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The big four banks: The evolution of the financial sector, Part I

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Executive Summary

This research looks at how the financial sector has evolved over the periods both before and after the financial crisis of 2007-8. This paper is the first in a series, examining the balance sheets of the four largest banks; it will be followed by papers on the regional banks, the smaller banks and the shadow financial sector. The assets and liabilities of the big four banks grew very rapidly for years prior to the financial crisis as a result of deregulation, particularly through the Riegle-Neal Act in 1994, but also from the Gramm-Leach-Bliley Act of 1999.

These laws gave banks the ability to consolidate and expand both across geographic and service lines, and they continued to do until the crisis hit years later. Paired with generally robust economic growth, the deregulation of the financial sector enabled the largest banks to post double-digit growth rates right up to the onset of the crisis.

The theme of consolidation continued, in a way, into 2008 as the U.S. government encouraged acquisitions of troubled financial institutions by stronger ones during the worst moments of the crisis. With no clear precedents or protocols for managing the failures of such large and interconnected institutions like Lehman Brothers, Merrill Lynch, and Bear Stearns before the crisis, the U.S. government took was forced to take an ad hoc approach, pushing these major investment banks into mergers with or acquisitions by other, stronger private institutions. Likewise, to deal with failing depository institutions, the U.S. government encouraged mergers with stronger banks or dispositions of bank subsidiaries by troubled institutions to other banks, with support provided by the FDIC as required. As a result, today, the four biggest banks ("Big Four") are JP Morgan Chase, Bank of America, Citigroup and Wells Fargo.

** On June 1st, 2015, revisions were made to Figures 1, 5, 6, and 7.*

Introduction

This report is the first in a series on the evolution of the financial sector. The series aims to retrace the major trends that have shaped the banking sector since the crisis and to orient the public as to where industry stands today. This first installment focuses on the “Big Four” banks: JP Morgan Chase, Bank of America, Citi, and Wells Fargo.

The financial crisis of 2007-2009 revealed a widespread lack of understanding of how the modern banking system operated. In the decades prior to the crisis, the traditional banking model of taking deposits and extending loans to regionally-based customers evolved into one characterized by global reach, new technology, and a diverse range of complex services. With the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act in 1994 and the Gramm-Leach-Bliley Act in 1999, commercial banks became free to expand first across state lines and then across service lines. Although securitized loans had been around for many years, the housing boom encouraged the creation of complex securities that sliced and diced risk and returns and made it hard to assess their risks correctly. Many of these securities were sold to domestic and foreign investors and many were held by the banks on their own portfolios, or in special investment vehicles (SIVs).¹ Even those market participants who sensed the riskiness of the new securities felt obliged to purchase them in order to remain competitive.

Further, the financial crisis exposed the importance of a “parallel” system of credit intermediation. The so-called “shadow sector” or “shadow banks” that transformed short-term funding obtained in the money markets into long-term investments had grown rapidly in the years leading up to the crisis. Without being subject to the kind of regulatory and reporting standards as those of traditional banks, these the activities of some of the shadow banks largely flew – and in some cases continue to fly – under the radar of regulators and policymakers until it was too late. Unlike historical bank crises where there were runs on deposits at banks, the post-2007 financial crisis was characterized by runs on a different source of funding for financial institutions, namely commercial paper and other short-term wholesale funding often used for securitized loans, and it became apparent just how vital the shadow banking sector had become to financial intermediation and the business of traditional banking.

The banking system has continued to evolve since the crisis. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ushered in sweeping

new regulations that would profoundly change the operational environment for the banking industry. New rules and regulations intended to improve the safety and soundness of the financial system would affect nearly every aspect of the banking business, from lending to trading to funding. In addition, pressures from inside the market contributed to change in the banking industry. As these new rules, regulations, and norms have begun to take effect, the banking model continues to evolve.

The “Big Four”

This first report is meant to be a factual exploration of the balance sheets of the four largest banks. We will follow this with a report on the regional banks and then a sample of smaller banks. While we give some commentary on the data, the purpose at this stage is to allow readers access to a picture of the largest banks and form their own judgments about why the banks have changed. Putting together the balance sheets of the big four seemed at first as if it would be a straightforward task, but the reality has been different and more difficult. We have aimed to present an accurate picture in the following pages but we would welcome comments.

Banking Industry Concentration

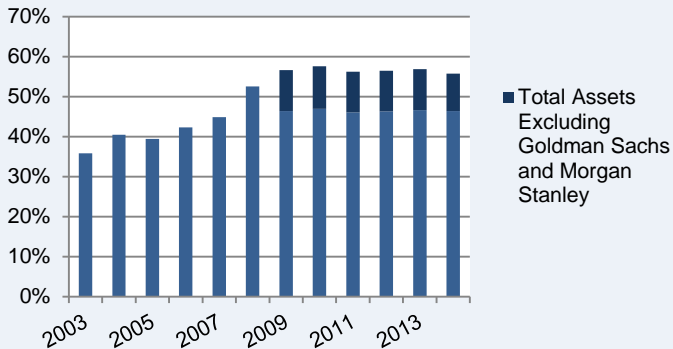
To ensure that financial markets continued to operate as the financial crisis unfolded in 2008, the Federal Reserve, the Federal Deposit Insurance Corporation (FDIC), and the Department of the Treasury facilitated a number of major transactions among the largest financial institutions. Providing some combination of financial support and regulatory persuasion, the federal government stewarded JP Morgan Chase’s acquisition of Bear Stearns, Bank of America’s merger with Merrill Lynch and its acquisition of Countrywide Financial, and Wells Fargo’s acquisition of Wachovia. Furthermore, while these transactions were happening, several major non-bank financial institutions, namely Goldman Sachs and Morgan Stanley, amended their operating charters in order to attain depository institution holding company status. Collectively, these changes significantly affected the distribution of market share in the banking sector.

Figure 1 shows the shares of the total banking sector assets held by the Big Four with the assets of Goldman Sachs and Morgan Stanley excluded from the total (i.e. when the red bars are included). The share of total assets held by the Big Four rises strongly through 2008 and then decreases slightly after that, particularly after 2010, the year that Dodd-Frank was passed. The Big Four’s share dropped from 52.5% in 2008 to 51.2% in 2014. Surprisingly, the mergers and acquisitions entered

into at the time of the crisis have not resulted in as much concentration of banking sector assets among the Big Four as might have been expected.

The blue bars show the shares of the Big Four when the assets of Goldman Sachs and Morgan Stanley are included in the sum of total banking sector assets, starting in 2009, when these institutions became bank holding companies. As one would expect, including these additional financial institutions means that the share of the Big Four drops much more, decreasing from 52.5% in 2008 to 45.2% in 2013.

Figure 1. Big Four Share of Total Banking Sector Assets



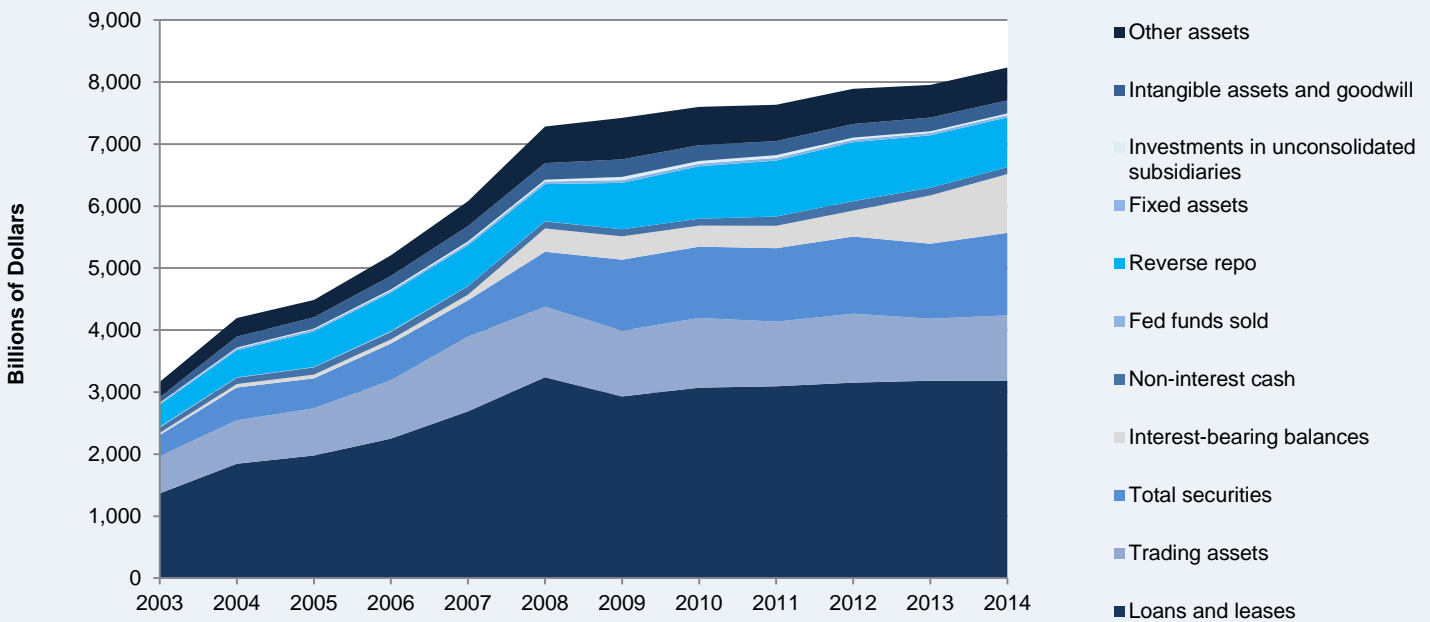
Source: Federal Reserve Board holding company data

Assets of the Big Four

Beyond their relative sizes, the composition of the Big Four's asset holdings has changed significantly since the crisis. Figure 2 plots the composition of the Big Four's asset holdings in the five years prior to and the five years since the crisis in absolute terms, and Figure 3 does the same in relative terms.

The first trend that is apparent is the lower rate at which assets among the Big Four have been growing since 2008. From 2003 – 2008, the Big Four's holdings of total assets

Figure 2. Big Four Asset Composition in Dollars

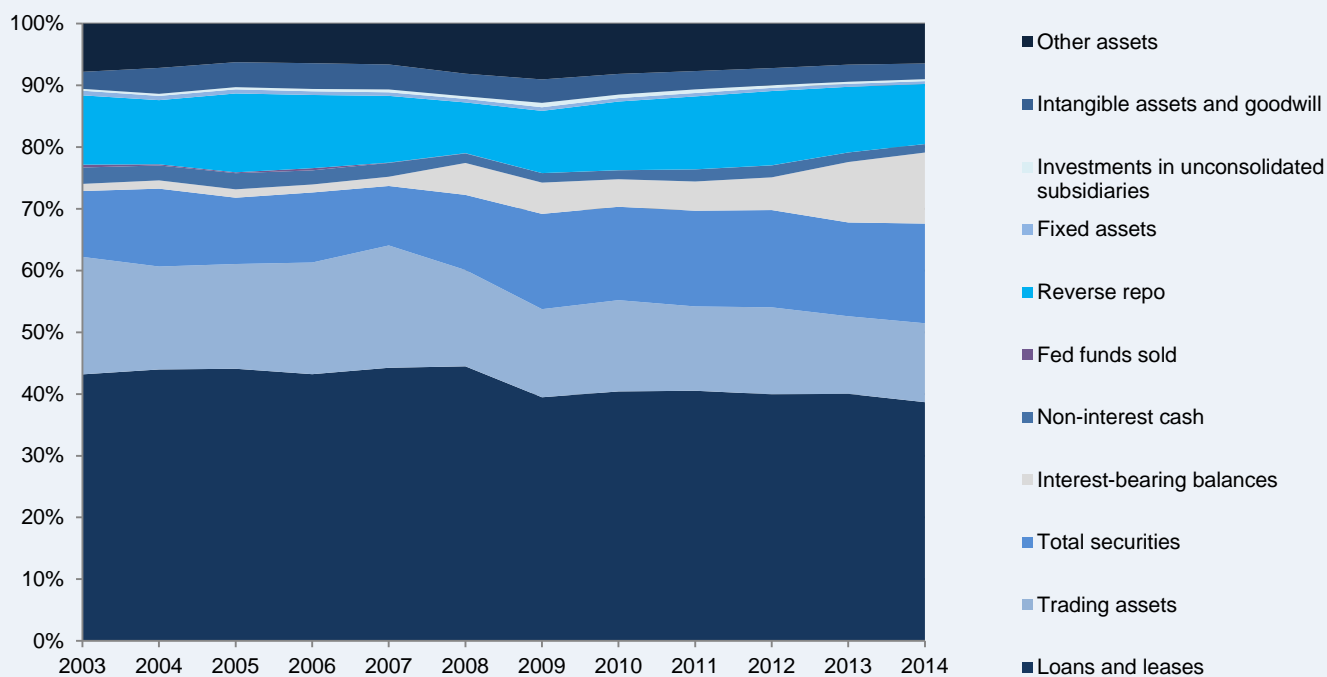


Source: Federal Reserve Board Y-9C data

increased at a compounded annual growth rate (CAGR) of approximately 14.8%; from 2009 – 2014 however, the CAGR drops markedly to 1.8%. Though the Big Four banks have become larger in the five years since the crisis, their post-crisis growth has been far more modest than their pre-crisis growth. These institutions are facing a new phase of development marked by fewer major acquisitions and profound challenges to organic growth. The data shown here is affected by the crisis period acquisitions. We look at these later in the paper.

In addition to the lower rate at which their assets have grown since 2008, there are several notable changes within the composition of assets. It is apparent that trading assets constitute a smaller share of total assets while holdings of interest-bearing deposits have increased. Notable as well is the decrease in the share of total loans and leases, which have gone down from comprising approximately 45% of total assets in 2008 to 39% in 2014.

Figure 3. Composition of Asset Holdings among the Big Four



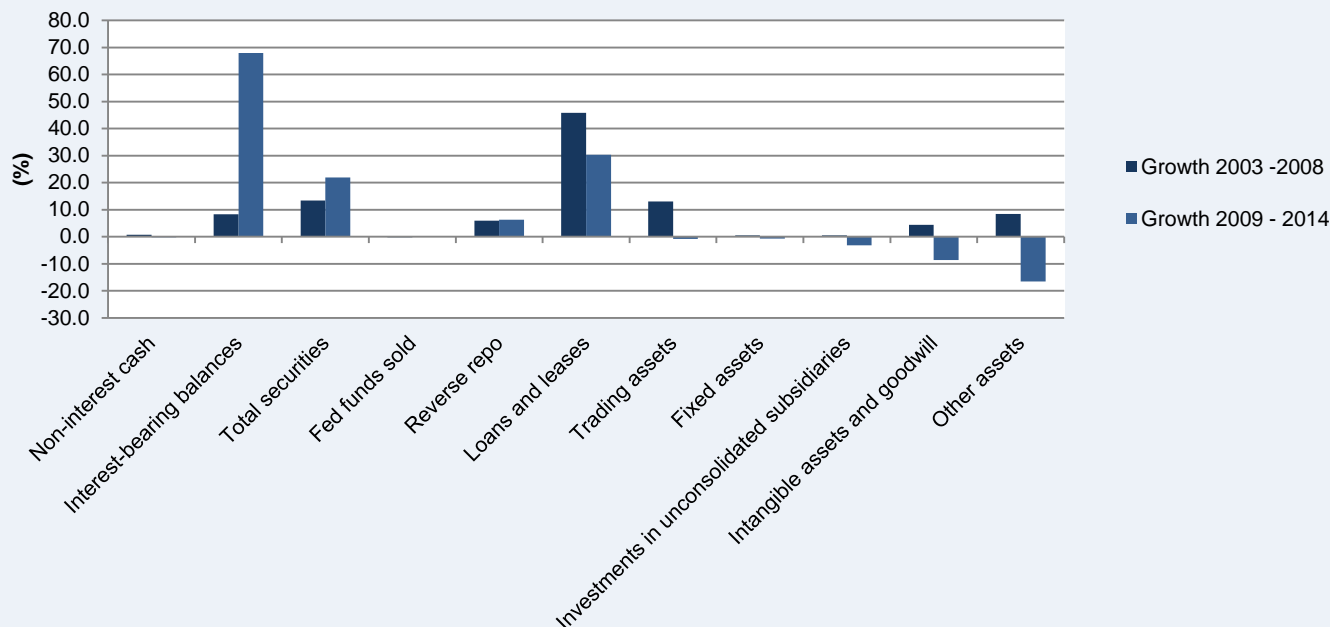
Source: Federal Reserve Board Y-9C data

Figure 4 further illuminates the way in which the composition of assets at the big banks has changed by breaking out which categories drove asset growth during the 2003-2008 and 2009-2014 periods. In the pre-crisis period, asset growth was driven overwhelmingly by loans and leases, with further significant contributions from trading assets, total securities, reverse repo, interest-bearing balances, and “other assets,” such as accrued interest receivable and net deferred tax assets. In the post-crisis period however, asset growth has been driven almost entirely by interest-bearing balances, total securities, and reverse repo.

Though there are likely a confluence of factors at play, the shift from trading assets, loans and leases to interest-bearing deposits may reflect two major current trends in the banking sector. First, nearly five years of expansionary mon-

-etary policy have challenged bank treasurers to manage ever-higher levels of excess reserves. With more cash than good investment opportunities, banks have looked to park their money in interest-bearing deposit accounts. Second, the sweep of new rules and regulations authorized under the Dodd-Frank Act make it more costly – in terms of capital and liquidity requirements – for banks to hold assets. In addition to increasing the costliness of holding riskier and illiquid assets, this also increases the costliness of holding any assets, particularly high quality assets where there is already little margin to be made. The downsized trading operations and lower relative holdings of loans partially reflect bank efforts to manage the costs of these new regulations. Perhaps most importantly, new liquidity requirements strongly incentivize banks to hold larger quantities of liquid securities.

Figure 4. Sources of Asset Growth among the Big Four



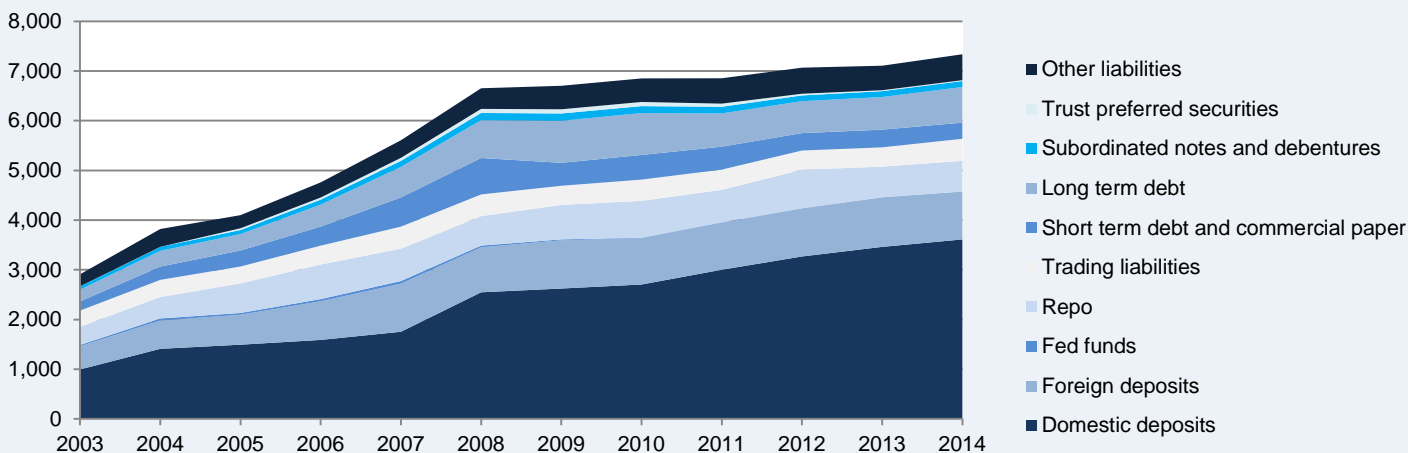
Source: Federal Reserve Board Y-9C data

Liabilities of the Big Four

On the liabilities side of the balance sheet, Figures 5 and 6 show that the deposit base among these institutions has increased significantly since the crisis. Though domestic deposits comprised approximately 38% of liabilities in 2008, by 2014 that figure had increased to 49%. To be sure, some of the increase was due to the incorporation of the deposit bases at the major commercial banks that were acquired in 2008 – Countrywide, Wachovia, and WAMU (see later analysis) – but the bulk of the growth occurred from the 2009–2014 period, during which time domestic deposits as a share of total liabilities increased by approximately 11%.

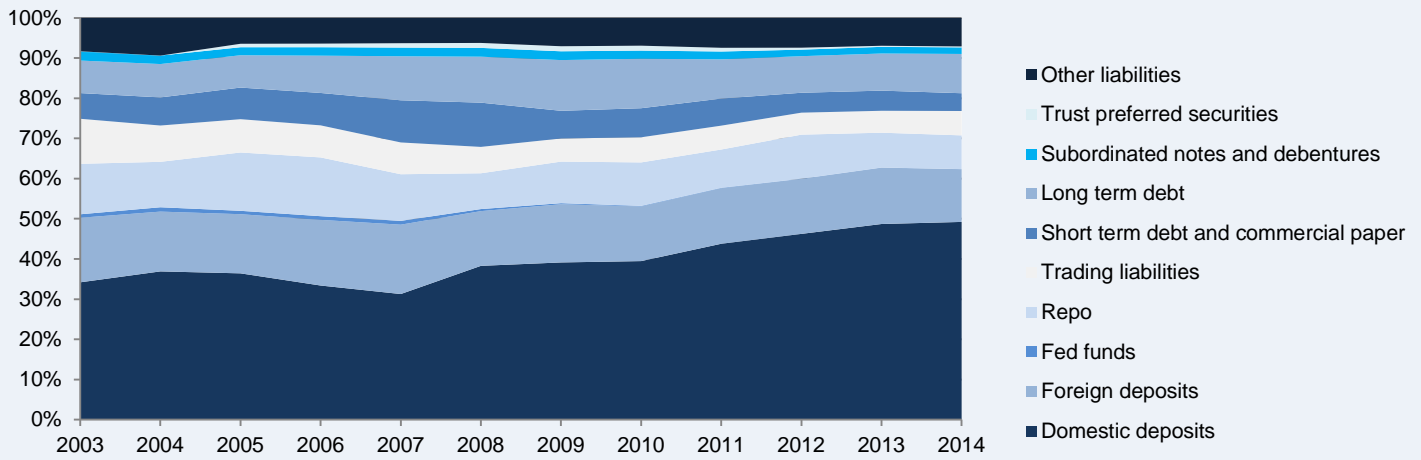
As seen in Figure 7, domestic deposits have been the primary source of liabilities growth in the post-crisis period. Likely, a combination of some increase in aggregate savings after the crisis, an aversion to investment risk, and low interest rates has provided the impetus for the strong growth in domestic deposits. The declines in the other liabilities categories, particularly in short-term borrowing, commercial paper, and long-term borrowing may reflect a push by investors and regulators alike to have banks be less reliant on volatile sources of funding that are not guaranteed by public backstops, as are some deposits.

Figure 5. Growth of Liabilities among the Big Four



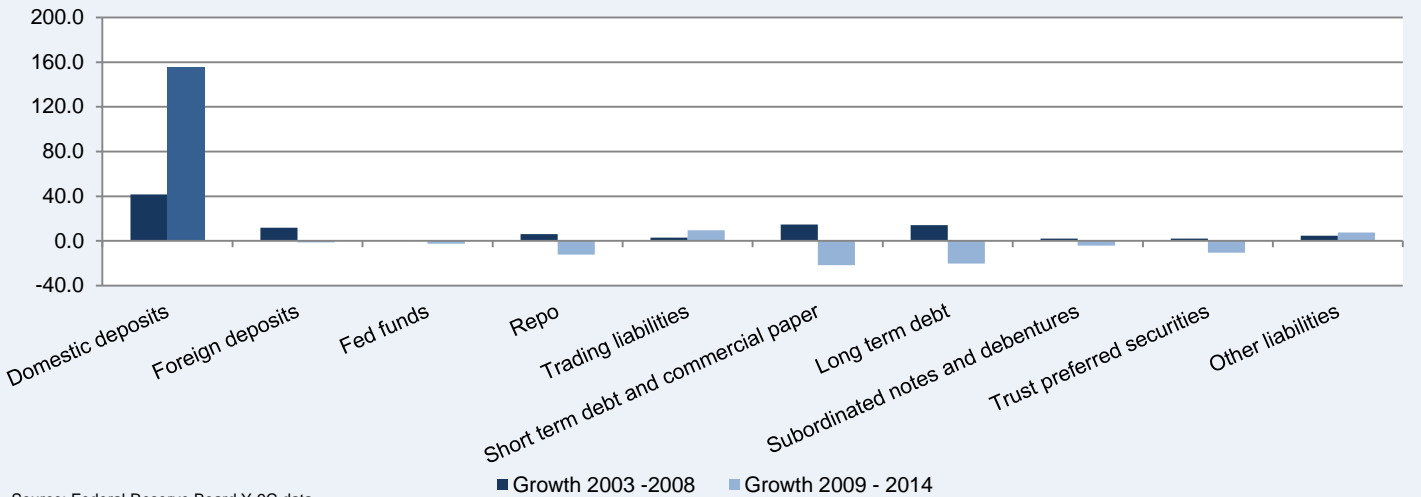
Source: Federal Reserve Board Y-9C data

Figure 6. Composition of Liabilities among the Big Four



Source: Federal Reserve Board Y-9C data

Figure 7. Sources of Liabilities Growth among the Big Four



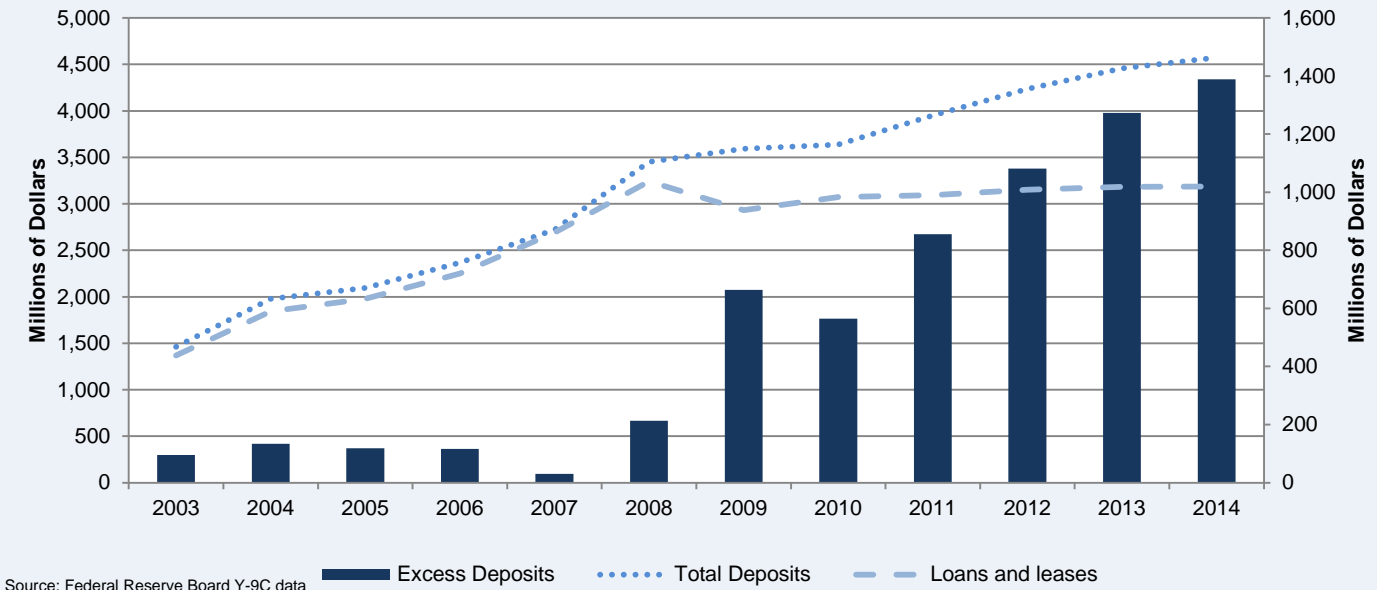
Source: Federal Reserve Board Y-9C data

Figure 8 plots the divergence between the rates at which deposits and loans have been growing since 2008. In the five years prior to the crisis, loans and deposits largely grew in step, but that trend breaks with the onset of the crisis. It may be the case that this trend reflects a structural change in the banking model resulting from regulatory or market changes; for example, higher regulatory costs associated with riskier asset classes have incentivized banks to seek income from sources other than loans and leases. But the divergence between deposit and loan growth also reflects the adverse economic conditions of the Great Recession, including limited investment opportunities and depressed demand, combined with easy monetary policy.

Changes to bank income and securitization

The data show remarkable changes in income among the Big Four banks over the crisis years. The definition of income here, which we have based on work at the Federal Reserve, refers to interest income, trading revenues and other revenues from financial operations.² It is net of interest paid and other financial payments. Salary and other operating expenses are not subtracted and so the figures shown are equal to bank profits.

Figure 8. Deposits in Excess of Loans



Figures 9 and 10 plot the changes in income among the Big Four banks between 2003 and 2014, showing changes in both absolute and relative terms. Figure 9 shows that overall income among these banks rose steadily in the years leading up to 2007, fell significantly in 2007, rose dramatically in 2008, and since 2009 has dipped down, though ticking up slightly in 2014.

Securitization income declines with the crisis – though not sharply – but gradually becomes a smaller share of income in the post-crisis years. Nontraditional income takes a large dip in 2008 (from \$44 billion to \$9 billion in net income) and then comes back strongly in 2009 and maintains a larger share of total income through 2014. Trading revenue accounts for much of the 2008-09 swing, as Citi and Bank of America took losses in 2007 and much larger losses in 2008 before returning to positive trading revenue in 2009. JP Morgan also took trading revenue losses in 2008. Venture capital revenues also fared poorly, contributing losses in 2008 and larger losses in 2009. Traditional income increased in 2009, reflecting primarily the acquisitions made by these banks during the crisis, but has flattened since then.

Since the crisis, income has leveled off. As mentioned, a number of issues are at play. A generally difficult investment environment, stemming from periodic crises in the Eurozone and near-zero interest rates, as well as business challenges prompted by new rules, certainly explain some of the moderation in margins that the data show. Additionally, returns in the lead up to the crisis were very high by longer-term historical standards. But tighter margins may also reflect the heightened challenges of managing a global banking business in the current time.

Figure 9. Growth in Income, Net of Interest Expense

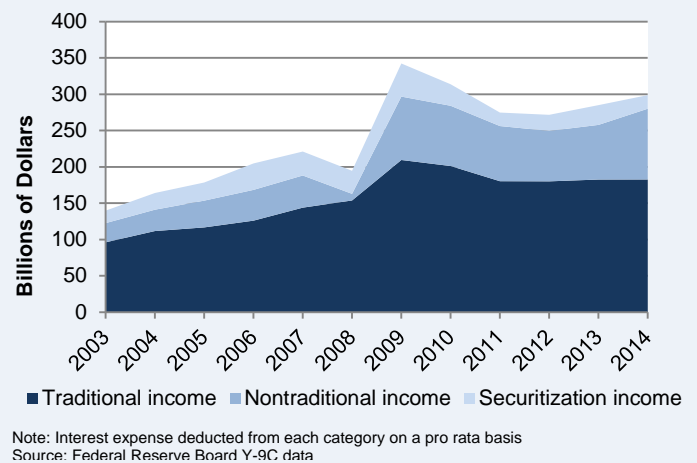
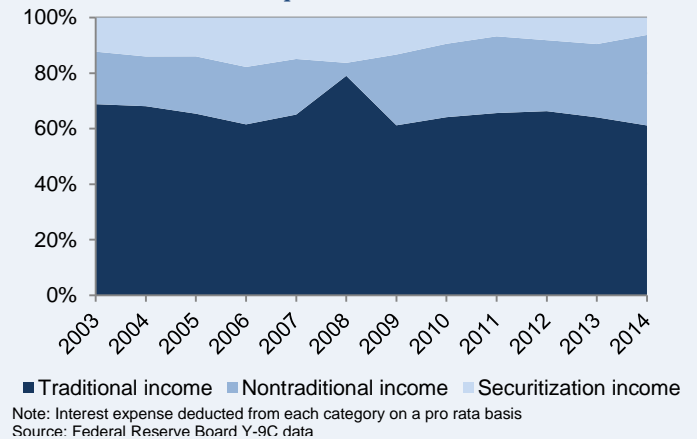
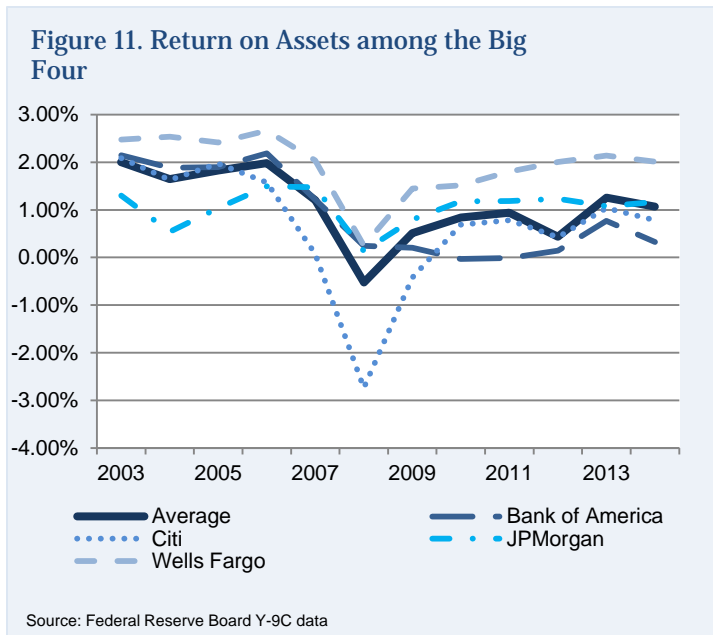


Figure 10. Composition of Income, Net of Interest Expense



As important as are the changes in the total amount of bank

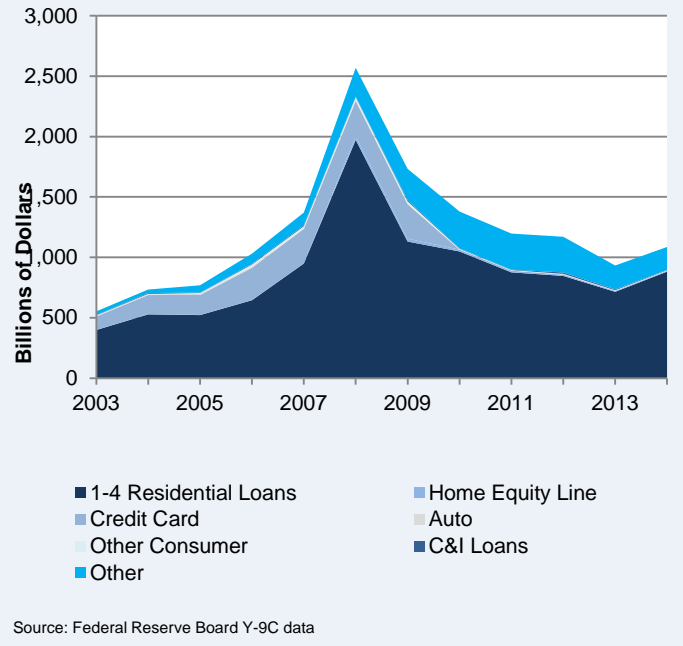
net income are trends in the make-up of that income. Figure 10 shows that the share of income by source among these banks has been changing. In the years leading up to the crisis, the share of securitization income was on a steady rise, while the share of traditional income decreased until 2006. During the crisis however, capital markets seized up temporarily and nontraditional income – consisting of, among other things, revenue from investment banking and trading, nearly disappeared. Thus a sharp rise in traditional income as a share of total income is seen during this period. But since the crisis, strong capital markets performance has contributed to an increase in the share of nontraditional income to levels that are higher than have been seen since before the crisis.



It is also apparent that the share of securitization income, which includes gains and losses on assets sold in a bank holding company's securitization transactions and fees from charges on securitization services, has gradually decreased since the crisis. The collapse of the subprime mortgage securitization market during the crisis and the ensuing sweep of post-crisis regulatory reforms in securitization markets, such as the risk retention requirements, or “skin in the game” of the 2010 Dodd-Frank Act, have shrunk these markets and served to hold the share of securitization income below pre-crisis levels.

The data also show major changes in these banks' return on assets (ROA), which is a measure of profitability. (Note that unlike the earlier calculations, ROA includes the effects of all expenses.) Figure 11 shows that in the pre-crisis years returns consistently exceeded 1.5%, above historical averages. And while in 2007, as one would expect, returns drop substantially, by over 2 percentage points, since the crisis the Big Four have seen their performance improving, though by 2014 returns were still below pre-crisis levels.

Figure 12. Securitization Business among the Big Four

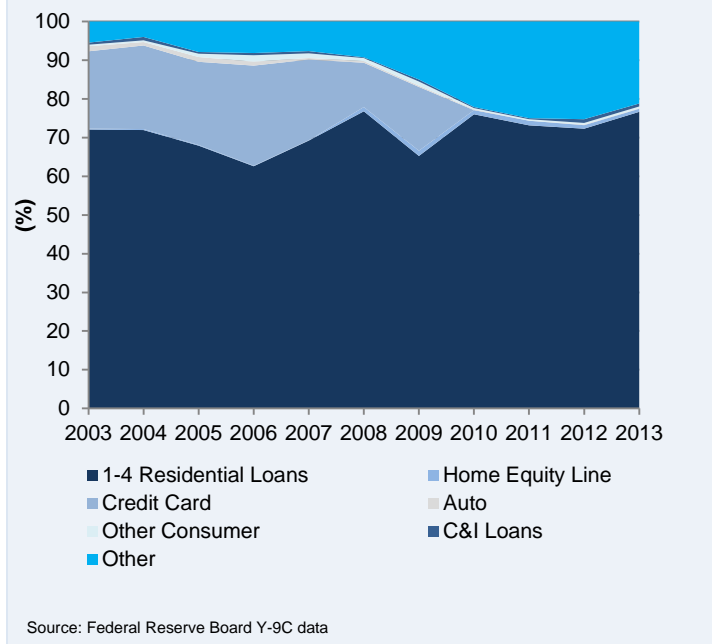


As alluded to earlier in this paper, the data also shows interesting variations in securitization among the Big Four banks. Figure 12 plots changes in the level of the banks' securitization businesses, measured as the outstanding principal balance of assets sold with seller-provided credit enhancements, a useful indicator of securitization activity that takes some account of bank participation in off-balance sheet securitization. As shown in the figure, securitization rose in the pre-crisis years, peaked in 2008, and has been on the decline ever since (though it still has not fallen below 2005 levels). In the years leading up to the crisis, securitization business increased at an increasing rate. The post-crisis decline has been relatively steady by comparison.

Figure 13 shows that while these dramatic changes in the amount of securitization business were happening, the breakdown of the securitization business was also undergoing major variations. One of the most important trends shown in this chart is the rapid decline in credit card securitization in 2009. While this type of securitization accounted for about 20% of overall securitization business in 2003, by 2008 that figure had dropped by about half, and by 2010 it had reached zero. Meanwhile the share of “Other” securitization increased substantially between 2003 and 2014. (The Initiative on Business and Public Policy plans to research this component of securitization business further, and to present our findings in a future installment of this series.) Smaller, but nonetheless important, developments during the time period include the near-disappearance of auto and “other consumer” securitization by 2010, and the emergence of home equity line

securitization in 2007.

Figure 13. Composition of Securitization Business among the Big Four



Once more, there is no single factor that explains the changing composition of securitization business among the Big Four nor the rise and fall of total such business between 2003-2014. A variety of dynamics, such as search-for-yield and industry-wide support of securitization for its capacity to disperse credit risk and produce higher returns without requiring increased capital under the pre-crisis rules, led to the rise in overall securitization business in the pre-crisis years, and a combination of changing attitudes and new regulations played a part in the post-crisis decline as well. The implications of these changes are still unfolding, and more time and research will be needed to fully understand all of their effects.

Tracking assets during the large mergers

As we have described, the Big Four experienced a number of large mergers in the wake of the financial crisis and so the changes we have seen in the size and composition of their businesses are partly a result of these transactions. As delving into the details of each bank's various mergers and acquisitions is beyond the scope of this paper, here we only show basic pre- and post-merger asset data for the major transactions of JP Morgan, Citi, Bank of America, and Wells Fargo. These all took place in 2008. Citi did not acquire other significant institutions in the crisis period, as its own financial health was impaired. We have collected additional information for those interested.

Figure 14 shows balance sheet asset data for the purchase

of Bear Stearns by JP Morgan in March of 2008 and the purchase of Washington Mutual in September of 2008. Acquisitions do not take place instantaneously, however, but over a period of months as the legal entities are merged. JP Morgan had just under \$1.6 trillion in assets at year-end-2007, prior to the transactions. Bear Stearns assets, based on their SEC filings (since they did not report to the Federal Reserve and thus did not file a Y-9C form), were \$399 billion in the first quarter of 2008, but this figure had fallen to \$289 billion by May of 2008 – at the time the merger became effective – as their assets were written down and disposed of. Washington Mutual reported assets of \$264 billion at the time of its sale, so the two acquisitions collectively added a maximum of \$550 billion. As shown in Figure 14, however, the assets of JP Morgan had increased by \$613 billion by the end of 2008, indicating that the company also added a minimum \$60 billion of additional assets over the period, reaching a total size of \$2.18 trillion.

Comparing the consolidated balance sheet of JP Morgan at the end of 2007, before the mergers, and December 2008, after the mergers, reveals that the largest increases in assets occurred in the following areas: deposits with banks increased by approximately \$126 billion; loans net of allowance for losses, by about \$211 billion; federal funds repos, by \$32 billion; borrowed securities, by \$40 billion; and accrued interest and accounts receivable, by \$36 billion. On the liability side, the largest increases between December 31, 2007 and December 31, 2008 were in deposits, which increased by \$269 billion; federal funds and other repos, by \$38 billion; other borrowed funds, by \$104 billion; accounts payable, by \$94 billion; and long term debt, by \$68 billion. Stock holder equity rose by \$44 billion.

It is hard to give a full interpretation of two complex acquisitions during such a troubled period, but it appears that the acquisition of Bear Stearns provided JP Morgan with value through its investment banking clients and securities business. Washington Mutual provided an expansion of JP Morgan's deposit base and loan portfolio, and the company was also the beneficiary of a general flight to safety that contributed additional deposits (increases in its liabilities) which were then placed into fairly safe assets.

Figure 15 shows asset balance sheet information for Bank of America. In July it acquired the mortgage finance company Countrywide, a company that had been a pioneer in developing an efficient mortgage business over its history but which had plunged into sub-prime and Alt-A lending that caused it to go into default when the crisis hit. The assets of Countrywide in July 2008, prior to acquisition, were about \$172 billion, a relatively small figure compared to Bank of America's total assets (10%). Bank of America's assets increased by only \$102 billion over the period during which the merger took place. The acquisition of Countrywide has been very troubling to Bank of America because of the legal problems it brought with it, for not much of an increase in

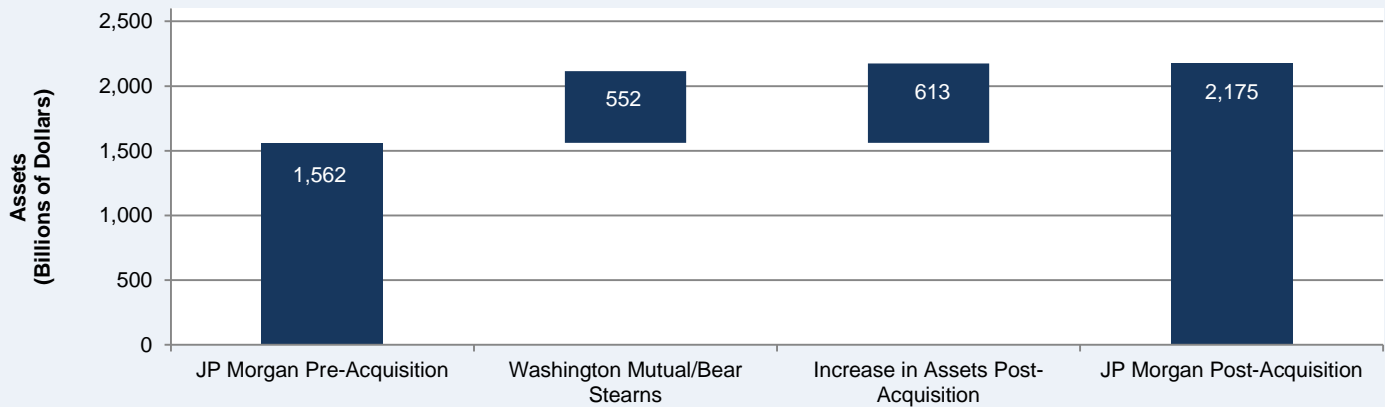
assets.

Figure 16 gives asset balance sheet information for the time of the Merrill Lynch merger, which was a much larger transaction, with Merrill holding \$668 billion of assets prior to the merger, again with troubled assets. Post-merger, Bank of America's assets had risen by \$405 billion, boosting its size substantially, although far less than the amount of the pre-acquisition assets of Merrill.

Wells Fargo made the largest acquisition relative to its size of any of the Big Four during the crisis period when it acquired Wachovia. Prior to the crisis, Wachovia had

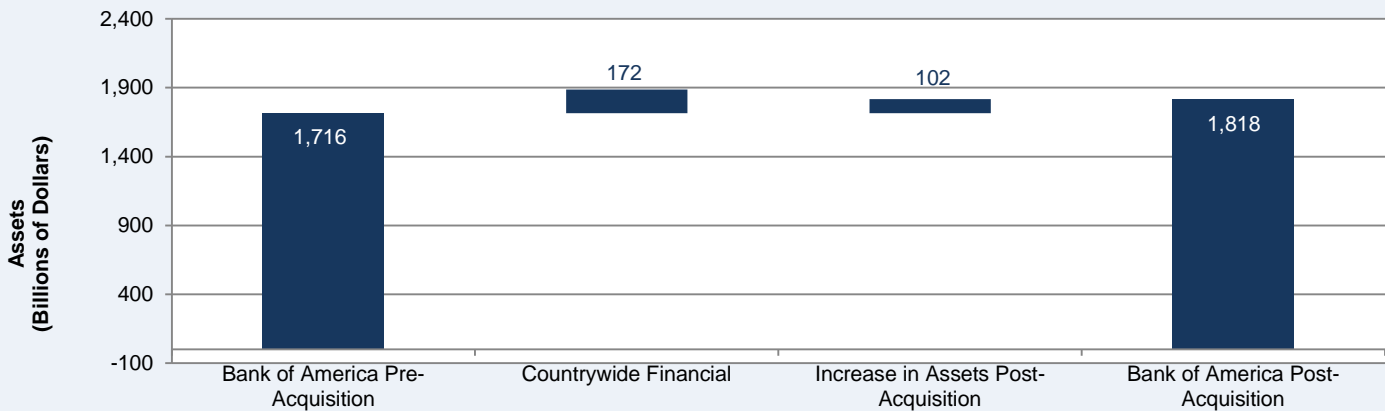
followed a fairly aggressive growth strategy, acquiring several other financial institutions, including First Union bank. In 2006 it purchased Golden West Financial which expanded its scale in California and the West but which held a portfolio of mortgages in the region that became distressed in the crisis and pushed Wachovia into severe difficulties. Prior to its purchase in October 2008, Wachovia reported assets of \$707 billion, larger than the \$575 billion in assets held by Wells Fargo at the beginning of the year (see Figure 17). The increase in Wells Fargo's assets post-merger was \$734 billion suggesting that they did not write down or dispose of large amounts of the Wachovia assets. As a result of the acquisition, Wells Fargo increased its size, but remains primarily a traditional bank.

Figure 14. Change in Assets: JP Morgan - Combined Crisis Transactions



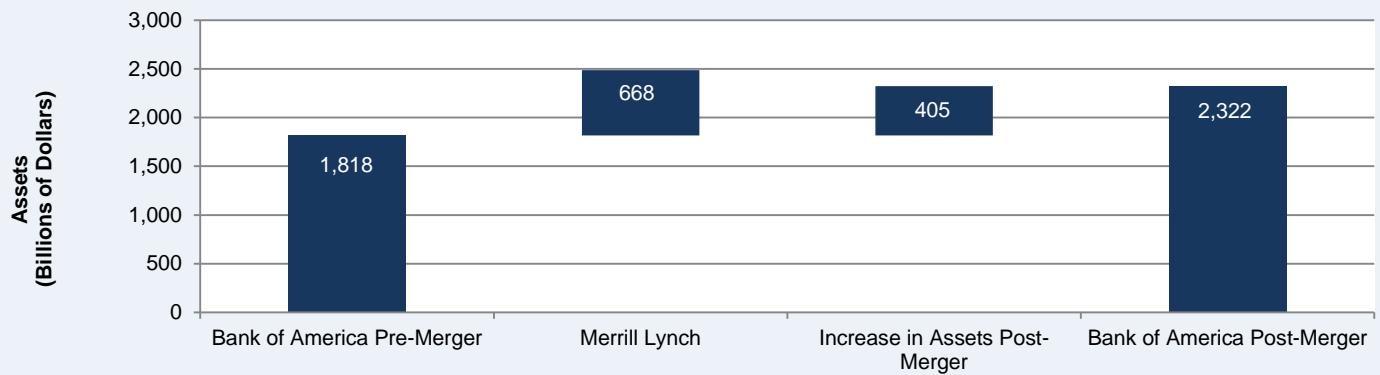
Source: SEC Filings

Figure 15. Change in Assets: Bank of America-Countrywide Acquisition



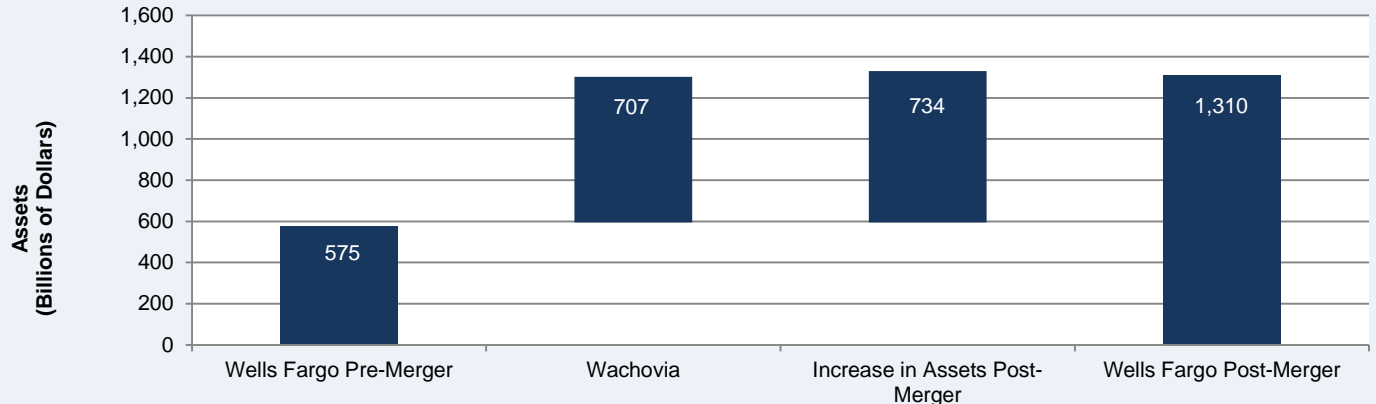
Source: SEC filings

Figure 16. Change in Assets: Bank of America-Merrill Lynch Merger



Note: Merger announced in October 2008
Source: SEC filings

Figure 17. Change in Assets: Wells Fargo-Wachovia Merger



Source: SEC filings

Conclusions on the Big Four banks

The most rapid growth in the Big Four banks, by a wide margin, occurred prior to the financial crisis. A combination of deregulation, particularly through the Riegle-Neal Act in 1994 and the Gramm Leach Bliley Act of 1999, had provided banks with the ability to consolidate and expand both across geographic and service lines, which they continued to do until the crisis. Paired with generally robust economic growth, the deregulation of the financial sector enabled the largest banks to post double-digit growth rates right up to the onset of the crisis.

The theme of consolidation continued, in a way, into 2008 as the U.S. government encouraged acquisitions of troubled financial institutions by stronger ones during the worst moments of the crisis. With no clear precedents or protocols for managing the failures of such large and

interconnected institutions as were Lehman, Merrill, and Bear before the crisis, the U.S. government took an ad hoc approach in which these major investment banks were pushed to be merged with or acquired by stronger private institutions. Likewise, to deal with failing depository institutions the U.S. government encouraged mergers with stronger banks or dispositions of bank subsidiaries by troubled institutions to other banks, with support provided by the FDIC as required. Amidst all of these changes, the acquisitions by the Big Four banks did push up their share of total banks assets and liabilities as a share of total banking but not by as much as is often believed. Further, the share of banking sector assets held by the Big Four declined after 2010, even when controlling for the additions of Goldman Sachs and Morgan Stanley to the class of reporting institutions. This trend is likely to continue given the regulatory pressure and capital requirements on the largest institutions.

The Big Four have changed their portfolios of assets and liabilities substantially as well, holding more interest-bearing

deposits as assets and relying less on short-term wholesale funding to finance their businesses.³ One of the most troubling signs in these data is the decline in loans in relation to deposits. In the crisis, the demand for loans fell, but the economy is now recovering and it would have been expected that loans would pick up by more than they have. Banks may be reluctant to lend because of continued concerns about risk, or they may be restrained from lending by regulatory pressure. This trend may be a cause for concern among policymakers, consumers, and industry alike if it continues.

Endnotes

1. Baily, Martin Neil, Matthew S. Johnson, and Robert E. Litan. 2008. "The Origins of the Financial Crisis," Brookings (November). Retrieved from <http://www.brookings.edu/research/papers/2008/11/origins-crisis-baily-litan> on May 22, 2015.
2. Specifically, gross traditional income includes interest and fee income on loans; income from lease financing receivables; interest income on balances due from depository institutions; interest and dividend income on securities, excluding mortgage-backed securities; interest income from federal funds sold and securities purchased under agreements to resell; other interest income; income from fiduciary activities; service charges on deposit accounts in domestic offices; net gains (losses) on sales of loans and leases; net gains (losses) on sales of other real estate owned; net gains (losses) on sales of other assets, excluding securities; realized gains (losses) on held-to-maturity securities; and realized gains (losses) on available-for-sales securities. Gross securitization income includes net servicing fees, net securitization income, and interest and dividend income on mortgage-backed securities. Gross nontraditional income includes trading revenue; investment banking, advisory, brokerage, and underwriting fees and commissions; venture capital revenue; insurance commissions and fees; and interest income from trading assets. The gross figures are then netted by interest expense, with the share of interest expense apportioned to each category based on that category's share of the total gross income; for example, the net securitization income figure will reflect the gross amount of securitization income less the product of total interest income and the share of total gross income accounted for by securitization.

See Copeland, Adam. 2012. "Evolution and Heterogeneity among Larger Bank Holding Companies: 1994 to 2010," *Federal Reserve Bank of New York Policy Review* 18(2).
3. Demand deposits are of course a form of short term funding and historically runs on banks have involved rapid withdrawals of bank deposits. With the advent of deposit insurance, bank deposits have become sticky and do not run easily, with the possible exception of deposit amounts exceeding the FDIC insurance level. Even those persons looking for federal insurance for large deposit amounts can spread their funds among several banks or avail themselves of securities that have been created to provide such insurance.

