The State of American Banking
An assessment of the resiliency of U.S. banks and their ability to support steady economic growth

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**Introduction**

AS A NEW ADMINISTRATION and a new Congress prepare to tackle a host of difficult financial regulatory issues, we have assembled a series of informational briefing materials to serve as background for that process. We have not included proposals for reform but rather have focused on providing a robust and factual assessment of the current state of the banking industry and the regulations that increasingly shape it.

Most of these materials are devoted to a rigorous analysis of the current state of capital and liquidity regulation, and efforts that have effectively ended concerns that large banks will require taxpayer assistance in a future crisis. We start, though, by identifying a set of popular misconceptions – myths – that have served as a powerful distraction as policymakers have considered regulatory policy over the past few years. With those out of the way, we then proceed to a data-driven look at the current state of play in banking and capital markets in the United States.
CHAPTER ONE:

7 Myths of Financial Services Regulation

Myth #1: Large banks lend to large businesses, and small banks lend to small businesses; therefore, the most effective way to promote small business growth is to provide regulatory relief to small banks.

Myth #2: The largest banks benefit from a too-big-to-fail (TBTF) subsidy for their debt that gives them an unfair competitive advantage over other banks.

Myth #3: There are limits to efficiencies of scale and scope in banking, and therefore the existence of large banks must be the product of a subsidy or some other unnatural force.

Myth #4: The leverage ratio is a sensible way to measure a bank’s capital adequacy.

Myth #5: The U.S. banking industry is highly concentrated.

Myth #6: Large banks have gotten larger.

Myth #7: Large banks are too big to jail.

MYTH NUMBER 1:
Large banks lend to large businesses, and small banks lend to small businesses; therefore, the most effective way to promote small business growth is to provide regulatory relief to small banks.

In reality, large banks make a substantial share of loans made to small businesses – anywhere from 39 to 82 percent, depending on how one measures it:

» Based on data collected and reported by the federal banking agencies, large U.S. banks – i.e., those that are part of bank holding companies with at least $50 billion in assets – originated 86% of small business loans made by banks in 2015.¹

» By dollar amount of loan originations, larger banks originated 54% of small business loans in 2015. Because the percentage share of total loans by amount here is lower than the percentage share by number cited above, it appears that loans originated by large banks tended to be smaller in size than average.

» Finally, large banks held 39% of the small business loans that were currently at 2Q 2016. Because large banks originated a larger share of small business loans than they had outstanding, it appears that loans made by large banks had relatively shorter maturities, likely reflecting large bank business credit card lending to small businesses.²

It is worth noting that this data almost certainly understates the percentage of small business lending support provided by large banks. Many small businesses – sole proprietorships especially – have traditionally relied on personal credit card loans or general purpose home equity loans to fund their growth. (While unsecured credit cards can be an expensive

¹ FFIEC, Community Reinvestment Act data
² Reports of Condition and Income (Call Reports)
form of credit, they still offer lower rates than most non-bank lenders, including both finance companies and online lending clubs.) The majority of such loans are made by large banks, not small ones.

As discussed in subsequent chapters, capital, liquidity rules and other types of lending have made each of these types of lending more costly and more difficult for large banks (and, to a lesser extent, small banks).  

**MYTH NUMBER 2:**

The largest banks benefit from a TBTF subsidy for their debt that gives them an unfair competitive advantage over other banks.

In reality, investors and markets now appear convinced that investors that hold the equity and long-term debt of the largest U.S. banks bear any and all risk in the event of failure, and that government assistance will not be available (nor required) to resolve a large U.S. banking organization. Put another way, they appear convinced that large U.S. banks are no longer “too big to fail.”

The Government Accountability Office (GAO) conducted a comprehensive study of this topic in July 2014, examining data from pre-crisis, mid-crisis and post-crisis. The last is important because the Dodd-Frank Act made a revolutionary change in how large U.S. bank holding companies would enter bankruptcy or, if bankruptcy proved unworkable, be resolved by the FDIC in much the same way the FDIC has traditionally resolved banks themselves. Prior to 2010, the FDIC had no authority to resolve a bank holding company or bank affiliate, such as Lehman Brothers or Bear Stearns. As a complement to these new frameworks, large U.S. banks now must also organize and structure themselves so as to facilitate a pre-packaged bankruptcy. While this effort entails extraordinary costs – some which seem unwise – it means that either bankruptcy or FDIC resolution is now a quite practicable option in a way it was not prior to 2010.

Thus, the GAO report found, “[o]ur analysis provides only limited evidence that large bank holding companies had lower funding costs since the crisis and instead provides some evidence that the opposite may have been true at the levels of credit risk that prevailed in those years.” The GAO found that any premium in the interest rates (that is, lower rates) that banks pay to borrow in the bond market – sometimes called a “funding subsidy” – had been significantly reduced, eliminated, or even reversed by 2014. Indeed, in half of the 42 models they employed, larger banks actually paid more to

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borrow than mid-sized banks issuing publicly traded debt. (While the GAO did not speculate as to why large banks would have to pay higher yields than mid-sized banks, regulatory and enforcement uncertainty is a possible cause.)

It is important to note that a major component of the GAO study was to control for bank issuance size in determining whether large banks receive a TBTF subsidy. (It also controlled for credit rating and a variety of other factors.) This is extremely important because large companies of all types typically fund themselves more cheaply in debt capital markets than smaller companies, and large banks are no exception. The reason has nothing to do with TBTF assumptions – obviously, as the phenomenon occurs in industries where this isn’t an issue – but rather with the fact that investors prefer debt that is liquid, and therefore can be traded in a secondary market. Issuers that issue debt regularly and in size are therefore receiving better pricing (pay lower yields) than issuers that issue sporadically and in smaller size. This is true whether the issuer is a pharmaceutical company or a technology company or a bank. Regrettably, some studies simply allege that large banks issue more cheaply than mid-sized banks without controlling for this factor.

Reflecting this new reality, credit rating agencies now rate debt in accordance with the GAO’s findings. At the time of the 2014 study, two of the three large rating agencies had already eliminated any “uplift” in ratings of bank holding company debt because of anticipated future government support. Since then, the third rating agency has also dropped any uplift for bank holding company debt. This is a case of the ratings agencies lagging the market, however, as the market was pricing large bank debt at prices that assumed no uplift. (Of course, when the ratings agencies did include an uplift for large banks, some observers frequently cited this fact as proof that the large banks were receiving a TBTF subsidy (market realities aside); they appear not to have acknowledged the change in practice.)

MYTH NUMBER 3:
There is limits to efficiencies of scale and scope in banking, and therefore the existence of very large banks must be the product of a subsidy or some other unnatural force.

There is a very large body of academic literature that finds larger banks can provide products and services at lower cost than smaller banks and this effect is stronger for the largest banks.⁵ One estimate that takes into account only operating costs suggests that limiting bank size to be no larger than 2% of GDP would increase noninterest expense up to 7%, or $22 billion per year for the banks subject to the size cap.⁶ In addition, technological advantages such as diversification and the dissemination of information costs also do not increase proportionally with bank size which increases further the cost of breaking-up big banks.

MYTH NUMBER 4:
The leverage ratio is a sensible way to measure a bank’s capital adequacy.


A leverage ratio measures the capital adequacy of a bank by dividing its capital by its total assets. Although the leverage ratio is seen as an alternative to risk-based measures of capital, the leverage ratio is in fact a risk-based measure of capital, albeit a bad one. It simply assesses the risk of each asset to be exactly the same. Thus, the risk of a Treasury security is assessed as the same as the risk of a loan to a startup with uncertain cash flows. The risk of holding a market-making portfolio of liquid, highly rated bonds is equated to the risk of holding a portfolio of illiquid loans to untested companies. This would be akin to setting the same speed limit for every road in the country – whether it be a school zone or an interstate highway.

The inaccuracy of the leverage ratio – and the resulting misallocation of capital – has increased dramatically in recent years as a result of several regulatory mandates, as we describe in more detail in Chapter 4. Liquidity rules now require large banks to hold approximately 30% of their balance sheets in cash and cash equivalents – predominantly cash reserves held at the Federal Reserve, Treasury securities and other government securities. Large banks now hold approximately three times as much of these assets as they did pre-crisis. Those assets rightly receive a zero or low risk weight in risk-based capital measures, but the U.S. minimum leverage ratio – 6% for banks and 5% for their affiliates – is radically more than any rational risk manager would require. Because the leverage ratio completely ignores the actual risk of these low-risk assets, it creates a powerful disincentive to hold them. Because the holding of these low-risk assets is a necessary part of the securities and custody businesses, the leverage ratio most distorts bank balance sheets in these areas.

Indeed, even the cost of a small business loan is needlessly increased by the leverage ratio. Such a loan must be funded, and unless it is funded with retail or other very “sticky” deposits, liquidity rules now require the bank to hold cash or cash equivalents against that funding. While that requirement is generally appropriate and consistent with sound banking practices, the U.S. leverage ratio then requires the bank to hold 6% capital against that cash, which is decidedly not appropriate or consistent with sound banking. This leverage ratio “tax” of liquid assets needlessly increases the aggregate cost to the bank of making the loan, which is ultimately passed on to the borrower.

Our recent research also debunks another myth: that the leverage ratio was an accurate predictor during the recent financial crisis. Specifically, the analysis calculates the Basel I tier 1 risk-based capital ratio and the leverage ratio, at the end of 2006, for more than 8,000 commercial banks that existed at that time, and tests which regulatory capital ratio has a stronger ability to predict the more than 400 failures that occurred between 2007 and 2011. In 2006, banks that would later survive the crisis reported a tier 1 capital ratio (which is risk-weighted) that was about 30% higher than the tier 1 capital ratio of banks that failed. In contrast, the leverage ratio of banks that survived is only slightly higher than the leverage ratio of banks that failed. In fact, roughly one-third of banks that subsequently failed – 125 banks – had leverage ratios at the end of 2006 at or above 10%. Thus, the difference between the surviving banks’ and the failed banks’ risk-based and non-risk based capital ratios suggests that risk-
Based capital requirements are a better predictor of bank failure moving forward.

That superior performance of risk-based capital requirements is confirmed using statistical analysis. As shown in the appendix, both the tier 1 risk-based capital ratio and the leverage ratio predict bank failure. In each case, a higher regulatory capital ratio reduced the odds of failure; however the tier 1 risk-based capital ratio has a stronger ability to predict bank failure. For instance, a 1 percentage point increase in the tier 1 risk-based capital ratio lowered the probability of bank failure by more than 60 basis points, whereas the same increase in the leverage ratio reduced the odds of failure by approximately 20 basis points.

Lastly, when the tier 1 risk-based capital ratio and the leverage ratio are both included in the regression, banks with a lower leverage ratio are less likely to fail. While the result seems counterintuitive, it may reflect the fact that, as shown in the example above, if two banks have the same risk-weighted capital ratios, the bank with the lower leverage ratio must have a higher share of low-risk and liquid assets.

MYTH NUMBER 5: Banking is a highly concentrated industry.

In reality, evidence suggests that the banking industry is unconcentrated, and is in fact one of the least concentrated major U.S. industries.

As shown in Figure 2, the degree of market concentration in the U.S. banking sector was little changed in the post-crisis period according to the Herfindahl-Hirschman index (HHI), the standards antitrust measure used by the Department of Justice across all industries. Note that the HHI is currently just below 700 points, but according to the U.S. Department of Justice a market is considered to be moderately concentrated for values of the index between 1500 and 2500 points and highly concentrated for values of the index above 2500 points.

As shown in Figure 3, other industries are significantly more concentrated than banking. (Data here unfortunately is from 2007, as new census data have not been released, but as noted above, concentration in banking has not changed significantly in the interim.)

The U.S. banking sector is also significantly less concentrated compared to banking sectors in peer economies – including the U.K., Canada, Japan and a majority of the OECD. While total U.S. banking system assets as a percentage of GDP have increased from 73% in 2000 to 88% in 2018, the U.S. banking sector is still the smallest banking sector compared to the ten largest E.U. economies and Japan. Moreover, when comparing the world’s largest banks – those designated by the Financial Stability Board as global systemically important banks (GSIBs) – we find that the U.S. is home to eight of these banks, more than double of any other country, and their combined total assets account for only 62% of U.S. GDP (Figure 4). It is important to note that while differences in accounting standards

8 Center for Financial Markets Milken Institute. Too-Big-to-Fail Banks: Where are we Now?
make a comparison challenging, it is still evident that peer economies have more highly concentrated banking sectors.

**MYTH NUMBER 6:**
**Large banks have gotten larger.**

It is frequently claimed that the largest banks have gotten larger since financial reform. However, after adjusting for inflation or as a share of the economy, the combined assets of the largest banks have declined since the passage of post-crisis banking reform. The U.S. banking agencies identify eight U.S. banking organizations as “Global Systemically Important Banks” or “GSIBs” – Bank of America, Bank of New York Mellon, Citi Group, Goldman Sachs, J.P. Morgan Chase, Morgan Stanley, State Street, and Wells Fargo. In 2010:Q2, just prior to the passage of the Dodd-Frank Act, the combined assets of the economy, the combined assets of the largest banks have declined since the passage of post-crisis banking reform. The U.S. banking agencies identify eight U.S. banking organizations as “Global Systemically Important Banks” or “GSIBs” – Bank of America, Bank of New York Mellon, Citi Group, Goldman Sachs, J.P. Morgan Chase, Morgan Stanley, State Street, and Wells Fargo. In 2010:Q2, just prior to the passage of the Dodd-Frank Act, the combined assets of


Source: SNL Financial, World Bank, Banker’s Database; Note: The figure on top of each bar represents total GSIB assets as percentage of home country’s GDP; the figure within each bar represents number of GSIBs in that country.
those banks equaled $9.64 trillion. In 2016 Q2, the combined assets equaled $10.72 trillion. But, after adjusting for inflation (using CPI ex food and energy), combined assets of the banks in 2016 equaled $9.58 trillion, slightly lower than in 2010. Moreover, the economy has also increased in size over that interval. In 2010, the combined assets equaled 66% of nominal GDP; in 2016 they equaled 58%, a substantial decline.

MYTH NUMBER 7:
Large banks are “too big to jail.”
The catchy phrase “too big to jail” is sometimes used by bank critics to imply that large banks would ordinarily be prosecuted for criminal conduct but escape that fate because prosecutors choose not to do so, either because large banks are too powerful, or because a criminal conviction would disrupt the economy given their size. The reality is that corporations of all types are rarely prosecuted criminally, and for good reason.

It is helpful to begin by discussing corporations in general and then large banks in particular. As a matter of physics, a corporation cannot be jailed; rather, it can be convicted of (or plead guilty to) a criminal offense in its corporate form. For a very long time, the Department of Justice and other prosecutors have faced the question of when such a corporate conviction or plea is appropriate.

For most companies, a criminal conviction or guilty plea is not terribly significant. Because a company cannot go to jail, nothing automatically flows from such an event – i.e., there are no collateral consequences. The question of when such a conviction or plea is appropriate becomes an important policy question only when other laws or circumstances create collateral consequences. The classic example of collateral consequences was the criminal conviction of the audit firm Arthur Andersen. On June 15, 2002, Arthur Andersen was convicted of obstruction of justice because its Houston office had allegedly shredded documents related to its audit of Enron. Since the U.S. Securities and Exchange Commission (SEC) cannot accept audits from convicted felons, the firm agreed to surrender its CPA licenses and its right to practice before the SEC – effectively putting it out of business. Although the conviction was later reversed by the Supreme Court, the firm was destroyed before the appeal was heard. Approximately 28,000 people lost their jobs; the auditing profession became even more concentrated as the Big Five became the Big Four. Again, the damage was caused not by the criminal conviction itself, but from the collateral consequences embedded elsewhere.

In the wake of the Arthur Andersen collapse, most observers concluded that, given the collateral consequences, pursuing a corporate criminal conviction had been the wrong decision. One could say that they concluded that Andersen was “too big to jail,” but a fairer characterization might be that pursuing a corporate criminal conviction did not serve the ends of justice, as 28,000 people were punished for the actions of only a very few, and an important U.S. industry lost a major competitor.
Another example involves defense contractors, which frequently settle without a criminal conviction allegations ranging from bribery under the Foreign Corrupt Practices Act to fraud in their dealings with the Pentagon to violation of environmental regulations. Furthermore, even when a criminal conviction is obtained, there generally are no automatic collateral consequences. Thus, they are rarely debarred from further work for the government. One could say that they are “too big to jail,” but a fairer characterization might be that putting them out of business would not serve the ends of justice because it would put tens or hundreds of thousands of people out of work, deny important weapons to our military, and further concentrate the defense industry.

In another pertinent example, General Motors agreed to pay a $900 million fine as part of a Justice Department investigation into its failure to fix a deadly ignition-switch defect blamed for more than 120 deaths. It was not required to plead guilty to a criminal offense, however, and no one suggested that it be debarred from manufacturing automobiles in the future. One could say that General Motors was “too big to jail,” but a better characterization might be that the ends of justice would not have been served by eliminating a major U.S. automaker.

The result in these cases is consistent with Department of Justice policy, as reflected in its U.S. Attorney Manual. It provides that in deciding whether to seek a guilty plea, the U.S. Attorney should consider “collateral consequences, including whether there is disproportionate harm to shareholders, pension holders, employees, and others not proven personally culpable, as well as impact on the public arising from the prosecution (see USAM 9-28.1100).”

For banks, collateral consequences can be significant, including potential loss of their charter (effectively putting them out of business) and potential loss of their asset management subsidiary (even when the conviction has nothing to do with that business). Those decrying banks as “too big to jail” are effectively demanding that the Department of Justice abandon the principles it applies in dealing with every other industry, forgo the careful consideration of the wider consequences of their actions and the ends of justice, and instead effectively return to the Arthur Andersen model in dealing with large banks. They would prefer to see hundreds of thousands of people lose their jobs for the actions of only a few, and see the banking industry and the asset management industry become increasingly concentrated as one firm after another is closed.

Of course, this discussion has nothing to do with the question of whether individual wrongdoers at banks, or other companies, should be prosecuted for criminal wrongdoing. Of course they should. And in the banking industry, the Department of Justice and other prosecutors have devoted extraordinary resources to doing so. One might presume that the fact that there have not been more prosecutions, and that many of the highest profile prosecutions have resulted in acquittals, reflects the fact that (1) unlike with companies, which have powerful reasons to settle cases, individuals actually tend to go to trial; and (2) much of the conduct involved was in fact not criminal. ■
Financial Resilience: Assessing the Strength of the U.S. Banking System

Since the financial crisis the U.S. banking system has increased its ability withstand shocks, according to a new TCH quantitative index.

I. INTRODUCTION
In the aftermath of the global financial crisis, banks in the United States and abroad have substantially increased their resiliency – that is their ability to absorb losses or market shocks – by strengthening their capital levels, improving the liquidity of their balance sheets, and reducing their interconnectivity with other financial institutions. These improvements in the resiliency of the banking system have been reinforced by a series of key capital and liquidity rules that have been enacted in the United States, including the Basel III capital and liquidity frameworks as adopted in more stringent form in the United States, and U.S.-only annual stress tests, which require large U.S. banks to hold capital sufficient not only to withstand a financial crisis worse than the last one without failing, but actually to remain well capitalized and conducting business generally as normal. This chapter describes some of the key changes in the resiliency of the banking sector that occurred in the post-crisis period, which have reduced the likelihood of a large U.S. bank failure and their risks to financial stability.

II. SIZABLE IMPROVEMENTS IN THE CAPITAL AND LIQUIDITY POSITIONS OF LARGE BANKS
One of the key lessons of the financial crisis is the critical importance of maintaining sufficient capital and liquidity levels to ensure that banks can absorb outsize losses and heightened liquidity demands that typically accompany periods of financial stress. Responding to that key lesson, large banks have significantly increased the amounts of high-quality capital and liquid assets they hold on their balance sheets, and regulators have enacted a range of reforms that require that this dramatic increase in the resiliency of such banks remain in place.

A. Capital increases
The level of capital that now exists in the U.S. banking system is not merely a transitory trend; a series of regulatory requirements either has driven these changes or prevents their reversal. One important lesson of the financial crisis is that common equity should be the predominant component of capital, as the financial crisis showed that other forms – e.g., preferred stock were not effective at absorbing losses. Accordingly, the Basel III capital standards and U.S. implementing rules establish common equity as the predominant component of capital. And the aggregate common equity tier 1 (CET1) ratio across all TCH’s 24 owner banks rose from 4.6 percent at the end of 2008 to 12.1 percent by the second quarter of 2016 (Exhibit 1). In dollar

1 Common equity tier 1 equals common shares, common stock related surplus, and retained earnings adjusted by the relevant regulatory adjustments set out in paragraphs 66-90 of the Basel III rules text (e.g., goodwill and intangibles).
terms, the common equity tier 1 capital held by those 24 banks has tripled from about $326 billion to $970 billion over the past seven years.

In addition, capital regulation now emphasizes stress testing to measure banks’ capital adequacy. Static measures like Basel III, model the risk of an asset based on its past loss experience and the current state of the business cycle, so are necessarily backward looking; thus, pre-crisis, they assumed that mortgage default rates would remain much as they had been before. Stress testing presumes that historically dramatic – and in some cases unprecedented – adverse economic and financial shocks will occur leading to a sudden rise in the number of defaults and market losses. The first stress test deployed by the Federal Reserve was its Supervisory Capital Assessment Program (SCAP) exercise in 2009, which played a crucial role in ending the financial crisis by assuring investors that large U.S. banks could withstand significant stress. SCAP was subsequently codified in the form of the Dodd-Frank Act Stress Tests (DFAST) and the Comprehensive Capital Analysis and Review (CCAR) process. A total of 33 bank holding companies – those with total consolidated assets of $50 billion or more – participated in the 2016 stress tests.

As noted above, large banks are currently required by the Federal Reserve’s stress tests to hold enough capital to shrug off a recession worse than the one experienced during the past financial crisis. The stress test is so severe that to pass it does not just require large banks to survive a depression and market crash of unprecedented severity, but rather to be so well capitalized that their businesses are largely unaffected by such a depression and market crash. In particular, for the 2016 stress test exercise, banks had to demonstrate how they would perform under a sudden and severe recession and coincident market crisis that featured the following:

» A sudden jump in the unemployment rate of 4 percentage points (from 5 percent to 9 percent) during the first 4 quarters of the scenario, which is nearly twice as severe as the increase that occurred during the 2007-2009 financial crisis (when unemployment increased only 2 percentage points over the first year);

» A sudden decrease in GDP of more than 6 percentage points;

» An abrupt rise in the BBB corporate bond spread;

» A 50 percent drop in the equity market over four quarters, an 11,000 point loss on the Dow;

Note: 2008Q4 Figures represent Tier 1 Common ratios. Source: SNL Financial
For banks with substantial trading and processing operations, the abrupt failure of their largest counterparty; and

The emergence of negative short-term interest rates.²

After this stress, large banks must not only remain solvent but rather well capitalized — meeting a series of post-stress capital requirements, including holding 4.5 percent common equity against risk-weighted assets.³ As shown in Exhibit 2, the aggregate projected common equity tier 1 ratio for the 33 BHCs that participated in the 2016 stress tests fell from about 12 percent at the end of 2015, to a post-stress minimum level of 8 percent under the severely adverse scenario in DFAST, but remained well above the minimum requirement of 4.5 percent.

B. Banks’ balance sheets hold significantly more liquid assets

The balance sheets of large banks are now also dramatically more liquid, and thus substantially less likely to fall victim to a run by depositors or other short-term creditors. As shown in Exhibit 3, large banks now hold about 24 percent of their balance sheet in the form of high-quality liquid assets (HQLA), nearly five times higher than the share they held pre-crisis.⁴ HQLA include cash reserves held at Federal Reserve Banks, U.S. Treasury securities, government-sponsored agency securities and a small set of other assets that can be sold for value even under extreme stress.

The dramatic increase in holdings of cash and cash equivalents at large banks has been driven by another of the core post-crisis reforms: the liquidity coverage ratio (LCR). The LCR requires banks to hold high-quality liquid assets sufficient to meet their potential peak funding needs over a 30-day period of severe idiosyncratic and market stress.⁵

A critical component of the requirement is how the stress scenario is calibrated — basically, which liabilities are projected to run, requiring the bank to sell assets to fund them. As a procedural matter, commendably, the LCR stress scenario was explicitly designed to resemble conditions during the worst of the recent financial crisis, based on extensive empirical analysis, and subjected to public comment. We strongly support the general thrust of the LCR, as it will help to ensure that banks with complex funding strategies remain resilient in the face of future liquidity stresses. In addition to the specific requirements of the LCR, the Federal Reserve also now requires banks to conduct monthly stress tests of their liquidity at overnight, 30-day, 90-day, and one-year horizons, at a minimum.⁶


³ The quantitative assessment of a bank’s capital plan also requires a tier 1 risk-based capital ratio above 6 percent, a total risk-based capital ratio above 8 percent and a tier 1 leverage ratio above 4 percent.

⁴ Large banks are defined as the largest 33 bank holding companies each quarter. It corresponds to the peer cohort suggested by the Federal Reserve’s response to the Government Accountability Office report entitled “Large Bank Holding Companies, Expectations of Government Support” (2014), i.e., banks with $50 billion or more in assets at the end of 2014. It is also the number of BHCs required to participate in the 2016 U.S. stress tests.

⁵ See 79 Fed. Reg. 17240 (March 27, 2014) (final rule); 12 C.F.R. § 252.35.
Another new liquidity-related regulatory requirement has also been proposed. Known as the net stable funding ratio (NSFR), it is meant to complement the LCR, and at least as initially defined, it was supposed to ensure that a bank has enough liquidity to sustain a less severe but longer one-year stress episode. As shown in Exhibit 4, an estimate of the NSFR based on large banks’ regulatory reports indicates that the aggregate NSFR is currently well above 100 percent. That said, it is expected that compliance will become more challenging when the Federal Reserve’s balance sheet and interest rates normalize over time. Problems with the design and calibration of the NSFR alluded above, will lead to unintended consequences that are likely to result in substantial economic costs by restricting credit to small businesses and households.

### III. A QUANTITATIVE ASSESSMENT OF THE RESILIENCY OF THE U.S. BANKING SECTOR

The Clearing House has recently developed and index that is a quantitative assessment of the resiliency of the U.S. banking sector. This index is constructed using a wide range of indicators that are commonly used to characterize the condition of the banking sector. Among many potential uses, the index helps analysts, policymakers and public in general to assess the impact of changes in the regulatory landscape on overall bank condition using a large variety of banking indicators. Specifically, The Clearing House Bank Conditions Index (TCHBCI) synthetizes data on 23 banking indicators, grouped into six categories: capital, liquidity, risk-appetite, asset quality, interconnectedness and profitability. The choice of the variables included in each category follows a large academic literature on banking crises.

The first category of the index is capital, which measures the ability of the banking sector to absorb losses. This category is comprised of both risk-based as well as non-risk based capital measures and includes all four regulatory capital ratios included in the U.S. stress tests and it is augmented with a measure of market leverage developed by NYU Stern’s Volatility Laboratory model.8

The second category of the index includes measures of bank liquidity and maturity transformation, to gauge the banking sector’s ability to absorb reductions in the liquidity of its assets or availability of its funding without defaulting or pulling back from the provision of liquidity counterparties. Such resiliency reduces the risk of spillover from the financial sector to the real economy. The measures of liquidity in the banking sector included are a proxy for the share of high-quality liquid assets relative to total assets, the net stable funding ratio, short-term wholesale funding and the maturity gap.

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8 See the references listed on a recent TCH blog post available at https://www.theclearinghouse.org/eighteen53-blog/2016/july/ccar-vs-vlab.
The third category of the index includes measures of bank risk-taking to assess the vulnerability of banks’ balance sheets to aggregate shocks. This category includes average risk-weights, defined as the ratio of risk-weighted assets to total assets, the ratio of loans to deposits, the ratio of loans to gross domestic product and changes in lending standards reported in the Federal Reserve’s Senior Loan Officer Survey. The ratio of loans-to-GDP is included in this category since there is an influential academic literature that demonstrates that credit growth is a powerful predictor of financial crisis.

The fourth category of the index includes measures of asset quality, to evaluate the health of banks’ loan books. This category includes net charge-offs, loan loss reserves, the share of non-performing loans, and the adequacy of loan loss reserves.

The fifth category of the index includes measures of interconnectedness among banks, to capture the extent to which a negative shock could lead to fire sale spillovers that arise when a bank has to liquidate assets. If the banking sector is very concentrated, it is more likely that the actions of one large bank generate severe fire sale externalities in financial markets. This category includes a measure of bank concentration – the Herfindahl index for total assets – as well as the ratio of loans made to other depository institutions, repos and federal funds sold to total assets.

Finally, the sixth category of the index provides a gauge on the level of bank profitability. Bank profits are a source of strength, that is banks that are profitable are able to increase retained earnings and better able to withstand adverse shocks. This category includes return-on-assets, return-on-equity, net interest margins and the share of noninterest income in total assets.

The aggregate bank conditions index is shown in the bottom panel of Exhibit 5. The index is mapped into the (0,100) interval in order to allow for a straightforward comparison of each category over time. Namely, a value of the index close to 100 corresponds to a banking sector that is the least vulnerable as it has ever been since the first quarter of 1996, the first available data point of the index. In contrast, a value close to 0 implies that the U.S. banking sector is as vulnerable as it has even been over the past two decades. While an index value of 100 is consistent with a maximally resilient banking system, it is probably not the level most conducive of robust economic growth. On the one hand, having extremely safe banks is desirable from a financial stability perspective as vulnerabilities in the banking system amplify and propagate adverse economic and financial shocks, resulting in severe and persistent economic downturns. On the other hand, a banking system that takes no risk will also have an adverse impact on economic growth over the medium and longer term, namely by restraining credit to borrowers that are bank-dependent (e.g., small firms) and via higher lending rates on loans to all types of borrowers.
These factors suggest that there is an optimal level of TCHBCI that balances between these two extreme cases. We find in our analysis that a value of the index of about 55 maximizes the contribution of the TCHBCI in tracking future GDP growth. Currently the TCHBCI is at 70, which is higher than the optimal level indicated by our statistical model, suggesting that banking regulations could be holding-up economic growth somewhat.

The top panel of Exhibit 5 shows the heat map for each of the categories that comprise the aggregate index, capital, liquidity, risk-taking, asset quality, interconnectedness and profitability. As shown to the leftmost part of the panel, the aggregate index indicates that the level of vulnerability of the banking sector was quite low in the mid-1990s with most of the categories of TCHBCI hovering around the midpoints of their historical ranges. Thereafter, the condition of the banking sector remained extremely resilient until the Russian crisis in late summer and early fall of 1998, where the aggregate index dipped to a value slightly below 65. Over the next two years, the TCHBCI recovered but only for a brief period until the recession that occurred in the early 2000s. The recession was associated with a deterioration in liquidity and risk-taking in the banking sector. Between 2002 and 2005 the index recovered to levels around the middle of its range. After that, there was a widespread decrease in all categories of the index until the onset of the 2007-2009 global financial crisis. The categories that started showing the most vulnerability were liquidity and capital, respectively. During the past financial crisis, the increase in the vulnerability of the banking sector became widespread across all categories of the overall index.

In the aftermath of the crisis, TCHBCI shows that the capital and liquidity positions of U.S. banks have improved significantly. Risk-taking has remained at relatively subdued levels and has increased only slightly over the past few years, mostly driven by an increase in risk-weights as a result of changes in regulation. Meanwhile, the degree of connectivity among financial institutions has decreased at a moderate pace in the post-financial crisis period.
One category of TCHBCI that indicates challenges for banks is profitability. This is shown by the orange “ribbons” in the top panel of Exhibit 5 under the profitability category (the bottom block) over the past quarters. Profits are an important source of strength for banks because they allow a replenishment of capital should the bank make losses. The vulnerability in bank profits reflects in part the subdued level of return on equity in the post-crisis period. Indeed, as can be seen by the red bars in Exhibit 6, banks’ return on tangible common equity (ROTCE) has fallen sharply since the pre-crisis period, especially for the largest banks. The decline in ROTCE appears to have several causes, with the sources varying by bank size as shown in Table 1.9 Our key explanations for the decline in ROTCE are as follows:


- A decline in book leverage (measured as tangible assets to tangible common equity) explains a sizable fall in ROTCE across all banks with total consolidated assets above $10bn.
- A sizeable decline in fee income has reduced ROTCE at the largest banks (measured as banks above $250bn in total assets).
- For banks with total assets in the $50bn - $250bn range, the decline in ROTCE is instead explained by a reduction in efficiency – defined as the ratio of noninterest expense to net revenue – as the noninterest expense rose more quickly than net revenues in the post-crisis period.
- Lastly, and perhaps surprisingly, net interest margins have narrowed only modestly across all banks groups, suggesting that the low level of interest rates and the relatively flat yield curve are not important drivers of the decline in bank profitability.

In summary, not only is the decline in profitability greatest for the largest banks, it is primarily the result of reduced leverage and reduced fee income, both consequences of regulation rather than the macroeconomic or the financial environment.

<table>
<thead>
<tr>
<th>TOTAL ASSETS</th>
<th>PERCENTAGE POINTS (ROTCE)</th>
<th>PERCENTAGE POINTS (P/TBV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$250bn+</td>
<td>12.0</td>
<td>-</td>
</tr>
<tr>
<td>$50bn - $250bn</td>
<td>11.0</td>
<td>6.4</td>
</tr>
<tr>
<td>$10bn - $50bn</td>
<td>7.4</td>
<td>-</td>
</tr>
<tr>
<td>$1bn - $10bn</td>
<td>3.4</td>
<td>-</td>
</tr>
<tr>
<td>&lt; $1bn</td>
<td>1.7</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: The decrease in ROTCE and P/TBV are calculated using quarterly averages between 2005 and 2006 and the past 12 months.

**TABLE 1: DECOMPOSITION OF THE FALL IN ROTCE ACROSS BANK GROUPS**

<table>
<thead>
<tr>
<th>Bank Group</th>
<th>'05-'06 Average ROTCE</th>
<th>+$250bn</th>
<th>$50bn - $250bn</th>
<th>$10bn - $50bn</th>
<th>$1bn - $10bn</th>
<th>&lt; $1bn</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27.2%</td>
<td>21.8%</td>
<td>18.9%</td>
<td>14.2%</td>
<td>9.2%</td>
<td></td>
</tr>
<tr>
<td>Reduced leverage</td>
<td>(4.2%)</td>
<td>(4.8%)</td>
<td>(4.3%)</td>
<td>(2.0%)</td>
<td>(2.8%)</td>
<td></td>
</tr>
<tr>
<td>Reduced net interest margins</td>
<td>(0.9%)</td>
<td>(1.5%)</td>
<td>(0.6%)</td>
<td>(0.7%)</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Reduced fee income</td>
<td>(5.0%)</td>
<td>(1.2%)</td>
<td>(1.0%)</td>
<td>(0.1%)</td>
<td>(0.1%)</td>
<td></td>
</tr>
<tr>
<td>Reduced efficiency</td>
<td>(1.9%)</td>
<td>(3.5%)</td>
<td>(1.6%)</td>
<td>(0.6%)</td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td>Average ROTCE over the last 12 months</td>
<td>15.1%</td>
<td>10.8%</td>
<td>11.5%</td>
<td>10.8%</td>
<td>7.5%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Based on quarterly averages from '05-'06 to the last 12 months. All changes are relative to tangible common equity. Bank size is measured as of the second quarter of 2016.
CHAPTER THREE:
The New Resolution Paradigm: Ending Taxpayer Bail Outs for Large Banks

A new post-crisis resolution framework will ensure that large banks can fail in a safe and orderly way, while losses are imposed on bank shareholders and bondholders and taxpayers are not on the hook.

One of the most immediate and obvious lessons from the recent financial crisis was the need for a bankruptcy or insolvency regime that could allow large financial institution to fail in an orderly way. For example, the failure of Lehman Brothers spread contagion to other financial institutions and risked destabilizing the U.S. (and possibly the global) financial system.

Consequently, policy-makers in the midst of the crisis and in the immediate wake of Lehman’s disorderly and panic-inducing failure, made the difficult and unpopular choice of using taxpayer funds to bail out certain institutions and their creditors and to ultimately backstop virtually the entire U.S. financial system.

Coming out of the crisis, policymakers resolved to liberate themselves from this poor binary choice of either taxpayer bailouts on the one hand, or financial collapse on the other hand, by creating a third choice: namely, the ability to allow any financial institution – no matter how big or important – to fail in an orderly way without risking broader financial stability where losses could appropriately be borne by creditors and shareholders and not the taxpayer. In short, policymakers committed to ensure that no institution is too big to fail by creating a framework to guarantee that all institutions are safe to fail.

It is important to note the ensuing reforms were really targeted at global systemically important bank holding companies (GSIBs) engaged in substantial non-banking activities. For more traditional commercial banks that hold substantially all of their assets with an insured depository institution, the crisis showed that the FDIC already possessed the necessary authority and expertise to resolve them, and major changes were not required. But, during the recent crisis, the FDIC had no authority to administer the resolution of Lehman Brothers, AIG or other large non-banks; it also did not have authority to resolve the holding companies or affiliates of a large bank, even if they had authority over the bank itself.

I. ENSURING LARGE BANKS CAN FAIL SAFELY WITHOUT TAXPAYER SUPPORT

The new resolution regime that emerged to eliminate the too big to fail problem comprises two key components: a legal framework (contained in Dodd Frank) and an operational framework (subsequently built out over the past six years by the FDIC and Federal Reserve as well as the banks themselves). These components, or frameworks, are described in greater detail below.
A. Dodd Frank Legal Framework

The Dodd-Frank legal framework is comprised of two key parts: (1) bankruptcy as a first option and (2) FDIC resolution in the event that bankruptcy is not practicable.

**Bankruptcy.** Every large banking institution must prepare and maintain a prepackaged bankruptcy plan (known as a living will) that credibly demonstrates how the institution would be resolved under the U.S. Bankruptcy Code in an orderly way should it experience financial distress or failure. Most observers believe that Lehman’s bankruptcy would not have been systemically destabilizing if Lehman had developed a credible resolution plan in advance – instead, Lehman filed for bankruptcy with no plan in place, which fueled a sense of uncertainty and panic.

By developing a prepackaged bankruptcy plan, institutions are being forced to confront and address any potential legal, structural or operational impediments that might impede their orderly resolution. This includes practical things like reducing the overall number of legal entities within an organization and rationalizing services agreements and other relationships between and amongst affiliates within the organization.

It also includes devising strategies for ensuring the bankruptcy can be conducted in a way that minimizes disruption to customers and the broader financial system. One such strategy – which has been adopted by seven of the eight U.S. GSIBs as their primary strategy in their living wills – is the use of the Single-Point-of-Entry, or SPOE, resolution strategy. This relatively revolutionary strategy is discussed in greater detail below, but the critical point here is that the SPOE strategy can be used successfully under the existing Bankruptcy Code. Such a strategy would involve putting the parent holding company into a Chapter 11 bankruptcy proceeding, transferring its assets and certain liabilities including interests in subsidiaries to a newly formed holding company pursuant to Section 363 of the Bankruptcy Code, and keeping the operating subsidiaries out of resolution, bankruptcy or other insolvency proceedings.\(^1\)

Institutions are required to submit their living will plans to the FDIC and Federal Reserve annually. The FDIC and Federal Reserve review the plans to determine whether or not they are “credible.” If they determine that a resolution plan is not credible, then the institution must resubmit the plan and sufficiently address any deficiencies. If the institution still fails to provide a credible plan, the FDIC and Federal Reserve may jointly impose more stringent capital, leverage, or liquidity requirements on the firm or restrict its growth, activities, or operations. If the failure persists for two years or longer, the FDIC, the Federal Reserve, and the FSOC may order the firm to divest certain assets or operations.

**FDIC Resolution:** If for some reason bankruptcy does not prove a viable option, Title II of Dodd-Frank authorizes the FDIC to resolve a bank’s

\(^1\) Today, legislation is pending in the House and Senate that would amend the Bankruptcy Code to further enhance the use of the SPOE resolution strategy under the Code. In particular, the legislation among other things: (i) expressly authorizes a bankruptcy court to approve the transfer of a failed BHC’s assets to a bridge BHC within 48 hours of failure, to be held by a trust for the benefit of the bankruptcy estate; (ii) overrides QFC close-out rights as a matter of statute if certain conditions are satisfied, eliminating the need to rely on the ISDA Protocol except for on cross-border matters; and (iii) authorizes the distribution of any proceeds from the sale of the bridge BHC’s stock and any unsold stock to the claimants against the failed BHC under a plan of reorganization. Thus, while SPOE can be accomplished under the existing Bankruptcy Code, the pending legislation would create a clearer and easier path to successful SPOE recapitalization under the Code.
parent company in much the same way it has traditionally resolved banks—large and small. While the legal structure for the resolution—the SPOE strategy—will in most cases be much the same, Title II allows the FDIC to provide a liquidity line to support the resolution, akin to a discount window loan, as it is on good collateral. The FDIC has used similar authority in resolving banks for decades.

Title II contains provisions designed to ensure that taxpayers are not on the hook for bailing out troubled financial institutions, and explicitly provides that “[t]axpayers shall bear no losses from that exercise of any authority under [Title II].” The FDIC has issued important regulations to implement these provisions.

**B. The Operational Framework: Single-Point-of-Entry, Resolution Stays on Financial Contracts and TLAC**

In the six years since the enactment of Dodd-Frank, the FDIC and the Federal Reserve have led an effort to operationalize an effective and reliable resolution framework for globally active banking organizations largely through the creation and development of the Single-Point-of-Entry (SPOE) resolution strategy.

**SINGLE-POINT-OF-ENTRY:** The SPOE resolution strategy recognizes that large, diversified U.S. financial institutions are usually structured with a holding company that owns various operating subsidiaries, such as a bank, broker-dealer, or insurance company, and that the problems that can topple such an organization almost always begin with severe losses at one or more of its operating subsidiaries. In recognition of this structure, SPOE focuses entirely on having the holding company absorb *all* of the organization’s losses, *including those sustained by its operating subsidiaries*. Thus, rather than fail, a severely distressed operating subsidiary would be restored *by its holding company* to sound financial condition. The operating subsidiaries would stay open and to continue to serve their customers and support the economy, but under new ownership and management. This approach makes infinite sense and is akin to how a financially troubled airline (or any other kind of commercial company) stays open and operating when it is reorganized under Chapter 11 of the Bankruptcy Code.

Under the SPOE approach, shareholders and creditors of the holding company will have the maximum incentive to restrain excessive risk-taking by the operating subsidiaries because they will be first in line to absorb any losses incurred by those subsidiaries. In addition, by recapitalizing the operating subsidiaries and avoiding the sudden and disruptive shutdown of core lines of business and critical operations, the SPOE approach will minimize systemic risk from any bankruptcy or resolution at the holding company level.

Moreover, two other significant developments have greatly enhanced the overall credibility of SPOE as a resolution strategy: resolution stays in financial contracts and total loss absorbing capacity, or TLAC.

**RESOLUTION STAYS ON FINANCIAL CONTRACTS.** One potential shortcoming of the SPOE strategy was identified by regulators and market participants: if the parent holding company enters into a bankruptcy or resolution proceeding, then the counterparties of the holding company’s subsidiaries might exercise “cross-default” rights and terminate their derivatives and similar
financial contracts with the subsidiaries and seize and liquidate the collateral (even though the subsidiaries remain open, solvent and performing on their contractual obligations). This would drain liquidity from the group in resolution, and the sale of the collateral into the market at a time of stress could have systemic consequences, as it did in the financial crisis.

To prevent this outcome, each U.S. GSIB has voluntarily adhered to the ISDA 2015 Universal Resolution Stay Protocol, which provides for the explicit recognition of resolution stays on cross-default rights in financial contracts between and among the world’s largest dealer banks. In order to extend this systemic protection beyond dealer bank transactions, the Federal Reserve recently proposed a rule that would generally require U.S. GSIBs to include resolution stays in financial contracts with all of their counterparties. The Clearing House strongly supports this proposal, as the inclusion of resolution stays in financial contracts will make it easier to implement an SPOE resolution.

Importantly, the ISDA protocol ensures that these critical resolution stays will be both operational and reliable in an SPOE resolution conducted under either Title II or Title I bankruptcy plans.

**TOTAL LOSS ABSORBING CAPACITY.** In order for SPOE to be effective, a firm must maintain sufficient loss absorbing capacity that can be bailed in to recapitalize the firm even after a massive loss, and that bail-in must be operationally feasible. The former is achieved by holding at the holding company level substantial liabilities that cannot run in stress (basically, equity and long-term debt). Accordingly, the Federal Reserve has proposed (and is expected to finalize by year-end 2016) a TLAC rule that would require U.S. GSIBs to maintain minimum total loss absorbing capacity equal to 21.5 percent to 23 percent of its risk-weighted assets, and 9.5 percent of its total assets. The eight U.S. GSIBs alone will be expected to maintain, on an aggregate basis, more than $1.5 trillion in total loss absorbing capacity. The scale of this reform has not been widely appreciated. The TLAC proposal ensures that the largest and most complex banks hold sufficient capital and unsecured long-term debt – enough to absorb even historically unprecedented levels of loss – so that critical operating subsidiaries can be recapitalized and remain in operation.

Operational feasibility is achieved by minimizing the types of other holding company creditors, thereby avoiding disputes among creditor classes in bankruptcy. The Federal Reserve’s proposed rule would limit the amount of short-term debt or other liabilities at the holding company, and make clear that operating liabilities of subsidiaries are senior to the bail-in/TLAC equity and debt at the holding company. Thus, a U.S. GSIB’s losses can be imposed entirely on the private sector without inducing the holders of the group’s short-term debt or financial contracts to run, or the holders of its other operating liabilities to cut off critical services.

TLAC represents a final linchpin in a carefully constructed set of postcrisis reforms intended to ensure that the next crisis, government officials are not faced with a terrible choice between rescuing a large financial firm from failure with taxpayer money or allowing it to fail and desta-
bilize the rest of the financial system. TLAC mitigates that terrible choice by providing a third way, one in which the resources of shareholders and long-term creditors, and not taxpayers, are deployed to recapitalize key operations and prevent destabilizing contagion.]

C. Limits on Government Ability to Rescue Individual Institutions

Beyond the legal and operational framework that has emerged to ensure that banks are safe to fail in the future, there are also significant post-crisis limits on the ability of the government to rescue individual institutions. During the 2008 financial crisis, government authorities relied on section 13(3) of the Federal Reserve Act to act as a lender of last resort to provide assistance to distressed institutions. Title XI of Dodd Frank amended section 13(3) of the Federal Reserve Act so that any future assistance may only be provided through “broad-based” programs or facilities and can only be provided to solvent institutions. Any program structured for a single and specific company is now prohibited. However, the authority to provide government assistance through broad-based programs preserves the government’s ability to address systemic risk in extraordinary circumstances.

II. CLEAR EVIDENCE OF SUCCESS

Investors and markets appear convinced that equity and long-term debt holders are fully at risk in the event of failure, and that government assistance will not be required, or available, to resolve a large banking organization. Put another way, they appear convinced that large banks are no longer “too big to fail.” The spreads that debt markets charge large banks have risen dramatically from precrisis levels. A Government Accountability Office (GAO) study released in July 2014 stated, “[o]ur analysis provides only limited evidence that large bank holding companies had lower funding costs since the crisis and instead provides some evidence that the opposite may have been true at the levels of credit risk that prevailed in those years.” The GAO found that any premium in the interest rates (that is, lower rates) that banks pay to borrow in the bond market had been significantly reduced, eliminated, or even reversed. Indeed, in half of the 42 models they employed, larger banks actually pay more to borrow than mid-sized banks issuing publicly traded debt.

Similarly, the ratings agencies now rate debt in accordance with the market reality reported by the GAO. At the time of the 2014 study, two of the three large rating agencies had already eliminated any “uplift” in ratings of bank holding company debt because of anticipated future government support. Since then, the third rating agency has also dropped any uplift for bank holding company debt. These credit rating agencies eliminated the “uplift” in ratings of bank holding companies because banks and credit agencies believe that the FDIC’s resolution process makes significant progress in eliminating expectations of government support.


4 Id. at 24. Two of the three largest credit rating agencies cited FDIC’s resolution process as a key factor in their decisions to reduce or eliminate “uplift”—an increase in the credit rating—they had assigned to the credit ratings of eight of the largest bank holding companies due to their assumptions of government support for these firms. See http://www.gao.gov/assets/670/665162.pdf
CHAPTER FOUR:
Capital and Liquidity Regulation

Increased levels and quality of capital and liquidity in banks have improved their resilience since the financial crisis. The challenge facing policymakers moving forward is finding the proper regulatory balance that will not only lead to a safer banking system, but also a prosperous economy.

I. OVERVIEW

Following the most recent financial crisis, both financial institutions and regulators have focused on measures intended to improve and maintain both levels and quality of capital and liquidity to improve banks’ resiliency and solvency. Capital insulates a bank against unexpected losses; liquidity prevents a run on a bank if its short-term creditors experience a crisis of confidence.

It is worth remembering what banks do. At their core, they engage in what’s called maturity transformation: they take short-term deposits from individuals and businesses and convert them to long-term assets – commonly, loans. Holding short-term liabilities and making long-term loans carries significant liquidity risk – the risk that depositors will want their funds back before borrowers repay – and interest rate risk – the risk that rates paid on deposits will rise before rates earned on loans. On the other hand, this maturity transformation provides extraordinary benefits for the economy, as it allows savers to fund indirectly the growth of businesses that they would never lend to directly.

To understand the tradeoff, consider Bank A, which engages in complete maturity transformation, and Bank B, which engages in none. Bank A lends every dollar deposited to creditworthy businesses, but is doomed to fail, either in the event that depositors want their money back unexpectedly, or in the event that interest rates rise sharply. Bank B, on the other hand, takes deposits and purchases short-term government securities. Bank B can meet any depositor redemption, and its assets will always reprice along with its liabilities. But it won’t do anything to foster economic growth; indeed, it won’t really be what we think of as a bank. Borrowers will instead turn to non-bank lenders who necessarily charge much higher rates for loans, because their own cost of funding is much higher and variable.

The effect of almost every post-crisis regulation has been to push U.S. banks to be more like Bank B. Our nation’s banks hold far more short-term, liquid assets than they did pre-crisis, in place of the kind of loans to businesses and families that would generate economic growth. Companies seeking lines of credit face diminished availability and increased price because regulations force banks to assume that those lines will be drawn in amounts greater than in the recent financial crisis, requiring banks to hold cash to fund those hypothetical conditions.

The story on capital is much the same as on liquidity. Put simply, bank capital is the difference in value of a bank’s assets and its liabilities. In other words, bank capital is the value of the
bank to its investors or the margin above which creditors are covered if a bank liquidates its assets and settles its liabilities. Bank capital is important because when a bank incurs unexpected losses (such as a decrease in the value of its assets), capital allows a bank to absorb the losses and remain solvent, while ensuring the bank can continue to pay its liabilities (including demand deposits).

Capital requirements limit the amount of maturity transformation a bank can perform for each dollar of its equity. Our economy has reached a tipping point, where regulatory capital requirements have become so high that banks must assess the viability of each line of business by how much it increases regulatory capital. Banks are leaving profitable lines of business – for example, holding mortgages where the borrower is anything but a perfect credit – because the regulatory capital charges are based on historically unprecedented loss rates.

II. POTENTIAL IMPLICATIONS OF HIGHER CAPITAL AND LIQUIDITY REQUIREMENTS

While there has been robust discourse surrounding the benefits of higher capital requirements, it is equally important to consider the tradeoffs (i.e., costs) associated with such requirements. Capital requirements constrain the extent to which a bank can make loans or engage in other financial activities that serve the needs of customers and businesses and support and drive economic growth, as equity funding is more expensive than debt funding.\(^1\) Simply put, the capital regulation of banks has real and substantial impact on how credit is allocated – both in terms of to whom and how much. As capital requirements increase bank costs, the likely results will include (i) higher interest rates charged to customers, (ii) lower interest rates offered on deposits, and (iii) a potential reduction in lending.\(^2\)

Given the interplay between increased capital requirements and economic growth, it is important that capital regulation balance both the benefits and the costs of higher capital requirements. At a certain point, the incremental benefits of increasingly higher capital requirements for safety and soundness objectives become attenuated at best, while the negative impacts on lending and other key activities that support the economy become more substantial and pronounced.

Similar to capital, there are costs associated with banks holding increased amounts of liquidity. As banks are required to hold additional liquidity on their balance sheets, they may need to reduce lending to households and nonfinancial businesses, which negatively impacts economic growth and job creation.\(^3\) Longer-term loans to nonfinancial businesses and households are among the least liquid of banks’ assets; when banks are required to hold increased amounts of liquidity, they must be funded largely with more costly longer-term funding or equity.\(^4\) Banks required to hold more liquidity generally reduce short-term credit to other financial institutions, thereby

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\(^1\) Heightened capital levels “increase the total expense of operating a bank and making loans, even taking account of the decrease in the cost of each dollar of bank equity and debt due to the greater safety of a bank which operates with more capital.” Elliott, Douglas, “A Primer on Bank Capital,” January 28, 2010.

\(^2\) Id.


\(^4\) Id.
contributing to the ongoing deterioration in financial market liquidity and functioning. Specifically, liquidity regulation requiring banks to hold even more liquidity could make it more costly for banks and broker-dealers to support intermediation in capital markets, a critical way in the United States that those with funds to save and invest are connected with those that need to borrow – including the U.S. Treasury.

The challenge facing policymakers is finding the appropriate balance in capital and liquidity regulation that will lead to both a resilient banking system and a healthy growing economy.

**III. CAPITAL RULES ENACTED SINCE THE CRISIS**

**International Standard Setting**

In crafting the post-crisis regulatory framework, international standard-setting bodies, such as the Basel Committee on Banking Supervision (“BCBS”) have led the effort to develop globally consistent capital and liquidity regulations. While no jurisdiction is legally bound to implement the BCBS standards, in practice the U.S. either has implemented, or is in the process of implementing, most of the applicable standards – almost without exception with an additional charge applied only to U.S. banks. This reliance on international standard-setting is rarely seen in the U.S. regulation of other industries.

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6 Id.

7 The U.S. typically implements more stringent regulations than the BCBS recommendations (e.g. GSIB surcharge).

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9 For the purpose of this paper, the U.S. bank regulatory agencies are the Board of Governors of the Federal Reserve (“Federal Reserve”), the Office of the Comptroller of the Currency (“OCC”) and the Federal Deposit Insurance Corporation (“FDIC”).
er Protection Act ("Dodd-Frank Act"). These rules outline two different approaches for risk-weighted capital ratios: the standardized approach and the advanced approaches.

Standardized Approach

Under the standardized approach, regulators assign each asset a "risk-weight" that determines how much capital is required to be held against such asset. Since the risk weights are set by regulators, any bank holding an asset is required to hold the same amount of capital against such asset. While more risk-sensitive than the leverage ratio (discussed in more detail below), this approach does not permit banks to incorporate their own experiences as to the riskiness of particular assets.

Advanced Approaches

Some larger banks, known as Advanced Approaches Banks, are also required to use an internal ratings-based approach to calculate the amount of capital that must be held against each asset. This approach uses internal models that are developed by the banks and approved by their primary supervisor to determine the amount of capital to be held against an asset. Notably, the Collins Amendment to the Dodd-Frank Act requires these Advanced Approaches banks to hold at least the amount of capital required under the Standardized Approach, such that there is no capital benefit permitted from using bank internal models.

Quality and Quantity of Capital

The U.S. implementation of the capital rules associated with Basel III ("Basel III Capital Rules") has greatly increased both the quantity and the quality of capital held by banks. With respect to quantity, the Basel III Capital Rules largely rely on a form of capital known as Common Equity Tier 1, which is considered the highest quality form of capital, consisting largely of issued stock and retained earnings. Although Common Equity Tier 1 Capital was included in the pre-crisis measure of Tier 1 Capital, the Common Equity Tier 1 requirement is more restrictive than the pre-crisis Tier 1 Capital requirement, as banks are required to maintain more Common Equity Tier 1 capital today than they were pre-crisis. With respect to the overall quantity of capital, banks are required to maintain a higher amount of capital post-crisis than they were pre-crisis, as demonstrated by the chart above.


11 Id.

12 Id.


14 Common Equity Tier 1: generally considered the highest quality form of capital; Additional Tier 1: more expansive, includes some types of preferred stock; Tier 2: includes other types of preferred stock and some subordinated debt and accounting reserves.

15 The asterisked items serve as de facto minimums as falling below these minimums would subject banks to restrictions on capital distributions and executive bonus payments.
CCAR/DFAST

Following the height of the financial crisis, the Federal Reserve implemented capital stress tests that have evolved into what is currently known as the Comprehensive Capital Analysis and Review (“CCAR”). The annual CCAR exercise has become a key component of how the Federal Reserve ensures that banks are sufficiently resilient to continue to support economic activity even in the event of severe stress to the financial system. CCAR requires banks to project their balance sheets over a nine-quarter horizon using three different scenarios: (i) baseline, (ii) adverse and (iii) severely adverse, all of which are determined by the Federal Reserve. The banks’ balance sheet projections must include any dividends, share repurchases or other forms of return of capital to shareholders that the bank intends to undertake. The banks’ projections are ultimately run through the Federal Reserve’s models and, in order to pass CCAR, banks are required to have enough capital to meet minimum capital requirements at the end of the nine-quarter severely adverse scenario. In addition to CCAR’s quantitative requirements, banks are also assessed on a series of qualitative factors, including a firm’s risk management, internal controls and governance supporting the capital planning process. Significant deficiencies in these qualitative areas, as determined by the Federal Reserve, or a failure to meet the quantitative minimum standards will result in a bank receiving an objection to their capital plan and not being permitted to proceed with planned capital actions. CCAR results for all participating banks are published by the Federal Reserve mid-year.

In addition to CCAR, banks participate in a capital stress testing exercise pursuant to the Dodd-Frank Act known as the Dodd-Frank Act Stress Tests (“DFAST”). Although similar to CCAR, DFAST is different in that both the Federal Reserve and the banks run the balance sheet projections through their own models and more importantly, bank planned capital actions are not incorporated into DFAST and instead historical dividends are assumed over the nine-quarter projected horizon. It is also important to note that there is no qualitative component of DFAST and banks are also required to run a mid-year DFAST projection utilizing their own models.

GSIB Surcharge

In 2013, the BCBS issued a rule imposing a capital surcharge for global systemically important banks (“GSIBs”). The GSIB surcharge is intended to reduce the probability of failure of a GSIB relative to that of a non-GSIB to offset the relatively greater systemic costs of a GSIB’s failure. The five characteristics that determine a GSIB’s surcharge are: (i) complexity; (ii) interconnectedness; (iii) cross-jurisdiction; (iv) substitutability; and (v) size. A GSIB must

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17 The adverse and severely adverse scenarios are developed by the Federal Reserve through a “recession approach” and incorporate a set of economic and financial variables including measures of economic activity (such as the unemployment rate), prices, developments in equity and property markets, and interest rates.

18 Banks that would fall below the CCAR quantitative minimums have the opportunity to make a one-time reduction to their planned capital distributions and resubmit them to the Federal Reserve to remedy any shortfall prior to receiving an objection.


20 BCBS, Global Systemically Important Banks: Assessment Methodology and the Additional Loss Absorbency Requirement, July 1, 2013.
calculate its score using the aforementioned measures and is required to hold extra capital based on the result, which generally ranges from 1%-2.5% of risk-weighted assets.

In 2015, the Federal Reserve finalized a rule implementing a U.S. GSIB surcharge that incorporates the BCBS methodology, but also layers on a more stringent methodology often resulting in a higher capital surcharge.21 In lieu of the substitutability indicator, the U.S. rule includes short-term wholesale funding and the overall GSIB capital surcharge ranges generally from 1%-4.5% of risk-weighted assets. The surcharge applies to all risk-based minimum capital requirements and is currently being phased in through 2018.

Leverage Ratio

As noted above, the leverage ratio does not take into account the risk of a bank’s assets. By treating all assets as having the same inherent risk, it is akin to setting the same speed limit for every road in the world. Unlike other major international jurisdictions, commercial banks in the United States have been required to satisfy a leverage ratio requirement for on-balance sheet assets since 1981. Internationally, Basel III included a 3 percent supplementary leverage ratio for all internationally active banks, which includes both on and off-balance sheet assets.22

In addition to finalizing a 3 percent supplementary leverage ratio requirement for all

Advanced Approaches banks in 2014, the U.S. Agencies also finalized a rule requiring U.S. GSIBs to maintain a minimum enhanced supplementary leverage requirement (“eSLR”) of 5 percent in their holding company and 6 percent in their depository institution subsidiaries.23 Consequently, for several of the largest U.S. banks, the eSLR, as opposed to a risk-based requirement, is a current or potential future binding constraint and affects bank capital and business planning.24

IV. LIQUIDITY RULES ENACTED SINCE THE CRISIS

The post-crisis regulatory response to liquidity issues was primarily addressed through the Basel III liquidity framework, which established international quantitative liquidity standards for the first time. The Basel III liquidity framework established two new standards, the Liquidity Coverage Ratio (“LCR”) and the Net Stable Funding Ratio (“NSFR”), which are

21 80 FR 49081.
23 79 FR 187.
25 This chart was created by The Clearing House; all bank-level data are obtained from the Consolidated Financial Statements for Bank Holding Companies (the FR Y-9C form) published by the Federal Reserve Board or the Consolidated Reports of Condition and Income (the FFIEC 031/041 form, or also known as the Call Reports) for commercial banks published by the Federal Deposit Insurance Corporation. The chart starts in the first quarter of 1996 and end in the second quarter of 2016.
currently (or soon will be) used by supervisors to regulate bank funding and liquidity. The LCR was finalized in 2014 in the U.S. and the NSFR is currently proposed. Each of these frameworks is discussed in greater detail below.

**LCR**

The LCR was designed to ensure that a bank has sufficient liquidity to sustain a severe 30-day period of idiosyncratic and market-wide stress.26 The U.S. LCR requires banks to maintain a sufficient stock of high quality liquid assets (“HQLA”) to cover expected net cash outflows, which is calculated pursuant to certain regulatory assumptions, over a 30-day period. The total net cash outflow amount is calculated by subtracting cumulative cash inflows (capped at 75 percent of the cumulative stressed cash outflows) from the cumulative stressed cash outflows over a 30-day period, plus an add-on that accounts for maturity mismatches between the two measures.27 The stressed inflow and outflow assumptions, used to determine the denominator, are set conservatively by the U.S. Agencies, and in some instances are more stringent than those experienced during the most recent financial crisis.

Assets that are considered HQLA are generally low risk, have little price volatility, and are actively traded. HQLA is divided into Level 1 assets, which are the most liquid (e.g., cash or U.S. Treasuries) and not subject to any haircuts or quantitative caps, and Level 2 assets, which are generally considered less liquid and are capped at 40 percent of a bank’s total HQLA. Level 2 assets are further subdivided into Level 2A assets (e.g., U.S. GSE securities), which are subject to a haircut, and Level 2B assets (e.g., certain corporate debt securities), which receive a comparably larger haircut, Level 2B assets also cannot count for more than 15 percent of total HQLA.

As evidenced in the chart above,28 banks have significantly increased the amount of HQLA on their balance sheets from pre-crisis levels.

**Liquidity Stress Testing/CLAR**

In 2014, the U.S. Agencies finalized liquidity standards pursuant to Section 165 of the Dodd-Frank Act that are designed to complement the quantitative Basel III standards.29 Most notably, these standards require banks to conduct monthly liquidity stress tests across overnight, 30-day, 90-day, and one-year time horizons and require

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26 79 FR 61439.

27 The BCBS LCR does not include a maturity mismatch add-on and is less stringent than the U.S. LCR in certain other respects.

28 This chart was created by The Clearing House; all bank-level data are obtained from the Consolidated Financial Statements for Bank Holding Companies (the FR Y-9C form) published by the Federal Reserve Board or the Consolidated Reports of Condition and Income (the FFIEC 031/041 form, or also known as the Call Reports) for commercial banks published by the Federal Deposit Insurance Corporation. The chart starts in the first quarter of 2001 and end in the second quarter of 2016.

banks to maintain a sufficient “liquidity buffer” based on their expected liquidity needs under these stress tests. Unlike the Basel III standards, banks are permitted to utilize their own assumptions with respect to inflow and outflow rates and as to which assets are eligible for inclusion on the liquidity buffer. An asset’s eligibility for inclusion in the liquidity buffer is often dependent on the time horizon used for stress testing, and a broader pool of securities are eligible in longer time horizons and a narrower pool of securities are deemed eligible in shorter time horizons.

These rules also clarified that the Federal Reserve intends to use the supervisory process to conduct horizontal reviews of internal liquidity stress testing methods and liquidity risk management practices to provide a consistent cross-firm evaluation of liquidity and liquidity risk management. In 2012 the Federal Reserve began using such reviews, known as Comprehensive Liquidity Analysis and Reviews (“CLAR”), for the largest U.S. financial institutions. However, CLAR has grown to include all institutions in the Large Institution Supervision Coordinating Committee portfolio.

V. FURTHER CAPITAL & LIQUIDITY RULES THAT ARE PENDING OR PROPOSED

Notwithstanding the substantial changes already enacted, there are yet further reforms pending or proposed with respect to capital and liquidity rules. Most notably, for capital these include (i) changes to the annual CCAR exercise and related post-stress capital requirements, (ii) possible changes to the leverage ratio framework, and (iii) the Basel IV capital framework. For liquidity these include (i) finalization of the NSFR and (ii) changes to the LCR’s classification of municipal securities. Further detail on each of these items is discussed below.

Proposed and Announced Changes to CCAR

In September 2016, Federal Reserve Governor Daniel Tarullo discussed the potential future evolution of the Federal Reserve’s approach to CCAR, including possible changes to the structure of CCAR and incorporation of the GSIB surcharge. Governor Tarullo described a stress capital buffer (“SCB”) approach that would set post-stress capital requirements and “replace the existing 2.5 percent [capital conservation buffer] as a component in each CCAR firm’s point-in-time capital requirements.” The SCB would be risk-sensitive, vary across firms, and be “set equal to the maximum decline in a firm’s Common Equity Tier 1 capital ratio under the severely adverse scenario of the supervisory stress test before the inclusion of the firm’s planned capital distributions.” He also noted that the Federal Reserve may add a bank’s GSIB surcharge to the effective CCAR post-stress minimum capital requirements. Similarly, Federal Reserve Chair Janet Yellen confirmed that the Federal Reserve is supportive of “integrat[ing] CCAR with our regulatory capital framework,” specifically incorporating the GSIB surcharge in CCAR post-stress minimums and confirming her support for the introduction of the SCB.


32 Id.

Coinciding with Governor Tarullo’s remarks, the Federal Reserve released a proposed rule that, if adopted, would tailor CCAR to integrate the qualitative CCAR exercise for smaller financial institutions into the supervisory process, highlighting the “unnecessary burden” caused by the current CCAR qualitative process. Additionally, the proposal would lessen the reporting requirement burdens, while still subjecting smaller firms to the quantitative requirements of CCAR. The proposed rule would also eliminate the ability of banks to undertake certain de minimis capital actions outside of the CCAR process absent prior approval from the Board. Although Governor Tarullo’s remarks portended the revisions contained in the proposal, the proposed rule neither includes the SCB nor the incorporation of the GSIB surcharge into CCAR, which would need to be proposed through a separate rule making process.

Leverage Ratio

Industry and policymakers are increasingly focused on the leverage ratio and its impacts, and in particular the capital it requires banks to hold against cash-on-deposit with central banks and high-quality sovereign bonds (e.g., U.S. Treasuries). For the U.S. GSIBs, the leverage ratio requirement is now so high relative to risk-based capital requirements that it frequently acts as a potentially binding constraint shaping business decisions, rather than serving solely as a backstop. As a result of the concerns around requiring capital to be held against reserves deposited at central banks, the Bank of England announced in early August that it would exclude central bank reserves from the leverage ratio.

Additionally, because the leverage ratio requires banks to maintain the same amount of capital regardless of the riskiness of an asset, it provides banks with an incentive to both hold riskier assets on their balance sheets and to shed low-risk assets, which has significant implications for securities markets, where U.S. Treasuries are used as collateral plays a crucial role.

There is considerable evidence that the higher minimum requirement of the U.S. leverage ratio (both static and CCAR), is leaving an imprint on financial markets. Over four-fifths of the respondents to the Federal Reserve’s Senior Credit Officer Opinion Survey in June 2015 indicated that liquidity and market functioning in Treasury markets had deteriorated. Over 80 percent of those respondents that reported a deterioration indicated that the most important cause was a decreased willingness of securities dealers to expand their balance sheet for market-making purposes as a result of regulatory change.

The impact of the leverage ratio is also pronounced for those banks that provide custody services, such as the operation of cash management accounts for investment funds and other

34 81 FR 67239.
35 Id.
36 It is important to note that the Bank of England also announced its intention to recalibrate the leverage ratio requirement upward next year thereby mitigating the effect of excluding bank reserves from the leverage ratio.
37 See Barry, Jay, Bruce Sun and Phoebe White, “Times Like These,” JPMorgan, February 10, 2016.
38 Board of Governors of the Federal Reserve System, Senior Credit Officer Opinion Survey on Dealer Financing Terms, June 2015.
39 Id.
institutional investors. The leverage ratio could thus also have an adverse impact on financial stability by preventing banks from being able to accept cash deposits from their custodial clients during a crisis, denying those clients a safe haven to preserve their capital and potentially worsening a run on the banking system. Moreover, the leverage ratio effectively requires banks to hold un-economic amounts of capital when they trade with a client and then clear the trade. CFTC Chairman Timothy Massad has called for the leverage ratio to be amended to take this issue into account.

In September 2016 the House Financial Services Committee voted to favorably report H.R. 5983, the Financial CHOICE Act. The bill would establish a minimum leverage ratio of 10 percent with the caveat that banking organizations that met the ratio would be exempt from certain other bank regulation. It is unknown whether there will be further legislative action on the bill this year due to the tight legislative calendar.

**Basel IV**

Basel IV collectively refers to a series of proposals by the BCBS, which are intended to (i) be finalized by the end of 2016 and (ii) make fundamental changes to the Basel III risk-based capital framework. Basel IV consists primarily of the following items: Fundamental Review of the Trading Book, Step-In Risk, Operational Risk, Standardized Approach to Credit Risk, Constraints on the Use of Internal Models, and Interest Rate in the Banking Book. While the foregoing have varied components, there is a broad, over-arching movement towards government-devised standardized measures of risk as replacements for bank internal models used when calculating capital requirements. It is important to note that bank internal models were not in place during the most recent financial crisis. As a result of the current proposals, there is increasingly wide appreciation among policymakers and industry participants that the practical effect of the Basel IV changes is likely to be a substantial increase in overall capital requirements.

To that end, key European and Asian policymakers are growing increasingly concerned about the effect of BCBS capital and liquidity standards – and in particular the possibility that Basel IV might increase capital requirements. Valdis Dombrovskis, Vice-President and Head of Financial Stability, Financial Services and Capital Markets Union for the European Commission, signaled that Europe appears to be ready and willing to abandon increases in capital requirements on the basis that further capital increases will impair the ability of European banks to lend and support investment in the economy.

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40 Such banks are finding it increasingly challenging to accept certain cash deposits from customers, because the U.S. leverage ratio requires banks to hold substantial capital against the low-risk, liquid assets in which those deposits are temporarily invested – generally cash and U.S. Treasuries.
41 Rennison, Joe, “CFTC Head Calls for Leverage Ratio Fix”, September 29, 2016, [https://www.ft.com/content/f62c38ec-66c9-11e5-a57f-21b88f7d973f](https://www.ft.com/content/f62c38ec-66c9-11e5-a57f-21b88f7d973f).
42 See H.R. 5983.
ditionally, Dombrovskis has ostensibly indicated that the European Commission will issue its own proposal for finalizing Basel III, presumably without the additional changes included in Basel IV. His remarks appear to indicate a willingness by Europe to exit the Basel process if significant changes are not made.46

Similarly, the International Monetary Fund (“IMF”) in its Global Financial Stability Report, called for the possible delay of Basel IV implementation. According to the IMF, “[i]t is better to obtain agreement on a robust risk-weighted capital framework, even if the agreement takes more time, than to risk dilution or withdrawal to meet the challenging constraints of ‘no further capital increase’ and the end-2016 deadline.”47 Moreover, “the implementation of the framework may also have to be phased in over a longer period to prevent potentially procyclical (further damaging banks’ profits) consequences under the current circumstances.”48

These concerns are broadly consistent with the interest in Europe and Asia to identify and address the unintended consequences of post-crisis regulation, and the cumulative costs of such regulations. The EU has undertaken a high-profile “call for evidence” regarding the consequences of regulations, including a consultation49 paper issued by the European Commission in 2015, which sought feedback on: (i) rules affecting the ability of the economy to finance itself; (ii) unnecessary regulatory burdens; (iii) interactions, inconsistencies and gaps in rules; and (iv) rules giving rise to unintended consequences.50 Similar calls for action by industry participants have not been heeded by the U.S. agencies or policymakers to date.

Similarly, in contrast to the positions of regulators in Europe, policymakers in the United States – particularly Governor Tarullo and FDIC Chairman Gruenberg – appear to be strong advocates for more stringent outcomes across the range of Basel IV proposals and view higher overall capital requirements as not problematic and even potentially desirable.51

Net Stable Funding Ratio

The NSFR is a liquidity standard that was intended to ensure that banks have sufficiently stable funding over a one-year time horizon.52 It began as a relatively simple concept: a bank's available funding sources over a one-year period should be sufficient to cover the liquidity profile of its assets and off-balance-sheet exposures over the same horizon. There was concern that, if left unchecked, the LCR might create a “cliff effect” of funding stability on the 31st day and beyond because banks could

46 Id.
48 Id.
structure their liabilities so that they had every chance of surviving 30 days but practically no chance of surviving thereafter. Additionally there was concern that the LCR did not do much to reduce the liquidity risks of so-called “matched books” of repurchase transactions, a form of short-term wholesale funding that has been of concern to regulators. The NSFR was viewed as a way to address these risks and complement the LCR.

The NSFR requires that the amount of a bank’s available stable funding (“ASF”) is no less than the amount of its required stable funding (“RSF”). A bank’s ASF is composed of liabilities and regulatory capital, whereas RSF is composed of assets, undrawn amounts of a bank’s commitments and certain derivatives exposures. Each asset or liability is assigned an ASF or RSF factor based on the liquidity characteristics of each category. The rule would require banks to calculate the NSFR on a consolidated basis by taking the weighted figures for each relevant category and adding them together to determine their overall ASF and RSF.

\[ \frac{\text{ASF}}{\text{RSF}} \geq 1 \]

Following finalization of the BCBS rule in 2014, the U.S. agencies have proposed their own version of the BCBS’s NSFR standard.\(^3^3\) Although the U.S. proposal is largely consistent with the BCBS’s NSFR standard, there are key differences making the U.S. proposal more stringent. Specifically, as compared to the BCBS NSFR, the U.S. proposal requires additional stable funding for certain assets and gives less credit for the stable funding for certain liabilities.

Additionally, the U.S. NSFR does not provide for any framework for interdependent assets and liabilities, while the BCBS allowed national discretion for such transactions.

Treatment of Municipal Securities under the LCR

While U.S. municipal securities were not initially classified as HQLA in the U.S. LCR, subsequent analysis suggested that certain U.S. municipal securities have liquidity characteristics similar to other HQLA classes (e.g., corporate debt securities).

In April 2016, the Federal Reserve finalized a rule allowing investment-grade U.S. general obligation state and municipal securities to qualify as Level 2B HQLA up to certain levels, assuming they meet the same liquidity criteria that currently apply to corporate debt securities.\(^3^4\) The OCC and FDIC have not permitted similar treatment of municipal securities as HQLA.

The House of Representatives passed legislation in February of this year that would treat all investment-grade municipal securities as Level 2A HQLA.\(^3^5\) In September 2016, legislation was introduced in the Senate that would classify investment-grade U.S. general obligation state and municipal securities as Level 2B HQLA to “bring municipal bond debt on par with corporate debt, and help stabilize the municipal securities market.”\(^3^6\) The prospect for passage of the legislative proposals is uncertain.

\(^{33}\) See 81 FR 35124.
\(^{34}\) See H.R. 2209.
Emerging Challenges in Bank Intermediation

The post crisis reforms have made banks safer and more resilient. However, sound regulation requires a careful weighing of costs and benefits.

I. INTRODUCTION

The post-crisis reform of bank regulation and supervision has made large banks safer and more resilient, but sound government regulation requires that decisions be made with an awareness of the costs as well as the benefits. An assessment of net benefits is especially important as consideration moves beyond the regulations with the clearest positive net benefit, which were the first to be adopted. This chapter reviews ways that recent regulations have curtailed the ability of banks to engage in or support the core function of the financial system – matching those with funds they wish to save and invest with businesses, households, and governments that want to borrow to support spending on capital, durable goods, and housing. We focus in particular on three areas:

1. how the design of the stress tests encourage banks to reduce lending to middle-class households and small businesses;

2. how a proposed liquidity regulation as well as the living wills make it more costly for banks to take in deposits and extend loans, and

3. how several regulations have led banks to cut back sharply their support for intermediation between investors and borrowers in capital markets.

II. STRESS TESTS AND LENDING TO MIDDLE CLASS HOUSEHOLDS AND SMALL BUSINESSES

Each year, Federal Reserve supervisors prepare a forecast of each large banks’ capital levels under the assumption that the economy enters an extremely severe recession or, if already in a recession, that the recession gets significantly worse. If the supervisors project that a bank’s capital level ends below the amount necessary to continue to do business, it must lower its dividends. Naturally, the loans that perform the worst under such assumptions are ones to households more at risk of losing their jobs if a recession occurs and with only modest savings and loans to newly formed small businesses, so banks have a strong incentive to substitute away from such loans to do better on the stress test. The consequences of those incentives can be seen in the continued tight supply of credit to households, except the wealthy, while small business formation and employment has remained sluggish during the recovery.

A. Severity of stress tests.

BANK FAILURES ARE RARE: Although there are thousands of banks, during the five years before the crisis there were only 10 failures and those were at small banks. Moreover, bank profits can be hit by a wide variety of things – rogue traders,
massive fines – not just poor performance of the macroeconomy. Indeed, projections of bank earnings tend to find that banks do reasonably well despite an economic downturn. But supervisors have no way to condition their stress tests on the idiosyncratic events that reduce bank profits; they can only condition on the economy. As a result, the scenarios used by the Federal Reserve for its stress tests have to be extraordinarily severe in order to produce declines in profits similar to those seen at times at banks historically – that is, to be satisfactorily stressful.

For example, as described in a research note that TCH published in March 2016 and shown in the left panel of exhibit 1, the 2016 and 2015 stress test scenarios assumed a rise in the unemployment rate that was sharper than during the great recession. A rapid rise helps make the scenario stressful because high unemployment only leads to large loan losses over the nine-month projection horizon if the unemployment rate jumps to a higher level quickly.

Similarly, as shown in the right panel of exhibit 1, the declines in GDP assumed in the 2015 and 2016 scenarios are steeper and larger than experienced in the great recession.

B. Consequences for bank credit supply

A bank faced with the prospect of a stress test that consistently includes an unprecedentedly severe economic downturn will naturally shift away from loans whose performance is cyclically sensitive, such as loans to households with less than pristine credit scores. For example, in response to questions on the July 2016 Senior Loan Officer Opinion Survey (SLOOS) on Bank Lending Practices, banks indicated that the lending standards applied on credit cards for borrowers with less than perfect credit are tighter than the midpoint of their range over the past 10 years, while the standards applied to credit cards to households with perfect credit are easier. More recently, in the October 2016 SLOOS banks reported that they tightened lending standards even further for subprime credit cards, while they eased standards for prime credit cards.


The consequences for home mortgages are best illustrated by the behavior of home equity lines of credit (HELOC), which, as can be seen in the left panel of exhibit 2, have declined steadily since the crisis. Over a period when total bank loans have increased by 25 percent, HELOCs have declined by 25 percent.

The sluggish behavior of small business lending is illustrated by the right hand side of exhibit 2. As can be seen, small business loans have never recovered from the recession while large business loans have grown solidly. Moreover, new small businesses are often financed with personal credit card debt or home mortgage loans, supply of which, as already noted, has been limited. Indeed, Janet Yellen, Chair of the Federal Reserve Board, recently observed that there was evidence that financial constraints had limited employment growth at, and the startups of, small firms, and that those developments could be part of the reason the recovery has been so slow.4


II. LIQUIDITY REGULATIONS, LIVING WILLS, AND BANK LENDING

Banking is, at its heart, liquidity transformation. Banks fund themselves with liquid deposits and invest in illiquid loans to businesses and households. Liquidity transformation can be potentially unstable, however, because each individual depositor or overnight creditor has an incentive to run if there is a whiff of trouble, but the bank can’t liquidate its illiquid assets to meet the run. One way to eliminate this inherent risk is, of course, to require banks to make no loans and hold only completely safe and liquid assets such as Treasury bills. Another is to require banks to stop offering savings or checking accounts and fund themselves only with long-term debt. For a variety of reasons, however, modern economies have consistently opted for a banking system in which lending and deposit-taking are combined.

Many financial institutions experienced severe liquidity problems during the financial crisis, and the bank regulatory agencies appropriately tightened liquidity requirements in response. The first ever numerical liquidity requirement – the
Liquidity Coverage Ratio (LCR) – was established. The LCR requires banks to hold sufficient liquid assets to meet a 30-day net cash outflow projected under conditions of severe stress. In addition, all large banks are required to conduct monthly liquidity stress tests at multiple horizons, up to the one-year horizon. For the larger banks, the tests are complemented by the Federal Reserve’s annual horizontal liquidity review, the “ Comprehensive Liquidity Analysis and Review.”

A. Net Stable Funding Ratio

In June 2016, the banking agencies put out for public comment a proposal that would establish an additional liquidity requirement – the Net Stable Funding Ratio (NSFR).5 The NSFR is intended to ensure that large banks have prudent funding profiles over a one-year horizon.

As shown in a recent TCH research note, although many U.S. banks are likely able to comply with the NSFR in the current unusual financial environment without major adjustments, compliance is likely to become more challenging as the Federal Reserve’s balance sheet and interest rates normalize over time.6 As a result, in the future banks may need to reduce their provision of credit to nonfinancial businesses – including small businesses – and households and reduce their support of capital market intermediation in order to continue to comply with the NSFR.

Not only do tighter liquidity regulations reduce the extent to which banks can take deposits and make loans, as found by a recent international working group of central bank economists, they also push down the equilibrium short-term interest rate.7 The equilibrium interest rate is the rate above which monetary policy slows the economy and below which monetary policy stimulates the economy. A low equilibrium interest rate is costly for at least two reasons: First, it reduces the efficacy of monetary policy when interest rates are stuck at zero, and 2) it increases the odds that interest rates will get stuck at zero. A recent TCH research note provides evidence that the equilibrium interest rate has fallen notably in recent years as well as evidence that some of the decline may owe to the post-crisis tightening of liquidity regulations.8

Because the NSFR is redundant, poorly designed, and likely to be very costly, The Clearing House is of the view that it should not be adopted, or at a minimum, sent back to Basel for repair and improvement before adoption.

B. Living Wills

Recent decisions by the Federal Reserve and Federal Deposit Insurance Corp. on the living wills of several U.S. banks, while phrased as bank-specific decisions on the credibility of a firm’s resolution plan, effectively make important policy decisions about the ability of U.S. banks to engage in liquidity transformation. These decisions, which reinforce other post-crisis regulatory changes, were not subject to notice and comment or mandated


by Congress. Nevertheless, they have important ramifications for the ability of the U.S. banking system to fund economic growth.

The living-will guidance would appear to make it even more expensive for banks to engage in liquidity transformation. The guidance regulators provided in April in conjunction with their assessment of 2015 plans instruct bank holding companies to hold sufficient liquid assets to meet the peak potential funding needs of each of their material entities, including their broker-dealer subsidiaries, on a standalone basis, even though the guidance also requires that the subsidiaries have sufficient capital after recapitalization to maintain the confidence of the markets. If that is indeed the case, it is the living-will guidance, and not the other liquidity regulations that have been developed over the past seven years, that is the binding determinant of the amount of liquidity transformation that occurs in the banking system. The potentially profound impact of these new policies on economic and job growth may be one reason why the Government Accountability Office suggested that the agencies should be more transparent about the criteria they are applying when determining if the living wills are credible.

## III. REGULATIONS AND BANK SUPPORT FOR CAPITAL MARKETS

As described above, tighter bank regulations inevitably reduce the supply of bank credit and channel credit toward or away from certain sectors. However, in the United States, much of lending to the private nonfinancial sector and most of the borrowing by the government sector occurs outside the banking system in capital or money markets. Indeed, banks provide only about one-third of credit in the United States. The commercial bank and broker-dealer subsidiaries of large bank holding companies facilitate financial market intermediation both by making markets in the securities traded in those markets as well as providing the funding to financial institutions necessary for the liquidity and efficiency of those markets.

Several of the regulations described in chapter 4 make it more costly for banks and bank holding companies to engage in capital market activities. The GSIB surcharge (the extra capital required of the largest bank holding companies) is based in large part on characteristics of banks, such as the amount of repo lending or linkages to other financial institutions, that increase with the extent to which the bank holding company is engaged in capital market activities. The leverage ratio requirement, which U.S. regulators have established at twice the level required by international agreement, requires banks to hold capital against riskless (eg. Treasury securities) or near riskless assets (eg. overnight loans backed by Treasury securities) required as collateral or created by capital markets activities. The Volcker Rule imposes further restrictions on banks’ ability to underwrite and make markets in nearly all asset classes, which both increase the cost of securities dealing and reduce the extent to which banks are likely to be willing to hold inventory and provide liquidity in times of market stress.

And several regulations on the horizon will make such activities even more costly. The recent proposal of Daniel Tarullo, Governor of the Federal Reserve Board, to add the GSIB surcharge to the

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stress tests will make banks even more eager to reduce their capital markets footprint and thereby lower their surcharge.\(^\text{10}\) The proposed NSFR will require banks to fund overnight loans to financial institutions with a substantial amount of relatively expensive stable funding. And the Basel Committee’s Fundamental Review of the Trading Book, which will substantially increase the capital costs of trading activities.

A. Weak bond issuance by smaller firms.

As shown in exhibit 3, issuance of corporate bonds by small and midsized nonfinancial firms has fallen over the past few years while issuance by larger firms has risen. Issuance may have fallen off for such firms because it has become more difficult and expensive for dealers to hedge the risk associated with holding the inventories of the bonds using credit default swaps (CDS). Dealers need to hold inventories of bonds to “make a market” in the security; that is, stand ready to buy or sell it.

Recent research by economists at the New York Federal Reserve has found that credit default swaps have become much more costly to hold in large part because of the capital that dealers are required to hold against the transaction.\(^\text{11}\) That added expense for hedging may be more consequential for corporate bonds issued by smaller firms because they tend to be more costly to sell quickly if necessary than the bonds of larger firms.

B. Repo financing by broker-dealers

The efficiency and liquidity of financial markets is maintained by the ability of financial institutions to take leveraged positions in mispriced assets to earn a profit when the asset price returns to normal. Such positions are financed in the market for repurchase agreements. In a repurchase agreement, or repo, one institution sells a security to another with agreement to repurchase the security at some date in the future, often the next day. A repo is a collateralized loan. The institution that sells the security and receives cash is borrowing, the institution that


\(^{11}\) Boyarchenko et al (2016).
buys the security and provides cash (a transaction that is called a “reverse repo”) is lending.

Broker dealers often intermediate between two financial institutions by engaging in a repo with one and an identical matched repo with another. While such matched transactions are nearly riskless, under the leverage ratio requirement, banks have to hold capital against their reverse repos, while such loans also contribute to a banks’ GSIB surcharge. Moreover, if the NSFR is adopted as proposed, banks will be required to finance the loans with a material amount of stable funding rather than a matched repo borrowing. As explained in a recent TCH research note, all these requirements make such transactions more expensive, and dealers are passing those costs on.12 As shown in the left panel of exhibit 3, the spread between the General Collateral Finance (GCF) repo rate (the rate large dealers charge smaller dealers) and the triparty repo rate (the rate that large dealers borrow), has widened steadily in recent years and is now at a post crisis high. Relatedly, as shown in the right panel, the amount of dealer repo lending has fallen by one third over the past few years.

With dealer repo financing less available, financial institutions are less able to make the investments that bring asset prices into alignment with each other. For example, if a Treasury security is cheap relative to similar securities, an investor might provide the similar securities as collateral for a repo and borrow the cheap security through a reverse repo. The actions of the investor, and other investors taking similar positions, tends to push the prices into alignment.

The much higher cost for market participants of financing their positions in Treasury securities has contributed to increased pricing gaps in the Treasury market that would normally be arbitraged away. That reduced efficiency can be seen in the Treasury yield curve fitting error, shown in exhibit 5, the amount by which the actual yields on specific Treasury securities differ from the smooth yield curve estimated from those yields. While the fitting errors are small relative to those seen in the crisis period, they have clearly trended up over the past two years.

Evidence of the reduction in market efficiency is not limited to the Treasury market. For

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example, as discussed in Borio et al (2016), there have also been more frequent, and larger, gaps between the cost of borrowing in dollars and the cost of swapping dollars into a foreign currency and borrowing in the foreign currency. The “law” in economics that these two ways of borrowing dollars should be the same is called “covered interest parity,” or CIP. As shown in the right panel of exhibit 5, violations of CIP have steadily widened in recent years, with borrowing in dollars domestically cheaper than borrowing dollars via a foreign currency.

The yields on Treasury securities are lower than those of other securities because of the securities’ extraordinary liquidity. The reduced ability of financial institutions to finance large positions in Treasury securities would seem to indicate that it is more difficult to sell large positions quickly. Moreover, more than four-fifths of the respondents to the Federal Reserve’s Senior Credit Officer Opinion Survey in June 2015 indicated that liquidity and market functioning in Treasury markets had deteriorated. Over 80 percent of those respondents that reported a deterioration indicated that the most important cause was a decreased willingness of securities dealers to expand their balance sheet for market-making purposes as a result of regulatory change. Consequently, it seems inevitable that Treasury yields are at least a bit higher as a result of reduced liquidity and impaired market functioning, increasing the cost to taxpayers of the national debt. There is however, as far as we know, no evidence that demonstrates such increased costs.

REFERENCES


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The Clearing House is a banking association and payments company that is owned by the largest commercial banks and dates back to 1853. The Clearing House Payments Company L.L.C. owns and operates core payments system infrastructure in the United States and is currently working to modernize that infrastructure by building a new, ubiquitous, real-time payment system. The Payments Company is the only private-sector ACH and wire operator in the United States, clearing and settling nearly $2 trillion in U.S. dollar payments each day, representing half of all commercial ACH and wire volume. Its affiliate, The Clearing House Association L.L.C., is a nonpartisan organization that engages in research, analysis, advocacy and litigation focused on financial regulation that supports a safe, sound and competitive banking system.