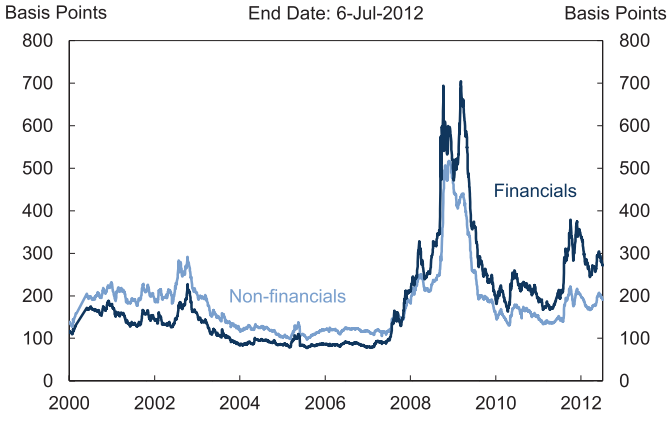
Chart 5.1.8 Global Equities



Source: Capital IQ

Note: 1-Jul-2008 = 100.

Chart 5.1.9 U.S. Corporate Bond Spreads—Investment Grade



Source: JP Morgan

Equities

U.S. equity markets outperformed other major equities markets from mid-year 2011 through early July 2012 after a period of considerable volatility **(Chart 5.1.7)**. Equity markets in advanced and emerging economies fell sharply in the third quarter of 2011 as numerous concerns—including the unfolding European crisis, the sustainability of U.S. fiscal policy, and a slowdown in global growth—weighed on sentiment **(Charts 5.1.8)**. By early October 2011, the S&P 500 was around 17 percent below its level at the end of June 2011. The Euro Stoxx index declined around 27 percent over the same period, reflecting outsized declines in peripheral equity markets. As concerns subsequently eased during the first quarter of 2012, buoyed in part by global central bank actions and ongoing signs of economic recovery in the United States, U.S. equity markets reported strong gains. However, much of these recent gains in the United States have reversed following weaker than expected data on the U.S. recovery, weak global economic data and renewed concerns about the European crisis. As of July 6, 2012, the S&P 500 was nearly 4 percent lower than at the end of the first quarter of 2012, and European stocks fell almost 10 percent over the same period.

Corporate Bonds

Corporate bond spreads to sovereign equivalents in the United States and Europe have generally widened since mid-2011, although this development has been less pronounced in the United States. A particular feature has been the large divergence between spreads on debt issued by financial firms versus nonfinancial firms, as investors focus on risks associated with the financial sector **(Chart 5.1.9)**. A similar pattern can be found in the relative increase in CDS spreads of financial firms over nonfinancial firms. Issuance of covered bonds has outpaced unsecured debt issuance in a number of European banking systems, reflecting increased concerns about the creditworthiness of these institutions. Overall, U.S. dollar corporate bond issuance has rebounded strongly in 2012, particularly among nonfinancial issuers.

Foreign Exchange

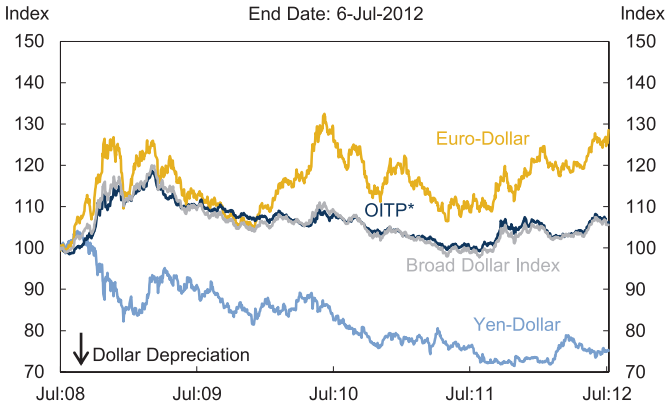
Over the past 12 months, foreign exchange markets were strongly influenced by euro area developments and monetary policy expectations. The euro broadly declined over the second half of 2011 and first half of 2012, with downside pressure against the major currencies particularly evident late in 2011 and 2012:Q2. In dollar-euro markets, bid-ask spreads widened slightly and options markets placed above average value on protection from further euro depreciation. Within Europe, the sharp depreciation against the safe haven of the Swiss franc prompted a strong market intervention by the Swiss National Bank in August and early September 2011, culminating with the establishment of a floor for the euro-franc exchange rate. Downside pressure on the euro against major currencies abated somewhat in early 2012, particularly against the yen. The Bank of Japan had intervened in foreign exchange markets in late October through early November 2011, selling yen and buying dollars, and also engaged in further monetary easing through the end of April 2012. The improvement in risk tone over that period was also associated with a partial rebound in many emerging market currencies, after they had depreciated sharply in the second half of 2011 as reflected in the other important trading partners (OITP) and broad dollar indices **(Chart 5.1.10)**. More recently many emerging market currencies fell against the dollar, prompting intervention by some of these countries to support their currencies.

Overall, between July 2011 and July 2012, the U.S. dollar appreciated by nearly 15 percent against the euro, was broadly unchanged against the yen, and appreciated against most emerging markets currencies. Options markets are again placing a relatively high value on protection against euro depreciation, as measured by the price differential between out-of-the-money puts and calls.

Commodities

Commodity prices have displayed elevated volatility for the past several years, driven by

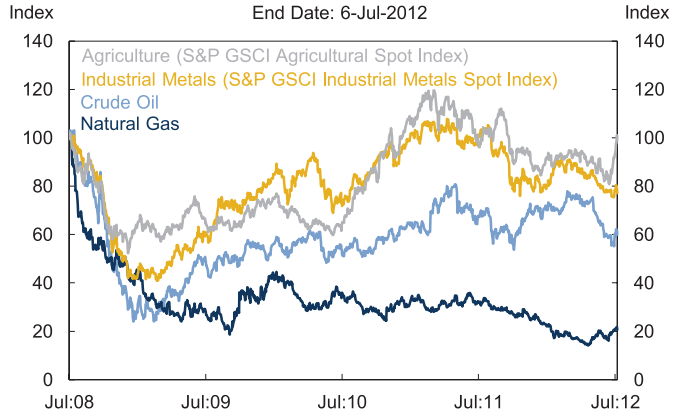
Chart 5.1.10 U.S. Dollar Exchange Rates



Source: Bloomberg, Federal Reserve

Note: 1-Jul-2008 = 100. *Other Important Trading Partners – a weighted average of the FX values of the dollar against a subset of currencies in the broad index that do not circulate widely outside the country of issue.

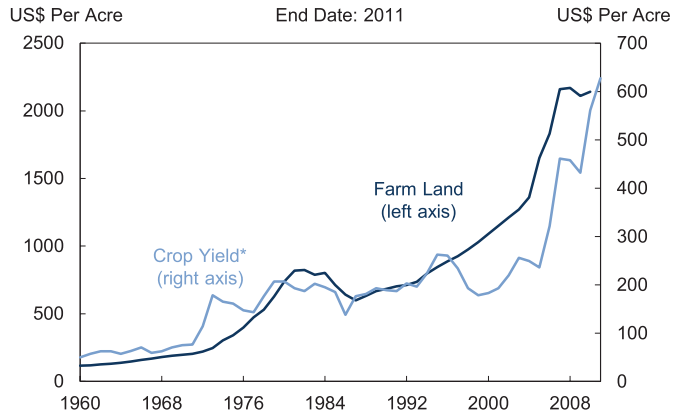
Chart 5.1.11 Commodities



Source: Bloomberg

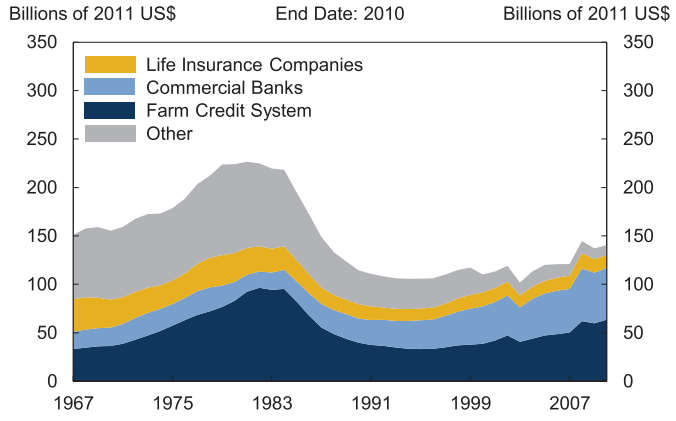
Note: 1-Jul-2008 = 100.

Chart 5.1.12 Farm Land Prices and Value of Crop Yield



Source: USDA, FSOC Calculations *Note: US$ value of crops grown per acre.

Chart 5.1.13 Agricultural Real Estate Debt Outstanding



Source: USDA, Haver Analytics

market-specific fundamental factors as well as broader global growth concerns and risk sentiment. Oil prices were near their three-year highs early in 2012, with continued geopolitical uncertainty in the Middle East raising concerns over global supply and limited spare capacity. More recently, however, prices moderated slightly. In the United States, nominal gasoline prices were also near historic highs early in 2012 but have likewise moderated. Natural gas prices almost halved over the past year on expectations of increased supply arising from hydraulic fracturing technology **(Chart 5.1.11)**, though prices increased again through July 6, albeit from quite a low base, as result of announced cutbacks in drilling and some signs of accelerated coal-to-gas switching activity. Industrial metal prices have also declined since June 2011, with the majority of the fall occurring in the third quarter of 2011, when global growth fears were most pronounced. This period was also associated with marked strength in gold prices. Commodity markets continued to function well with only limited impact from the bankruptcy of MF Global*, despite its role as a futures clearing merchant in these markets. **(See Box D: MF Global Bankruptcy.)**

Agricultural Land

Agricultural land values are estimated to have increased further through mid-2011, driven by increasing crop yields, rising commodity prices, favorable crop export conditions, and low interest rates **(Chart 5.1.12)**. Adjusting for commodity prices and improvements in crop yields, agricultural land values have retreated somewhat from the record highs reached in 2005 and 2006. Price-to-rent ratios for agricultural land are at multi-decade highs for a number of Corn Belt and Plains states but have moderated from peaks for the United States as a whole.

Currently, aggregate incomes in the U.S. farm sector are performing well, forecasts for production and demand are positive, and debt levels in general do not appear to have

* Chairman Gensler did not participate in the preparation or review of the portions of this report specifically regarding MF Global.

been rising sharply. Adjusting for inflation, current agricultural real estate debt levels remain significantly below the levels of the late 1970s **(Chart 5.1.13)**. The Farm Credit System and community banks that specialize in agriculture lending have the bulk of exposures to agricultural land. Delinquency rates on real estate farm loans at commercial banks declined in recent quarters to about 3 percent at the end of 2011, slightly above the historical average of about 2.6 percent over the past 20 years.

5.1.3 Wholesale Funding Markets

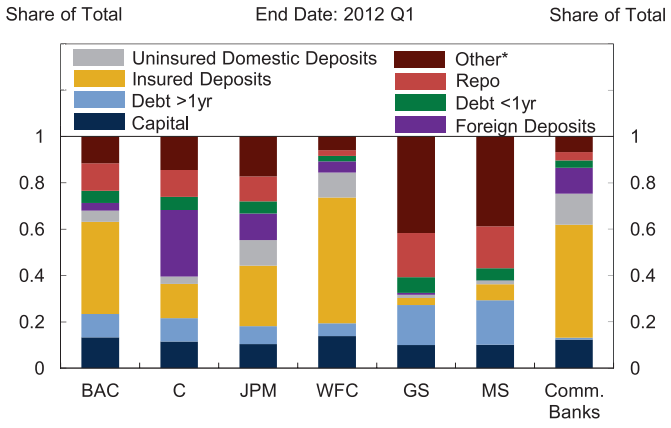
Use of short-term wholesale funding has dropped significantly, with declines in outstanding volumes of both repurchase agreements and corporate paper. This development is likely to enhance stability of funding for financial institutions, as these entities shift to more stable funding sources such as retail deposits. However, this shift is partially due to market reaction to uncertainty and flight to safety, and it could be retraced as these uncertainties abate.

Short-Term Wholesale Funding Markets Overview

Short-term wholesale funding markets, which include large time and checking deposits, repurchase agreements (repos), and commercial paper, provide financial intermediaries with funds that supplement retail deposits to support their activities **(Chart 5.1.14)**. Sources of lending in the wholesale short-term funding markets are largely wholesale cash pools, including cash on the balance sheets of nonfinancial companies, reinvestments of cash collateral from securities lending, cash held by long-term mutual funds, and money market funds. These sources of funds have grown markedly as a percentage of GDP over the past two decades, although this percentage has been declining through the first quarter of 2012 **(Chart 5.1.15)**. Nonfinancial corporate cash, in particular, has been growing at an accelerating rate, a pattern that continued through early 2012.

Measures of reliance on short-term wholesale funding of domestic banking firms continue to decline and remain well below their peaks in 2008 **(Chart 5.1.16)**. Slow growth in loans

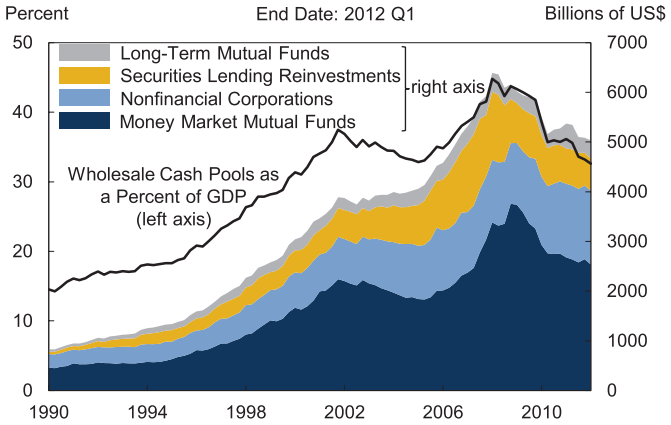
Chart 5.1.14 Large Bank Holding Company Liability Structure



Source: FDIC, FR Y-9C

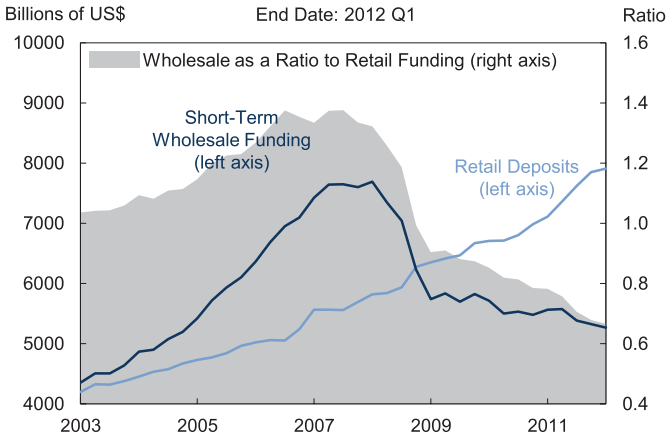
* Other = commercial paper, derivative payables, securities sold short and everything categorized as "Other" reported in FR Y-9C.

Chart 5.1.15 Wholesale Cash Investors



Source: Flow of Funds, Haver Analytics

Chart 5.1.16 Retail Deposits vs. Short-Term Wholesale Funding



Source: Flow of Funds, FDIC, Haver Analytics

relative to large deposit inflows, which have been bolstered by the FDIC's temporary unlimited insurance coverage for non-interest-bearing transaction deposits, also supported this decline.

Recent LIBOR Investigations

Recent investigations into possible manipulation of the London Interbank Offered Rate (LIBOR) underscore the importance of effective control processes to help ensure the integrity of funding markets. LIBOR rates serve as reference rates for most interest rate derivatives and variable rate loans. However, LIBOR rates are not transaction rates. Rather, the LIBOR rate for a given currency and tenor is calculated based on the rates submitted by a panel of member banks each morning to the British Bankers' Association (BBA). The accuracy of LIBOR as a measure of interest rates in the London interbank market depends crucially on the accuracy of banks' responses to the BBA survey.

While media reports of anomalies in the LIBOR rates have surfaced as far back as 2007, concerns with the integrity of the LIBOR process escalated in late June 2012. Specifically, on June 27, in an internationally coordinated enforcement effort, the CFTC, U.S. Department of Justice (DOJ) and the United Kingdom Financial Services Authority (FSA) each announced actions finding that Barclays had provided false information to the BBA surveys and attempted to manipulate LIBOR and another benchmark, the Euro Interbank Offered Rate (Euribor), on numerous occasions and sometimes on a daily basis over a four-year period, commencing as early as 2005. In addition, certain Barclays euro swaps traders, led at the time by a senior trader, coordinated with and aided and abetted traders at other banks in attempts to manipulate Euribor. Among other things, Barclays improperly made submissions both to benefit its derivatives trading positions and to protect against negative perceptions of the bank's health.

Barclays entered into settlement agreements with the CFTC, DOJ and FSA. The CFTC

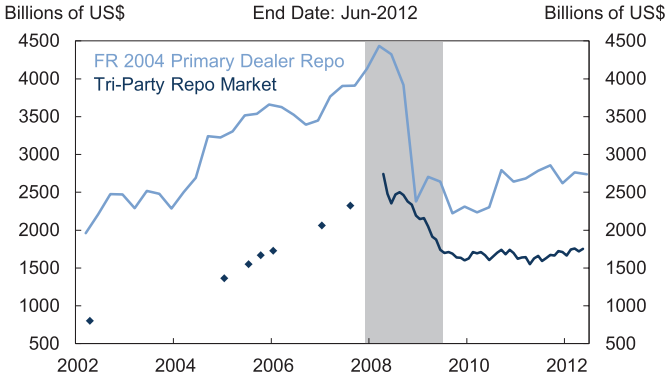
imposed a $200 million penalty and issued an Order requiring Barclays to implement measures to help ensure that its submissions are transaction focused, based upon a rigorous and honest assessment of information and not influenced by conflicts of interest. Among other undertakings in the CFTC Order, in making submissions, Barclays transactions will be given the greatest weight subject to certain specified adjustments and considerations. In addition, Barclays was ordered to implement firewalls to prevent improper communications and submissions. As part of a non-prosecution agreement, the DOJ ordered Barclays to pay a $160 million penalty. In its action, the FSA imposed a penalty of £59.5 million.

Repo Markets

The overall repo market is composed of both bilateral transactions negotiated between two market participants and tri-party repo transactions in which the exchange of cash and collateral is administered by a clearing bank. The size of the overall repo market is difficult to measure, due to issues related to netting and accounting conventions. Additionally, existing data do not provide adequate visibility into the composition of repo activity. **Chart 5.1.17** displays two measures of the size of the repo market: tri-party repos and primary dealer repos, which include both tri-party and bilateral repos. According to both measures, the overall volume of repo activity remains substantially below that seen in the run-up to the crisis. In particular, tri-party repo activity peaked in 2008 at $2.7 trillion and fell below $1.8 trillion in the years since the end of the recession, well below pre-crisis levels.

As the volume of tri-party activity has declined, so has the level of traditional and non-traditional collateral in tri-party since July 2008. Traditional collateral consists of Treasury securities, agency mortgage-backed securities (MBS), agency debentures, and agency collateralized mortgage obligations (CMOs). Non-traditional collateral includes corporate bonds, equities, private label CMOs, asset-backed securities (ABS), commercial paper

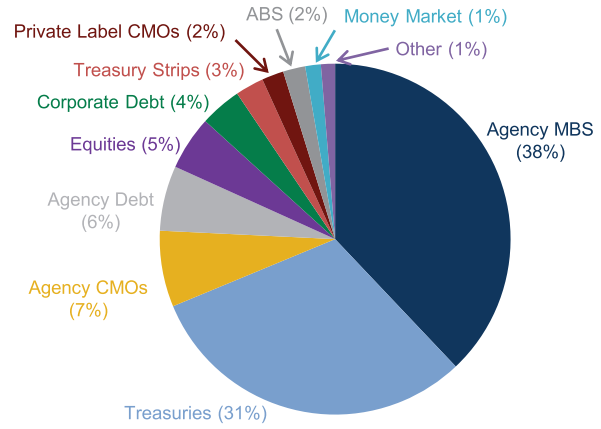
Chart 5.1.17 Estimated Value of the Repo Market



Source: FRBNY White Paper, Tri-Party Repo Infrastructure Reform Task Force, Flow of Funds, Haver Analytics

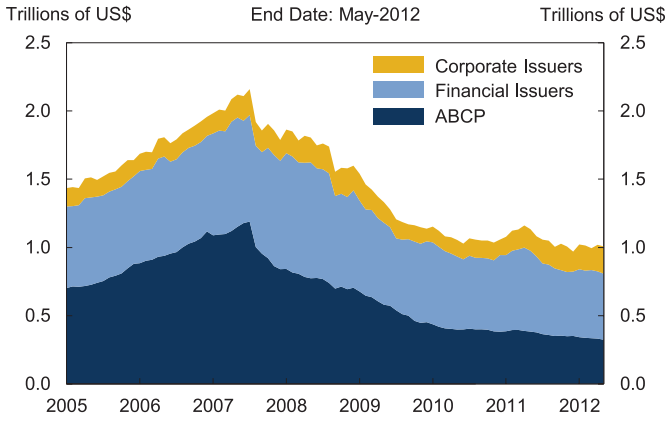
Note: Limited data were provided by clearing banks prior to April 2008. These figures are estimates based on the data provided. Gray bar signifies NBER recession.

Chart 5.1.18 Tri-Party Repo Collateral Distribution



Source: Tri-Party Repo Infrastructure Reform Task Force As Of: May-2012

Chart 5.1.19 Commercial Paper Outstanding



Source: Federal Reserve, Haver Analytics

(CP), other money market instruments, whole loans, and municipal bonds. Non-traditional collateral accounts for only 16 percent of tri-party collateral as of May 2012 **(Chart 5.1.18)**, down from 21 percent of the total in May 2011 and 25 percent in July 2008. Among traditional collateral in the tri-party repo market, the share of Treasury securities has increased at the expense of agency paper, consistent with relative shifts in supply and flight-to-quality in recent years. Most types of non-traditional collateral have fallen significantly, with private CMOs declining the most.

There are considerable concerns about structural weaknesses in the tri-party repo market. **(See Box G: Ongoing Vulnerabilities in the Tri-Party Repo Market.)**

Commercial Paper and Asset-Backed Commercial Paper

CP outstanding peaked at $2.2 trillion in July 2007 and stood at $1.0 trillion at May-end 2012 **(Chart 5.1.19)**. As of May 2012, asset-backed commercial paper (ABCP) accounts for 32 percent of the market, financial commercial paper accounts for 48 percent, and nonfinancial corporate commercial paper accounts for 20 percent. Financial CP and certificates of deposit (CDs) outstanding are around 40 to 50 percent below their pre-crisis peaks and, in recent months, financial commercial paper outstanding has continued to decline, largely due to reduced demand from investors for foreign bank commercial paper.

ABCP was only about 6 percent of the total commercial paper market in 1990, but it accounted for about 60 percent of the total market in mid-2007, or approximately $1.2 trillion. The market has shrunk steadily and, as of the beginning of July 2012, it is currently at about $311 billion outstanding, with foreign bank sponsored conduits comprising the majority of the market. The Moody's downgrade of 15 large U.S. and European banks in June 2012, discussed in Section 5.2, also resulted in the downgrade of 18 ABCP conduits that rely on these banks for liquidity support. The

affected conduits have a combined value of almost $70 billion. These downgrades elicited a noticeable market response, with an increase in the cost of funding these conduits.

Securities Lending

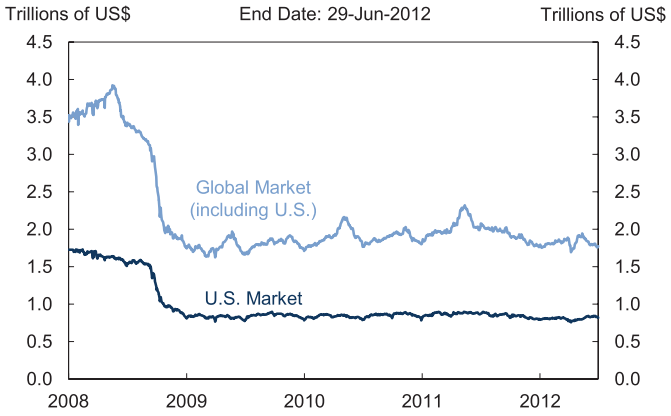
Securities lending is a transaction involving the temporary transfer of a security by one party (the lender) to another (the borrower), in exchange for collateral in the form of either cash or non-cash instruments. Institutions may want to borrow securities to facilitate short selling, for derivative hedges, or to avoid failing on a delivery. The main lenders of securities are institutional investors, such as pension plans, investment funds, and insurance companies. The main borrowers are hedge funds, broker-dealers, asset managers, derivatives traders, and market makers. Most domestic securities lending is done against cash collateral. Typically, the lender of a security pays an interest rate to the borrower for the cash collateral. Lenders, in turn, seek to earn an additional return by investing this cash in a variety of instruments.

The global value of securities lending transactions remained fairly flat through June 2012 at an average value below $2 trillion **(Chart 5.1.20)**. The total market value of securities on loan in the United States was about $820 billion at the end of the second quarter of 2012. About 50 percent of the total U.S. market is represented by U.S. government securities, about 40 percent by equities, and the rest by fixed income securities. Reinvestment of cash collateral from securities lending declined in volume over the past year from $775 billion in 2011:Q1 to $670 billion in 2012:Q1. In addition, the weighted average maturity of such cash reinvestment declined markedly in late 2011, likely in response to concerns associated with the euro area debt situation **(Chart 5.1.21)**.

5.1.4 Housing Markets

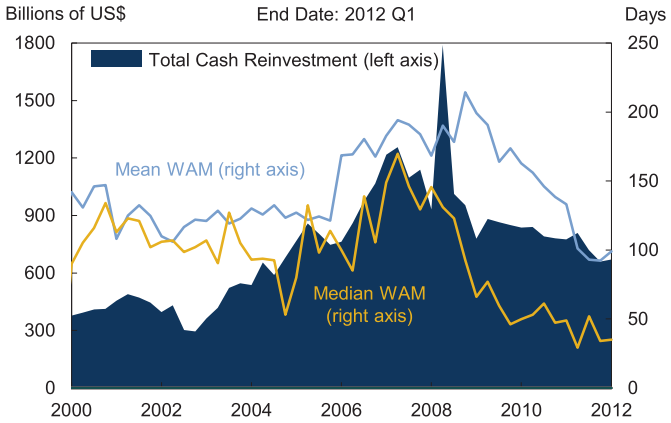
The housing market remains stressed. However, national home prices show signs of stabilizing after a long-term decline, and some measures of house prices have shown upticks recently. Housing markets

Chart 5.1.20 Value of Securities on Loan



Source: Markit

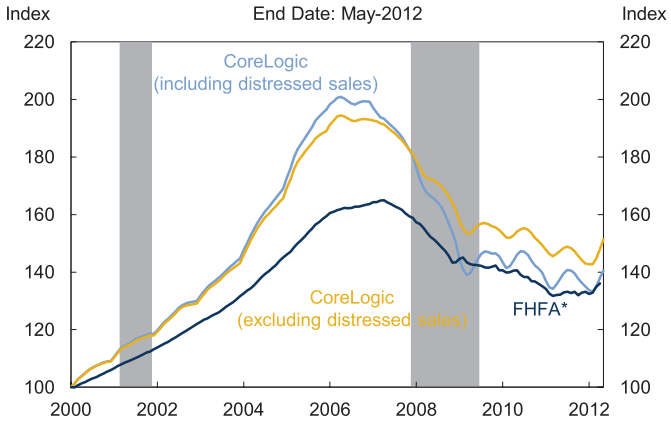
Chart 5.1.21 Securities Lending Cash Reinvestment



Source: The Risk Management Association

Note: WAM = weighted average maturity.

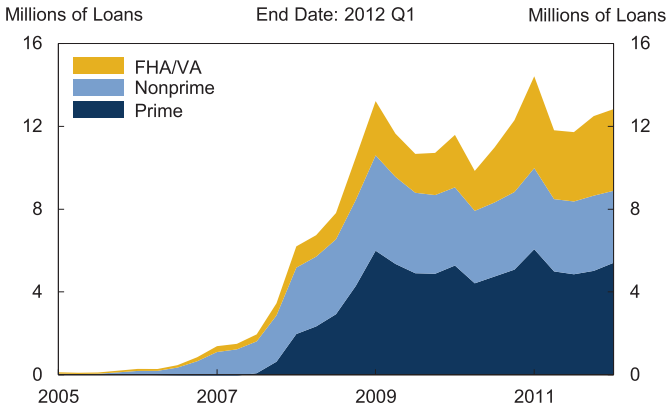
Chart 5.1.22 National Repeat Sales Home Price Indices



Source: FHFA, CoreLogic, FSOC Calculations

Note: Jan-2000 = 100. *Seasonally Adjusted. Gray bars signify NBER recessions.

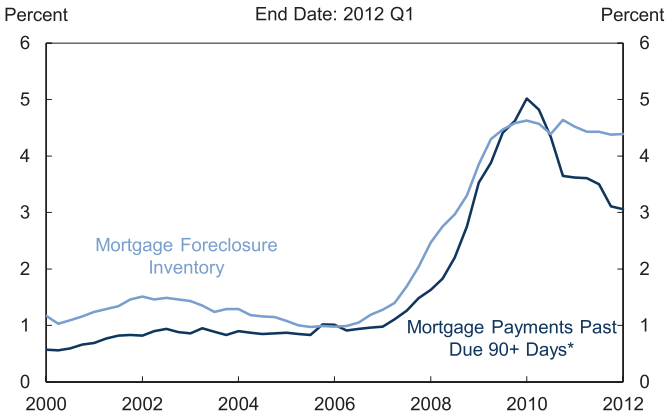
Chart 5.1.23 Mortgages with Negative Equity



Source: LPS Applied Analytics, CoreLogic

Note: Likely understated because of incomplete data on junior liens.

Chart 5.1.24 Mortgage Delinquency and Foreclosure



Source: Mortgage Bankers Association, Haver Analytics

Note: Percent of all mortgages. *Seasonally Adjusted.

continue to be weighed down by elevated inventories of foreclosed homes, homes in the foreclosure process, and homes in danger of foreclosure, although the latter has been decreasing over the past year. In addition, the inventory of existing homes for sale has continued to decline and now stands at levels comparable to 2004. Despite the overall improvement in economic and financial market conditions and historically low interest rates, access to residential mortgages remains constrained. The public sector continues to offer solutions aimed at stabilizing the housing markets by providing refinancing and modification options to prevent additional foreclosures.

Housing Market Overview

Housing activity remains at a historically low level. Home prices continued to decline through late 2011, though early 2012 showed signs of stabilization, including a rise in some housing price indices **(Chart 5.1.22)**. National house prices are still as much as 30 percent below their peak in 2006. Going into the second quarter of 2012, nearly 13 million homeowners had mortgage balances exceeding the values of their homes, a condition known as "negative equity" **(Chart 5.1.23)**. Although housing starts and existing home sales remain significantly below pre-crisis highs, they have risen by more than 30 percent from their respective 2009 and 2010 lows through April 2012. The inventory of existing homes for sale has declined significantly over the last two years and is currently comparable to levels last seen in 2004.

Indicators of credit quality in the residential mortgage sector continue to reflect the challenges confronting homeowners and lenders. The fraction of mortgages that are delinquent more than 90 days but not yet in foreclosure is sometimes referred to as the "shadow inventory" of homes in danger of foreclosure. This measure has declined from a high of 5 percent to around 3 percent; however, it remains at elevated levels. Moreover, there has been little change in the fraction of mortgages that are in foreclosure, which remains around 4.4 percent **(Chart 5.1.24)**. The inventory of mortgages

that are in some stage of the foreclosure process remains high **(Chart 5.1.25)**.

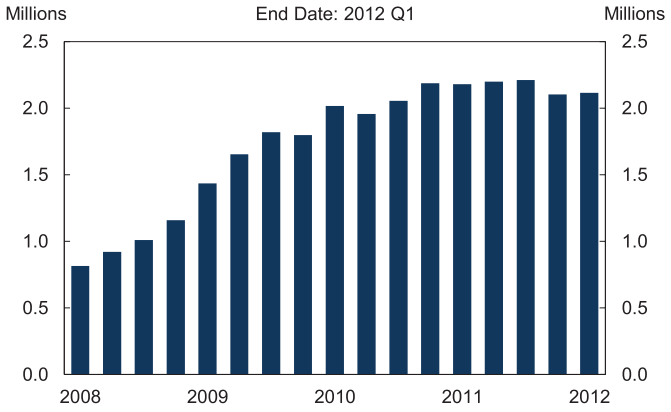
Mortgage Credit Flows

Mortgage credit flows remain quite constrained. High unemployment and heightened uncertainty contributed to weak provision of housing credit, but tighter credit standards have also been a major factor. In particular, the credit quality of new originations—both purchases and refinances—is far higher than prior to the crisis **(Chart 5.1.26)**. According to the Senior Loan Officer Opinion Survey (SLOOS) data, the persistent net tightening in mortgage credit standards from 2007 through 2009 has only recently begun to ease, and only for prime residential loans. When asked to indicate their willingness to originate government-sponsored enterprise (GSE) eligible mortgages relative to 2006 for borrowers across a range of creditworthiness, banks were less likely to lend to all credit categories except those with pristine credit. While higher credit scores and larger down payments tended to increase banks' willingness to lend, many banks were unwilling to provide mortgage credit even when the loans were within GSE requirements. Higher "put-back risk" (the risk that the mortgage originator may have to repurchase the loan if it violates the GSE's requirements) and borrower costs, along with difficulty in obtaining mortgage insurance, were cited as important factors contributing to banks' reluctance to originate such loans. The events of the last several years also exposed severe deficiencies in the nation's housing finance infrastructure. In areas ranging from the securitization process to servicing of delinquent mortgages to the foreclosure process, a system that was designed for a rising market was shown to function poorly in a declining price environment. This increased the level of uncertainty among market participants, contributing to constrained credit availability.

Measures to Strengthen the Housing Market

To strengthen the housing market, the government developed a number of programs

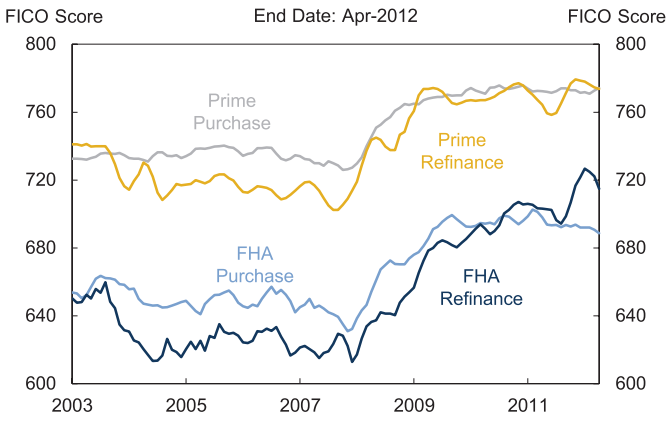
Chart 5.1.25 Foreclosure Pipeline



Source: OCC and OTS Mortgage Metrics Reports

Note: Numbers scaled by estimated coverage rate.

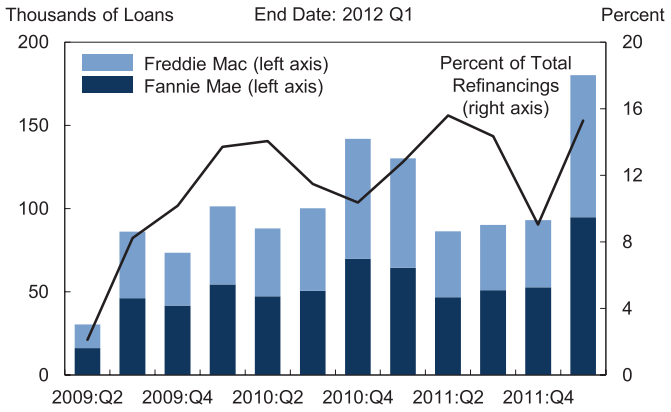
Chart 5.1.26 Median Credit Score at Mortgage Origination



Source: LPS Applied Analytics

Note: Three month moving average.

Chart 5.1.27 HARP Refinancings



Source: FHFA

aimed at providing relief to struggling homeowners, including Making Home Affordable (MHA), the Home Affordable Refinance Program (HARP) and the Hardest Hit Fund. MHA, which was announced in 2009, was enhanced in January 2012, with expanded eligibility to reach a broader pool of distressed borrowers. As of April 2012, MHA has granted over 1.1 million homeowner assistance actions, mostly through the Home Affordable Modification Program (HAMP), which provides first lien permanent modifications. Additional MHA programs include a second-lien modification program, an unemployment forbearance program, and a short-sale or deed-in-lieu-of-foreclosure program. The end-date of MHA, based on the January 2012 enhancements, is December 31, 2013.

In April of 2009, the Home Affordable Refinance Program (HARP) was established to help homeowners refinance their GSE-guaranteed mortgages if they had a loan-to-value ratio (LTV) higher than 80 percent. As of March 2012, 1.2 million loans had been refinanced out of an estimated 3 to 4 million HARP-eligible homeowners. In October of 2011, the FHFA announced modifications to HARP in an effort to increase efficiency and expand the eligible universe of borrowers who can benefit from refinancing. The revisions extended the expiration until December 2013, removed the 125 percent LTV cap in order to accommodate more borrowers with negative equity, and provided additional representation and warranty relief for same-servicer refinances. These changes seem to have led to increased HARP refinancing in early 2012 **(Chart 5.1.27)**.

In 2010, the Hardest Hit Fund was announced, which provides $7.6 billion to Housing Finance Authorities in the 18 states most affected by price declines and unemployment as well as in the District of Columbia. These funds have been used to develop a range of programs tailored to their local housing markets, including mortgage payment assistance for unemployed borrowers, reinstatement

programs, principal reduction, and transition assistance for borrowers.

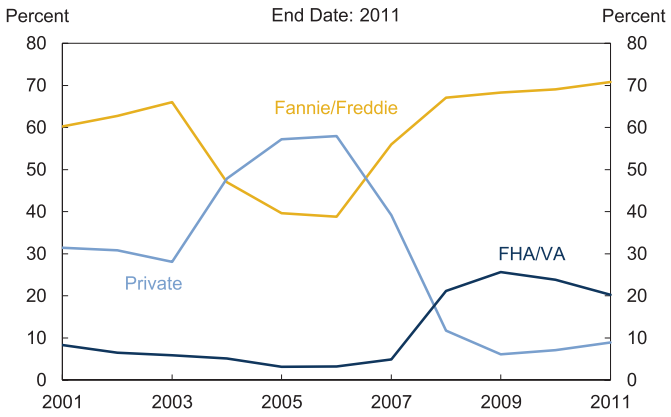
In addition to these programs, the government agencies have made substantial efforts to address loan servicing and foreclosure abuses. In early 2012, 49 states and the federal government announced a $25 billion settlement with the five largest loan servicers. Under the terms of the settlement agreement, servicers are required to pay $5 billion to be allocated to states, borrowers, and the FHFA. In addition, servicers are also required to dedicate $20 billion toward various forms of financial relief to borrowers, including reduction of principal balances on loans with negative equity and assistance in refinancing. These actions complement consent orders and other actions already being taken by the OCC, the FDIC, the Federal Reserve, and the FHFA to address and correct deficiencies in mortgage foreclosure processing.

Government-Sponsored Housing Enterprises

Government support to Fannie Mae and Freddie Mac has helped keep mortgage credit markets functioning, as private securitization largely remains absent. At the end of 2011, GSE mortgage credit flow accounted for 71 percent of total mortgage origination **(Chart 5.1.28)**, considerably higher than pre-crisis levels, with most of the remaining originations coming from the Federal Housing Administration (FHA) and Department of Veterans Affairs (VA). Residential mortgage-backed securities (RMBS) continue to be issued solely by housing-related GSEs and Ginnie Mae (GNMA), with negligible issuance of securities by non-agency entities **(Chart 5.1.29)**.

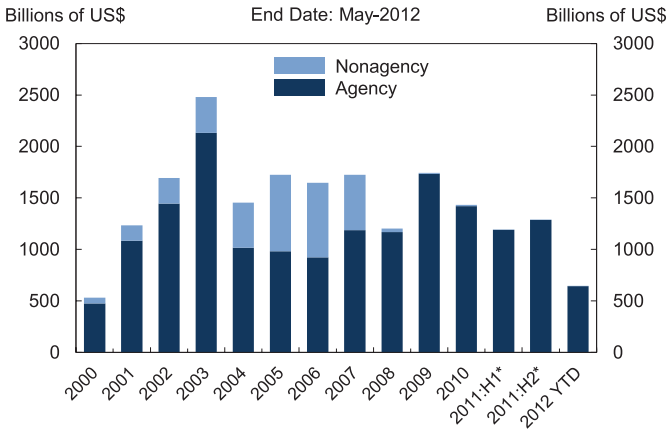
The financial position of the GSEs has improved recently. In 2012:Q1, Fannie Mae earned $2.7 billion income, and it did not request additional capital support from the government. In contrast, Freddie Mac reported a net income gain of $577 million for the same quarter and is seeking an additional $19 million in capital from the Treasury **(Chart 5.1.30)**. Although the loss rate from single-family

Chart 5.1.28 Mortgage Originations



Source: Inside Mortgage Finance

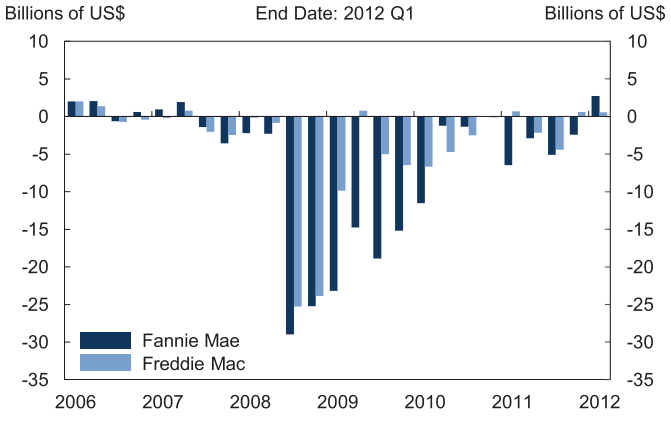
Chart 5.1.29 Issuance of RMBS



Source: Thomson Reuters, Dealogic

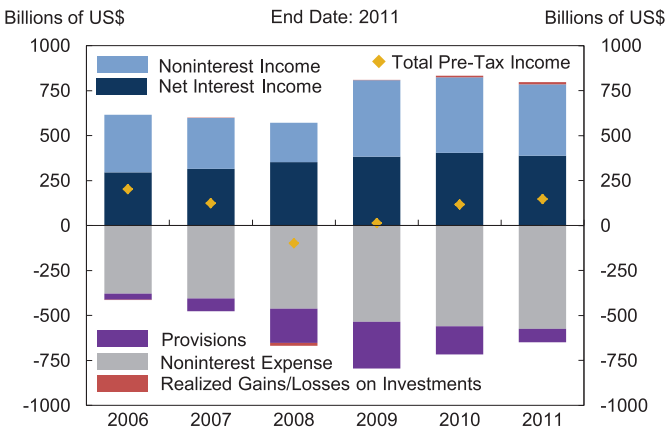
*Note: Annual rate.

Chart 5.1.30 GSE Net Income and Losses



Source: SEC, SNL Financial

Chart 5.2.1 Aggregate BHC Pre-Tax Income



Source: FR Y-9C

Note: Includes all BHCs filing Y-9C.

loans has been declining, this activity is still the main driver of losses at the GSEs. As of March 31, 2012, Fannie Mae and Freddie Mac reported single-family mortgage delinquency rates of 3.7 percent and 3.5 percent respectively, representing the lowest delinquency rates since 2009.

5.2 Bank Holding Companies and Depository Institutions

5.2.1 Bank Holding Companies

Bank holding companies (BHCs) continue to enhance their overall strength with improved capital and liquidity positions. Both the quality and amount of capital at BHCs continue to improve due to positive operating results, capital raising, and regulatory changes. Most of the largest BHCs have resumed capital distributions after undergoing stress testing and capital planning under the enhanced supervision of the Federal Reserve. However, revenues at the largest BHCs remain challenged by general market uncertainty, slowing global growth, and the low interest rate environment; credit default swap (CDS) spreads remain elevated, and increases in pretax income continue to be driven largely by non-recurring items.

A majority of commercial banks are owned by BHCs, which include the bank and any nonbank subsidiaries such as broker-dealers, investment companies, or insurance companies. As of year-end 2011, there were 4,743 top tier BHCs in the United States (excluding Puerto Rico), with aggregate assets of about $17.4 trillion. Aggregate pretax income in 2011 totaled $148 billion, an increase of 26 percent from 2010 **(Chart 5.2.1)**.

Capital and Liquidity

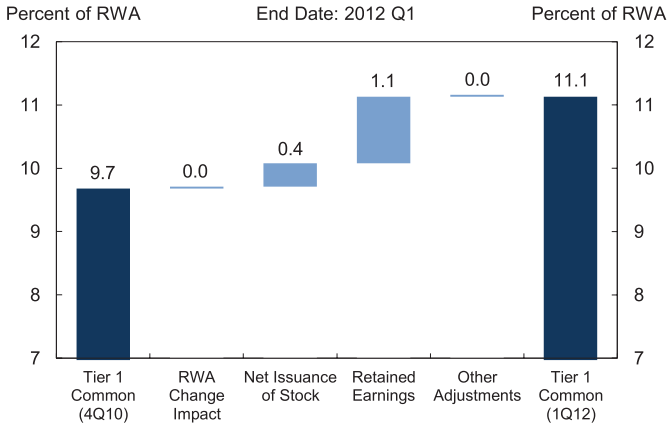
In aggregate, capital ratios for BHCs improved from 2010:Q4 to 2012:Q1, with the tier one common capital ratio under current risk-based capital rules ("Basel I") increasing 1.4 percentage points to 11.1 percent as of 2012:Q1. Increases in retained earnings, primarily from positive operating results, contributed 1.1 percentage points to this increase, while

additional capital raising contributed 0.4 percentage points **(Chart 5.2.2)**.

For the 19 largest U.S. BHCs, capital ratios continue to improve from post-crisis levels, with the aggregate tier one common capital ratio under Basel I improving 1.5 percentage points from 2010:Q4 to 2012:Q1 to 10.9 percent **(Chart 5.2.3)**. These 19 BHCs also underwent additional stress testing as part of the Comprehensive Capital Analysis and Review 2012 (CCAR 2012). Similar to the 2011 exercise, CCAR 2012 was a forward-looking cross-sectional analysis designed to examine the capital planning processes at these firms. A key part of the Federal Reserve's examination was a supervisory assessment of capital adequacy under a hypothetical stress scenario. This stress scenario was intended to help ensure a rigorous assessment of the BHCs' capital plans and was significantly more severe than prior stress tests. For example, one of the macroeconomic factors used in the stress scenario is the unemployment rate, which peaks at just over 13 percent for CCAR 2012—considerably higher than the comparable stress scenarios in both the 2009 Supervisory Capital Assessment Program (SCAP) and the prior year's CCAR exercise **(Chart 5.2.4)**.

In the hypothetical stress scenario, the Federal Reserve projected that the 19 BHCs would have a total of $438 billion in tier one common capital, implying an aggregate tier one common ratio under Basel I of 6.3 percent at the end of the nine-quarter projection period—well above the 5 percent target established in the Capital Plans Rule issued by the Federal Reserve in November 2011. The pro forma capital level under the stress scenario actually exceeded the BHCs' aggregate tier one common ratio at the start of the 2009 SCAP, reflecting the more than $300 billion increase in tier one common equity at these BHCs since early 2009 **(Chart 5.2.5)**. However, 4 of the 19 BHCs had one or more projected regulatory capital ratios fall below regulatory minimum levels at some point over the stress scenario horizon.

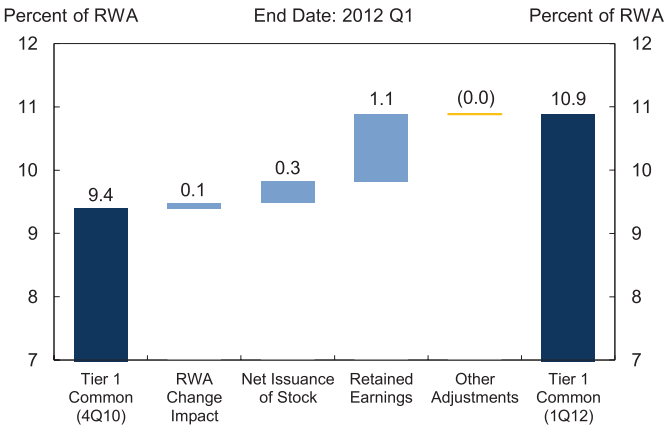
Chart 5.2.2 Change in Tier 1 Common Ratios for Aggregate U.S. BHCs



Source: FR Y-9C

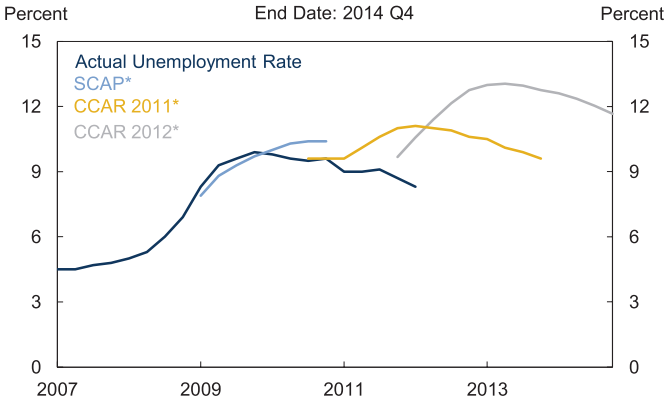
Note: Domestically owned BHCs.

Chart 5.2.3 Change in Tier 1 Common Ratios for 19 Largest BHCs



Source: FR Y-9C

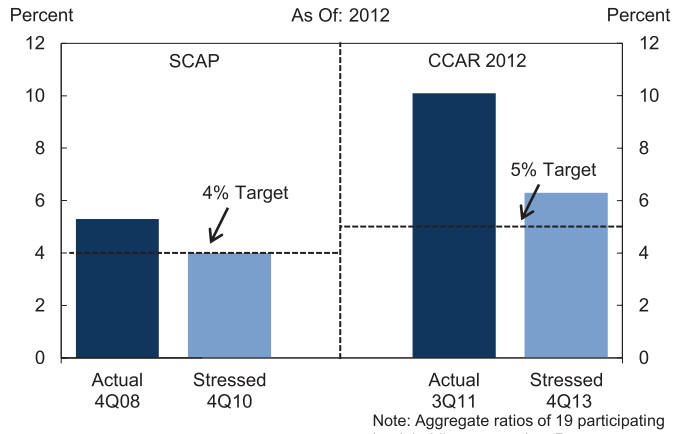
Chart 5.2.4 U.S. Unemployment Rate: Actual vs. Stress Scenarios



Source: Federal Reserve

*Note: Unemployment rate trajectory in respective stress scenarios.

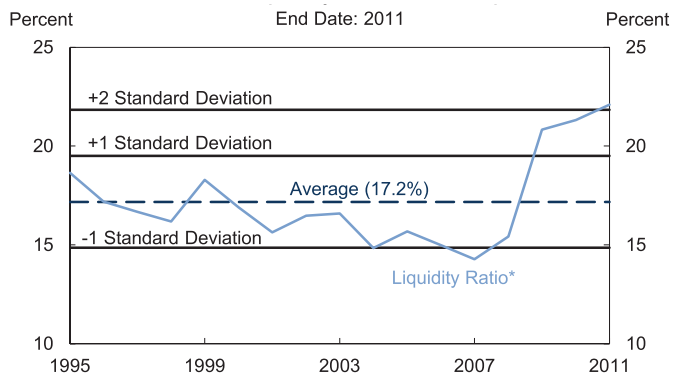
Chart 5.2.5 Initial and Stressed Tier 1 Common Capital Ratios



Note: Aggregate ratios of 19 participating bank holding companies. Post-stress estimates are supervisory estimates.

Source: Federal Reserve

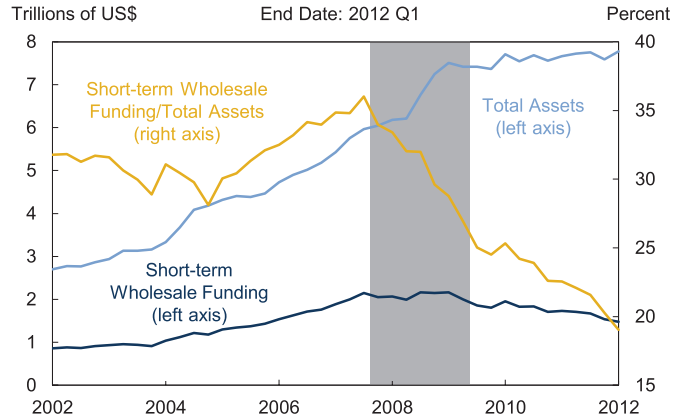
Chart 5.2.6 Consolidated Liquidity Ratio* for Top 50 BHCs



*Liquidity Ratio = sum of Cash & Due From, FFS, Repos, U.S. Treasuries, U.S. Gov. Agencies and U.S. Gov. Sponsored Agencies divided by Total Assets.

Source: FR Y-9C, BHCPR, OCC Calculations Note: Top 50 BHCs by asset size.

Chart 5.2.7 Short-Term Wholesale Funding at Largest BHCs



Note: Aggregation of BAC, C, JPM, and WFC. Gray bar signifies NBER recession.

Source: FR Y-9C

Along with higher capital levels, balance sheets at the largest BHCs continue to be more robust, as assets became more liquid and liabilities more stable following the financial crisis. In particular, the fraction of assets on BHC balance sheets consisting of highly liquid assets is more than two standard deviations above its average from 1995 to the end of 2011 **(Chart 5.2.6)**. Less reliance on short-term wholesale funding **(Chart 5.2.7)**, combined with an increase in core deposits, offers a more stable and resilient funding base.

Since some of this rebalancing away from short-term funding across all banks is a result of flight to quality by wholesale funding suppliers and since some of the increase in core deposits may be associated with the expanded FDIC guarantee that is scheduled to expire at the end of 2012, the longer-run persistence of these balance sheet improvements is unresolved. Moreover, some banks have large amounts of wholesale funding that are not necessarily fully covered by liquidity buffers.

For U.S. BHCs with assets less than $50 billion, the tier one common ratio under Basel I improved by approximately 1.6 percentage points to 12.6 percent over the 2010:Q4 to 2012:Q1 period, primarily due to capital raising (1.4 percentage points) and positive operating results contributing to retained earnings (1 percentage point) **(Chart 5.2.8)**. These increases were somewhat mitigated by the increase in risk-weighted assets that reduced the tier one common capital ratio under Basel I by 0.7 percentage point.

Many BHCs continue to engage in moderate share repurchases and dividend payouts in spite of continued economic uncertainty, forthcoming higher regulatory capital requirements, and enhanced regulatory scrutiny. Although many of the 19 largest BHCs that participated in the CCAR resumed distributions of capital in the form of dividends and share repurchases in 2011, U.S. BHCs saw only a slight increase in dividends and a net issuance of common equity in aggregate **(Chart 5.2.9)**.

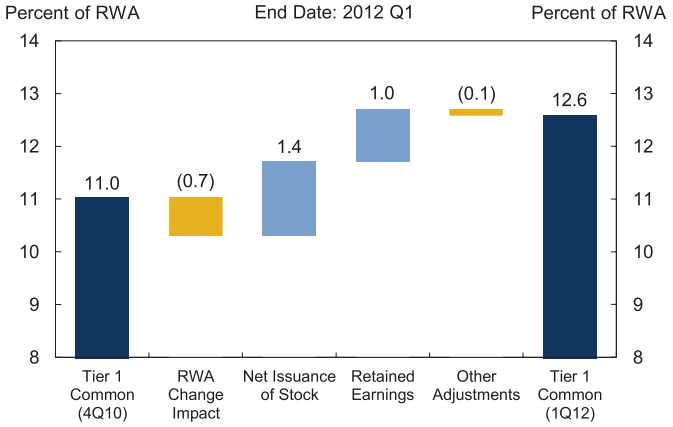
As noted in the Council's 2011 Annual Report, the Basel Committee on Banking Supervision (BCBS) agreed in December 2010 to a further revised set of capital and liquidity standards collectively referred to as Basel III. In June 2012, the Federal Reserve, FDIC, and OCC invited public comment on three proposed rules that would revise and replace the agencies' current capital rules. These proposals would implement, in the United States, the Basel III regulatory capital reforms from the BCBS and the changes required by the Dodd-Frank Act. Among other minimum standards, the proposals would establish a tier one common equity requirement equal to 4.5 percent of risk-weighted assets. It would also establish a capital conservation buffer above the minimum risk-based capital requirements, which must be maintained to avoid restrictions on capital distributions and certain discretionary bonus payments. As proposed, and consistent with Basel III, banking organizations generally would begin implementing the proposed capital reforms on January 1, 2013, and would be fully subject to the new standards by January 1, 2019. Concurrently, the agencies also approved a final rule to implement changes to the market risk capital rule, including those made by the BCBS in 2005 and 2010, to better capture positions for which the market risk capital rule is appropriate. The final rule will be effective on January 1, 2013.

In November 2011, the BCBS released its framework and assessment methodology to identify globally systemically important banks (G-SIBs) that are subject to an additional common equity tier one capital buffer ranging from 1.0 to 3.5 percent of risk-weighted assets. Eight U.S. BHCs were designated as G-SIB and would be subject to the higher capital standards beginning in 2016, with full implementation by 2019. As with Basel III standards, the G-SIB framework would be incorporated by member jurisdictions into their local capital rules.

Performance

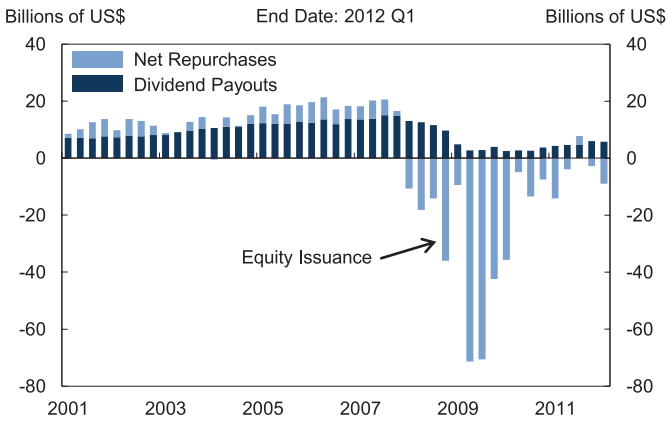
Despite strengthened balance sheets and liquidity, BHC market indicators have been

Chart 5.2.8 Change in Tier 1 Common Ratios for BHCs < $50B



Source: FR Y-9C

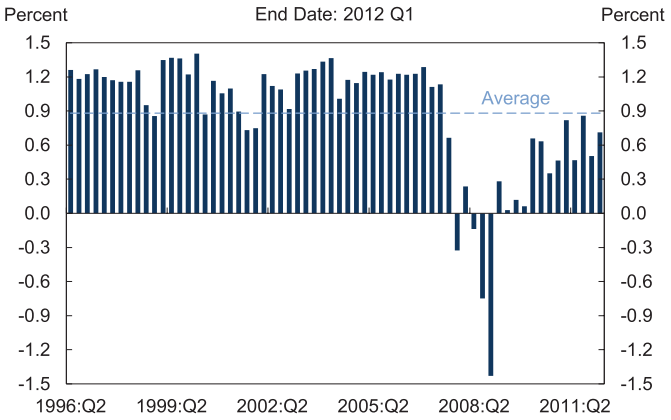
Chart 5.2.9 BHC Dividends and Repurchases



Source: FR Y-9C

Note: Domestically owned BHCs.

Chart 5.2.10 Return on Average Assets



Source: FR Y-9C Note: Includes only BHCs with total assets over $10 billion.

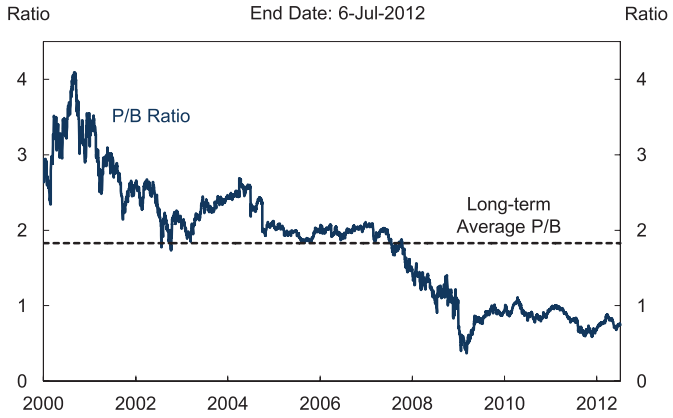
weighed down by concerns around potential contagion from Europe, among other vulnerabilities, discussed further in Section 7. Within the subset of 69 BHCs with assets greater than $10 billion, aggregate pretax income increased by 20 percent in 2011 to $138 billion, but return on assets still remains lower than the levels that prevailed in the 10 years before the crisis **(Chart 5.2.10)**. Trading revenue in 2011 was negatively affected by sharply lower client activity and volumes amid fears of European contagion and concerns of slowing global economic growth. Earnings were also adversely affected by the interest rate environment characterized by both low short-term rates and low term premiums. Furthermore, approximately 40 percent of this pretax income for 2011 was due to two non-recurring accounting items: (1) increased releases of reserves against losses on loans and leases due to improved credit quality; and (2) so-called "debt valuation adjustments" (DVAs), whereby decreases in the mark-to-market value of a BHC's liabilities is booked as a profit. It is unclear to what degree these non-recurring items will contribute to the profitability of U.S. BHCs going forward, as the pace of reserve releases continues to decline, and potentially tightening credit spreads would result in reversals of these mark-to-market DVA gains.

On June 21, 2012, Moody's announced the results of its review of the credit ratings of large international banks with global capital markets operations. Fifteen global banks were downgraded, with 10 of these banks incurring a two-notch downgrade to their long-term ratings; Credit Suisse was downgraded three notches. (In addition, two dealer banks, Nomura and Macquarie, had been downgraded in March.) These downgrades reflected a re-assessment by Moody's of heightened uncertainties associated with capital market operations. However, Moody's continues to rate more highly those banks seen to have superior risk-management capabilities, more conservative funding profiles, and/or lower reliance on capital markets activities. These ratings actions were generally in line with market expectations and with prior guidance provided by Moody's in February.

Market Indicators

Following the heightened level of duress in capital markets during the second half of 2011, market indicators for BHCs reflected an improved investor sentiment and greater risk appetite in early 2012. These improvements later receded during the second quarter of 2012. The market capitalization weighted price-to-book ratio of the six largest BHCs improved in 2012, but market valuations remained at a more than 25 percent discount to book value in July 2012, which is below both the pre-crisis level and the average level over the past 12 years **(Chart 5.2.11)**. In late 2011, an equally weighted average of CDS spreads for the six largest BHCs reached levels last seen during the crisis. Spreads remain elevated relative to early 2011 levels **(Chart 5.2.12)**.

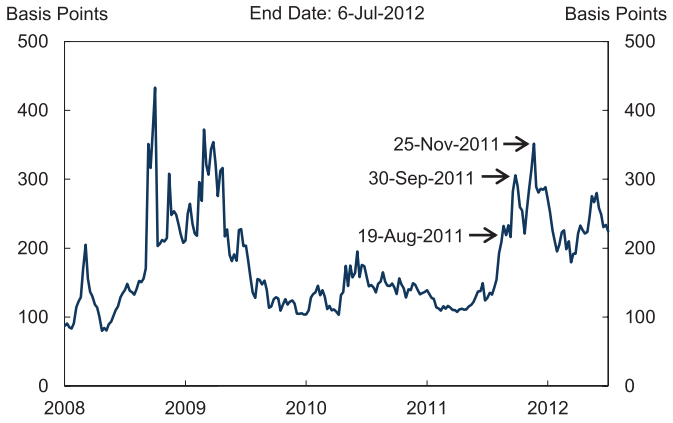
Chart 5.2.11 Price-to-Book Ratio of 6 Large Complex BHCs



Source: Bloomberg

Note: Market-cap weighted average.

Chart 5.2.12 CDS Spreads of 6 Large Complex BHCs



Source: Bloomberg

Note: Equal-weighted average of BAC, C, JPM, WFC, GS, MS.

5.2.2 Insured Depository Institutions

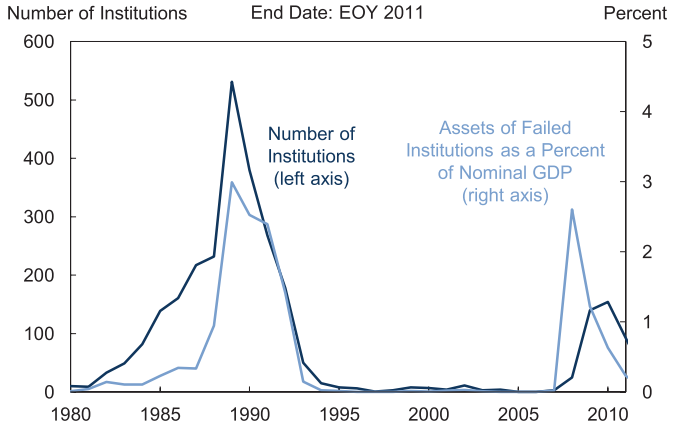
Performance within the commercial banking industry continues to rebound, coinciding with the general improvement in credit quality within the economy. Despite the rate of bank failures declining, the commercial banking sector has become more concentrated, as larger banks have seen higher levels of profitability and rebounded faster post-crisis.

Insured Commercial Banks and Savings Institutions

The banking industry is composed of more than 7,300 commercial banks and savings institutions. Of these, approximately 6,600 institutions have assets under $1 billion, 88 institutions have assets between $10 billion and $100 billion, and 19 institutions have assets over $100 billion. Failures, mergers, and a decline in chartering activity have contributed to further consolidation over the past several years.

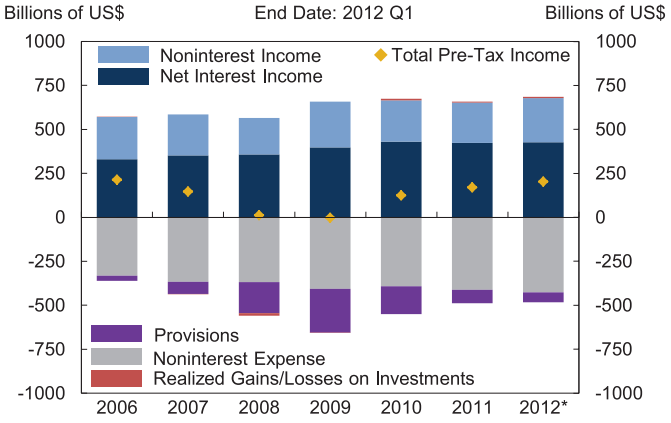
Failures of insured depository institutions continue to decline from crisis levels, as 92 institutions representing $35 billion in assets failed in 2011 **(Chart 5.2.13)**. An additional 31 insured institutions have failed thus far in 2012 (through July 6) representing $7.6 billion in assets. As of March 31, 2012, some 772 institutions, accounting for 10.6 percent of all institutions, were on the FDIC's problem bank

Chart 5.2.13 FDIC-Insured Failed Institutions



Source: FDIC

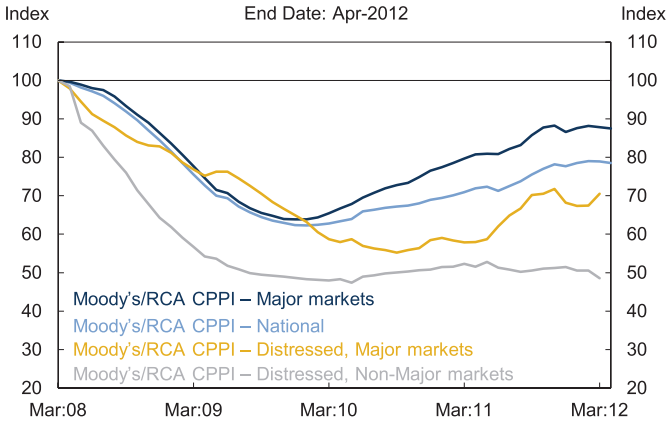
Chart 5.2.14 Commercial Bank and Thrift Pre-Tax Income



Source: FDIC

Note: *Annualized. Includes all FDIC-insured commercial banks and thrifts.

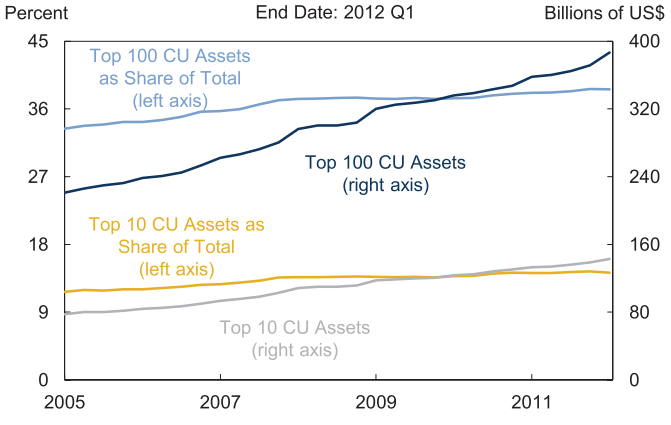
Chart 5.2.15 Commercial Property Price Indices



Source: Moody's Investors Service

Note: Mar 2008 = 100.

Chart 5.2.16 Concentration of Credit Union Assets



Source: NCUA

list, with financial, operational, or managerial weaknesses that threatened their continued financial viability.

Pretax net income for U.S. commercial banks and savings institutions totaled $169.3 billion in 2011, representing a significant increase over 2010 and a continuation of the rebound following the crisis. A rebound in credit quality with the associated reduction of loan loss provisions and other expenses continues to drive the improvements in pretax net income since 2009 **(Chart 5.2.14)**. Although the largest institutions and community banks benefited from reductions in loan loss provisions, community banks have experienced a smaller increase in net revenue than large banks. In addition, community banks continue to deal with credit problems associated with relatively outsized concentrations in the commercial real estate sector, which remains depressed **(Chart 5.2.15)**.

Credit Unions

The number of credit unions declined to 7,094 institutions by year-end 2011, down from 7,339 at year-end 2010. This 3 percent decline in the number of credit unions is in line with recent trends. As in other parts of the banking system, assets in the credit union system have become more concentrated, with the top 100 credit unions increasing their share of total credit union assets to 39 percent **(Chart 5.2.16)**. Corporate credit unions—which provide critical services to the broader credit union system—are consolidating and deleveraging as they refocus their business models on providing operational support to consumer credit unions, raising capital, and adjusting to the new regulatory environment. As of year-end 2011, there are 24 corporate credit unions with $34 billion in assets—a decline from 27 corporate credit unions with $96 billion in assets in 2007.

The credit union system experienced an improved return on assets (ROA) in 2011 of 67 basis points, an increase from 50 basis points in 2010. Improved credit conditions were the

primary driver behind the provision for loan losses declining from 0.8 percent of assets in 2010 to 0.5 percent of assets in 2011 **(Chart 5.2.17)**. Aggregate net income increased to $6.3 billion, a 39 percent improvement from 2010. Overall loan levels within the credit union system rebounded by 1.2 percent to $571 billion after experiencing a decline of 1.4 percent in 2010. In 2011 loan growth was driven by increases in real estate, credit cards, and auto loans.

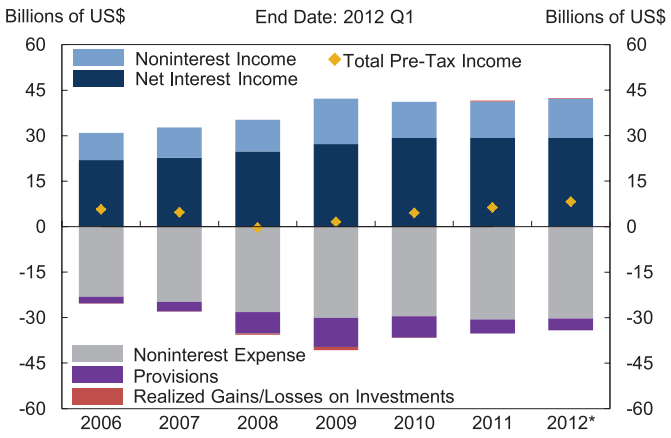
Profitability continues to vary based on the size of the institution, with smaller credit unions historically lagging behind larger credit unions. The industry still faces some uncertainty over future losses associated with failed corporate credit unions; with future resolution costs projected to total between $2.7 billion and $6.0 billion over the coming years, these assessments are not likely to curtail industry growth and profitability. Larger concerns for the industry are challenges related to the low interest rate environment and managing through a transition into a higher rate environment. As **Chart 5.2.18** shows, fixed-rate real estate as a share of loans and long-term assets as a share of assets have risen over the past several years.

5.2.3 U.S. Branches and Agencies of Foreign Banks

U.S. branches and agencies of foreign banks support lending activity in the United States, but also tend to rely on a funding mix that is less stable than that of most U.S. commercial banks. These branches and agencies are sensitive to the funding and liquidity needs of their parent organizations and depend on access to uninsured deposits that pose a heightened flight risk. Stresses on parent banks and constrained access to short-term dollar funding impinged on branch lending and investment in the United States over the past year, especially by the European branches and agencies.

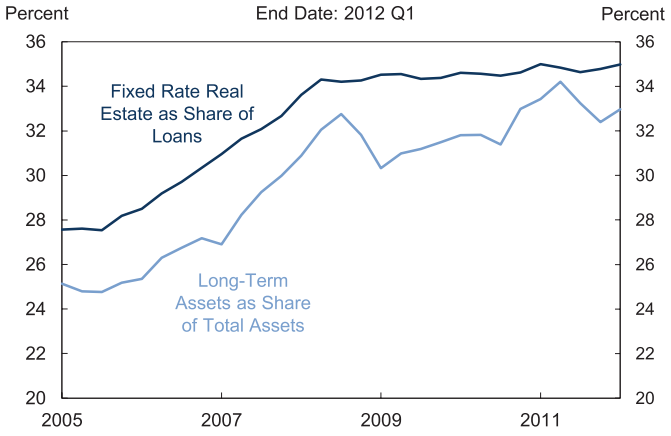
In addition to the U.S. BHCs, foreign bank families have a large presence within the United States. Together, the U.S. branches and agencies of foreign banks account for close to $2 trillion of banking assets, over 15 percent of total U.S.

Chart 5.2.17 Federally Insured Credit Union Income



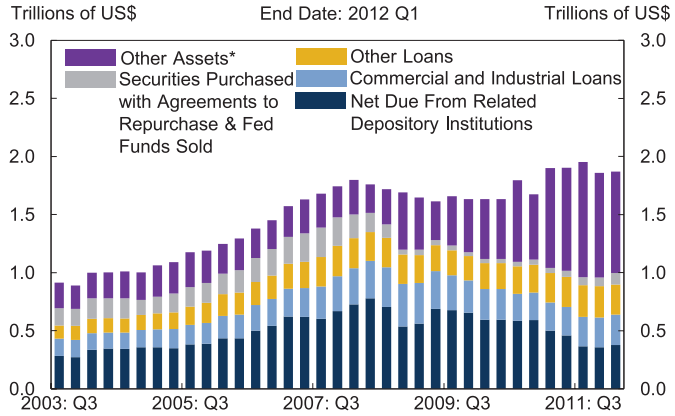
Source: NCUA
Note: *Annualized

Chart 5.2.18 Credit Union Fixed Rate Real Estate and Long-Term Assets



Source: NCUA

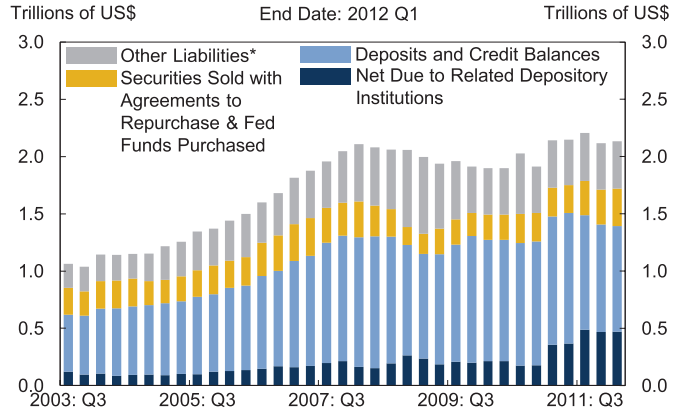
Chart 5.2.19 U.S. Branches and Agencies of Foreign Banks: Assets



*Note: Includes government securities, asset-backed securities, and other trading assets.

Source: Federal Reserve

Chart 5.2.20 U.S. Branches and Agencies of Foreign Banks: Liabilities



*Note: Includes transaction accounts, non-transaction accounts, and other borrowed money.

Source: Federal Reserve

banking assets. These entities represent an important source of credit for U.S. borrowers.

There are different business models in the operations of branches in the United States, with a mix of targeted investment and asset strategies and a range of different funding approaches. On average, branches and agencies generally dedicate about 30 percent of their balance sheets to loans, but can differ substantially in the composition of their lending across commercial and industrial (C&I) activity versus other U.S. domestic customers. Direct C&I loans outstanding by these banks, which represents a major source of financing for U.S. businesses and investment projects, has been as high as $365 billion, but more recently has fallen closer to $260 billion, out of total loans of over $500 billion **(Chart 5.2.19)**. Other securities held as assets have risen sharply from about $300 billion pre-crisis to closer to $1 trillion by 2012:Q1. Some of these branches and agencies also send dollar flows to their parent organizations and related affiliates, as indicated by the levels of Net Due from Related Depository Institutions in the balance sheet decompositions in Chart 5.2.19. These flows support dollar lending and investment activities in the United States and elsewhere. European parent banks in particular have actively used their branches to source dollar funding. Outstanding positions vis-à-vis parent banks currently are a smaller percentage of branch and agency assets than at any point in recent history.

The liability side of balance sheets of the U.S. branches and agencies of foreign banks also has bearing on financial stability **(Chart 5.2.20)**. Most of these U.S. branches are not allowed to offer deposits insured by FDIC and thus lack access to the stable source of funds represented by households' checking, savings, and other transaction accounts. Instead, money market funds and other noninsured deposits provide the majority of funding for these institutions. When such funds and depositors withdraw from particular banks, which occurred in the summer of 2011 when European banks were

viewed as particularly risky, it can destabilize the balance sheets of those banks, leading to deleveraging or potential reversals of support to the parent organization. **(See Box H: Money Market Fund Responses to Euro Area Uncertainty.)** Such dynamics are masked, to some extent, in the aggregate statistics, as these deposits may be reoriented to other U.S. branches and agencies. However, the recent increases in Net Due to Related Depository Institutions shows a greater degree of support from foreign parent banks than previously had been the case, as investments are made to maintain the presence of these banks in U.S. asset classes and reduce contractions of lending activity and asset sell-offs that could otherwise occur.

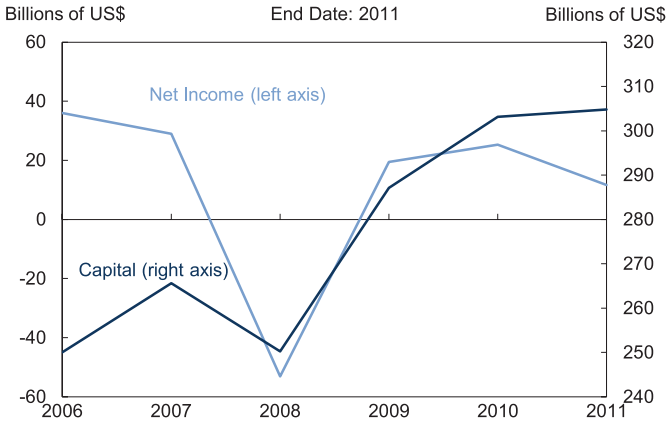
5.3 Other Financial Institutions

5.3.1 Insurance

Despite a substantial net decline in income in 2011, capital levels within the insurance industry improved. The life insurance industry continues to play a significant role in long-term funding of assets through the investment of premium income. The low interest rate environment has proved challenging for life life insurers to generate sufficient investment returns to meet high guaranteed benefits promised in prior years. Property and casualty insurers faced historically higher catastrophe losses that impeded performance in 2011.

For life insurance companies, which sell retirement products such as traditional life insurance contracts and annuities, book capital grew modestly, despite net income declining by over 50 percent or $13.6 billion in 2011 compared to 2010 **(Chart 5.3.1)**. The spread between the yield that life insurers earn on their investments and a measure of the interest rate necessary to maintain policyholder reserves, also known as the required interest rate, has narrowed since 2007 **(Chart 5.3.2)**. If this spread had stayed at 2007 levels, net income would have been $13.0 billion higher during the period from 2008 through 2011—$1.2 billion higher in 2011 alone.

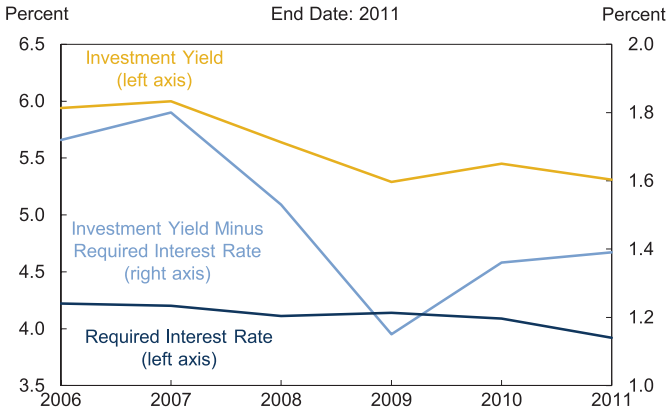
Chart 5.3.1 Life and Other Insurance: Capital and Income



Source: NAIC

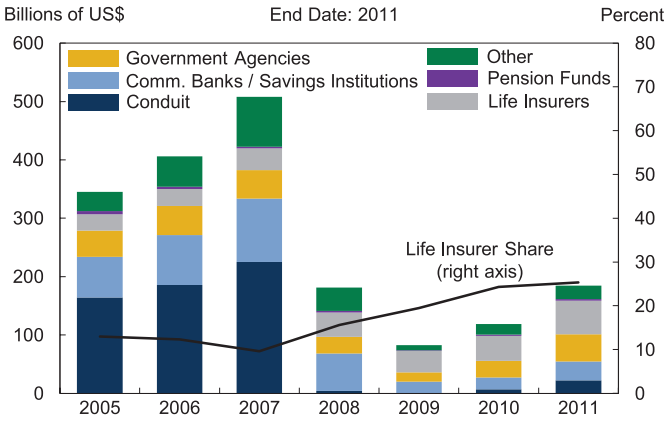
Note: Includes accident and health.

Chart 5.3.2 Life Insurers: Impact of Low Rate Environment



Source: NAIC

Chart 5.3.3 Commercial Mortgage Origination by Lender Type



Source: Mortgage Bankers Association

The low interest rate environment poses a significant challenge for life insurers with sizable blocks of liabilities incorporating embedded interest rate guarantees, such as annuities or universal life insurance policies. The industry has reduced its minimum guarantees over time, but products sold when interest rates were higher represent a continued drag on profits. The share of life and annuity product account values subject to a minimum guaranteed rate of return of 5 percent or higher fell from 20 percent to 10 percent over the 2006-2010 period, but more than 40 percent of account values were still subject to a minimum guaranteed rate of return of 3.5 percent or higher in 2010. Life insurers have exited selected markets due to the inability to meet the minimum guaranteed returns associated with the underlying products in this low rate environment. Of note, life insurers have increased their use of non-traditional investments, such as hedge funds and private equity, perhaps as a response to the low interest rates that currently prevail.

The role of the life insurance industry in funding new commercial mortgages has increased since the collapse of conduit activity in 2008. Life insurers funded roughly 25 percent of new commercial mortgages in 2011, compared to 10 percent in 2007 **(Chart 5.3.3)**. Although the industry is playing a larger role in financing new loans, commercial mortgages as a share of total life insurance assets have decreased modestly from 2007 to 2011 to less than 1 percent of assets.

Property and casualty insurers, who sell insurance on homes, cars, and businesses, are less affected by the low interest rate environment because they underwrite shorter duration liabilities without embedded interest rate guarantees. However, property and casualty insurers were pressured by large catastrophe losses in 2011. Insured catastrophe losses were $33.6 billion in 2011, 135 percent higher than in 2010 and exceeded only by the extraordinary losses associated with Hurricane Katrina in 2005. Property and casualty assets fell slightly

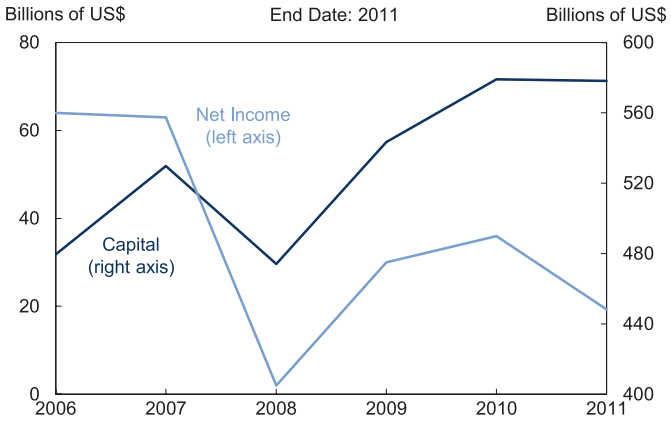
during 2011, although book capital levels were largely unchanged despite a 46 percent decline in net income from 2010 to 2011 **(Chart 5.3.4)**.

5.3.2 Money Market Funds

Total money market fund (MMF) assets declined over calendar year 2011, reflecting low yields and concerns over European exposures. Low rates also reduced revenue flows to fund managers. Substantial redemptions from MMFs in the summer of 2011 in response to heightened financial market uncertainty associated with euro area stresses and federal budget negotiations in the United States illustrates the extent to which MMFs are still subject to pro-cyclical redemption pressures.

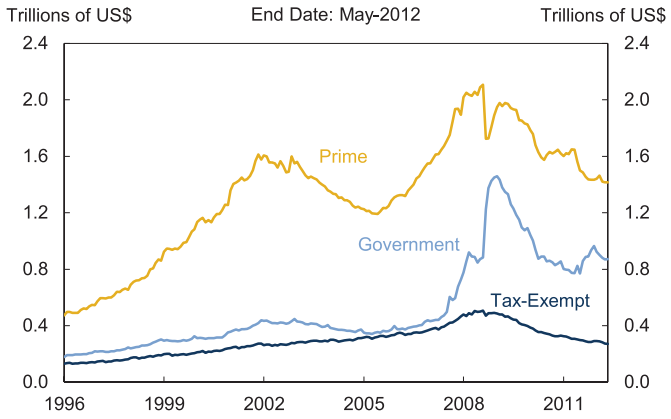
Total U.S. MMF assets declined from $2.80 trillion at year-end 2010 to $2.56 trillion as of May 2012. Prime MMF assets declined from $1.62 trillion to $1.42 trillion, while government and Treasury MMF assets increased from $855 billion to $872 billion during this period. Tax-exempt funds also declined from $330 billion to $272 billion **(Chart 5.3.5)**. During July and August of 2011, there was significant redemption activity due to the European debt crisis and the political uncertainty in the United States leading up to the debt limit extension in early August 2011. Between the end of May and the end of August 2011, prime MMF assets fell by more than $160 billion (9.8 percent) **(Chart 5.3.6)**, with some funds diminished by as much as 50 percent over this period. Prime fund bank holdings in France continued to decline through the end of 2011. **(See Box H: Money Market Fund Responses to Euro Area Uncertainty.)** Since that period, prime MMFs have bolstered their liquidity levels to better handle redemptions, with daily liquidity levels ranging from 26 percent to over 30 percent and weekly liquidity levels holding at over 40 percent in late 2011 and early 2012 **(Chart 5.3.7)**. MMFs also reduced maturities since the summer of 2011, with the weighted average life for prime MMFs falling to around 70 days **(Chart 5.3.8)**.

Chart 5.3.4 Property and Casualty Insurance: Capital and Income



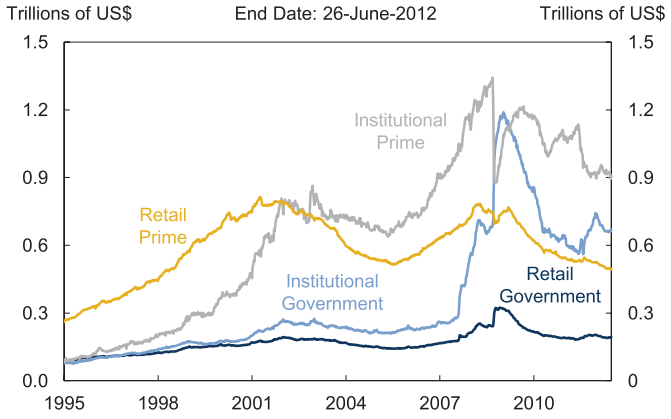
Source: NAIC

Chart 5.3.5 Money Market Mutual Fund Assets by Fund Type



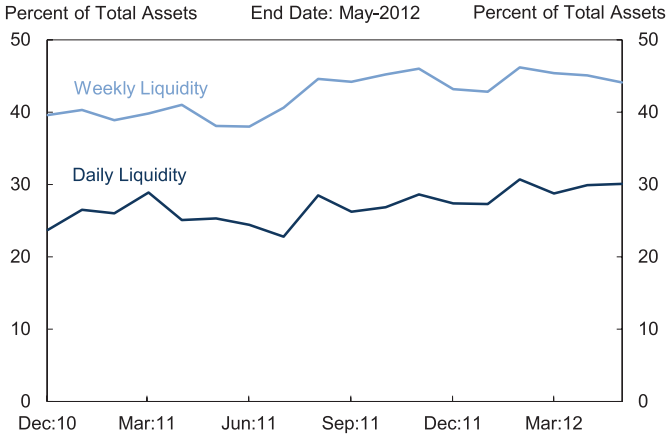
Source: ICI, Haver Analytics

Chart 5.3.6 Institutional vs. Retail Money Market Fund Assets



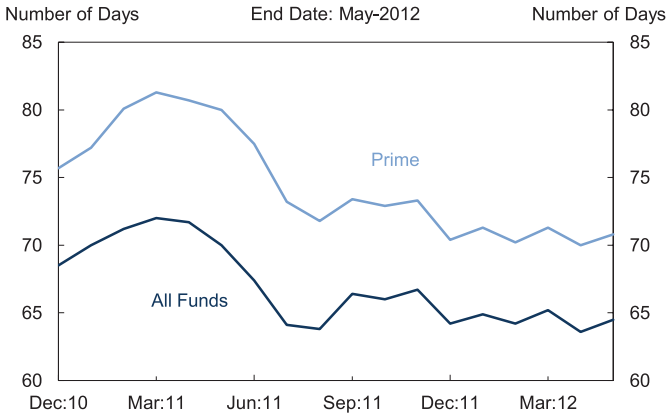
Source: iMoneyNet

Chart 5.3.7 Prime Funds Liquidity



Source: OFR, SEC

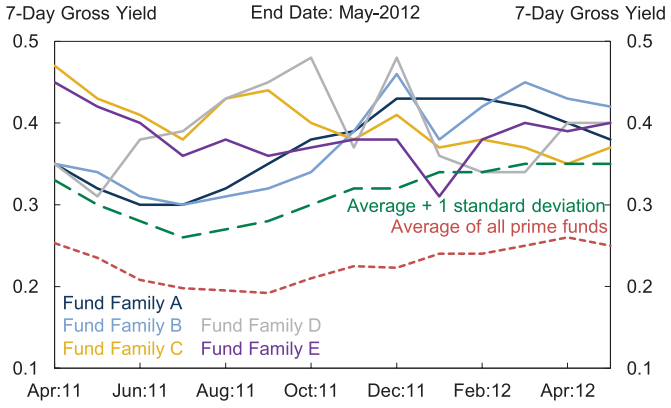
Chart 5.3.8 MMF WAL*



Source: OFR

Note: *Weighted average lives, weighted by size of fund.

Chart 5.3.9 Gross Yield of 5 Outlier MMF Families



Source: SEC

Note: Fund families are not named to retain anonymity.

The low interest rate environment also affected revenues of MMF managers. Total expense ratios for MMFs have fallen from 49 basis points to 25 basis points for retail MMFs and from 26 basis points to 18 basis points for institutional MMFs from 2009 to 2011. This significant drop, particularly among retail MMFs, is primarily due to fee waivers by MMF sponsors to preserve a positive net yield for MMF investors. As the extended low interest rate environment continues to put pressure on MMF yields, some MMFs have shown a willingness to take on additional portfolio risk **(Chart 5.3.9)**, which increases MMF gross yields and offsets the pressure to provide fee waivers. Thus, while on average MMFs have shown a decreased risk appetite in 2012, some funds have sought to increase their risk profile.

5.3.3 Broker-dealers

The broker-dealer (BD) industry contracted significantly while reducing leverage. Concentration in the industry increased.

As of year-end 2011, there were 4,679 domestic- and foreign-owned BDs operating in the United States. Coinciding with a sharp decline in leverage within the industry, assets held within the U.S. BD industry fell sharply to $4.8 trillion at 2012:Q1—a decline of 25 percent since 2007 **(Chart 5.3.10)**.

The U.S. BD sector is relatively concentrated; at year-end 2011, 60 percent of industry assets were held by the top 10 BDs, the largest of which are affiliated with foreign banks and domestic BHCs. By contrast, the top 10 independent BDs represented only 6 percent of industry assets. In late 2011, the third largest independent BD, MF Global, filed for bankruptcy. **(See Box D: MF Global Bankruptcy.)**

Aggregate pretax income declined by 59 percent in 2011 to $14 billion, as trading revenues declined sharply **(Chart 5.3.11)**.

5.3.4 Specialty Lenders

Specialty lenders continue to play a critical role in providing credit to those markets not served by the traditional banking industry and providing necessary funding in certain segments of the mortgage markets.

The specialty lending sector is composed of a wide range of entities, ranging from real estate investment trusts (REITs) who invest a majority of their capital in mortgage and mortgage-related holdings, to captive finance arms of major manufacturers who facilitate the financing of the parent firm's products. As of April 2012, specialty lenders owned approximately $654 billion of consumer loans, $330 billion of real estate loans, and $434 billion of business loans. Aside from consumer credit revolving loans and retail business loans **(Charts 5.3.12 and 5.3.13)**, specialty lenders experienced a slight decline in loan balances across a wide variety of loan categories, which was consistent with overall trends in the traditional banking industry.

As the GSEs have reduced their investment portfolios, REITs have been a rapidly growing source of investment capital for agency mortgage-backed securities (MBS). As of 2012:Q1, REITs held $299.4 billion of agency MBS, a 109 percent increase from 2010 and roughly five times pre-crisis levels **(Chart 5.3.14)**.

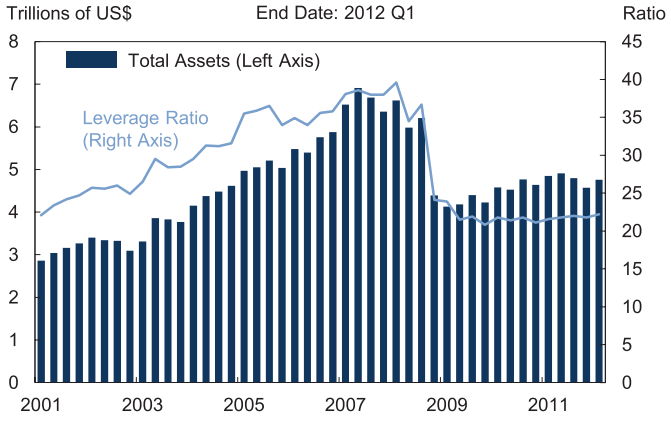
5.3.5 Investment Funds

Across the various types of investment companies, fund flows seem to reflect a general shift towards deleveraging and risk reduction by households and corporations within the uncertain financial environment. Performance in this low interest rate environment tended to be lackluster.

Mutual Funds

Mutual fund flows from year-end 2010 to 2012:Q1 reflect growing investor preference for capital preservation, income generation, and lower volatility. Mutual funds had an estimated $202 billion net inflow for the period, largely attributable to taxable bond funds, which received a net $217 billion **(Chart 5.3.15)**. Of

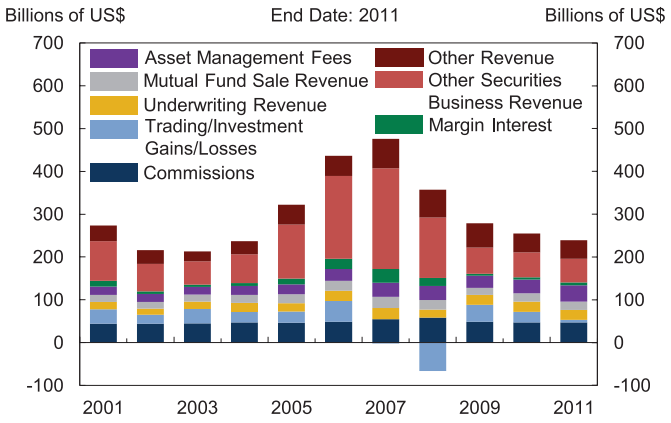
Chart 5.3.10 Aggregate Broker-Dealer Assets and Leverage



Source: SIFMA DataBank

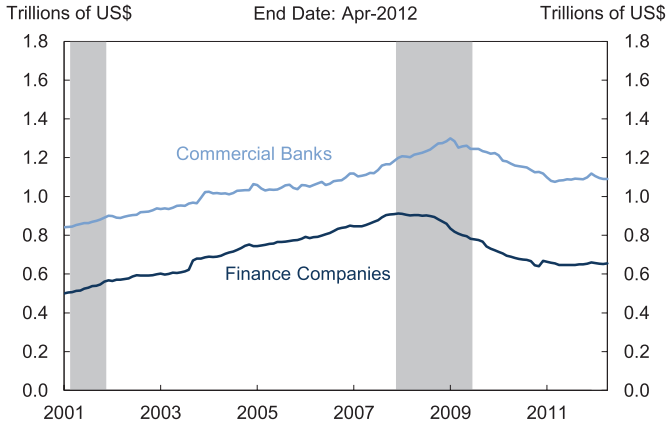
Note: Leverage is total assets as a multiple of equity.

Chart 5.3.11 Broker-Dealer Revenues



Source: SIFMA DataBank

Chart 5.3.12 Consumer Loans Outstanding



Source: Federal Reserve

Note: Loans owned and securitized. Gray bars signify NBER recessions.

BOX D: MF GLOBAL BANKRUPTCY

MF Global Holdings Ltd. (MFG) and MF Global Finance USA Inc. filed on a consolidated basis for relief under Chapter 11 bankruptcy protection on October 31, 2011. Of particular interest in the United States was the jointly registered broker-dealer (BD) and futures commission merchant (FCM), operating as MF Global Inc., which entered liquidation proceedings under the Securities Investor Protection Act (SIPA).

The jointly registered BD-FCM was a clearing member at several domestic central counterparty (CCP) clearinghouses, including the Chicago Mercantile Exchange (CME), the Options Clearing Corporation, and National Securities Clearing Corporation (NSCC). The BD was also a primary dealer in government securities with the Federal Reserve Bank of New York. The BD-FCM conducted business for its own account, as well as for customers.

A series of events led to the bankruptcy of MFG. Between March 2010 and March 2011, MFG entered into repurchase agreement transactions collateralized to maturity with European sovereign debt securities. During 2011, the company continued its almost uninterrupted series of quarterly operating losses (9 of 11 quarters through September 2011) that resulted partly from declining interest income earned from investing customer funds. On October 24, Moody's downgraded MF Global Holdings Inc., citing exposure to European sovereign debt, high leverage, and its likely inability to achieve financial targets. The following day, MFG announced a $192 million quarterly loss. MF Global Holdings Inc.'s debt was subsequently downgraded to junk. Industry observers believe that the ratings downgrade also precipitated the lowering of the collateral advance rate on the term to maturity repurchase agreements, prompting a margin call. The earnings report and credit-rating downgrade also impacted MFG's liquidity, as certain counterparties and clearing organizations assessed their credit exposure to MFG and imposed increased collateral requirements.

On the day of the bankruptcy, the company did not default to the CME, the Options Clearing Corporation, or NSCC. However, later on the same day, the company reported a shortfall in customer-segregated assets.

The full extent of the shortfall in commodities customer funds will not be known until the Trustee managing MFG's liquidation completes its efforts to recover assets and finalizes the customer claims process. The Trustee has distributed approximately $3.9 billion to date to customers who were trading primarily on U.S. futures markets. This represents approximately 72 percent of such customers' account balances. The Trustee also received the approval of the Bankruptcy Court on April 26, 2012, to distribute up to an additional $685 million, including $600 million to customers with claims for accounts trading on U.S. contract markets.

The Trustee, however, has stated that there is an approximate $1.6 billion gap between the value of the Trustee's estimate of potentially allowable commodities claims and the assets that are currently under the Trustee's control. A significant component of the gap in customer funds is attributable to approximately $700 million of customer assets that were deposited with MF Global UK Limited, an MFG affiliate in the United Kingdom, for trading on non-U.S. markets. The Trustee is disputing the treatment of these funds under English law with the Joint Special Administrators of MF Global UK Limited, and the likelihood of such assets being repatriated is uncertain at this time and is expected to be subject to future litigation or further United Kingdom court action. In addition, multiple federal agencies are reviewing the circumstances surrounding the transfers of monies out of customer-segregated bank accounts (particularly certain transfers that occurred during the week prior to the bankruptcy filing).

An SIPC-led liquidation was initiated on October 31. The firm had 200 to 300 securities accounts totaling less than $500 million in assets and over 38,000 commodity customer accounts totaling over $7 billion. The SIPA Trustee managing the liquidation is responsible for returning customers' property as quickly as possible, including both securities and commodities customers. As stated previously, approximately 72 percent of U.S. segregated

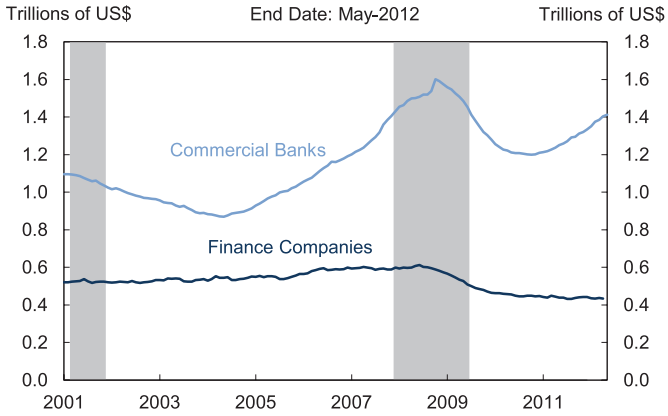
customer property has been distributed to commodities customers trading on U.S. designated futures markets as of April 25 on a pro rata basis. As a result of a distribution of funds recently approved by the bankruptcy court, that number should increase to over 80 percent.

The missing customer money highlights the issue of customer protection for commodities accounts. FCM accounts at custodians that contain customer property are under the control of the account holder, the FCM. FCMs routinely keep substantial amounts of their own capital in their customer accounts in order to protect against any possibility of a shortfall in customer accounts that may result from daily market moves, margin requirements, and other activity. Accordingly, it is critical for custodians to monitor the transfer of any money out of segregated accounts.

The CFTC has taken steps to enhance customer protection. In December 2011, the CFTC amended its regulations governing derivatives clearing organizations (DCOs) and FCM investment of customer funds. Among other things, the CFTC eliminated from the list of permitted investments BD-FCM in-house transactions that are the economic equivalent of repurchase agreements, repurchase agreements with affiliates, corporate notes and bonds that are not federally guaranteed, and foreign sovereign debt instruments. The amended regulations also imposed asset-based concentration limits and repo counterparty concentration limits, in addition to mandating stricter issuer-based concentration limits than had been applied previously.

The CFTC has also issued a new rule for customer segregation of cleared swaps, called legal segregation with operational commingling (LSOC). Under this model, each FCM will provide the DCO with position and collateral valuation information at the customer account level. The DCO can hold customer collateral provided by FCMs in the same commingled manner as it holds margin assets for exchange traded products. In a situation of "double default," where the default of an FCM customer causes the FCM to default to the DCO, the DCO would be able to then identify and access the collateral of the defaulting customers of the FCM but not the collateral of the non-defaulting customers, as is permitted today with exchange-traded futures.

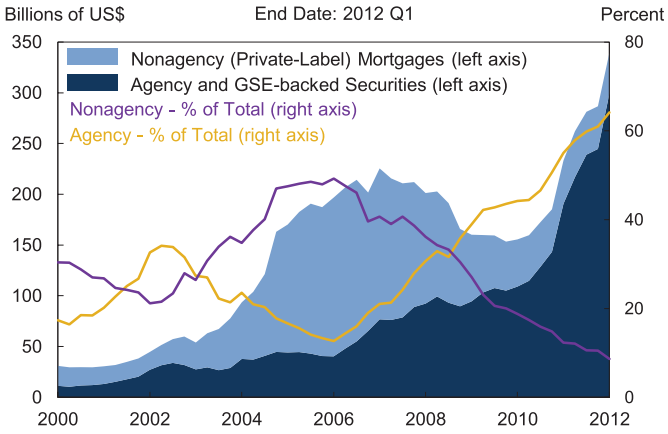
Chart 5.3.13 Business Loans Outstanding



Source: Federal Reserve

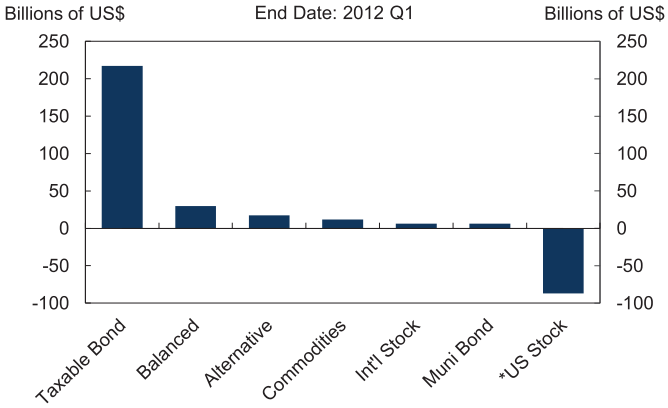
Note: Loans owned and securitized. Gray bars signify NBER recessions.

Chart 5.3.14 Real Estate Investment Trust (REIT) Assets



Source: Flow of Funds, Haver Analytics

Chart 5.3.15 Mutual Fund Flows by Asset Class (2011 to 2012 Q1)



Source: Morningstar

*Note: Includes sectors stock funds with int'l exposure.

note, the strong asset growth rates in high-yield funds (17 percent growth rate, relative to 2011 year-end net assets) and emerging market bonds (55 percent growth rate) over this period may reflect investor preference for yield among lower volatility fixed income products **(Chart 5.3.16)**. In contrast, U.S. equity funds had net outflows of $86 billion, with net monthly outflows since May 2011.

Pension Funds

As of the fourth quarter 2011, the combined assets under management of private and public pensions were over $15.3 trillion **(Chart 5.3.17)**.

Both public and private defined benefit plans remain significantly underfunded relative to the present value of their liabilities due to inadequate past contributions, low interest rates, and losses incurred in 2007 and 2008. As of year-end 2011, public defined benefit plans were only 76 percent funded, while private defined benefit plans were 79 percent funded **(Chart 5.3.18)**. Some private pension funds have received contributions to make up shortfalls or have been able to adjust their plans to reduce future outlays.

A number of state and local pension funds continue to grapple with structural shortfalls between their assets and liabilities. While these pension funds face pressure to reduce their expected return assumptions, many are reluctant to change assumptions in a meaningful way, reducing expected returns by only 25 to 50 basis points over the past three years. Currently the median assumed expected return across public plans is 8 percent, while private sector estimates of returns are closer to 6 percent.

Over the past three years, many states and localities have increased efforts to address long-term pension funding issues by curtailing benefits and increasing employee contributions, among other measures. Analyst views on the impact of these changes on pension funding profiles differ, with some viewing them as positive for long-term plan sustainability, while

others regard them as insufficient to address medium-term funding needs. To reduce fiscal pressures, state and local pension funds may seek to further curtail benefits for current and future retirees or seek increased financial support from their respective sponsors. If successful, these developments could lead to lower expected payouts for employees, reduced services, higher taxes, or some combination of all three. However, public pension benefits are often legally guaranteed, and amending them remains challenging.

Private Equity Funds

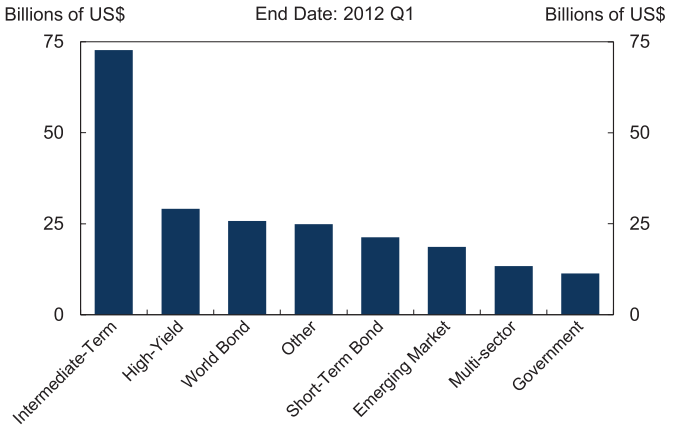
U.S. private equity assets under management increased to $1.7 trillion in 2011 **(Chart 5.3.19)**. The growth in assets continued to be supported by allocations from institutional investors such as pension funds, which comprise 43 percent of U.S. private equity capital. Although leveraged buyouts and venture capital account for over half of private equity assets under management, advisers continue to diversify their investment strategies into areas such as real estate, natural resources, distressed assets, and emerging market opportunities **(Chart 5.3.20)**.

The high volume of fund-raising and robust deal activity that signified pre-crisis private equity activity created the conditions that currently prevail, with advisers now focused on exiting existing investments and deploying committed capital. Given the constrained initial public offering (IPO) environment and tepid mergers and acquisitions activity amid ongoing economic uncertainty, private equity firms are focused on realizing returns on historically high levels of existing portfolio investments. They are also seeking investment opportunities for over $500 billion in undeployed capital commitments stemming from record levels of fund-raising from 2005 to 2007. (See Chart 5.3.19.)

Hedge Funds

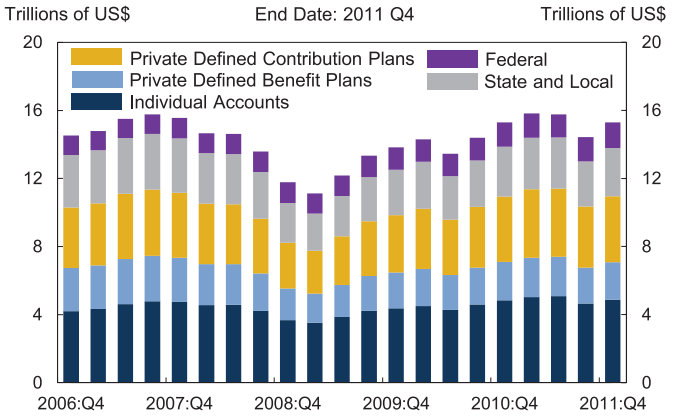
Institutional investors continue to be interested in hedge funds as an asset class in part because of the perception that the correlations between hedge funds and broad asset classes are low.

Chart 5.3.16 Mutual Fund Taxable Bond Flows (2011 to 2012 Q1)



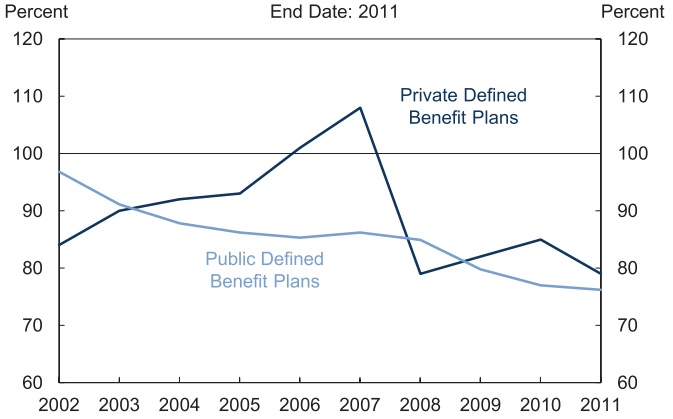
Source: Morningstar

Chart 5.3.17 Retirement Funds by Type



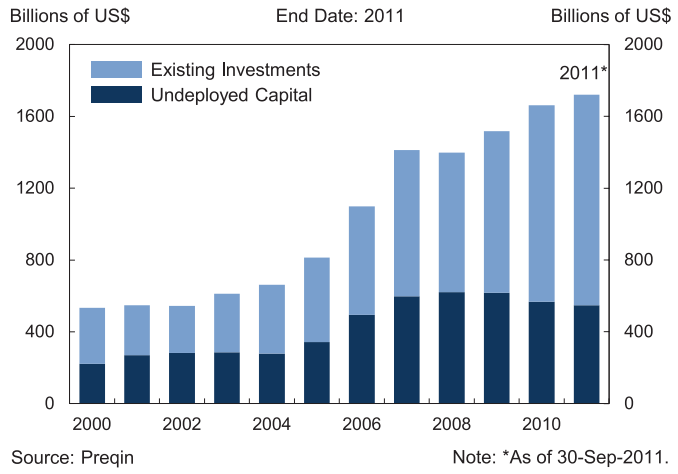
Source: Flow of Funds, Haver Analytics

Chart 5.3.18 Public and Private Pension Funding Level



Source: NASRA, Goldman Sachs Asset Management

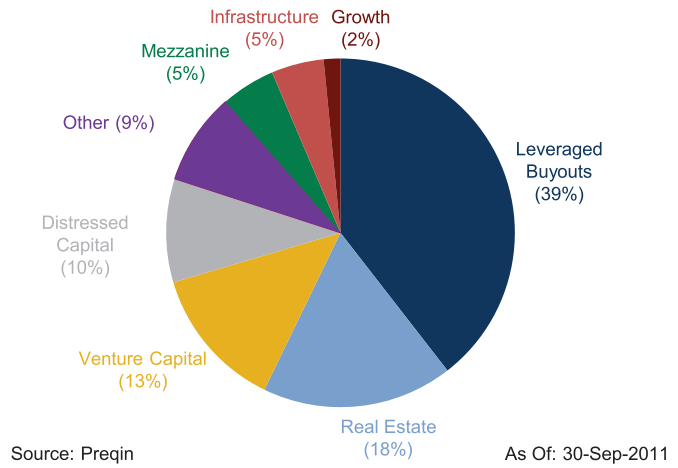
Chart 5.3.19 U.S. Private Equity AUM



Source: Preqin

Note: *As of 30-Sep-2011.

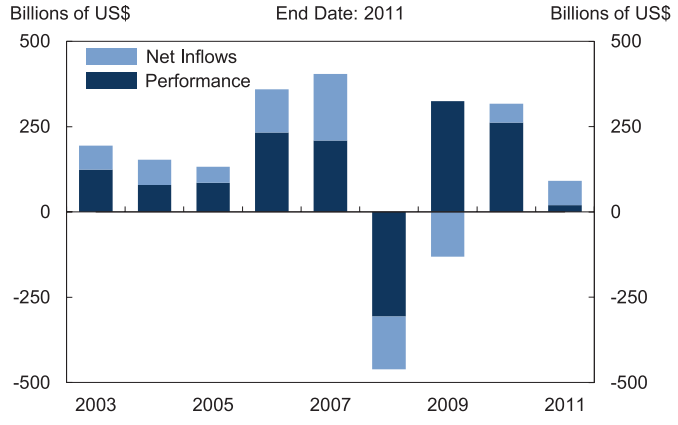
Chart 5.3.20 U.S. Private Equity AUM by Strategy



Source: Preqin

As Of: 30-Sep-2011

Chart 5.3.21 Change in Hedge Fund AUM



Source: Hedge Fund Research, FSOC calculations

At year-end 2011, assets managed by hedge funds were approximately $2.13 trillion, which represents a 3.5 percent increase from year 2010. This growth in assets under management primarily reflected inflows, rather than fund performance in 2011 **(Chart 5.3.21)**. In fact, hedge funds had lackluster performance across the major strategies for the calendar year **(Chart 5.3.22)**. Similar to other investment options, hedge fund performance has rebounded slightly in early 2012.

Following the crisis, institutional investor preferences for larger, more established funds with longer track records led to a greater concentration of industry assets at larger firms. This trend continued through 2011 and into 2012 as larger funds benefitted from the perception of increased stability.

Exchange Traded Funds

Exchange traded funds (ETFs) remain a popular means of achieving exposure to various market indices, as evidenced by their continued growth in terms of product launches and asset growth **(Chart 5.3.23)**. In 2011, the number of U.S.-listed ETFs grew by 28 percent to 1,353 products, and ETF assets grew by 6 percent to $1.06 trillion. Compared to 2010, net inflows in 2011 remained flat at $121 billion with higher concentrations of funds moving into ETFs with taxable bond, U.S. stock, and sector-specific strategies.

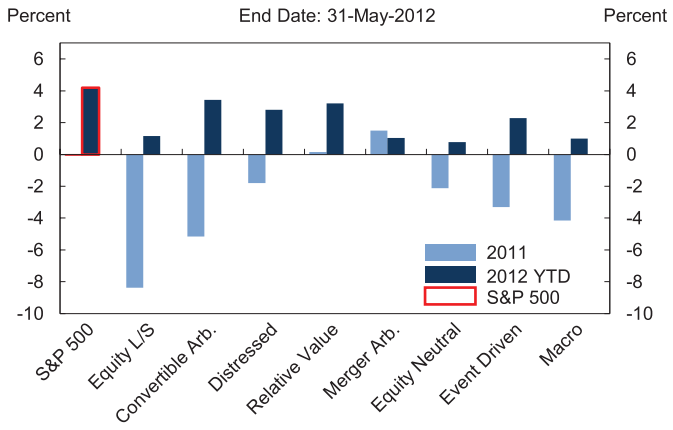
The U.S. ETF market remains populated predominately by passively managed products that track widely followed indexes in equity, fixed income, and commodity markets. Recently, alternative index strategies have emerged as ETF providers adapt to an increasingly saturated market. These "fundamental indexing" products rebalance their holdings according to proprietary methodologies that seek to extract value that is either not captured, or is obscured by, existing index construction. For example, among equity-based ETFs, such products may focus on lower volatility, lower beta to the broader market, higher earnings quality, higher dividend yield,

and so forth. On a related note, fixed income is widely viewed by industry observers as a likely avenue of growth for passively managed funds.

In addition to the growth of fundamental indexing, actively managed ETFs are cited by some as a potential new avenue for the ETF industry to grow. ETFs are required to disclose their holdings daily, while traditional mutual funds generally disclose their holdings quarterly. The requirement for daily disclosure is a matter of concern to some active managers, who fear the exposure of their strategies in the ETF structure may adversely affect the values of their funds. However, 2012 has seen notable launches of and filings for new actively managed ETFs, particularly for fixed income products, indicating that active management may indeed overcome the disclosure issue.

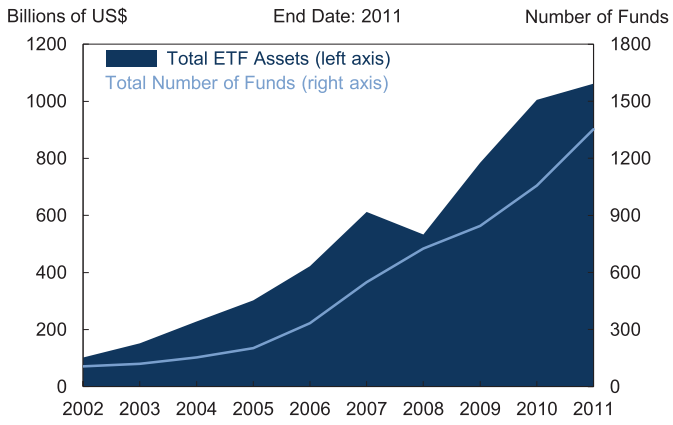
Despite the continued robust growth of the global ETF market, market participants remain attentive to some potential risks pertaining to ETFs, which may not yet be fully understood. In particular, some market participants continue to highlight the synthetic ETF structure as a potential transmission mechanism for risks between the United States and European financial systems. A synthetic ETF generates the return of an index through a total return swap with a bank, whereas a "physical" ETF holds the actual index constituents. Synthetic ETFs are common in Europe but not in the United States. Synthetic ETFs may manage to track indexes with lower trading costs and lower tracking error—particularly for less liquid markets—compared to an ETF. However, despite their potential advantages, some market participants continue to voice concerns over the potential for this structure to amplify financial market stresses in the event that a bank engaging in swaps with a synthetic ETF sponsor should be unable to meet its obligation. In addition, the emergence of new types of ETFs and similar products, such as leveraged and inverse-leveraged ETFs, actively managed ETFs, and ETFs based on very particularized asset classes, is a growing trend in the market and a focus of regulators.

Chart 5.3.22 Hedge Fund Performance by Strategy



Source: Hedge Fund Research

Chart 5.3.23 Growth in ETF Assets and Number of Funds



Source: Morningstar

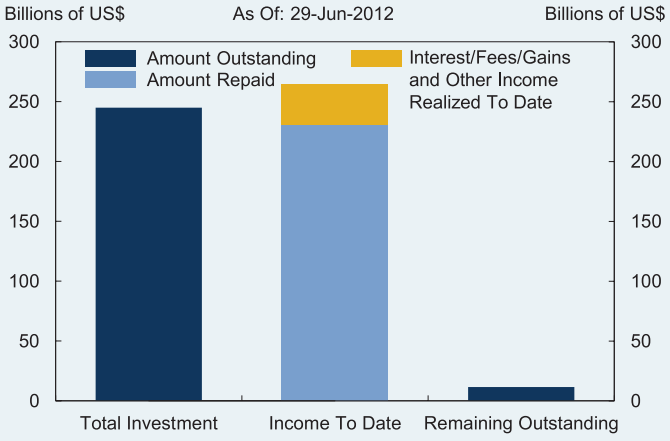
BOX E: CURRENT STATUS OF REMAINING STABILIZATION FACILITIES INAUGURATED DURING THE CRISIS

During the crisis, various federal agencies set up facilities to help stabilize the financial system when private market functioning was severely disrupted. While several of these facilities still hold net balances, most have been wound down in a manner that protects the U.S. taxpayer.

Troubled Asset Relief Program Bank Support Programs

Key parts of the federal government's response to the financial crisis were carried out by Treasury under the Troubled Asset Relief Program (TARP). Among several TARP programs targeting the banking system, the largest was the Capital Purchase Program (CPP), under which Treasury invested approximately $205 billion in over 700 banking organizations. The CPP is now closed. As of June 29, 2012, repayments—along with interest, dividends, and other income—exceeded the original disbursement. Treasury estimates that the total gain to taxpayers from the $245 billion disbursed under all bank support programs under TARP will ultimately exceed $20 billion **(Chart E.1)**.

Chart E.1 TARP Bank Support Program Status



Source: U.S. Department of Treasury

Temporary Liquidity Guarantee Program

The federal government's response to the financial crisis also included the FDIC's Temporary Liquidity Guarantee Program (TLGP). The Transaction Account Guarantee (TAG) portion of the TLGP guaranteed deposits in non-interest-bearing transaction accounts at insured depository institutions. The TAG expired on December 31, 2010. Section 343 of the Dodd-Frank Act, which provided unlimited deposit and share insurance coverage for non-interest-bearing transaction accounts beginning December 31, 2010, is scheduled to expire December 31, 2012. As of March 31, 2012, $1.3 trillion in non-interest-bearing accounts at over 7,000 institutions exceeded the basic coverage limit of $250,000 per account but was fully insured by temporary coverage. Under the TLGP, the FDIC guaranteed newly issued senior unsecured debt of insured depository institutions, their holding companies, and certain affiliates. No new debt can be guaranteed under the TLGP, but approximately $109 billion in guaranteed debt remained outstanding as of May 31, 2012.

Term Asset-Backed Securities Loan Facility

The Term Asset-Backed Securities Loan Facility (TALF), which the Federal Reserve and Treasury began operating in 2009, was created to help market participants meet the credit needs of households and small businesses by supporting the issuance of asset-backed securities (ABS) collateralized by certain consumer and business loans. Under the TALF, the Federal Reserve provided eligible borrowers with three-year and five-year non-recourse loans, collateralized by ABS.

In total, $71 billion in loans were provided under the TALF, but many were repaid early. The outstanding amount of TALF loans fell from $24.7 billion at the start of 2011 to $5.3 billion as of June 20, 2012. As of the end of March 2012, all collateral pledged against outstanding TALF loans maintained their AAA ratings, and all loans were performing as scheduled. Treasury committed to provide the Federal Reserve up to $20 billion under TARP in credit protection for the TALF. This amount was later reduced to $4.3 billion in July 2010 and subsequently reduced to $1.4 billion in June 2012. Treasury expects to incur no losses on this balance.

Maiden Lane LLC

Outside of and prior to TARP, the Federal Reserve Board authorized the Federal Reserve Bank of New York (FRBNY) to form Maiden Lane LLC (ML LLC) to facilitate the merger of Bear Stearns with JPMorgan Chase (JPM). The Federal Reserve Board authorized FRBNY to extend credit to ML LLC, which it did through a $28.8 billion senior loan,

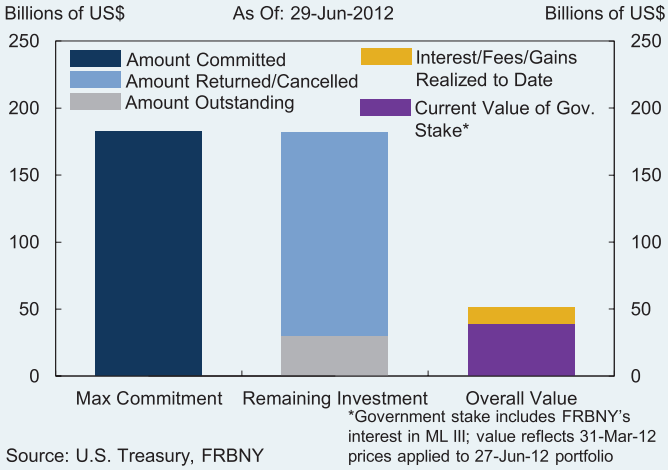
to partially fund the purchase of certain assets and associated hedges from Bear Stearns. As of June 14, 2012, ML LLC fully repaid the loan (including interest) made by FRBNY.

Assistance to American International Group

The Federal Reserve Board and the Treasury provided a coordinated response to alleviate capital and liquidity pressures on American International Group (AIG). At its peak, the amount committed to support AIG through FRBNY and Treasury was approximately $180 billion. FRBNY support included a secured revolving credit facility to AIG, as well as the formation and extension of credit to Maiden Lane II LLC (ML II) and Maiden Lane III LLC (ML III). To date, all of FRBNY's loans to AIG and to MLII and ML III have been repaid with interest.

As of June 29, 2012, only Treasury's TARP investment in AIG remained outstanding. The $30.44 billion unpaid balance is less than the $34 billion market value of the AIG common stock that Treasury holds. This stake and FRBNY's residual interest in assets held by ML II and ML III holdings related to FRBNY's investments in AIG are likely to produce an additional profit for the U.S. public **(Chart E.2)**.

Chart E.2 AIG Investments Committed and Returned



Source: U.S. Treasury, FRBNY

Mortgage-Backed Security Purchase Program

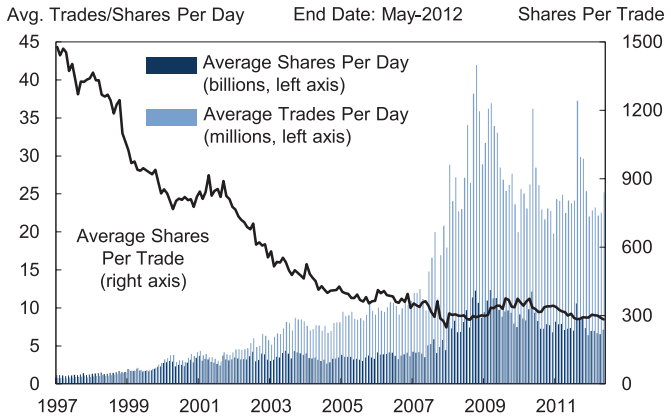
Using its authorities under the Housing and Economic Recovery Act of 2008, Treasury supported the housing market by purchasing mortgage-backed securities (MBS) issued by Fannie Mae and Freddie Mac. In 2008 and 2009, Treasury purchased MBS on the secondary market at a cost of $225 billion and completed the liquidation of these holdings in March 2012. The proceeds of sales, in addition to principal and interest received, were $250 billion, exceeding the program's cost by approximately $25 billion.

Auto Industry

Treasury created the Automotive Industry Financing Program (AIFP) in December 2008 to prevent a significant disruption of the U.S. automotive industry because of the risks such a disruption could pose to financial stability and the U.S. economy. Under the AIFP, Treasury invested approximately $80 billion in General Motors (GM), Chrysler, and their respective financing arms. As of 2012:Q1, GM and Chrysler, after substantial reorganizations, reported nine and five consecutive profitable quarters, respectively.

Treasury has made substantial progress toward exiting its investments in automotive companies and continues to monitor the performance of these firms and evaluate options to exit its investments. As of June 30, 2012, Treasury's investment in GM stood at $23.39 billion and in Ally Financial at $13.75 billion. Treasury has fully exited its investment in Chrysler and Chrysler Financial, which resulted in a $1.3 billion loss unlikely to be fully recovered.

Chart 5.4.1 Average Trade Size—U.S. Equities



Source: U.S. Exchanges, Tabb Group

5.4 Financial Market Infrastructure

5.4.1 Electronic Trading of Exchange-Traded Instruments

Technology has dramatically changed the market for exchange-traded instruments, with the growth in computerized trading algorithms resulting in smaller trade sizes, higher volumes, and potentially more complex trading strategies. At the same time, a proliferation of trading venues outside traditional exchanges has resulted in increased fragmentation of equities markets and could have broader implications for the financial system.

Advances in computing and communication technology, along with regulatory changes, have transformed electronic trading. High-speed computerized trading has been a hallmark of modern equities, futures, and foreign exchange markets and has spread in recent years to markets for derivatives and fixed income instruments. Computerized trading is used to facilitate a wide array of activities, including automated order routing and so-called high-frequency trading. **(See Box F: Algorithmic and High-Frequency Trading.)** A vast expansion of market data supports these activities.

Along with decimalization of U.S. equity and equity options markets, electronic trading has resulted in smaller tick sizes and decreasing trade sizes. In particular, a common use of computerized trading algorithms is to split trades into multiple smaller transactions. As seen in **Chart 5.4.1**, average size per trade in U.S. equities markets declined 81 percent since 1997, while volumes increased more than 500 percent through May 2012. This practice of trade splitting has become increasingly evident over the past 15 years. Its likely purpose is to minimize the price impact of trading, but decreased trade sizes may also be a component of more complex computerized trading strategies.

More generally, liquidity has been fragmented among various equity trading modalities, including exchanges, alternative trading systems, broker-dealer internalizers, and

so-called "dark pools." The latter are trading systems that are not openly available to the public in which buyers and sellers submit orders anonymously, with neither order size nor price revealed publicly until the trade has been completed. In May 2012, almost a third of all trading in the equities market occurred outside exchanges in such dark pools and broker-dealer internalizers, where customer orders are matched against each other or against proprietary orders of the internalizing broker-dealer **(Chart 5.4.2)**.

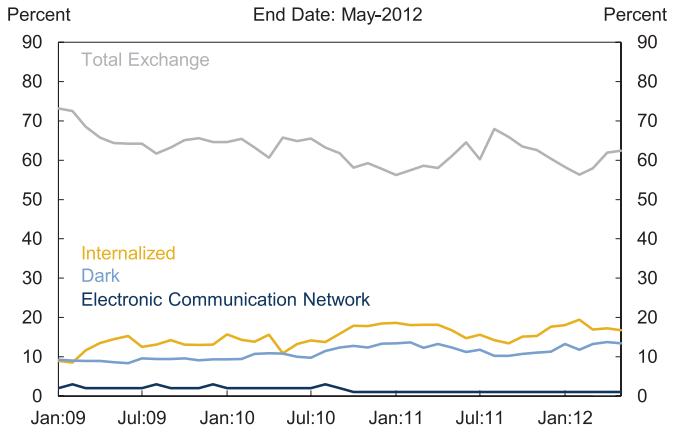
More recently, equities exchanges have been competing for market share in an environment of narrowing spreads, lower commissions, greater competition, and declining share volumes. Specifically, average daily volume of U.S. shares trading has declined 20 percent since a peak of 9.82 billion shares in 2009 to 7.83 billion at the end of 2011 **(Chart 5.4.3)**. Also noteworthy is the growth of trading in the Asia Pacific region. From 2000 through 2009, Asia's share of global trading more than doubled **(Chart 5.4.4)**. This growth in Asian trading is a by-product of the rapid economic growth in this region, with a concomitant growth in demand for financial services.

5.4.2 Wholesale Payments and Settlements

Activity within the wholesale payments utilities has rebounded as both volumes and values continue to increase since the crisis. Robustness for the largest of these utilities, the Fedwire® Funds Service, has improved, with earlier settlement times and reduced operational risk. In addition, new and more demanding international standards have been released for large value payments and settlement utilities, as well as for other financial market infrastructures.

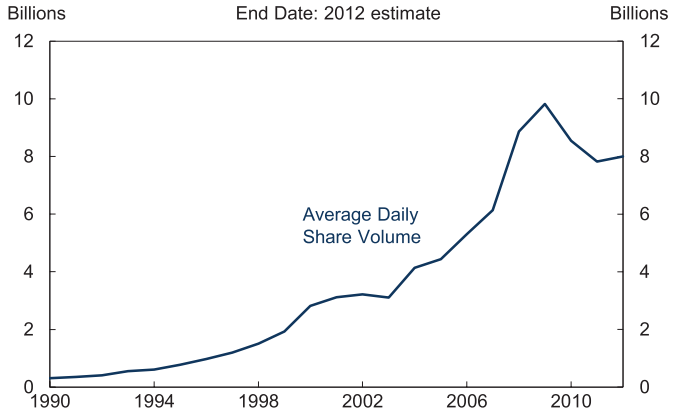
The major wholesale payments utilities supporting U.S. financial markets are the Fedwire Funds Service, a real-time gross settlement system operated by the Federal Reserve Banks, and the Clearing House Interbank Payments System (CHIPS), a continuous net settlement system operated by The Clearing House Payments Company

Chart 5.4.2 Average Daily Volume Shares by Venue



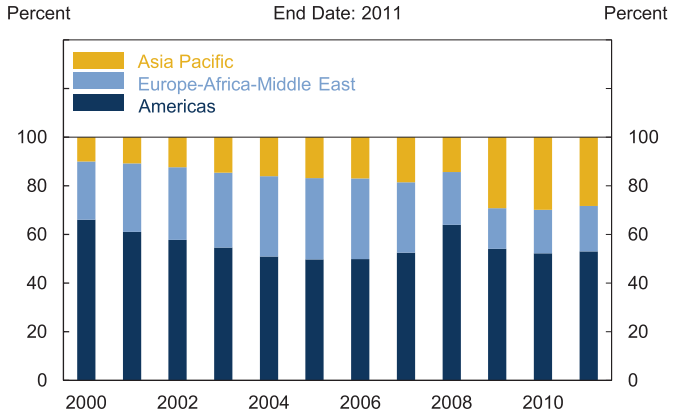
Source: Tabb Group

Chart 5.4.3 U.S. Equities Share Volume



Source: Tabb Group

Chart 5.4.4 Regional Market Share of Trades



Source: WFE

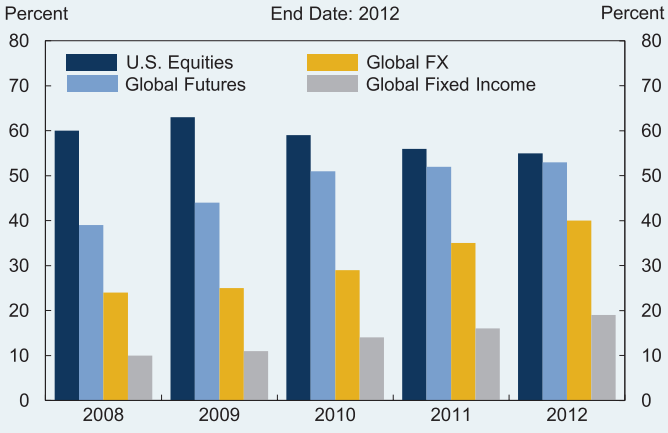
Note: Years 2000-2008 include electronic and negotiated deals. Years 2009-2011 include only electronic deals.

BOX F: ALGORITHMIC AND HIGH-FREQUENCY TRADING

Advancements in technology have had a profound effect on trading, as activity has become faster, more complex, and highly automated. Although computer-based algorithms have been utilized in U.S. equities markets for quite a while, the expansion into other markets and the proliferation of high-speed algorithmic trading—along with the current fragmented market structure—could lead to unintended errors cascading through the financial system. Regulators and market participants must help ensure that adequate controls and risk-management practices are in place to mitigate these risks.

High-speed algorithmic trading utilizes computer algorithms to determine the timing, price, and quantity of trades. High-frequency trading (HFT) is one particular type of algorithmic trading. While there is no standard, commonly accepted definition of HFT in the industry, HFT typically refers to the use of computerized trading to move in and out of positions rapidly, generally ending the day flat with little or no exposure to the market on an overnight basis. In contrast, other styles of algorithmic trading allow positions to be held over longer time horizons. HFT is widely used in U.S. equities, global futures, and global foreign exchange, accounting for nearly 56 percent, 52 percent, and 35 percent of total trading, respectively, in 2011 **(Chart F.1)**.

Chart F.1 HFT % Use in Various Asset Classes



Source: Aite Group

Note: 2012 Estimate.

Algorithms have long been used in U.S. equities markets, notably to route orders to the trading venue with the best execution price in compliance with the SEC's Regulation National Market System (NMS). Over the past decade, algorithms have been adapted for trading in other asset classes. A notable class of computerized trading algorithms is so-called "black box" strategies, which are fully automated and preprogrammed, and which generally have trades initiated directly by the algorithm itself. Black box trading algorithms are capable of reacting to market data, transmitting thousands of order messages per second directly to electronic trading venues, cancelling and replacing orders based on changing market conditions, and capturing price discrepancies with little or no human intervention.

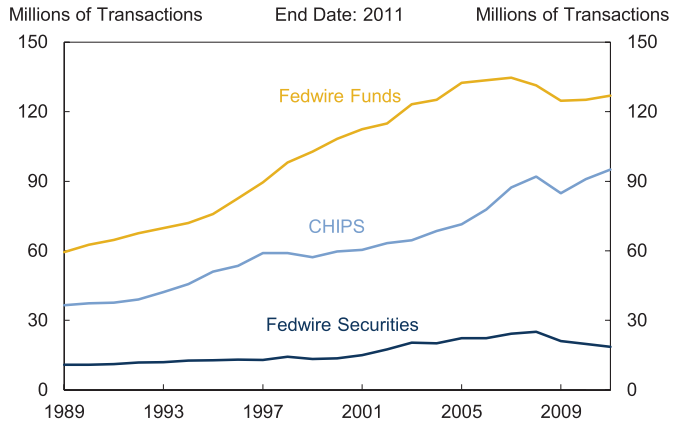
Given the speed with which these transactions are executed, errors can propagate rapidly through systems and across markets. Such errors could include unintended accumulation of large positions, out-of-control algorithms, and erroneous "fat finger" trades. As a result, prudent and timely risk management is of paramount importance in these markets. Appropriate pre- and post-trade risk controls are desirable at all levels of the trade life cycle, from trade submission to trade matching, clearing, and settlement. Therefore, trading firms, exchanges, broker-dealers (BDs), future commission merchants (FCM), foreign exchange prime brokers (FXPB), service providers, and clearing organizations each have an important role to play in preventing, detecting, and responding to potential computer-generated trading errors.

The desire for faster execution has prompted changes within the marketplace to minimize latency. Latency is a measurement of the time it takes to send an order to a trading venue and for a trading venue to acknowledge the order. Participants seek to minimize latency in order to increase the chances of getting prompt order execution at the best price. Factors affecting latency include geographical distance and response time from the exchange's matching engine and the speed at which market data and other signals from the marketplace are processed.

Reducing latency is particularly important for high-frequency traders because the passage of time, even for an instant, exposes them to market risk. Price makers are exposed to the risk that their orders could remain in the order book after the market has moved in the opposite direction of their trading strategy and before their cancellations are processed. Price takers are exposed to the risk that a resting order they want to capture could be cancelled prior to execution or could be captured by another, faster trader.

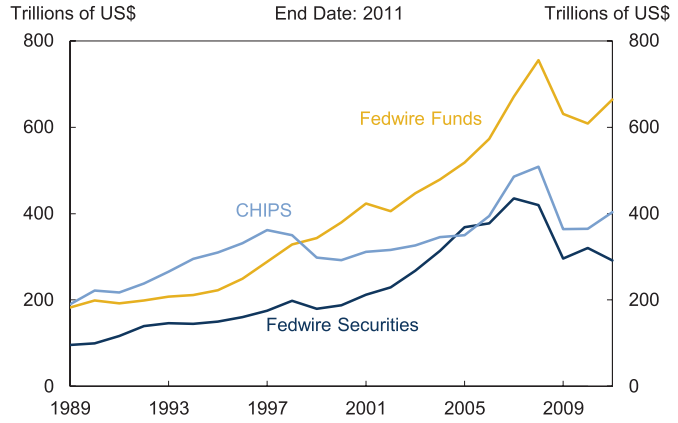
In response to demand for faster execution, some trading venues allow "direct access" (sometimes referred to as "sponsored access"), through which certain trading firms access the exchange's matching engine directly, bypassing the systems of their sponsoring BD, FCM, or FXPB. It is important that sponsoring entities offering direct access have proper controls in place for monitoring their clients' activity across the relevant platforms. Another way trading firms can reduce latency is to place (co-locate) their servers as near as possible to the trading venue's matching engine(s). An important policy issue is the extent to which trading firms have equal access to co-location or direct access services. BDs, FCMs, and FXPBs are financially responsible for the trades of all their customers, including those that engage in algorithmic trading. To help ensure prudent customer risk management in the equity market, the SEC implemented Rule 15c3-5 in July 2011, which (among other things) requires BDs to maintain a system of controls and supervisory procedures reasonably designed to limit the financial exposures arising from customers that access the markets directly. In addition, the SEC recently approved two proposals by the SRO and FINRA. The first proposal would update, on a pilot basis, the existing single-stock circuit breaker mechanism with an additional "limit-up" and "limit-down" mechanism that effectively prohibits trades from being immediately executed at prices outside of prescribed rolling bands. The second proposal would update, also on a pilot basis, the existing market-wide circuit breakers that, when triggered, halt trading in all exchange-listed securities throughout the U.S. markets. The proposed changes lower the percentage-decline threshold for triggering a market-wide trading halt and shorten the amount of time that trading is halted. Among other things, these mechanisms would help mitigate the impact of any algorithmic orders that could otherwise rapidly drive the price of a stock up or down. In the futures market, the CFTC has adopted rules to bolster risk management at the exchange, clearing firm and other levels. In the foreign exchange market, prime brokers are increasingly making use of post-trade services designed to help prime brokers manage client risk on a real-time, intraday basis across multiple trading venues.

Chart 5.4.5 Annual Payment Clearing Volumes



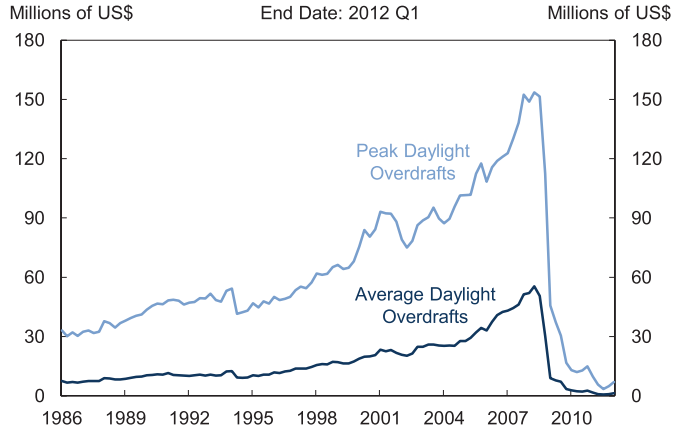
Source: Federal Reserve, CHIPS

Chart 5.4.6 Annual Payment Clearing Values



Source: Federal Reserve, CHIPS

Chart 5.4.7 Fedwire Funds Daylight Overdrafts



Source: Federal Reserve

LLC. The Fedwire Securities Service provides securities issuance, settlement, and transfer services for the U.S. Treasury, U.S. government agencies and government-sponsored enterprises, and certain international organizations.

There was a sharp decline in 2009 in annual payment clearing volume and value for the Fedwire Funds Service, CHIPS, and the Fedwire Securities Service from pre-crisis peaks **(Charts 5.4.5 and 5.4.6)**. From 2009 through 2011, volume and values continued to modestly decline for the Fedwire Securities Service and showed a moderate rebound for Fedwire Funds Service and CHIPS.

Two noteworthy developments in U.S. large value payment systems are the reduced use of daylight overdrafts **(Chart 5.4.7)** and the earlier submission of payments **(Chart 5.4.8)**. Before 2008, only 20 percent of Fedwire Funds Service payments (by value) were settled by 1:00 p.m. (Eastern), and only 50 percent were settled by 4:00 p.m. (Eastern). As of May 2012, some 20 percent of Fedwire Funds Service value settled by 10:00 a.m., and 50 percent settled before 2:00 p.m. (Eastern). Both of these developments appear to be driven largely by the increase in the quantity of reserves on bank balance sheets **(Chart 5.4.9)**. From an operational risk perspective, earlier payment submission decreases the potential magnitude of liquidity dislocations and risk in the financial industry should an operational disruption occur near the close of the Fedwire day at 6:30 p.m. (Eastern). An open question is whether payments will revert back to late-in-the-day settlements if and when reserve balances revert to the pre-crisis norm.

A final noteworthy development in wholesale payments and settlements is the release by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) of a new package of standards called Principles for Financial Market Infrastructures, subject to adoption by regulators

in individual jurisdictions. The principles are intended to apply to all systemically important payment systems, central securities depositories, securities settlement systems, central counterparties, and trade repositories (collectively "financial market infrastructures"). These principles contain new and more demanding international requirements that are designed to help ensure that the infrastructure supporting global financial markets is more robust and thus well placed to withstand financial shocks. The CPSS and IOSCO members (including the Federal Reserve, the CFTC, and the SEC) will strive to implement the new standards by the end of 2012.

5.4.3 Derivatives Infrastructure

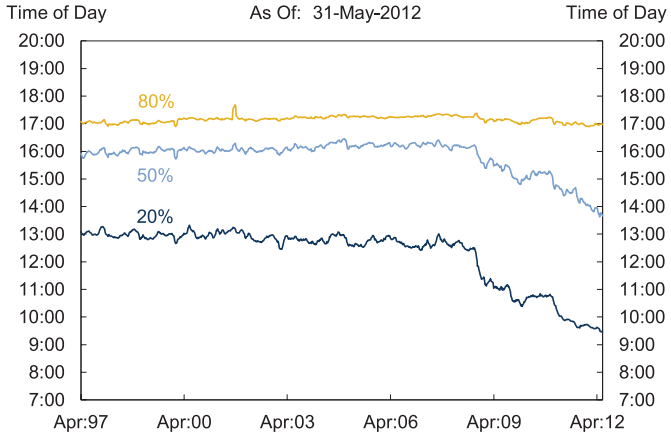
Global use of over-the-counter (OTC) derivatives expanded in 2011. Increasingly, these derivatives are centrally cleared, and data on these derivatives trades are reported to trade repositories, developments which enhance robustness of these markets.

Global Derivatives Volumes

As measured by notional value, the global OTC market has grown considerably faster than the exchange-traded derivatives markets **(Chart 5.4.10)**. Comparing the second half of 2011 to the second half of 2010, the OTC market grew at an 8 percent pace, reflecting continued strong demand by end users for customized risk-management products. In contrast, the exchange-traded markets declined by 17 percent over this period. Notional volumes for both exchange-traded and OTC interest rate products declined sharply in the second half of 2011, with notional amounts for OTC interest rate swaps dropping from $553 trillion (U.S. dollars) to $504 trillion from 2011:H1 to 2011:H2, and exchange-traded numbers in the same period declining from $76 trillion to $53 trillion **(Chart 5.4.11)**. It is likely that these declines were due to less need for interest-rate hedging in an environment of low interest rates and diminished credit growth.

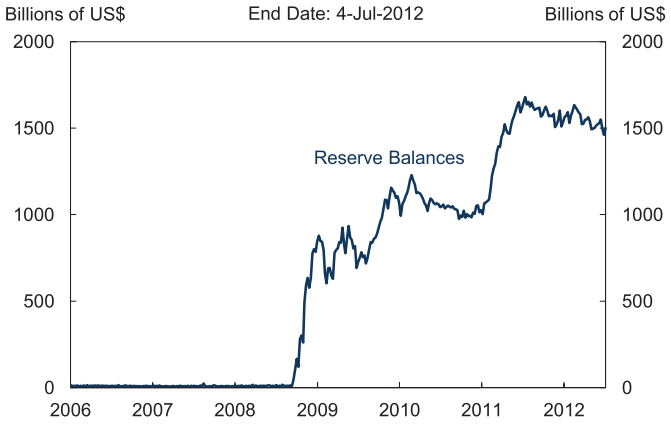
As measured by number of contracts, over two-thirds of exchange traded derivatives were traded outside the United States in

Chart 5.4.8 Deciles of Fedwire Value Time Distribution



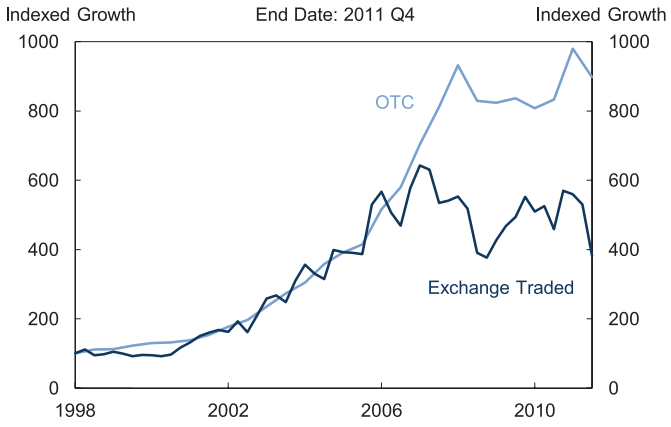
Source: FRBNY, Martin, Bech and McAndrews (2012)

Chart 5.4.9 Reserve Balances



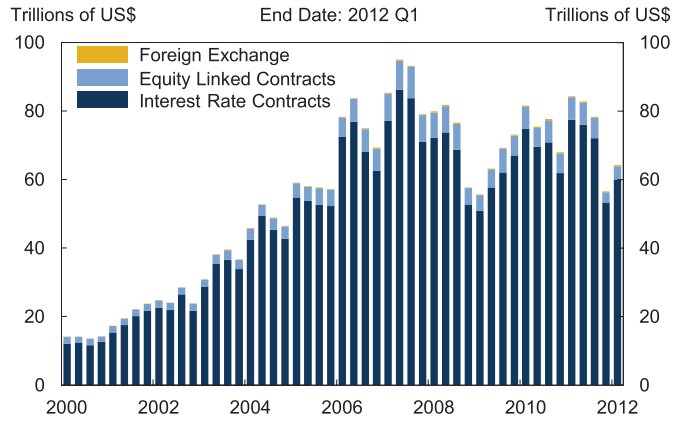
Source: Federal Reserve

Chart 5.4.10 Global OTC and Exchange-Traded Derivatives Growth



Source: BIS Note: Notional values, Indexed such that 1998 Q2 = 100.

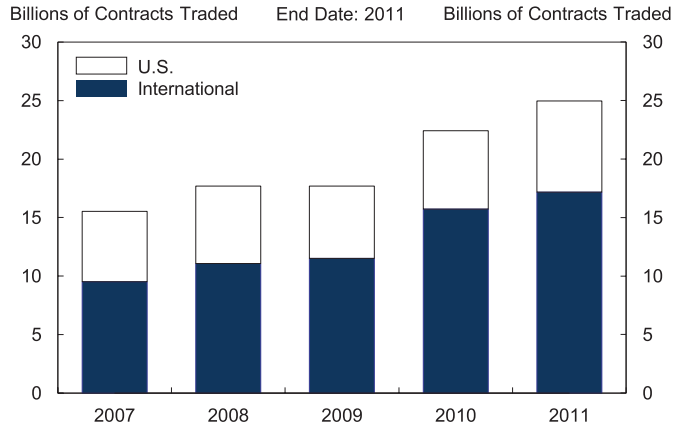
Chart 5.4.11 Global Exchange-Traded Derivatives



Source: BIS

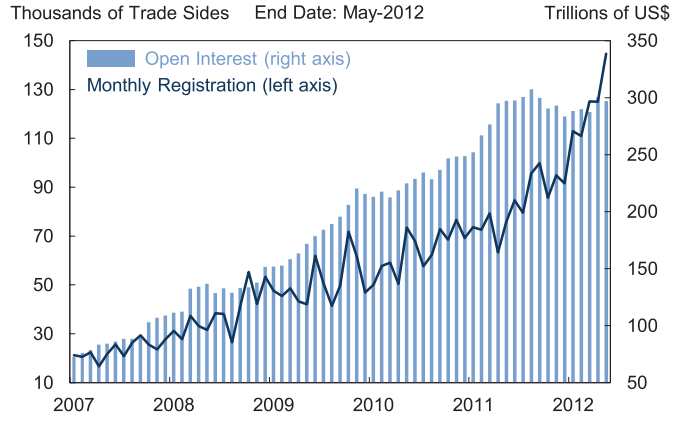
Note: Notional values.

Chart 5.4.12 Exchange-Traded Derivatives Globalization



Source: Futures Industry Association

Chart 5.4.13 SwapClear Volume



Source: LCH.Clearnet

2011 **(Chart 5.4.12)**. The share of derivatives volume traded on non-U.S. exchanges has been increasing over the past several years.

Central Clearing of Derivatives

A major trend in OTC markets over the past few years is the increasing numbers of OTC derivatives cleared by central counterparty (CCP) clearinghouses. CCP provide credit risk mitigation for market participants by acting as buyer to every seller and seller to every buyer. Prior to 2009, there had been central clearing of OTC derivatives, including clearing of interest rate swaps (IRS) by LCH.Clearnet's SwapClear and clearing of various energy derivatives by the ClearPort system operated by the New York Mercantile Exchange (now part of Chicago Mercantile Exchange, or CME) and by IntercontinentalExchange's (ICE) ICE Clear Europe. In 2009, ICE Clear Credit (formerly known as ICE Trust) and ICE Clear Europe, as well as CME, began clearing credit default swaps (CDS). Since the 2009 G-20 commitment, which calls for central clearing of all standardized OTC derivative contracts by the end of 2012, clearing activity has grown dramatically in all such asset classes. Subsequent legislation in the United States (the Dodd-Frank Act) and regulation in the European Union (the European Market Infrastructure Regulation) are consistent with the spirit of the G-20 commitment.

A good deal of progress has been made toward central clearing of standardized OTC derivatives contracts, although there is still progress to be made. LCH.Clearnet's SwapClear reports that the outstanding notional value of cleared IRS has grown from about $70 trillion in 2007 to almost $300 trillion going into June 2012 **(Chart 5.4.13)**. The number of new IRS contracts cleared per month ("monthly registration" in Chart 5.4.13) has risen from a bit over 20,000 in 2007 to nearly 150,000. SwapClear now estimates that 52 percent of new IRS trades are presented to it for clearing. As of June 29, 2012, 40 percent of the notional value of IRS cleared by SwapClear is denominated

in euros, with 36 percent denominated in U.S. dollars **(Chart 5.4.14)**.

CDS markets also show a substantial increase in centrally cleared contracts. According to the International Swaps and Derivatives Association (ISDA), centrally cleared CDS contracts represented 10.6 percent of the notional amounts outstanding as of December 2011. The two major CCPs for CDS both show significant growth in clearing: ICE Clear Credit's open interest has grown from de minimis amounts three years ago to $905 billion notional as of June 15, 2012, comprising $470 billion in index products, $390 billion in corporate single-name contracts, and $45 billion in sovereign single names. ICE Clear Europe reports similar growth **(Charts 5.4.15 and 5.4.16)**.

CCPs have added numerous new products to clearing. For example, the various clearing entities associated with the ICE added over 125 new OTC derivatives to their lists of products accepted for clearing, including energy swaps, emission swaps, and additional index, single-name and sovereign CDS over the past few months. Eurex Clearing has announced its intention to begin clearing OTC IRS in the second half of 2012. In mid-March 2012, LCH.Clearnet's ForexClear began clearing OTC foreign exchange (FX) non-deliverable forwards (NDFs). CME Group is also now clearing OTC FX, and NDFs. ICE announced their plans to begin NDF clearing as well. Finally, the Options Clearing Corporation is developing a Standard & Poor's (S&P) 500 OTC option for clearing.

One of the expected benefits of centralized clearing of OTC derivatives is the possibility of netting offsetting contracts that accumulate through repeated trading. LCH.Clearnet's SwapClear reports a reduction of about 25 percent of the notional value presented to it for clearing through netting, tearing up of offsetting contracts, and other processes to eliminate redundant contracts. ICE Clear Credit reports a much larger netting efficiency. They achieved a reduction of about 90 percent

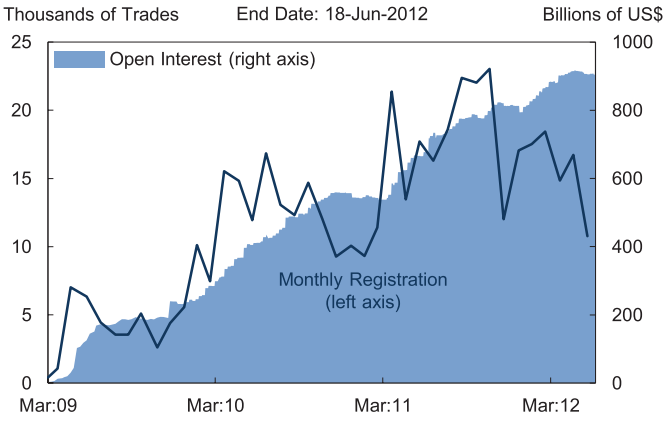
Chart 5.4.14 Outstanding SwapClear Volumes

As Of: 29-Jun-2012

Currency	Outstanding Notional (Trillions of US$)	Outstanding Trades
USD	109.3	357,663
EUR	121.8	340,609
GBP	23.8	105,031
JPY	33.8	148,162
CHF	3.4	24,736
Other	13.5	118,385
Total	**305.6**	**1,094,586**

Source: LCH.Clearnet

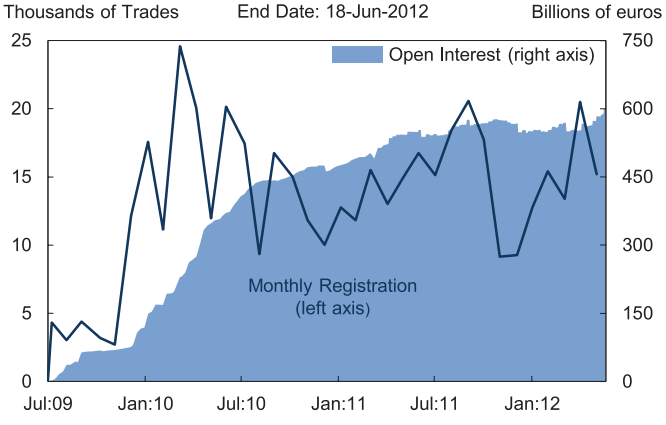
Chart 5.4.15 ICE Clear Credit



Source: ICE

Note: Only trading days shown.

Chart 5.4.16 ICE Clear Europe



Source: ICE

Note: Only trading days shown.

Chart 5.4.17 Interest Rate Derivatives

As Of: 20-Apr-2012

Counterparty Type	Gross Notional (BUSD EQ)	Gross Notional (%)	Trade Count	Trade Count (%)
CCP	259,704	52 %	1,819,070	42 %
G14 Dealer	82,124	17 %	669,861	16 %
Non-G14 Dealer	154,061	31 %	1,813,638	42 %
Total	**495,889**		**4,302,569**	

Source: TriOptima

Note: The G14 is an industry group of the most active global derivatives dealers. A G14 dealer is on at least one side of all TriOptima trades.

Chart 5.4.18 CDS and Other Credit Derivatives

As Of: 29-Jun-2012

		Seller Type					
		Dealer		Non-Dealer /Customer		Totals	
		Gross Notional (Billions of US$ EQ)	Contracts	Gross Notional (Billions of US$ EQ)	Contracts	Gross Notional (Billions of US$ EQ)	Contracts
Buyer Type	Dealer	15,714	1,718,302	4,627	294,067	20,341	2,012,369
	Non-Dealer/ Customer	4,629	284,384	28	2,749	4,658	287,133
	Total	**20,343**	**2,002,686**	**4,656**	**296,816**	**24,999**	**2,299,502**

Source: Trade Information Warehouse, DTCC

of the notional value of the original CDS trades presented for clearing through netting, tear-ups, and other compression processes.

Trade Repositories

A relatively new feature in the market infrastructure for swaps is the development of trade repositories (TRs). Under Title VII of the Dodd-Frank Act, the details of all swaps (and security-based swaps) will have to be reported to a TR (or to the CFTC or SEC, as appropriate, if no TR is available). The major global swaps market participants are working to establish a trade repository for each asset class and have voluntarily provided information to the repositories on their ongoing and, in some instances, legacy trades. TRs are operational in the United States, United Kingdom, and/or Luxembourg for interest rate swaps, credit default swaps, equities swaps, commodities swaps, and FX swaps. Additional TRs are expected to be operational by year-end 2012.

TRs data can be used to measure the size and composition of different swaps markets. For example, according to TriOptima, a TR that served the interest rate derivatives market through mid-2012 (before being replaced by a unit of Depository Trust and Clearing Corporation), some $495.9 trillion (notional) interest rate derivatives contracts have been reported to the TR by the so-called G-14 dealers, of which a bit over one-half are cleared by a CCP **(Chart 5.4.17)**. The vast majority of these centrally cleared swaps are dealer-to-dealer contracts. In addition, another 17 percent reported as non-centrally cleared dealer-to-dealer contracts were among the G-14 major swaps dealers. Similarly, the Trade Information Warehouse, a TR for CDS, reports that $25.0 trillion (notional) CDS contracts were reported to the TR, of which $15.7 trillion (approximately 63 percent) are dealer-to-dealer **(Chart 5.4.18)**. This preponderance of dealer-to-dealer swaps, especially those among the largest dealers, appears to be an ongoing feature of these markets. Industry contacts

report that these interdealer trades are mostly for the purpose of hedging the risks associated with market-making activities. It is of interest that, in aggregate, dealer positions as seller of CDS protection ($20.343 trillion notional) approximately equal dealer positions as buyer of such protection ($20.341 trillion notional). In other words, the dealer community in aggregate has approximately a flat CDS book without a pronounced directional tilt.