The Impact of Post-Crisis Reforms on the U.S. Financial System and Economy

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to the

Exchequer Club

Washington, D.C.

June 15, 2016

Thank you for the opportunity once again to speak to the Exchequer Club.

Today I would like to share some thoughts on the broader effects on the U.S. financial system and economy of the prudential safety and soundness reforms that the regulators have implemented since the financial crisis.

In response to vulnerabilities identified during the crisis, regulators have undertaken a series of measures to strengthen the banking system of the United States and promote a more stable and resilient financial system. The federal banking agencies have strengthened the quality of regulatory capital and increased the level of risk-based capital requirements for all banks, and have established enhanced leverage ratio requirements for the largest, most complex banking organizations. The banking agencies also have finalized requirements for increased liquid asset holdings of large banking organizations, proposed liquidity rules addressing the need for longer-term stable sources of funding, and worked with other agencies to establish margin requirements for non-cleared derivatives and limit the use of the federal banking safety net to support proprietary trading. The Federal Reserve's CCAR stress test process[1] has significantly increased the focus on rigorous management of the risks at large banking organizations.

As an objective matter, the banking system is significantly more resilient today as a result of these reforms. At the end of 2015, large banking organizations[2] had twice as much tier 1 capital and liquid assets in proportion to their size as they had entering the crisis,[3] and the loss-

[1] Comprehensive Capital Analysis and Review.

[2] Bank Holding Companies with assets of at least $250 billion.

[3] The tier 1 leverage ratio for BHCs with assets of at least $250 billion increased from 4.46 percent at year-end 2007 to 9.04 percent at year-end 2015, while the ratio of liquid assets (for this purpose these consist of cash, Fed Funds sold, Treasury securities, Agency debt securities, and Agency mortgage-backed securities) to total assets increased from less than 10 percent to about 21 percent during the same period.

absorbing quality of their capital has greatly improved. The quality and level of capital at smaller banks is stronger today as well.

It is fair to ask how these prudential reforms have affected banks' ability to support U.S. economic growth and market functioning. In this regard, four broad areas are often mentioned. These are credit availability, bank profitability, market liquidity, and the distribution of financial activity between banks and nonbanks. Today I would like to discuss all four of these areas. To cut to the chase, I believe the evidence suggests that the reforms put in place since the crisis have been largely *consistent with, and supportive of*, the ability of banks to serve the U.S. economy.

Credit Availability

With that as an introduction, I will turn to the first area, credit availability. How the post-crisis reforms have affected the willingness of banks to lend is an important question. What we observe is strong loan growth at U.S. banks. Loans on the balance sheets of insured banks are increasing significantly faster than economic growth and faster than some important measures of household and business credit. For example, in 2015 loans held by insured banks grew 6.4 percent, more than twice as fast as Gross Domestic Product. One-to-four family mortgages, meanwhile, grew 3.4 percent, more than twice the rate of growth of household residential mortgage debt from all sources,[4] while commercial and industrial loans grew 7.4 percent, exceeding the 4.3 percent growth of the outstanding amount of corporate bonds.[5]

[4] Household home mortgage debt excluding home equity lines; data from Federal Reserve Flow of Funds.
[5] Outstanding balances of corporate bonds as reported at http://www.sifma.org/research/statistics.aspx.

As reported in the FDIC's most recent Quarterly Banking Profile, loan growth at insured banks was even stronger at the beginning of 2016 than last year. As of the end of the first quarter, loans exceeded their year-ago levels by 6.9 percent for all insured banks and by 8.9 percent for community banks. For FDIC-insured banks as a whole, loan portfolios experienced the fastest 12-month growth rate since the crisis. Not only has loan growth been substantial in aggregate, it has been widespread across banks. As of the first quarter, approximately eight out of ten FDIC-insured banks had grown their loan portfolios from the levels of a year earlier, the highest proportion of banks with such growth since before the crisis (Chart 1).

A look at broad trends over time suggests that the most important driver of bank lending is the business cycle and the credit needs of businesses and households. Bank lending and the total debt of households and businesses grew rapidly during the run-up to the crisis, and then declined during the crisis and for a few years after. The retrenchment from the crisis is largely over, and bank loan growth and risk appetite appear to have returned (Charts 2 and 3).

Bank lending trends should be evaluated relative to a regulatory goal of promoting a healthy and sustainable climate for access to credit that does not endanger stability or unduly expose the Deposit Insurance Fund or taxpayers. A well-functioning banking system provides neither insufficient credit, nor an unsustainable volume of poorly underwritten credit that can never be paid back. What we are seeing now is stronger capital at U.S. banks and substantial loan growth. The growth of loans on bank balance sheets is outpacing GDP growth and the growth of some important measures of household and business credit. Such comparisons reinforce the picture presented by Call Report data, that U.S. banks are full participants in funding the growth of credit to our economy. Looking ahead, when the next economic downturn

arrives, U.S. banks will be more resilient and better positioned to support the credit needs of the economy.

Bank Profitability

The next topic I want to discuss is banking industry profitability.

Bank earnings have improved during the post-crisis period in the face of some significant headwinds. FDIC-insured institutions earned nearly $164 billion in 2015, a new record. Almost two-thirds of all institutions reported higher earnings in 2015 than in 2014. Only eight institutions failed last year—the lowest number since 2007.

A 1.9 percent reduction in banking industry earnings during the first quarter of 2016 was driven by increased provisions for energy-related loans and reductions in trading revenue at a few large institutions. First quarter earnings were noteworthy for the continued strong performance of community banks. Their net income grew 7.4 percent compared to first quarter 2015 levels, and year-over-year loan growth at community banks of 8.9 percent outpaced the loan growth of larger banks.

The most important earnings headwind for banks of all sizes during the post-crisis period has been reductions in net interest margin. Net interest margin for insured banks with assets greater than $250 billion declined from 3.3 percent in 2010 to 2.7 percent as of the first quarter of this year. For all other insured banks, the comparable decline was from 4.2 percent to 3.5 percent. Community banks have seen relatively less erosion of net interest margin than other banks during the post-crisis period.

Banks have faced other significant earnings headwinds as well, some of which have been more pronounced for the largest banks. Many banks worked off significant volumes of noncurrent loans during the post-crisis period, and for most banks, this process is largely complete. The largest banks have also reduced their noncurrent loan volumes considerably, but still have noncurrent loans exceeding pre-crisis levels. For insured banks with assets greater than $250 billion, noncurrent loans stood at 2.1 percent of loans as of first quarter 2016, compared to 0.8 percent of loans at the end of 2006. Litigation expenses, although recently moderating, subtracted nearly $100 billion from the bottom lines of the eight U.S. Global Systemically Important Banks from 2010 through 2015.[6]

Reported noninterest expense, or overhead, has generally trended downward on bank Call Reports. For example, for insured banks with assets greater than $250 billion, non-interest expense averaged 3 percent of average assets during the five pre-crisis years of 2002 through 2006, and 2.76 percent of average assets during the five post-crisis years of 2011 through 2015. Smaller banks also reduced their non-interest expenses, from 3.16 percent during the pre-crisis years to 2.99 percent during the post-crisis years.

In summary, despite significant headwinds, bank earnings have been on a generally favorable trajectory as we move farther from the crisis. The major earnings headwinds during the post-crisis period have been compression of interest margins, the working off of high levels of non-current loans coming out of the crisis, and for the largest banking organizations, litigation expenses. The improvement in bank earnings reflects a return to profitable banking, but with capital levels that are better able to absorb losses than was often seen during the pre-crisis years.

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[6] Based on data from form Y-9c; litigation expenses are specifically reported only if the amounts exceed 3 percent of noninterest expense or $25,000.

Market Liquidity

The next topic I would like to address is market liquidity. Questions have been raised about whether the post-crisis reforms have caused a pullback from market-making activity by bank-affiliated broker-dealers, and whether this in turn has hurt market liquidity. Much of this discussion has centered on the secondary market liquidity of corporate bonds and U.S. Treasury bonds.

I want to touch on three distinct sets of questions regarding market liquidity. First, how do the goals of prudential banking regulation relate to a goal of promoting market liquidity? Second, what important factors have affected the activities of bank-affiliated broker-dealers? And third, whatever may be driving changes in broker-dealer activity, what have been the effects on market liquidity?

Question one is the most fundamental: How does market liquidity relate to what we are trying to accomplish as prudential regulators? The pre-crisis liquidity of financial markets was abundant, but it vanished during the crisis with devastating effects. It is worth remembering that between 2003 and 2007, the five largest U.S. investment banks doubled in size before they all failed, merged, or became bank holding companies. Insufficient capital and liquidity that was dependent on readily available short-term wholesale funding made these firms especially vulnerable to distress, and they became transmitters of financial instability.

The intention of the post-crisis reforms was to reduce the extent of financial leverage and reliance on short-term wholesale funding of large banking organizations. Effective prudential regulation should help promote *sustainable* liquidity conditions through time. Strong financial institutions that are better protected against losses, and less vulnerable to runs, should better

insulate the financial system against a catastrophic failure of liquidity such as the one that occurred in 2008.

A second set of issues that frequently arises in discussions of market liquidity relates to changes in broker-dealer balance sheets and what is driving those changes. In aggregate, there has been a reduction in the size of broker-dealer balance sheets in recent years, which has included a reduction in bond inventories and in the volume of short-term repurchase agreements (repo) that are an important source of financing for those inventories.

One factor that may be influencing balance sheet decisions at bank-affiliated broker-dealers is the need for their parent banking organizations to have adequate consolidated capital and liquidity. The experience of the crisis is a reminder of how important this is.

Since questions have been raised about the drivers of balance sheet decisions at broker-dealers, I would like to touch briefly on some of the other factors that may be at work.

One important change affecting broker-dealers in recent years has been the effective elimination of their access to intra-day credit from the clearing banks in the tri-party repo market. This curtailment of intra-day credit was one of the explicit goals of a multi-year initiative to reduce systemic risk in the repo market under the leadership of the Federal Reserve Bank of New York.[7]

The size of broker-dealer balance-sheets may also be influenced by the risks of holding bonds. Bonds with very long maturities would experience potentially significant losses in value

[7] Task Force on Tri-Party Repo Infrastructure, Payments Risk Committee, Final Report, February 15, 2012; and https://www.newyorkfed.org/banking/tpr_infr_reform.html.

in a rising interest-rate environment. Credit risk also appears to be increasing for some bonds, especially for selected energy or other high-yield obligations.

Another post-crisis development is that central banks around the world, pension and retirement funds, and mutual funds have greatly increased their holdings of Treasury bonds and other high-quality assets. Some observers believe the result has been a scarcity of Treasury collateral and other high-quality collateral that has reduced the size of the repo market, a market that is important to broker-dealers.[8]

Finally, the profit margins or "bid-offer spreads" that broker-dealers earn on buying and selling bonds generally have been trending downward since the crisis. Some research suggests this may reflect a more competitive trading environment and improvements in technology.[9] Lower bid-offer spreads make buying and selling bonds less profitable, and may be part of the reason broker-dealers are reportedly trading more bonds "as agent" instead of holding inventories.

This brings me to the third question about market liquidity. Whatever the reason for changes in broker-dealer balance sheets, what has been the resulting effect on the market liquidity of bonds?

A number of published analyses over the past year have attempted to shed light on whether, or in what way, corporate and Treasury bond market liquidity have deteriorated.

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[8] Bednar, W. and M. Elamin, "What's Behind the Decline in Tri-Party Repo Trading Volumes?" Federal Reserve Bank of Cleveland, online "Economic Trends" series, April 2014; and Munyan, B., "Regulatory Arbitrage in Repo Markets," OFR Working Paper 15-22, October 29, 2015.

[9] Mizrach, B., "Analysis of Corporate Bond Liquidity," Research Note, FINRA Office of the Chief Economist, October 2015.

Published research[10] documents a number of changes in corporate bond trading during the post-crisis period, including, among other things, the following: an increasing number and dollar volume of corporate bond trades, decreasing cost to trade as indicated by narrower bid-offer spreads and a reduction in the impact on bond prices resulting from large trades, smaller trade sizes, greater retail participation, and a significant increase in market participant use of electronic platforms to conduct some of the tasks involved in trading. The research cites a survey indicating that the top ten U.S. dealers now account for a larger percentage of corporate bond trades by dollar volume than in 2007. Overall, what this research seems to be describing is less a retreat from market making than a change in the way it is conducted: that is, lower transaction costs, more frequent and smaller trades, and more trades conducted as agent or on order rather than as principal.

For Treasury bonds, research documents strong liquidity conditions, including extremely narrow bid-offer spreads and high trading volumes. A noteworthy finding of an interagency staff report by five federal agencies is the significant volume of trading of Treasury bonds in the United States that occurs on high-speed electronic platforms.[11] As the report noted, trading on such platforms can sometimes exhibit anomalous behavior that is worthy of the attention it is receiving from regulators.

In conclusion, recent research does not seem to support the proposition that post-crisis market liquidity for bonds has declined and in fact describes improvement in a number of standard measures of liquidity. This could certainly change under more stressful conditions, but

[10] See, for example, Mizrach, op. cit., and Liberty Street Economics Blog Posts, various authors, series on Market Liquidity, August 2015, October 2015, and February 2016, Federal Reserve Bank of New York.
[11] U.S. Department of the Treasury, Board of Governors of the Federal Reserve System, Federal Reserve Bank of New York, U.S. Securities and Exchange Commission, U.S. Commodity Futures Trading Commission, "Joint Staff Report: The U.S. Treasury Market on October 15, 2014," July 13, 2015.

stronger and more resilient banking organizations should make the economy and financial system as a whole better able to navigate such conditions and less prone to a collapse in market liquidity.

Migration of Financial Activities to Nonbanks

Finally, I would like to discuss the idea that the post-crisis reforms may be changing the distribution of financial activity between banks and nonbanks, in some way making banks less important financial players than before.

For many years before the financial crisis, the loan holdings, and more broadly, the financial asset holdings of U.S. insured banks did, in fact, decrease steadily relative to the holdings of nonbanks. According to the Federal Reserve's Flow of Funds data, during the three decades leading up to the financial crisis, U.S. banks' share of the total loans held by the domestic financial sector decreased from 68 percent to 35 percent.[12] Similarly, from 1975 through 2000, banks' share of the total assets—including both loans and other financial assets—of the domestic financial sector decreased from 40 percent to about 16 percent. Broadly speaking, these reductions in banks' share corresponded to a significant increase in the proportion of loans in the financial system held by Government-Sponsored Enterprises (GSEs) and securitization vehicles, and a significant increase in the proportion of total financial assets held by investment funds, GSEs, securitization vehicles, and broker-dealers.

[12] "Banks" refers to "U.S. chartered depository institutions," reported in Federal Reserve, Flow of Funds table L.111. These data are for consolidated FDIC-insured depositories excluding foreign branches and foreign subsidiaries. The figures cited for banks' share of loans are for year-end 1975 and year-end 2006.

If the post-crisis reforms were diminishing the role of banks in financing the credit needs of the U.S. economy, one would expect the pre-crisis migration of lending and assets to nonbanks to have continued or accelerated. Yet the data that showed declining market share for banks before the crisis, show that trend coming to a stop or reversing during the post-crisis period. The share of domestic financial sector assets held by banks has held steady at about 16.5 percent since 2010. And banks' share of total loans held by the domestic financial sector, having fallen steadily by about 34 percentage points during the three decades before the crisis, has *increased* by about five percentage points since 2010 (Chart 4).

The increase in banks' share of lending and their steady asset share may seem surprising given the increasing role played by nonbanks in some segments of financial services. For example, corporations have taken advantage of low interest rates since the crisis by issuing bonds in large amounts. A considerable portion of these bonds are held by mutual funds, which now hold a greater proportion of the assets of the U.S. financial sector than in 2010. Banks' steady share of financial assets since 2010 means that their overall asset holdings have expanded during this time at the same rate as the asset holdings of the U.S. financial sector—that is, not as fast as the assets of mutual funds, but faster than the assets of a number of other sectors such as money market mutual funds, finance companies, securitization vehicles, and broker-dealers. It is also worth mentioning that vigorous corporate bond issuance does not completely bypass large banking organizations as financial services providers, since they earn revenue by underwriting large amounts of these bonds.[13]

[13] Data on the volume of debt and equity underwritten by selected large banking organizations are available on Federal Reserve form FR Y-15.

The environment for lending has not been static either. In leveraged lending, there appears to be increasing involvement by nonbanks, although often in these situations a bank will be providing financing to the nonbank. In residential mortgage lending, the share of originations made by entities that are not affiliated with banking organizations has increased significantly. These nonbanks, however, are not typically the ultimate providers of credit. They are often financed by banks, and they generally attempt to promptly sell the mortgages they originate, most often to GSEs and sometimes to banks. The data seem to be telling us that notwithstanding such evolution in lending activity, banks' role as ultimate holders of the credit risk of loans has become more important in the post-crisis period.

Given the substantial recent bank loan growth I described earlier, it is not surprising that banks' share of loans held by the U.S. financial sector has increased. In aggregate, the five percentage point increase in banks' loan share roughly corresponds to the post-crisis reduction in the share of loans held by securitization vehicles. Banks' offloading of loans through securitization before the crisis was one of the factors driving their reduced share of loans relative to nonbanks, and was arguably driven by the desire to avoid bank capital charges. Now, while bank capital requirements have been strengthened, the data suggest banks are financing credit relatively more with their balance sheets and relatively less with securitizations.

I will end this discussion of the distribution of financial activity between banks and nonbanks by coming full circle, back to the point about the increasing capital strength of banks. U.S. bank balance sheets today are financed to a greater extent with equity capital and are better able to absorb losses. Banks are using their strong balance sheets to support significant loan growth to businesses and households. The relative importance of bank balance sheets as the

ultimate holder of the credit risk for loans, which had been decreasing for many years before the crisis, is now increasing.

Conclusion

In conclusion, the economic environment remains challenging for U.S. banks, with narrower net interest margins and modest overall economic growth. Nevertheless, I think an objective look at relevant data suggests that on balance, the reforms that have been put in place since the crisis have made the financial system more resilient and more stable, while strengthening the ability of banking organizations to serve the U.S. economy.

Chart 1

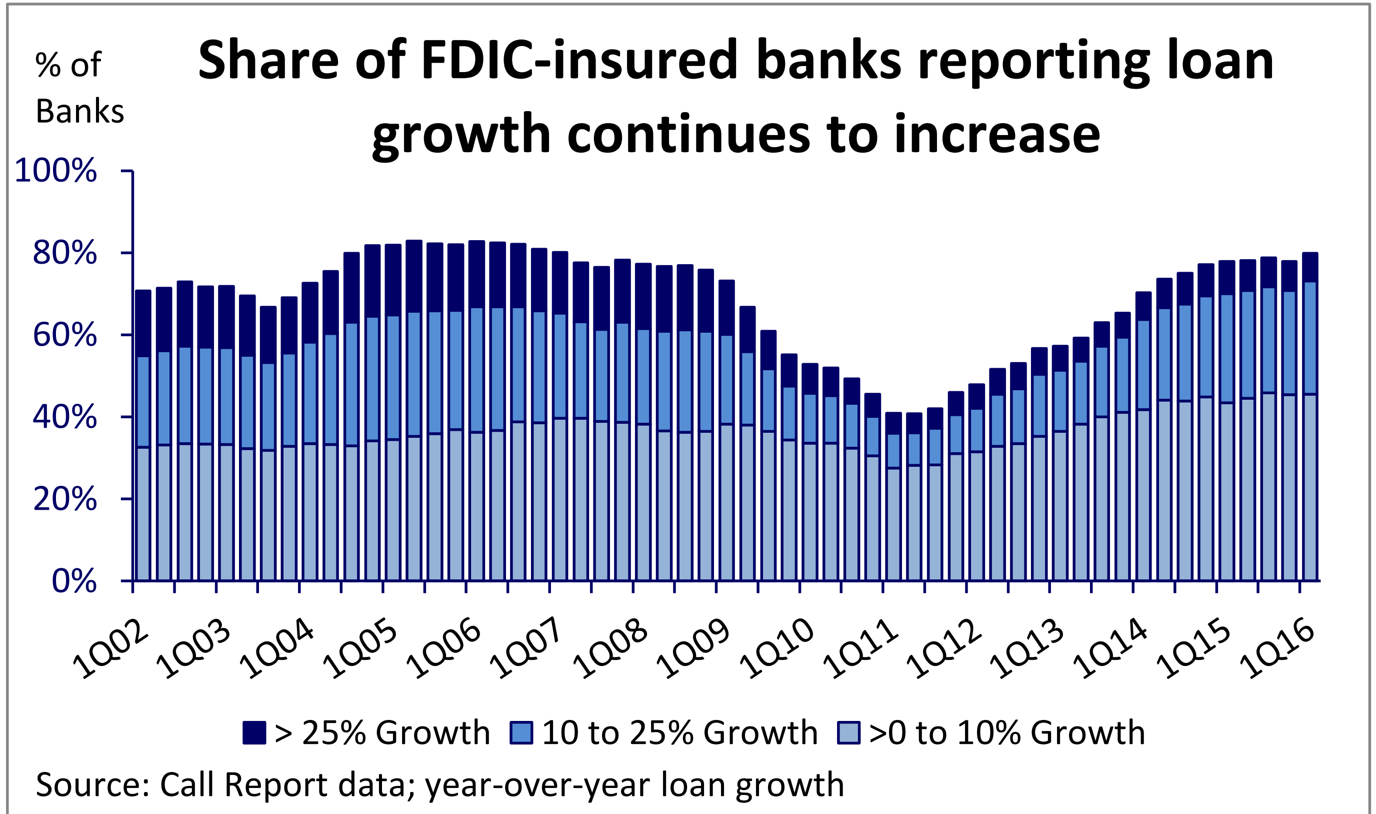

Chart 2

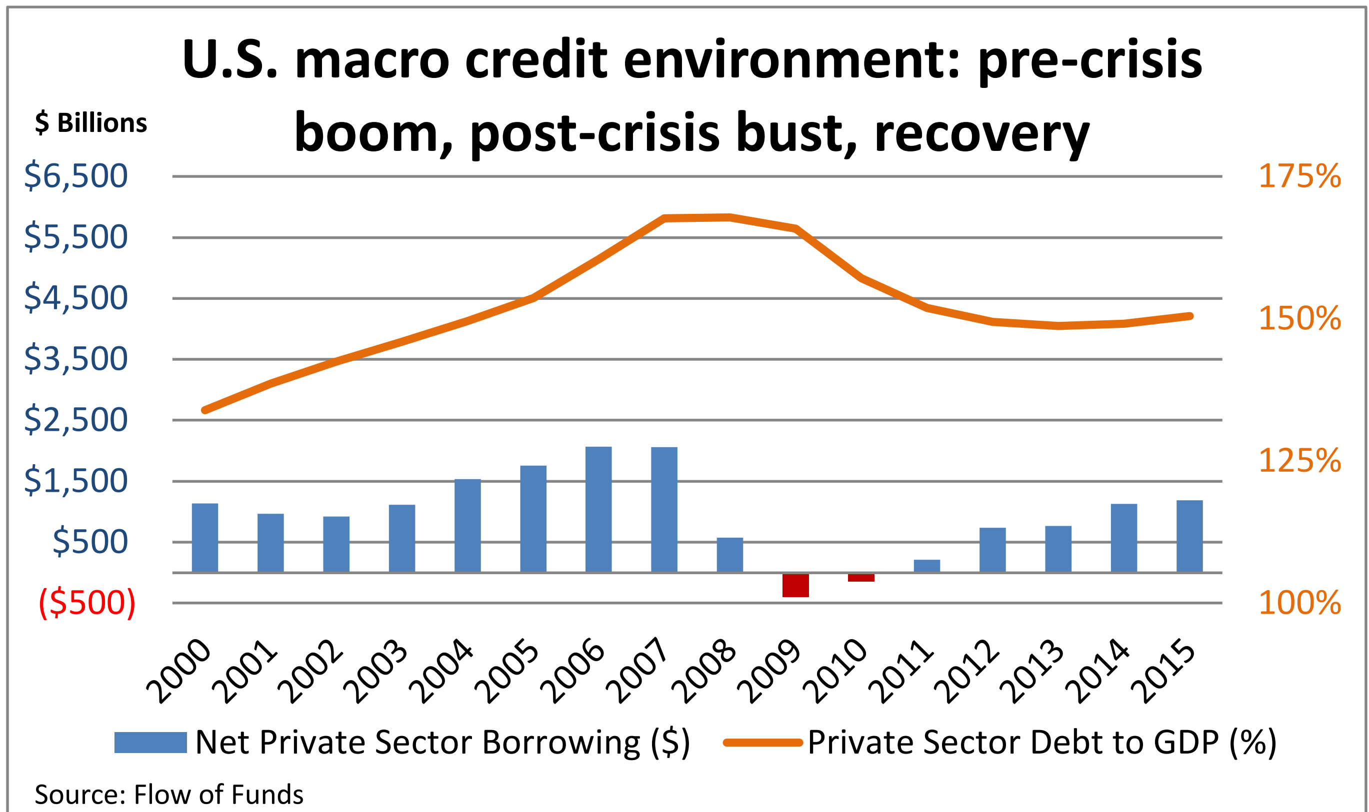

Chart 3

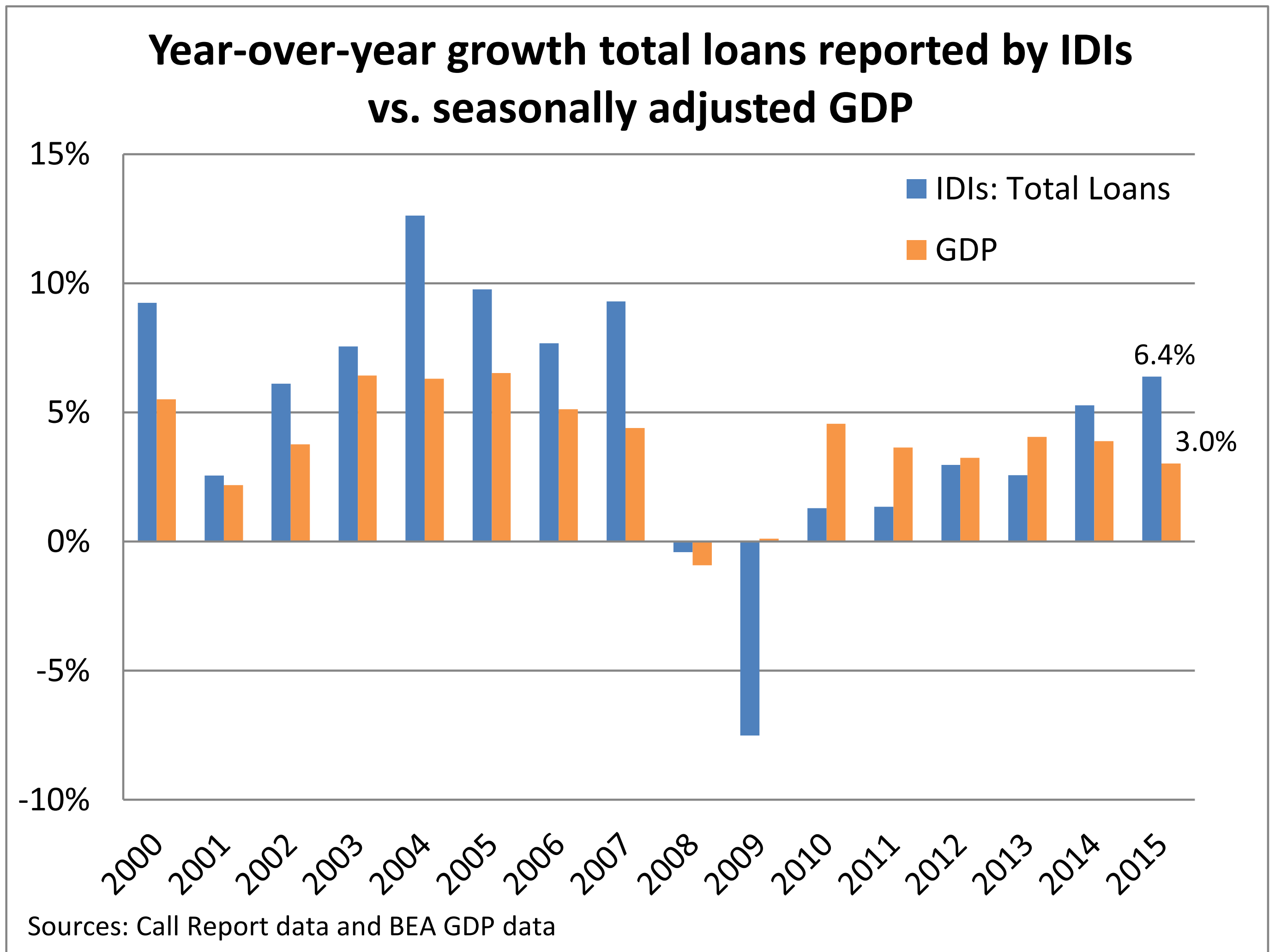

Chart 4