

LIQUIDITY
INSIGHTS

J.P. Morgan Global Liquidity

European and U.S. Banks:
Lower ratings, improved credit
fundamentals



ABOUT
J.P. MORGAN GLOBAL LIQUIDITY

J.P. Morgan Global Liquidity believes in creating long-term strategic relationships with our clients. We bring value to these relationships through extensive liquidity management capabilities which are global in reach, comprehensive in solutions and relentless in risk control. J.P. Morgan Global Liquidity is one of the largest managers of institutional money market funds in the world, with dedicated investment management professionals around the globe. This positions us to offer best-in-class investment solutions spanning a range of currencies, risk levels and durations, designed to suit our clients' specific operating, reserve and strategic cash management needs.

TABLE OF CONTENTS

Introduction	2
European Banks	4
Capital adequacy, Asset quality	5
Funding and liquidity	6
Profitability	7
Ratings	8
U.S. Banks	9
Capital, Asset quality	9
Liquidity	10
Profitability	11
Ratings	12
Conclusion	13
Appendix	14

INTRODUCTION



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Liquidity funds are compelled to invest in high-quality short-term debt (typically mid-single-A or better), the majority of which is issued by global banks. In the wake of the 2008 financial crisis and the subsequent eurozone sovereign debt crisis, U.S. and European banks have been transformed in many ways. Their debt should be viewed in this new context.

Many banks were hit by large investment and loan losses during one or both of the crises and subsequently restructured and recapitalized. Even those banks less affected had to increase capital buffers and boost liquidity measures as they responded to market and competitive pressures as well as far-reaching regulatory reforms. Across global markets, lawmakers, provoked by damaging fallout from the crises, took action to promote financial stability.

Today the global banking sector is in much stronger financial shape than it was in 2007, with higher capital levels, enhanced liquidity and improving asset quality, despite the fact that many banks experienced severe ratings downgrades between 2007 and 2013 (**Exhibit 1**). The lower ratings reflect a wide range of factors, including substantial loan and investment losses, sovereign downgrades, new regulations limiting future taxpayer support and changing methodologies at the rating agencies.

After reviewing their methodologies, the rating agencies are removing government support uplift at the holding company level for U.S. banks while some support uplift remains at the operating bank subsidiary level. (The uplift implies that the ratings would have been lower without the promise of extraordinary government support in the event of a significant threat to financial stability.) For European banks, the agencies have started to review government support uplift but have not yet removed it from their ratings.

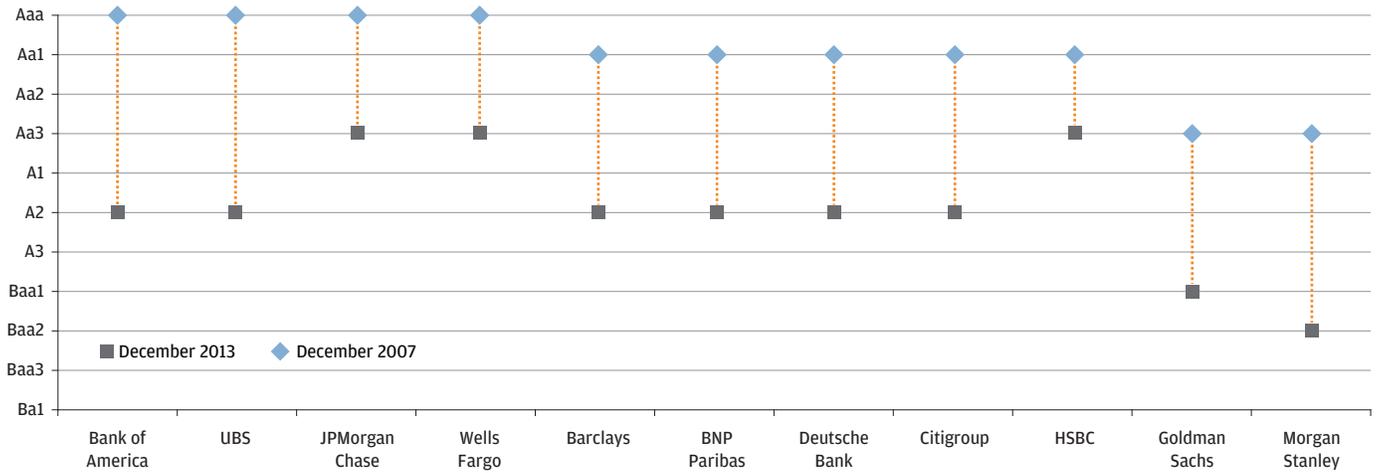
U.S. and European banks are at different points on the path to balance sheet repair, and they operate in quite different macroeconomic environments. The U.S. economy has pulled ahead, growing at a steady if less than brisk pace, while the European Union (EU) has only recently exited recession and continues to grapple with disinflation. U.S. banks have mostly completed the process of balance sheet recovery. European banks are one step behind; the European Central Bank (ECB) asset quality review and European Banking Authority (EBA) stress test results that will be available in October 2014 will likely mark the beginning of the end of this process for major banks in core Europe.

This paper analyzes the credit fundamentals of major U.S. and European banks. We explore how bank balance sheets have dramatically strengthened since 2007 and how bank ratings have declined. We also examine how tougher regulations and stricter oversight are pressuring bank earnings but generally making it safer for bank debt investors.

Although we cannot predict what rating agencies will do, as we assess improved credit fundamentals in the global banking sector, we believe it is likely that ratings of major banks are close to their bottoms in both the U.S. and Europe.

Between 2007 and 2013, downgrades averaged four full notches

EXHIBIT 1: RATINGS AS OF DECEMBER 2007 AND DECEMBER 2013 FOR 11 OF THE GLOBALLY SYSTEMICALLY IMPORTANT BANKS (G-SIBS)



Source: Company filings, J.P. Morgan Asset Management.

Lower ratings, improved credit fundamentals

European Banks

At the end of 2007, most European banks were highly leveraged and heavily reliant on short-term wholesale funding. As a counterweight to that vulnerability, their risk-based capital levels were considered to be adequate and their asset quality thought to be good. But when the U.S. subprime mortgage crisis started to unfold, banks discovered that many of their AAA-rated non-agency mortgage securities were heavily impaired. UBS, for one, was forced to take more than CHF 50 billion (U.S. \$44 billion) in write-downs related to its fixed income holdings.

Then came the eurozone sovereign debt crisis, which ran from roughly the spring of 2010 to the summer of 2012. At its peak, it posed an existential threat to the 17-nation bloc and the euro, raising the specter of a new global credit crisis.

European banks held—and still hold—a substantial amount of government bonds in their investment portfolios. In 2011 these bonds were held at a zero risk-weighting, funded by cheap short-term wholesale funds. These zero-risk-weighted positions were suddenly producing mark-to-market losses substantial enough to undermine banks' capital positions. As a result, a number of

large European banks needed an injection of government capital to shore up market confidence. The future of the eurozone was very much in question until the summer of 2012, when European Central Bank president Mario Draghi declared that the ECB would do “whatever it takes” to prevent the euro’s collapse.

As a deep recession followed the sovereign debt crisis, residential and commercial real estate prices collapsed in many European countries. Banks had to set aside more loan loss provisions even as they managed impairment losses in investment portfolios. Their heavy reliance on short-term wholesale funding exacerbated the problem. When many U.S.-based money market funds started to withdraw funding at the height of the eurozone crisis, in the fall of 2011, central banks were compelled to step in to provide funding support to European lenders.

Under pressure from markets and regulators, European banks began the slow process of repairing their balance sheets, deleveraging, de-risking and reducing reliance on short-term wholesale funding. As we assess the landscape today, most European banks have significantly improved most of their fundamental credit metrics.

In this paper we focus on five major European banks—HSBC Holdings, Barclays plc, Deutsche Bank AG, BNP Paribas SA, and UBS AG—to demonstrate the sector’s progress. The major credit metrics we examine are capital adequacy, asset quality, funding and liquidity and profitability.

Capital Adequacy

There are various measures of a bank’s capital position. In a risk-based capital framework such as Basel II and Basel III, the highest-quality capital ratio is Core Tier 1 in Basel II or Common Equity Tier 1 (CET1) in Basel III. (See Appendix for more details on the Basel accords, which define global standards for bank capital, liquidity and leverage.) Risk-based capital frameworks recognize that different assets have different levels of risk, but because these frameworks are complex and model-dependent, they are subject to model and data limitations.

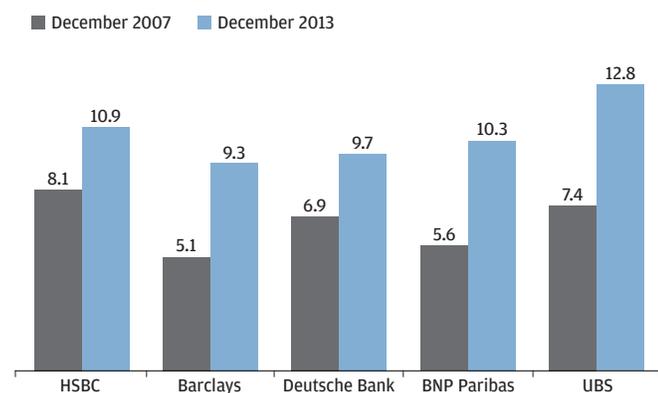
Another measure of capital, the leverage ratio, does not differentiate among the risk levels of assets—a significant shortcoming. However, it does prevent model manipulation and defines a basic cap on bank leverage. Banks have recently started to report Tier 1 leverage ratios under a Basel III framework.

In our assessment of risk-based capital, we compare Core Tier 1 at year-end 2007 to the fully loaded Common Equity Tier 1 (CET1) at year-end 2013. For simplicity’s sake, we refer to both as the “core capital ratio.”

Exhibit 2 shows the clear improvement in risk-based capital: all five banks have fully loaded Basel III CET1 ratios above 9%. For Barclays, BNP Paribas and UBS, the core capital ratio increased by approximately 80%. HSBC, which had a strong capital base to begin with in 2007, also significantly boosted its core capital ratio.

At the biggest banks, risk-based capital has clearly strengthened

EXHIBIT 2: CORE TIER 1 CAPITAL IN 2007; COMMON EQUITY TIER 1 CAPITAL IN 2013



Source: Company filings, J.P. Morgan Asset Management.

As we examine another measure of capital, the leverage ratio, we use the tangible-common-equity-to-earning-assets, or TCE/EA, ratio. It is easy to compute based on reported balance sheets, and comparable across all banks. **Exhibit 3** compares the TCE/EA leverage ratio of the five major European banks at year-end 2007 to year-end 2013.

In 2007, only HSBC had a TCE/EA ratio higher than 4%. Barclays and UBS were below 2%. With a ratio of 1.3%, UBS was almost 77 times leveraged. If we fast-forward six years, through a combination of capital raises and asset reductions, four of the five banks reported TCE/EA ratios above 5%. HSBC was still the strongest at 7%, followed by UBS at 6.5%. Even the weakest bank, Deutsche Bank, had a ratio (4.3%) that almost matched the ratio of the strongest bank in 2007, HSBC.

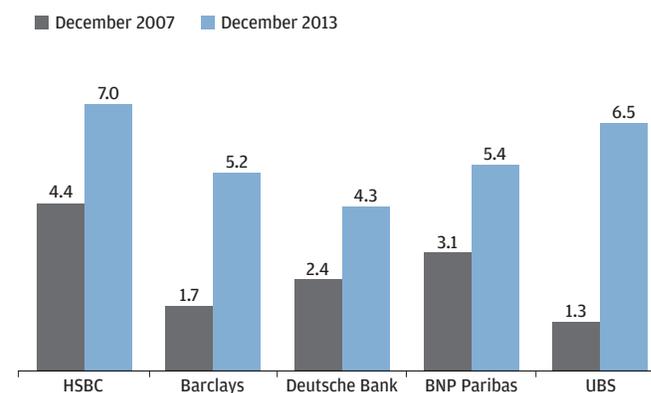
Asset Quality

In 2007, banks’ potentially problematic loans and investments were masked by easy credit conditions, making their asset quality appear solid. However, in the summer of 2007, as the U.S. subprime mortgage crisis began to unfold, global credit conditions started to tighten. With the collapse of Lehman Brothers in September 2008, the global financial crisis erupted and credit markets effectively froze.

In the ensuing recession, banks discovered that they needed to take large impairment losses on investments they had thought were of high quality. Non-performing loans (NPLs), one key indicator of asset quality, quickly started to pile up on bank loan books.

Leverage ratios have improved, through a combination of capital raises and asset reductions

EXHIBIT 3: LEVERAGE RATIO: TANGIBLE COMMON EQUITY TO EARNING ASSETS, OR TCE/EA RATIO, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

Today NPLs remain a significant presence on bank balance sheets (**Exhibit 4**). For many banks, the ratios of NPLs to total bank loans are higher now than they were in 2007, although they have been declining over the last two years. BNP Paribas is the one exception, partly because the bank has significant operations in Italy, whose legal framework prevents a quick write-off of NPLs.

Another important asset quality indicator is the Texas ratio: NPLs and loans delinquent for over 90 days divided by loan-loss reserve and tangible capital equity (**Exhibit 5**). The Texas ratio measures a bank's ability to absorb non-performing assets over a 12-month period and is considered a good leading indicator of potential bank insolvency (the lower the ratio, the healthier the bank). Texas ratios have improved at Barclays and UBS but are marginally worse at HSBC and Deutsche Bank. All four remain in a healthy range, though, at less than 30%.

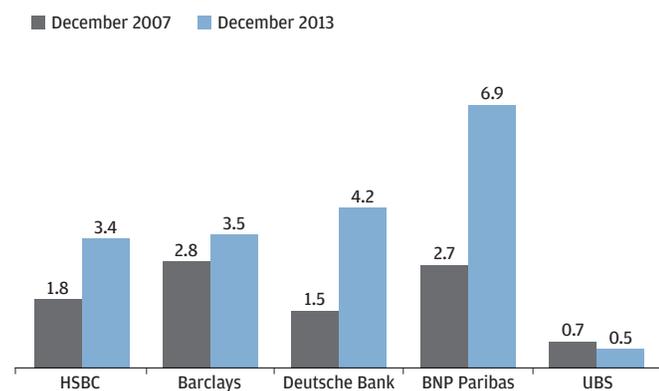
Funding and Liquidity

European banks have made tremendous progress in bolstering their funding and liquidity profiles. They have increased deposit funding and reduced short-term wholesale funding, deleveraging balance sheets and increasing liquidity buffers.

At Barclays and BNP Paribas, banks with significant retail and commercial banking operations, loan-to-deposit (LTD) ratios have been reduced by about 16 percentage points. HSBC had excess deposits to start with, but the bank still reduced this ratio by almost 10 percentage points, to below 80%. Deutsche Bank and UBS, mainly wholesale banks, did not have enough

Poor performance: Banks are still saddled with non-performing loans

EXHIBIT 4: NON-PERFORMING LOANS AS A PERCENTAGE OF TOTAL BANK LOANS, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

loans on their balance sheets in 2007. In the past six years, they have materially increased their LTD ratios, to around 70%. Deutsche Bank's increase is mainly the result of its acquisition of Deutsche Postbank.

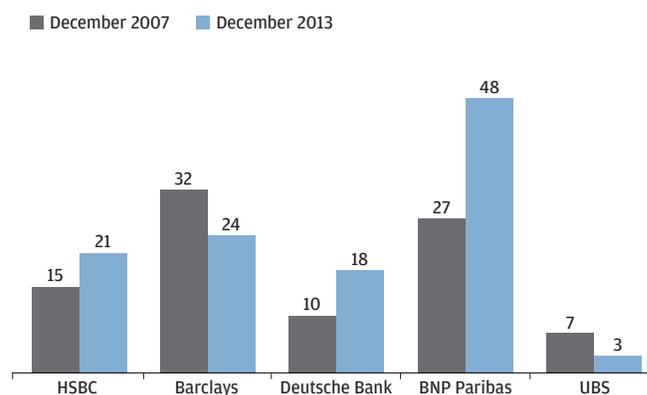
Evaluating liquidity profiles has been difficult because, until Basel III, measures of short-term wholesale funding varied among banks and did not require disclosure. **Exhibit 6** presents the measure of short-term wholesale funding as a ratio to total funded liabilities tracked by J.P. Morgan Investment Management Global Liquidity. As of year-end 2013, Barclays, Deutsche Bank and BNP Paribas had all reduced their short-term wholesale funding ratios to below 40% of total funding, while UBS had reduced it to 24%.

Aiming to ensure that banks can meet their liquidity needs in a severe stress scenario, Basel III requires banks to report their liquidity coverage ratio. The ratio of high-quality liquid assets (those that can be converted to cash within a day, without a decrease in value) to a bank's expected net cash outflows over a 30-day stress period must be greater than 100%. The ratio essentially measures a bank's ability to meet 30 days' worth of liquidity claims, including undrawn credit commitments, with highly liquid assets. Reporting of this ratio for European banks is not required until 2015, and banks have until 2018 to fully meet this standard. However, most banks have stated that they have already fully met the requirement.

For historical comparisons, in their annual reports most banks disclose assets/liabilities by their remaining maturity buckets, and the three-month maturity bucket is the most widely used.

Assessing asset quality: The Texas ratio is considered a good leading indicator of potential bank insolvency

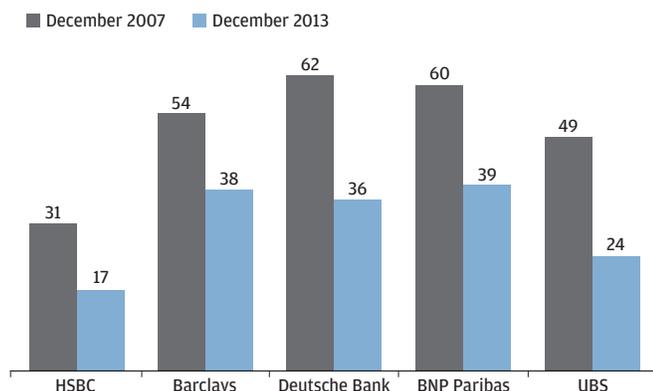
EXHIBIT 5: TEXAS RATIO: NPLS AND LOANS DELINQUENT FOR OVER 90 DAYS DIVIDED BY LOAN-LOSS RESERVES AND TANGIBLE CAPITAL EQUITY, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

Until Basel III regulations, measures of short-term wholesale funding varied among banks and did not require disclosure

EXHIBIT 6: J.P. MORGAN INVESTMENT MANAGEMENT GLOBAL LIQUIDITY'S MEASURE OF SHORT-TERM WHOLESALE FUNDING AS A PERCENTAGE OF TOTAL FUNDED LIABILITIES, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

In recent years, J.P. Morgan Investment Management Global Liquidity has consistently tracked an internally defined three-month liquidity coverage ratio (LCR) for our bank credit analysis. It examines how much a bank's liquidity buffer—cash and cash equivalents, plus central-bank-eligible high-quality collateral, net of haircut—can cover three-month wholesale short-term funding. **Exhibit 7** provides our calculation of the three-month LCR. Banks have dramatically strengthened their LCRs, both by reducing their short-term wholesale funding and by increasing the size of their liquidity buffers.

Profitability

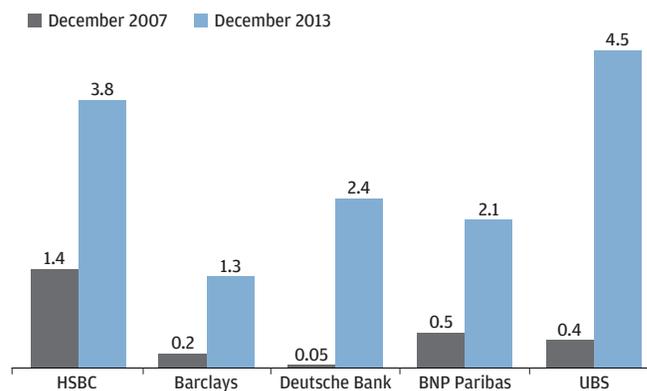
As balance sheets have strengthened, bank profitability has come under pressure. Deleveraging, weak loan demand, significant credit costs, subdued capital markets activity, increased regulatory and litigation costs, and higher capital levels result in lower return on equity, all else being equal.

Exhibit 8 shows the range of bank net interest margins (NIM), the key measure of bank profitability. As we define it, NIM is reported net interest income divided by all earning assets, including investment and trading securities. Of course, generating interest income has been a particular challenge in an environment of historically low interest rates.

NIM at HSBC has decreased slightly, due in part to the bank's strong excess deposit base. Barclays' NIM posted a marginal improvement. Net interest margins rose substantially at

Banks have dramatically strengthened their liquidity coverage ratios, both by reducing their short-term wholesale funding and by increasing the size of their liquidity buffers

EXHIBIT 7: THREE-MONTH LIQUIDITY COVERAGE RATIO, AS DEFINED BY J.P. MORGAN INVESTMENT MANAGEMENT GLOBAL LIQUIDITY, 2007 AND 2013



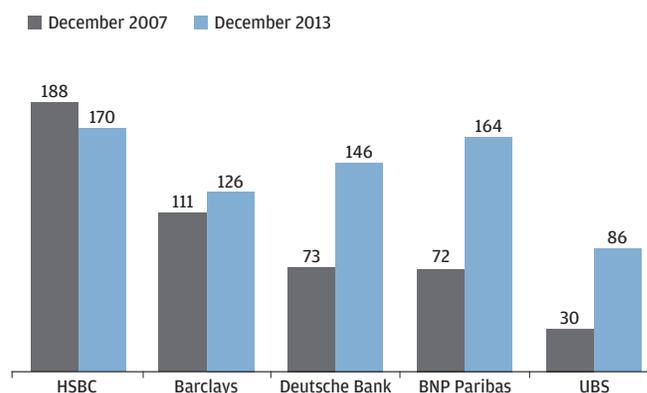
Source: Company filings, J.P. Morgan Asset Management.

Deutsche Bank, BNP Paribas and UBS, mainly because of a change in asset mix that included a reduction in trading assets.

The underlying earnings of most banks have remained stable or even increased. However, reflecting high loan losses, one-off items such as litigation and restructuring costs, and, finally, a high capital base, four of the five major banks have reported much lower returns on tangible common equity, (RoTCE), compared with pre-crisis levels (**Exhibit 9**).

As balance sheets have strengthened, bank profitability has come under pressure

EXHIBIT 8: NET INTEREST MARGIN: REPORTED NET INTEREST INCOME DIVIDED BY ALL EARNING ASSETS, INCLUDING INVESTMENT AND TRADING SECURITIES, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

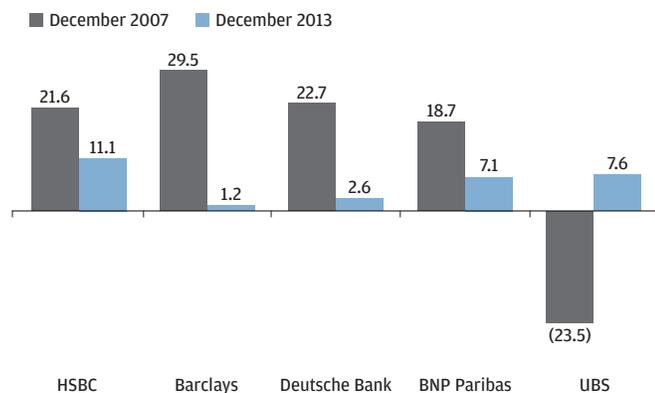
Ratings

Despite the recent improvement in credit fundamentals, both Standard & Poor's (S&P) and Moody's downgraded major European banks by three to four notches over the 2007-2013 period (**Exhibits 10 and 11**), mainly reflecting rating agencies' changed view of the banking sector, driven by crisis experience.

Both S&P's and Moody's rating methodologies do not include government and other support uplift, if they deem any, in bank stand-alone credit ratings (stand-alone credit profile for S&P, or SACP, baseline credit assessment for Moody's, or BCA), but they do embed the uplift in their final assigned ratings.

Reduced return on equity reflects substantial loan losses, one-off items and a high capital base

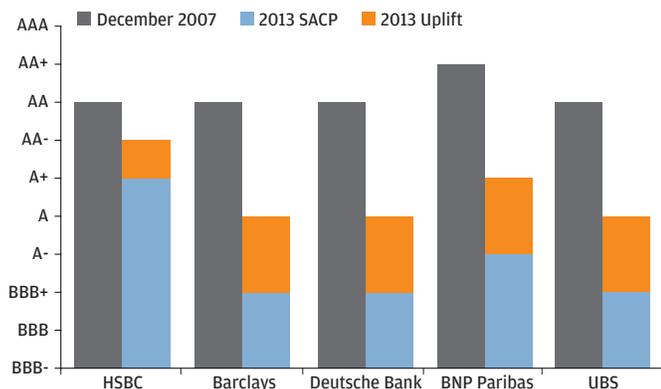
EXHIBIT 9: RETURN ON TANGIBLE COMMON EQUITY, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

Deep dive: Both S&P and Moody's downgraded major European banks by three to four notches over the 2007-2013 period. Both embed government support uplift in their final assigned ratings.

EXHIBIT 10: S&P RATINGS, 2007 AND 2013



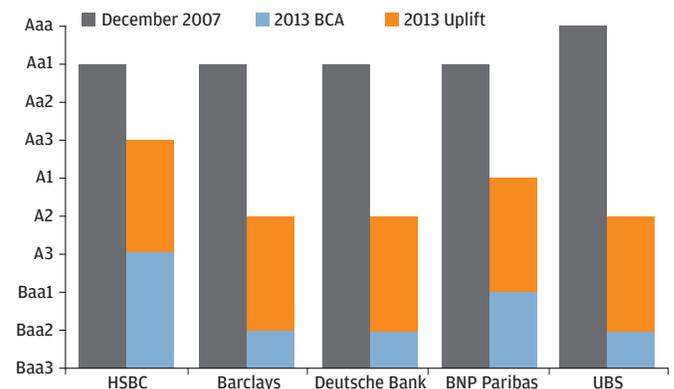
Source: Company filings, J.P. Morgan Asset Management.

The current lower bank ratings still have multiple notches of government support uplift embedded in them. S&P has one to two notches of support uplift, while Moody's has three uplifts for all five banks.

Back in 2007, S&P had no explicit support uplift built into its ratings of the five major European banks; Moody's had two notches of ratings uplift for each of the banks. Over the last six years, both agencies have downgraded the stand-alone ratings dramatically and at the same time increased government support uplifts.

Given the new global regulatory environment, and in particular the European bail-in scheme that calls for bondholders to absorb losses before a government bailout, the agencies have started to review their assumptions on government support. We expect that over the next 18 months the likely path for S&P is higher stand-alone ratings but lower support uplift to keep current ratings intact. For Moody's, the path is less clear. The agency has stated that its stand-alone credit ratings fully reflect current improved credit fundamentals, and the rating agency believes that government support uplift will not go away completely in the next 18 months. Nevertheless, it is our base-case scenario that Moody's ratings on European banks are also close to a bottom, based on the credit fundamentals we track.

EXHIBIT 11: MOODY'S RATINGS, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

U.S. Banks

As 2007 began, U.S. banks appeared to be well-positioned and well-capitalized. By most (not all) accounts, the U.S. had one of the strongest banking systems in the world.

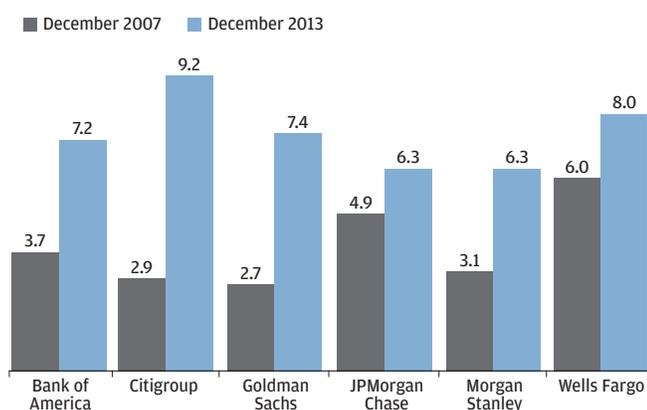
But off the balance sheet, trouble was brewing. Large U.S. banks and broker dealers had developed (off-balance sheet) financing structures to more efficiently use capital and report growing returns on equity, supporting higher stock prices. These structured securities consisted of subprime mortgages and esoteric loans whose underwriting standards and documentation had declined. Though they were rated AAA by the rating agencies, these securities contained considerable portfolio risk.

In the wake of the Lehman Brothers bankruptcy, the most severe financial crisis since the Great Depression saw major bank failures, the government bailout of large financial companies and the near-collapse of other institutions that needed direct capital injections from the U.S. government to survive. As credit markets seized up, Goldman Sachs Group Inc. and Morgan Stanley applied for bank holding company status to gain access to the Federal Reserve discount window. Merrill Lynch was bought by Bank of America Corp..

To ensure the safety and stability of the U.S. banking system, regulators and legislators enacted a number of post-crisis reforms, including the Dodd-Frank Act and the implementation of the Basel III accord. These new regulations demanded additional and better forms of capital, greater and more stable liquidity, lower leverage and more-diversified funding.

At U.S. banks, the capital base is as high as it has been in a generation

EXHIBIT 12: TANGIBLE COMMON EQUITY AS A PERCENTAGE OF TOTAL ASSETS, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

Capital

In the global banking sector, large U.S. banks have reported the quickest and most dramatic improvement in the amount and quality of capital. Their capital base is now as high as it has been in a generation. Large U.S. banks raised substantial amounts of common equity in 2009 as a result of the first stress test conducted by the Fed. Subsequent curbs on the amount of dividends paid to shareholders and stock repurchases by the large U.S. banks have kept profits on the balance sheet, growing capital.

Using Tangible Common Equity (TCE) to Assets, the measure of leverage using only core capital that prevailed in 2007, most large U.S. banks have reported double the amount of tangible common equity when compared with fiscal year-end 2007, as noted in **Exhibit 12**. Tangible common equity ratios exceeded 6% at year-end 2013 for all the large U.S. banks, whereas only one, Wells Fargo, had a TCE ratio that high in 2007.

Because of Basel III, minimum risk-based capital ratio requirements have increased since year-end 2007. The minimum requirement for Common Equity Tier 1 (CET1) for the large U.S. banks stands at 9%, which all of them have met. CET1 includes a buffer for capital conservation, a cushion in periods of heightened volatility and illiquidity, and an additional buffer for systemically important financial institutions (SIFI).

Asset Quality

Extraordinary Fed stimulus unleashed in response to the financial crisis—zero short-term interest rates and unprecedented quantitative easing—has helped stabilize real estate values and assisted in the purge of non-performing loans from bank balance sheets. Bank asset quality is much improved, although it is not yet back to pre-crisis levels. As illustrated in **Exhibit 13**, Texas ratios (non-performing loans as a percentage of reserves and capital) are well under 25%; we consider 30% or higher to be elevated and over 50% as indicating a severe non-performing-loan issue.

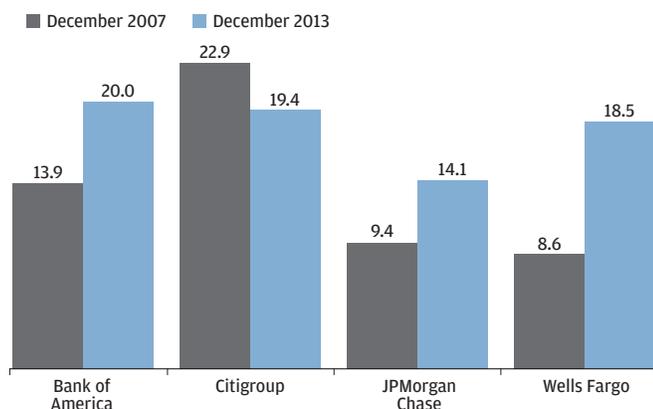
Bank asset quality also reflects the post-crisis acquisitions of damaged real estate lenders: the Bank of America purchase of Countrywide Financial, the JPMorgan Chase & Co. acquisition of Washington Mutual Inc. and the Wells Fargo & Co. purchase of Wachovia Corp.. Although the banks, in particular Bank of America, continue to deal with the troubled real estate operations of the acquired lenders, the bulk of that work is fairly complete.

For Goldman Sachs and Morgan Stanley, the real estate crisis manifested itself in overvalued, illiquid securities tied to residential real estate. Many of these were collateralized debt obligations and other synthetic mortgage-related securities that performed well in an environment of rising real estate values and easy credit availability, and imploded when credit tightened, market liquidity dried up and short-term funding proved scarce. In volatile markets, valuing these securities proved problematic because they traded infrequently and their value depended on financial models. The models failed to provide accurate pricing and ultimately forced banks to report large adverse changes in asset values and significant negative impacts on their capital positions. Many of these securities were labeled as “Level 3” assets under FASB Statement 157: assets whose fair value cannot be determined by using observable measures and is solely determined by pricing models.

As displayed in **Exhibit 14**, the amount of Level 3 assets on the balance sheets of Goldman Sachs and Morgan Stanley in fourth-quarter 2007 was more than double their tangible equity. Put another way, a 50% decline in the value of Level 3 assets would have eliminated the majority of each firm’s capital. Level 3 assets as a percentage of tangible equity have fallen considerably, with Goldman Sachs at 60% and Morgan Stanley at 35% at year-end 2013.

U.S. bank asset quality is much improved, though not yet back to pre-crisis levels

EXHIBIT 13: TEXAS RATIOS (NON-PERFORMING LOANS AS A PERCENTAGE OF RESERVES AND CAPITAL), 2007 AND 2013



Source: Company filings, SNL Financial, J.P. Morgan Asset Management.

Liquidity

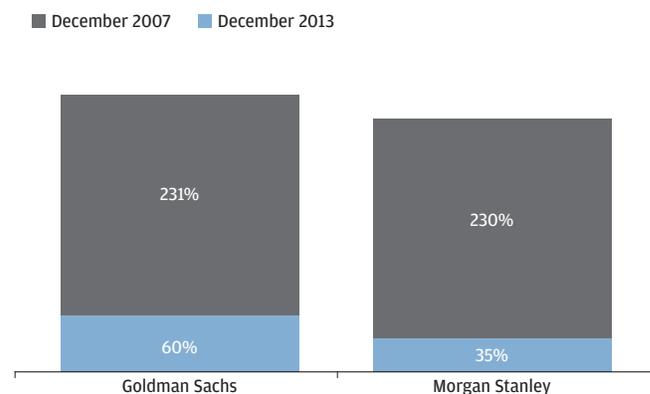
Prior to the financial crisis, there was no consensus metric that measured the reliance a bank placed on volatile short-term funding. A popular measure tracked the amount of wholesale, or market-based, funding as a percentage of total funding on a bank’s balance sheet. As might be expected, Goldman Sachs and Morgan Stanley, which have no access to branch banking systems and thus have limited ability to attract stable core deposits, have scored relatively poorly on this measure.

Morgan Stanley’s strategic focus on asset management, including its acquisition of Smith Barney, has increased the amount of deposits on its balance sheet and reduced its reliance on wholesale funding. However, both Goldman Sachs and Morgan Stanley have large amounts of liquid, short-term, high-quality assets that provide a reliable source of funding should wholesale markets become inaccessible (**Exhibit 15**).

As we discussed earlier, the liquidity coverage ratio is a key element of Basel III. It has already had a major impact on large U.S. banks, all of which have exceeded the 100% LCR for several quarters.

Post-crisis cleanup: Illiquid assets make up a much smaller percentage of tangible equity

EXHIBIT 14: GOLDMAN SACHS AND MORGAN STANLEY LEVEL 3 ASSETS AS A PERCENTAGE OF TANGIBLE EQUITY, 2007 AND 2013.

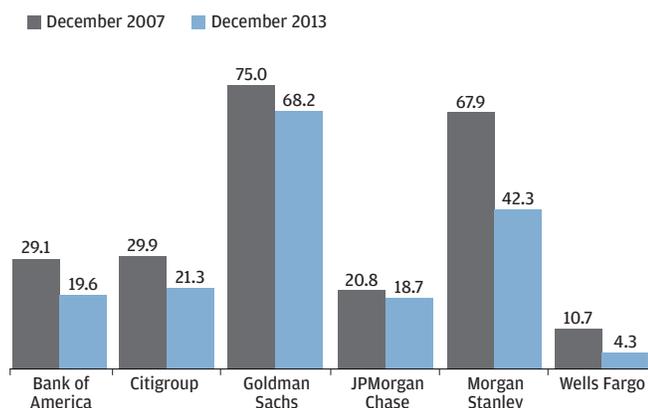


Source: Company filings, J.P. Morgan Asset Management.

FASB Statement 157 defines Level 3 assets as assets whose fair value cannot be determined by using observable measures and is solely determined by pricing models.

Should wholesale funding markets become inaccessible, Goldman Sachs and Morgan Stanley can draw on substantial amounts of liquid, high-quality assets

EXHIBIT 15: SHORT-TERM WHOLESALE FUNDING AS A PERCENTAGE OF TOTAL FUNDING, 2007 AND 2013



Source: Company filings, J.P. Morgan Asset Management.

Another measure of improved liquidity is a J.P. Morgan Investment Management Global Liquidity internal measure of liquid assets divided by unsecured short-term wholesale funding—a modified LCR. As illustrated in **Exhibit 16**, the large U.S. banks have increased the amount of highly liquid assets available to them relative to their short-term funding, thus reducing their short-term refinancing risk, especially in times of market volatility.

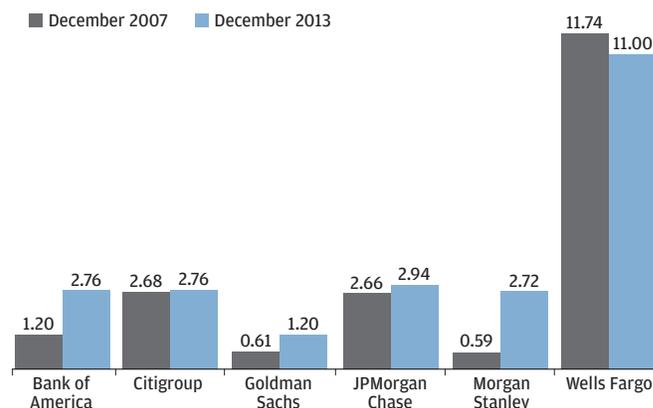
As part of their improved liquidity and funding profiles, many large U.S. banks have been reporting the amount of highly liquid assets available, thus indicating how long the bank could fund itself without access to capital markets. For example, Bank of America reported during its first-quarter 2014 earnings call that its unsecured obligations could be met for 35 months using only its excess liquidity sources (such as cash, high-quality government and government-related securities, and high-quality non-U.S. government and supranational securities), without issuing debt or sourcing other forms of liquidity.

Profitability

U.S. bank earnings are under pressure, as they have been for the past six years. This is largely a function of stronger bank balance sheets, which lead to reduced leverage and weaker returns on capital, and of the increased cost associated with regulation (stress tests, Basel III compliance) and legislation (Dodd-Frank).

Reduced refinancing risk: Large U.S. banks have increased the amount of highly liquid assets they hold relative to their short-term funding

EXHIBIT 16: J.P. MORGAN INVESTMENT MANAGEMENT GLOBAL LIQUIDITY'S MODIFIED LIQUIDITY COVERAGE RATIO, A MEASURE OF LIQUID ASSETS DIVIDED BY UNSECURED SHORT-TERM WHOLESALE FUNDING



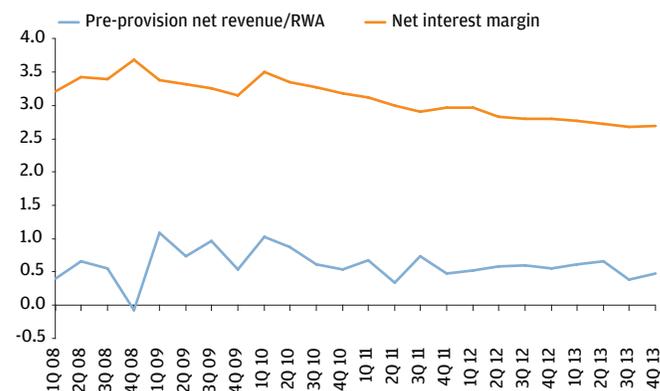
Source: Company filings, J.P. Morgan Asset Management.

Banks also face revenue challenges from both slower economic activity and the low absolute level of interest rates, causing declining margins and reduced fee income.

Net interest margin has been declining steadily, due in part to the lack of loan growth and persistently lower securities yields (**Exhibit 17**). Since early 2010, the positive benefit of lower interest rates to bank profitability—reduced funding costs—has been largely realized. Fee income is unable to offset ongoing margin pressure because it too has been falling since 2010.

Net interest margin has been declining steadily, due in part to the lack of loan growth and persistently lower securities yields

EXHIBIT 17: MEDIAN PRE-PROVISION NET REVENUE, MEDIAN NET INTEREST MARGIN



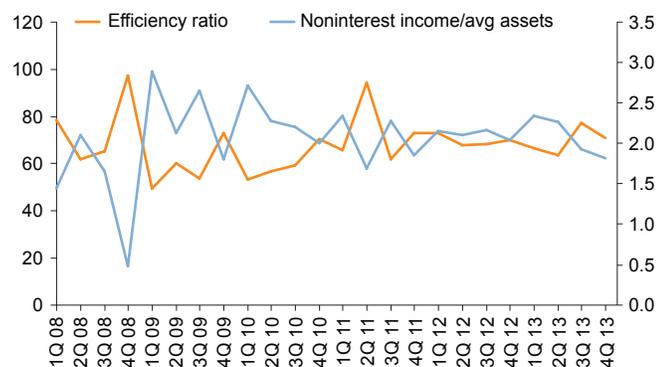
Source: Company filings, SNL Financial, J.P. Morgan Asset Management.

Declining fee income reflects subdued economic activity, which in turn negatively impacts bank revenue generated by loan fees and securities and investment banking transactions. Legislative changes, including lower credit/debit card interchange fees, reduced checking account fees and restrictions on proprietary trading defined by the Volcker rule, have further constrained bank profits.

Even as they have focused intently on controlling costs, large U.S. banks have been unable to produce any notable efficiency gains since the financial crisis. Indeed, cost measures have been stubbornly weak since early 2009. This is primarily the result of declining net interest and non-interest revenues but also demonstrates the higher cost of regulation (**Exhibit 18**).

Efficiency gains have proved elusive despite a focus on cost controls

EXHIBIT 18: X-AXIS: EFFICIENCY RATIOS; Y-AXIS: NON-INTEREST INCOME AS A PERCENTAGE OF AVERAGE ASSETS



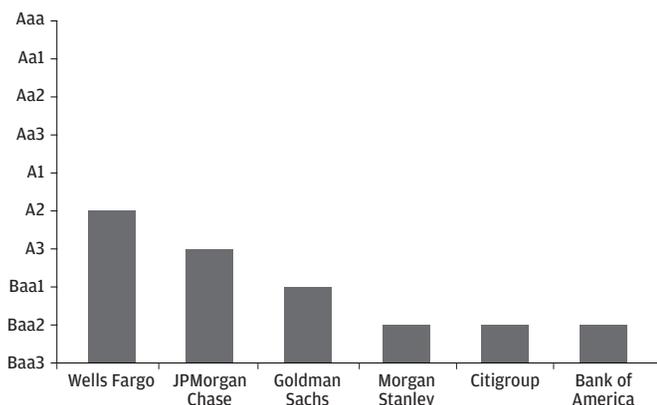
Source: Company filings, SNL Financial, J.P. Morgan Asset Management.

Ratings

A major component of the Dodd-Frank law is Title II, the Orderly Liquidation Authority (OLA) provision, which provides regulators with a process for liquidating a large, complex financial institution while still maintaining the operations of subsidiaries deemed critical to the stability of the U.S. financial system. The premise of OLA is relatively simple: use equity (both preferred and common) and the required amount of subordinated and/or senior debt to recapitalize a failing holding company while providing temporary funding (if needed) to solvent subsidiaries. If the recapitalization is successful, equity holders and creditors of the holding company, instead of taxpayers, will support the recapitalized parent company while solvent subsidiaries operate as close to normal as possible. Because holding company creditors would likely be at risk of a haircut or recapitalization in an OLA stress scenario, Moody's has removed sovereign support from the holding company ratings of the eight largest U.S. banks while maintaining up to three notches of support in the operating company ratings of these banks (**Exhibits 19 and 20**).

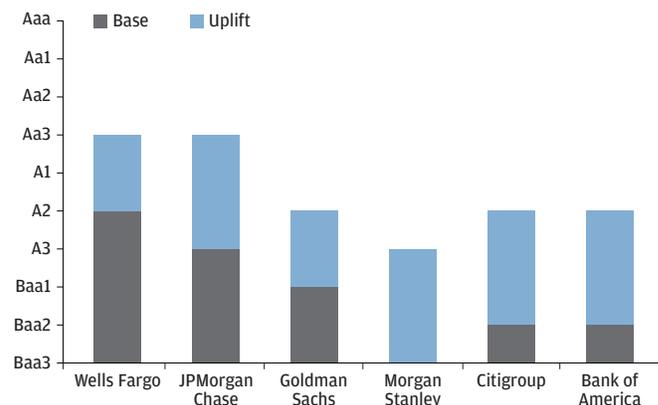
Under the terms of Dodd-Frank's Orderly Liquidation Authority, bank holding company creditors would likely be at risk of a haircut or recapitalization in a stress scenario

EXHIBIT 19: MOODY'S HOLDING COMPANY RATINGS



Source: Moody's; data as of December 31, 2013.

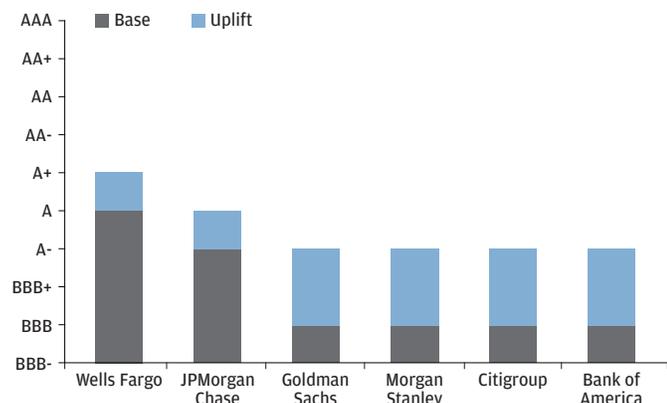
EXHIBIT 20: MOODY'S OPERATING COMPANY RATINGS, WITH EMBEDDED GOVERNMENT SUPPORT UPLIFT



Source: Moody's; data as of December 31, 2013.

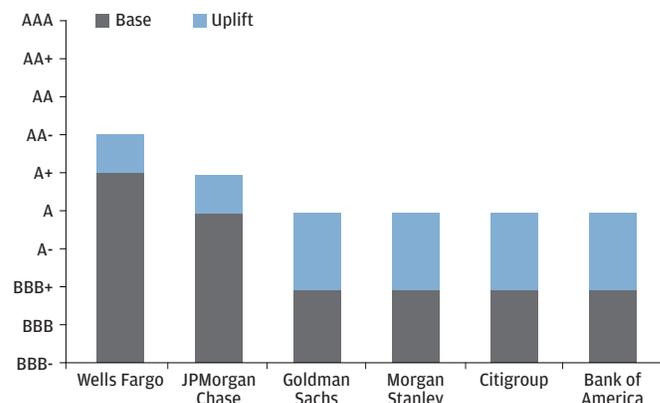
S&P has placed the ratings of the largest U.S. bank holding companies on negative outlook while it continues to assess the impact of the Orderly Liquidation Authority

EXHIBIT 21: S&P HOLDING COMPANY RATINGS, WITH EMBEDDED GOVERNMENT SUPPORT UPLIFT



Source: S&P; data as of December 31, 2013.

EXHIBIT 22: S&P OPERATING COMPANY RATINGS, WITH EMBEDDED GOVERNMENT SUPPORT UPLIFT



Source: S&P; data as of December 31, 2013.

S&P has placed the ratings of the largest U.S. bank holding companies on negative outlook while it continues to assess the impact and potential effectiveness of OLA. Currently, S&P includes up to two notches of support within the holding company ratings of the largest U.S. banks (**Exhibits 21 and 22**).

Although S&P could remove all of the notches of government support from its holding company ratings without any offsetting positive factors, we view this as an unlikely scenario. The most likely offsetting factor would be an increase in S&P’s stand-alone rating, based mostly on improved fundamentals as an offset to removing government support.

Conclusion

U.S. and European banks suffered severe ratings downgrades between 2007 and 2013. Although some of those ratings cuts reflected changing methodologies at the agencies, they were also due to higher loan and investment losses, sovereign downgrades and the impact of new regulations restraining future taxpayer support.

Bank credit fundamentals tell a very different story. Banks are reporting more and better-quality capital, enhanced liquidity and improved asset quality—the key components of far healthier bank balance sheets. Compared with their European peers, U.S. banks have made greater progress in balance sheet repair, but the deleveraging, de-risking process is very much under way at European financial institutions. It is likely that ratings of major banks in Europe and the U.S. are close to their bottoms.

Appendix: Banking Regulation and Legislation

Basel III

Basel III is a global, voluntary regulatory standard on bank capital adequacy, stress testing and market liquidity risk, developed by the Basel Committee on Banking Supervision to strengthen the regulation, supervision and risk management of the banking sector. The committee's reforms have no legal force. Instead, its regulatory guidelines are separately implemented by its 27 member nations (and in European Union countries by the EU). In January 2014, European and U.S. banks started to report under Basel III.

Basel III focuses on capital and liquidity standards, with the Common Equity Tier 1 (**CET1**) ratio as the primary risk-based capital measure. The CET1 minimum is 4.5% plus a 2.5% capital conservation buffer, raising the minimum to 7%. Globally, 29 financial institutions are designated as global systemically important banks (G-SIBs) by the Financial Stability Board, an international regulatory body created in 2009. For these 29 G-SIBs, an additional 1% to 2.5% CET1 is required, increasing the minimum ratio to 8% to 9.5%. In addition, national regulators have the authority to impose a countercyclical buffer of up to 2.5% to address the risk of a heated lending boom. On top of CET1, banks are required to hold additional Tier 1 (AT1) capital and Tier 2 capital to meet their total capital requirements.

The new regulations also set as a backstop the minimum non-risk-based **leverage ratio**—the amount of loss-absorbing capital relative to all of a bank's assets and off-balance sheet exposures, regardless of risk weightings. The committee recommends a minimum 3% Tier 1 leverage ratio. However, U.S. regulators adopted a significantly higher requirement of 5% for bank holding companies and 6% for their operating bank subsidiaries. The EU has not indicated that it will require more than 3%, but certain national authorities are actively considering a higher minimum requirement. For banks with large amounts of low-risk-weighted securities, such as U.S. Treasuries, the leverage ratio could be the most constraining of the capital ratios.

Basel III also introduced two new **liquidity** requirements: a minimum short-term **Liquidity Coverage Ratio (LCR)** of 100%, intended to provide enough cash to cover funding needs over a 30-day period of stress, and a longer-term **Net Stable Funding Ratio (NSFR)**, intended to address maturity mismatches over the entire balance sheet.

Capital, leverage and LCR rules are to be phased in gradually and will become fully effective by January 2019. However, under investor and competitive pressures, most large banks have met or intend to soon meet these targets on a fully loaded basis (assuming no phase-in rules are applied).

European and U.S. Legislation

The financial crisis has driven national authorities to introduce additional regulation and legislation, along with the Basel framework, to deal with bank resolution and financial stability. The critical European measures are the Bank Recovery and Resolution Directive (BRRD) and the eurozone banking union. In the U.S., the key measure is the Dodd-Frank Wall Street Reform and Consumer Protection Act, enacted in 2010.

Currently in Europe, EU aid rules will apply if a bank needs government help. The rules mandate that equity and subordinated debt will be exhausted before any taxpayer money can be injected. BRRD empowers EU regulators to “bail in” senior debt holders, forcing them to bear some of the burden by requiring a portion of the debt they are owed to be written off if a bank needs help to continue as a going concern. The bail-in scheme for senior debt holders will become effective in January 2016.

The eurozone banking union consists of three pillars. First is the Single Supervisory Mechanism (SSM), to be established in November 2014 with the European Central Bank as the single supervisor of the 130 largest eurozone banks. The second is the Single Resolution Mechanism (SRM), to become operational in 2016, targeting a single resolution fund of €55 billion to be mutualized over eight years, with a front-loaded schedule. It is not large relative to the €5.5 trillion in insured deposits, but the fund does have the capacity to borrow if necessary. The third pillar, the Single Deposit Guarantee Scheme, is the most challenging politically. Member countries are working to agree on a common framework.

For U.S. banks, the Dodd-Frank Act includes several important components: restrictions on trading defined by the Volcker rule, a requirement to move large parts of the derivatives market to an exchange and the creation of Orderly Liquidation Authority (OLA) provisions. OLA seeks to efficiently liquidate a U.S. G-SIB without necessitating taxpayer support. OLA calls for using equity and, if needed, haircutting (subtracting a percentage from the market value of) the subordinated and senior holding company debt of a failing financial institution to recapitalize it while maintaining the operations of financially sound subsidiaries.

As we assess the new global regulatory landscape, we believe that Basel III's higher capital and strong liquidity coverage requirements provide more protection for creditors. In Europe, the debt bail-in rule is negative for bank bondholders. In the U.S., OLA shifts the burden to debt holders at the holding company level while protecting operating bank subsidiaries. Finally, most of the global regulatory developments reduce revenue sources and increase compliance costs, resulting in lower profitability for banks.



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