

Restructuring the Banking System to Improve Safety and Soundness

Thomas M. Hoenig
Vice Chairman of the Federal Deposit Insurance Corporation

Charles S. Morris
Vice President and Economist
Federal Reserve Bank of Kansas City

Original version: May 2011
Revised: November 2013

The views in this paper are those of the authors and not those of the Federal Deposit Insurance Corporation, the Board of Governors of the Federal Reserve, the Federal Reserve System, or the Federal Reserve Bank of Kansas City. Michal Kowalik, an Economist in the Banking Research Department at the Bank, contributed substantially to the proposal. The authors would like to thank Viral Acharya, Matt Richardson, Larry White, Richard Sylla, Thomas Philippon, Lasse Pedersen, Jacob Goldfield, and Nada Mora for helpful comments and suggestions.

Executive Summary

Proposal

This paper provides a specific proposal to limit the financial activities that are covered and thus subsidized by the government safety net in order to protect the financial system and the economy. The U.S. safety net, which consists of central bank loans to solvent but liquidity strained banks and federal deposit insurance, was developed in the early 1900s to protect commercial banks.

The safety net originally was limited to commercial banks because they are critical to an economy's overall health and growth. Their core activities of making loans funded by short-term deposits provide essential payment, liquidity, and credit intermediation services. But these services also make banks inherently unstable because depositors will "run" if they believe their bank is in financial trouble.

While the safety net solves the instability problem, it also creates incentives to take excessive risk because it subsidizes banks. With safety net protection, depositors and other protected creditors are willing to lend to banks at lower interest rates, given the amount of risk. This cheaper funding and reduced market discipline creates incentives for banks to make riskier investments and increase leverage. The subsidy and associated incentive to take greater risks have grown substantially over the past 30 years – including discreet jumps following financial crises – because the activities the safety net supports has expanded beyond the core banking activities considered necessary to protect.

The recommendation in this paper is to limit the safety net – and thus its subsidy – to what the safety net should protect by restricting banking organization activities by business line. Under the proposal, banking organizations would continue to provide the core services of

commercial banks – making loans and taking deposits to provide payment and settlement, liquidity, and credit intermediation services. Other allowable services would be securities underwriting, merger and acquisition advice, trust, and wealth and asset management. Banking companies would not be allowed to conduct broker-dealer activities, make markets in derivatives or securities, trade securities or derivatives for either their own account or customers, or sponsor hedge or private equity funds.

The difference between what banking companies would and would not be allowed to do is based on the principle that beyond their core services, they should not conduct activities that create such complexity that their management, the market, and regulators are unable to adequately assess, monitor, and control risk taking. Current activities conducted by banking organizations that would be prohibited, such as trading and market making, are important to the economy. But they should not be subsidized by the safety net because it causes their overproduction, and therefore imposes unnecessary risks and costs on the financial system and economy. In fact, by removing the safety-net's protection for activities such as securities and derivatives market-making, the market for these services should become more competitive and less dominated by the largest investment banks, which currently are all affiliated with commercial banks.

The benefits of prohibiting banking firms from conducting high-risk activities outside of their core business, however, would be limited if those activities continue to threaten stability by migrating to the “shadow” banking system. Shadow banks are financial companies not subject to prudential supervision and regulation that use short-term or near-demandable debt to fund longer-term assets. In other words, shadow banks essentially perform the same critical, core functions as traditional banks, but without an explicit safety net or prudential regulation. As a

result, the shadow banking system is susceptible to disruptions that threaten financial and economic stability and lead to additional implicit government guarantees and the associated incentive to take excessive risks.

To mitigate the incentive for shadow banks and other financial companies to take excessive risk and the associated potential systemic effects, this paper makes two additional recommendations. First, money market mutual funds and other investment funds that are allowed to maintain a fixed net asset value (NAV) of \$1 should be required to have floating net asset values. Second, bankruptcy law for repurchase agreement collateral should be rolled back to the pre-2005 rules, which would eliminate mortgage-related assets from being exempt from the automatic stay in bankruptcy when a borrower defaults on its repurchase obligation.

The problem with fixed NAVs and current bankruptcy law is they provide special treatment – that is, they essentially subsidize – short-term funding. As with the safety net for banks, the subsidy leads to the overproduction of risky shadow banking activities. By reining in this subsidy, these two recommendations should greatly curtail shadow banking activities by exposing shadow bank creditors to the true costs of their investments.

Why Restricting Activities is the Solution

The reduced market discipline and incentive to take excessive risk caused by the safety net has long been recognized, which is one of the major reasons for the prudential supervision of banks. The incentive to take *excessive* risk traditionally has been contained through strong on-site examinations and minimum capital requirements that were supplemented as appropriate based on the exam results. This does not mean that banks do not take risks, nor that they do not make mistakes that cause them to fail. Banking is a business of risk taking, and when they do make bad decisions that lead to insolvency or liquidity problems, they should fail and be

resolved. Thus, it is the prevention of excessive risk taking arising from the safety net subsidy that prudential supervision is supposed to stop.

The traditional financial structure and regulatory framework worked well for many years, and it still does for those banks that still operate within the framework, which includes all but the largest universal banking companies that are extensively engaged in nontraditional activities. That framework has three components. First, it limits banking firm activities to those essential to the economy but inherently unstable. Second, it provides a safety net for banks and their limited activities, which prevents the instability but has undesirable side effects. Third, it includes strong supervision to control the side effects.

The current financial structure, however, is vastly different. Leading up to the financial crisis, the financial system became dominated by a handful of large *and* complex financial organizations, and these companies have become even more dominant. These complex universal banking companies combine traditional banking activities with a variety of investment banking and insurance activities.

The problem with this change in structure is not that banking organizations are larger, but that the scope of the safety net and its subsidy – and therefore their sizes – has expanded beyond the traditional bank activities that provide external social benefits. The subsidy is provided, either explicitly or implicitly, to the organization as a whole and not limited to the specific activities for which it was intended. The riskiness of banking firms can be reduced by the additional activities, for example, if they increase the diversification of assets and revenue streams. However, the riskiness also can be increased by the additional activities because they not only are subsidized by the safety net, but also because they create complexity that makes it more difficult for management, the market, and regulators to assess, monitor, and contain the

excessive risk taking induced by the safety net. Moreover, the large size of the universal banking companies – both individually and collectively given the increased interconnections among them – further endangers the stability of the financial system and the overall economy. Thus, the social costs of extending the safety net to large, complex universal banking firms that cannot be sufficiently monitored by their own management, the market, or regulators greatly exceeds the social benefits to an individual firm.

Evolution of current financial structure

Over the past 30 years, the U.S. banking system has changed dramatically from the stylized view of banking that arose from the banking panics of the early 1930s. The structure of the banking industry that emerged from the 1930s separated investment banking and other financial services from “traditional” commercial banking – making loans and taking deposits to provide payment, liquidity, and credit intermediation services. These core banking services are the foundation of the financial infrastructure that is critical for the overall health of an economy and its growth.

Regulation

The 1930s financial structure that lasted largely until the end of the century was shaped by three major components of the Banking Act of 1933, also known as the Glass-Steagall Act: the separation of commercial and investment banking, creation of federal deposit insurance, and the Federal Reserve’s Regulation Q.

The Glass-Steagall Act included four provisions that separated commercial and investment banking.¹ Deposit (i.e., commercial) banks were generally prohibited from conducting securities activities (underwriting and dealing) or affiliating with companies that

¹ Although the entire 1933 Act is the Glass-Steagall Act, references to the Glass-Steagall Act typically refer to these four provisions.

conducted securities activities.² The rationale was that banks are crucial for a well-functioning economy because they settle payments, provide deposits that are available at par value on demand, and are the primary source of credit for the vast majority of businesses and individuals. These functions are a critical part of the economy's financial infrastructure.

Banks are provided access to a public safety net because they are critical to the economy and susceptible to runs from using demand deposits to fund longer-term, illiquid loans. Prior to the 1930s, the Federal Reserve's discount window provided a limited safety net for solvent banks.³ The public safety net was significantly enhanced by including in the Banking Act of 1933 the creation of the Federal Deposit Insurance Corporation and limited federal deposit insurance, which protected depositors of banks that failed.

Access to a safety net, however, increases the moral-hazard incentive for banks to take excessive risks. Given the importance of a stable banking system, the necessity of a public safety net to provide the stability, and an incentive to take greater risk, a mechanism is needed to prevent banks from taking excessive risks and endangering the safety net. The market cannot be solely relied upon to prevent the risk taking because some deposits are insured and banks are inherently opaque. As a result, prudential supervision and regulation is necessary to prevent excessive risk taking.

² Certain exceptions to dealing and underwriting were allowed. For example, the National Bank Act (Seventh) allowed commercial banks to deal and underwrite U.S. Treasury securities, general obligations of State and political subdivisions, and obligations issued by the Federal Housing Authority, Federal Home Loan Banks, Federal National Mortgage Association, Government National Mortgage Association, and Federal Home Loan Mortgage Corporation. Section 20 of the Banking Act of 1933 prohibited Federal Reserve member banks from affiliating with organizations that "engaged principally in the issue, floatation, underwriting, public sale, or distribution of stocks, bonds, debentures, notes, or other securities." As a result, banks could affiliate with companies engaged in minimal amounts of securities underwriting and dealing, with the limits determined by the Federal Reserve Board of Governors.

³ Also, only members of the Federal Reserve could borrow from the discount window until the Monetary Control and Depository Institutions Deregulation Act of 1980.

One of the key provisions of the Banking Act of 1933 was the prohibition of paying interest on demand deposits and the authority to impose ceilings on savings and time deposit rates, which was implemented through the Federal Reserve's Regulation Q.⁴ A major rationale for Regulation Q was to prevent competition for deposits from causing instability in the banking system (Gilbert).

The combined effect of prohibiting securities activities for banking firms, bank access to a government safety net, prudential supervision and regulation, and deposit rate ceilings was a fairly stable, profitable banking industry with a positive franchise value for many years. The franchise value was protected to the extent banks were protected from outside competition and competition among themselves.

Increased competition

Over time, banks faced increasing competition on both the liability and asset sides of the balance sheet. The increase in competition was spurred by advancements in portfolio theory, investment and money management techniques, and information technology combined with greater volatility of the economic environment.

On the liability side, banks had to compete with money market mutual funds (MMMFs) and savings association Negotiated Order of Withdrawal (NOW) accounts that paid interest on close substitutes for bank demand deposits. They also faced greater competition for household savings from mutual funds, pension funds, and insurance companies.

MMMFs started in 1971 as a competitive alternative to bank deposits because they paid a market interest rate and were allowed to maintain a net asset value (NAV) of \$1 a share as long as their actual NAV is greater than 99.5 cents (i.e., they do not "break the buck") and not too far

⁴ The Banking Act of 1933 restrictions on deposit rates only applied to banks that were members of the Federal Reserve System. The restrictions were extended to nonmember banks in the Banking Act of 1935, which also amended other provisions of the 1933 Act.

above \$1, and they met certain investment (quality and maturity) requirements. They allow investors to withdraw funds on demand and have limited check-writing privileges. MMMF shares are held by individuals, institutional investors, and corporate and noncorporate businesses as an alternative to bank deposits for cash management and payments purposes. MMMFs started out investing in highly-rated financial and nonfinancial company commercial paper (CP) and short-term Treasury securities, and then over the years expanded to other money market instruments (MMIs), such as asset-backed commercial paper (ABCP), and short-term repurchase agreements (repos).

Chart 1 shows that MMMFs have grown rapidly over the past 40 years, peaking at \$3.8 trillion in assets in 2008. Although MMMF assets have dropped sharply since then, they are still at about \$2.5 trillion as of June 30, 2013, which is about 25 percent of domestic bank deposits.

It is important to note that although an MMMF investor technically owns equity shares of the fund – that is, there is *no leverage* – the investor is more like a depositor because the expectation is that funds can be withdrawn at a par value of \$1 a share. As a result, MMMF investors act more like depositors and will run whenever they are concerned about a fund’s safety so they can redeem their shares for \$1 before the fund “breaks the buck” and reduces the value of the shares. Moreover, because MMMFs are not required to issue additional equity instruments such as common stock, investors will behave as if there is no equity and *leverage is infinite*, which means the incentive to run is even greater than for bank depositors.

NOW accounts were developed by savings and loans in the early 1980s as a competitive alternative to demand deposits that paid interest. NOW accounts essentially were just like demand deposits – funds were available upon demand and had unlimited check-writing

privileges – but they could pay interest because the depository institution reserved the right to require notice before allowing funds to be withdrawn or transferred by check.

On the asset side, banks faced competition in making loans from investment banks (high-yield bonds, securitization, and nonfinancial commercial paper), mortgage brokers, and specialty lenders such as unaffiliated finance companies (primarily consumer lending), captive lenders (auto financing, retailers), and factors (trade receivable lending).

Banks have long faced competition in making loans from unaffiliated and captive finance companies and factors. Commercial paper (CP) became a competitive alternative to bank operating loans for large, highly-rated nonfinancial companies in the late 1960s and early 1970s.

Competition for bank loans increased substantially beginning in the 1980s with the growth of high-yield bonds and an ability to originate and distribute loans through the development of mortgage-backed securities (MBS), followed by other types of asset-backed securities (ABS), which are typically backed by consumer loans (credit cards, auto, student). Chart 2 shows the size of the high-yield bond market rose from just \$10 billion of outstanding bonds in 1978 to \$1.3 trillion in 2010. Chart 3 shows the private-label ABS market grew rapidly, from virtually nothing in 1983 to \$4.6 trillion in 2007. Problems in the private-label ABS market—initially caused by the securitization of low-quality loans such as subprime mortgages—were at the heart of the financial crisis. Since 2007, outstanding private-label ABS has fallen more than 60 percent to about \$1.7 trillion.

Shadow banking

The combination of alternatives to bank deposits and loans created an alternative system for providing complete end-to-end banking – from gathering funds to making loans – which

collectively comprises the so-called shadow banking system.⁵ In contrast to a typical bank that conducts the entire process of borrowing funds from savers, making loans to ultimate borrowers, and holding the loans to maturity, credit intermediation through the shadow banking system is a vertical process that takes place through a series of entities – collectively called shadow banks – similar to a supply-chain manufacturing process.

Funding for each of the entities takes place in wholesale markets. Money market instruments – specifically CP, ABCP, and short-term repos – are a major source of funds at virtually each step in the process.⁶ The major investors in the MMIs are MMMFs and other short-term investment funds that have a fixed NAV of \$1.⁷ At some steps of the process, major funding sources also include medium-term notes and ABS that are purchased by long-term investors, such as mutual funds, pension funds, and insurance companies. A typical example of the shadow banking intermediation process is as follows:

1. A loan is made by either a nonbank financial company or a bank. The nonbank companies finance the initial loans with CP or medium-term notes (MTN).
2. The loan is sold to a bank or broker-dealer conduit, which is an intermediate entity that temporarily warehouses the individual loans until it has enough to package together as an MBS or ABS. The conduits are funded with ABCP.
3. The loan warehouse sells the package of loans to a securitization sponsor that sets up a trust to hold the loans, which is financed by selling MBS/ABS backed by the loans. This is the only step in the process not financed by MMIs.
4. The ABS are purchased by a variety of entities that are funded by a variety of sources.

⁵ The description of the shadow banking system and the process described below is largely from Pozar, Adrian, Ashcraft, and Boesky.

⁶ The one exception is the step that actually securitizes loans into MBS/ABS.

⁷ There are also direct investors in these money market instruments, such as securities lenders.

- a. Entities that purchase ABS and tend to fund them with longer-term sources of funds include mutual funds, pension funds, and insurance companies.
- b. BHCs may purchase ABS and hold them on bank balance sheets funded by deposits. However, prior to the financial crisis, they generally held them in off-balance-sheet entities, such as structured investment vehicles (SIVs) or other conduits, which were funded by CP or ABCP. The CP or ABCP, in turn, was typically purchased by MMMFs and other MMI funds with fixed \$1 NAVs.
- c. Investment banks and BHCs purchase ABS for a variety of reasons. They may be held by a securities subsidiary as a source of liquidity, a proprietary trading asset, in inventory for filling customer trades, or warehoused for creating collateralized debt obligations (CDOs). The ABS are typically funded with repos and sometimes ABCP, which again are funded by MMMFs and other MMI funds with fixed \$1 NAVs.

Expansion of banking organization activities

Increased competition for banks from the shadow banking organizations combined with regulatory capital requirements that were higher than for their competitors (stemming from the Basel I Accord) led to reduced profits and declining franchise values. As a result, banking organizations looked for alternative activities, revenue streams, and business models, which included the originate-to-distribute shadow banking business model. Whereas the traditional banking model of making loans and holding them to maturity earned profits from loan-deposit rate spreads, the shadow banking model earned profits from fees and trading gains.

Some banking companies responded to the increased competition by focusing first on being able to engage in traditional investment banking and securities activities and later more broadly on broker-dealer and shadow banking activities. Banking firms were able to whittle

away at the Glass-Steagall Act restriction on investment banking activities in the 1990s by creating Section 20 securities subsidiaries that were supported by Federal Reserve Board approvals of higher thresholds for being “principally engaged” in securities activities.⁸

To fully participate, however, banks needed the Glass-Steagall Act prohibition on affiliation with securities companies to be repealed, which was achieved with the passage of the Gramm-Leach-Bliley Act (GLBA) in 1999. The GLBA allowed the formation of financial holding companies (FHCs), which were BHCs engaged in certain nonbanking activities, such as securities underwriting, broker-dealer activities, and insurance underwriting, not permitted for BHCs.

Table 1 shows how the activities of the largest BHCs have changed in the past 16 years. In 1997, the average share of banking assets relative to total assets was 86 percent at the four largest BHCs and 87 percent at the 10 largest.⁹ Among the 10 largest, only one company had a share *less* than 80 percent. Today, the average share of banking assets is 77 percent for the four largest BHCs and 67 percent for the 10 largest, with only four of the 10 largest having a share *greater* than 80 percent.

Significant changes in the investment banking industry also occurred to take full advantage of the opportunities of the shadow banking industry. With the growth of bond markets and the development of MBS securities in the 1980s, investment banks moved from partnership structures to public corporate structures. The corporate structures essentially allowed the investment banks to engage in riskier activities that put the firm’s capital at risk, such as

⁸ As noted in footnote 2, Section 20 of the Glass-Steagall Act allowed banks to affiliate with firms that were not “engaged principally” in securities underwriting and dealing as determined by the Federal Reserve Board of Governors. For many years, the administrative limit for not being “principally engaged” was that underwriting and dealing accounted for 5 percent or less of a subsidiary’s gross revenue. As banking firms became larger, underwriting and dealing became cost effective even with the 5 percent revenue limit. Over time, banking organizations began petitioning for larger limits, which the Federal Reserve agreed to based on assessments of the risks and benefits to the economy, with the limit eventually rising to 25 percent in 1997.

⁹ Banking assets are the total assets of a BHC’s bank subsidiaries.

proprietary trading, leveraged lending, and hedge fund sponsorship, that the partners were much less willing to do when their own money was at risk. The risks were exacerbated by relying on debt financing, i.e., leverage, much of which was short-term repos. In fact, it became much easier to use debt after 2004 when the SEC allowed broker-dealers to use their internal risk management models to compute the haircuts for calculating their net capital.¹⁰

Implications for financial structure, stability, and risk

Changes in financial structure and stability

The sharp line between commercial and investment banks is significantly blurred as each has engaged in shadow banking activities. The larger banking organizations engage in activities that were traditionally limited to investment banks, which exposes them to investment bank risks. Traditional banks that take in deposits and make and hold loans to maturity have to manage credit and interest rate risk. As FHCs have expanded activities to earning fees from trading and ABS underwriting, their risk exposures expanded to include market and counterparty risks from trading and the risk from having to roll over uninsured wholesale money market funding risks.

Similarly, the larger investment banks now engage in activities that were traditionally limited to commercial banks, which exposes them to commercial bank risks. By switching from partnerships to public corporate structures, taking on leverage, and making direct investments and loans that are held on the balance sheet, investment banks expanded their risk exposures beyond market risk to credit and funding risk.

¹⁰ Prior to the 2004 SEC ruling, the SEC determined the haircuts used to calculate the leverage ratios of broker-dealers. The 2004 ruling allowed the broker-dealers to use their internal risk management models to compute these haircuts. The ruling followed a similar change to the Basel I Accord from 1996, under which commercial banks could compute their capital requirements for trading positions using their own models.

With the largest financial companies – both banking and investment banking organizations – being the key players in shadow banking activities, both types of organizations play a special role in the economy that once was limited to commercial banks. Through shadow banking activities, both types of organizations ultimately provide the same credit intermediation function of traditional banks – lending long term using short-term funds available upon demand.

The expansion of activities by commercial and investment banking organizations has led to a less stable financial system because it is dependent on wholesale, money market funding without an explicit safety net of insurance and access to central bank lender-of-last-resort facilities. Essentially, these firms have become highly exposed to risks that previously had been eliminated by deposit insurance in retail banking. Just like banks were subject to depositor runs that created liquidity crises before deposit insurance was available, virtually every step of the shadow banking process is dependent on uninsured investments in MMMFs and other MMI funds with fixed NAVs of \$1. Investors in these money market funds have full access to their money as long as the underlying NAV is \$1 or more, so once concerns arise about the quality of the underlying assets, i.e., that the underlying NAV will drop below \$1, investors have an incentive to withdraw their funds before others. A loss in funding at any step of the process will cause the system to break down just like a loss in funding at a traditional commercial bank.

It is important to note that this exposure to wholesale funding affects both the insured bank and broker-dealer subsidiaries of FHCs. As already noted, broker-dealers use repos and ABCP to fund ABS held as part of their proprietary trading business, as inventory for filling customer trades, and for creating CDOs. Although bank subsidiaries are still protected from insured depositor runs, they have become more dependent on repo funding from MMMFs and other investors.

The exposure of bank subsidiaries was even greater leading up to and during the financial crisis because they often provided credit lines on the ABCP that funded ABS held by affiliated holding company subsidiaries, such as off-balance-sheet conduits and SIVs. ABCP generally needs a credit line or guarantee to get the AAA rating needed to make it an eligible investment for MMMFs. So if MMMFs decide not to roll over their ABCP investments in a SIV and the value of the underlying ABS is below par, the bank providing the guarantee or credit line would be exposed to the loss. Moreover, even if banks did not provide full guarantees, they generally provided full support when affiliates ran into problems to protect their reputations.

The risk-based capital requirements made matters even worse because the risk weights were much higher for holding loans or ABS on balance sheet than for guaranteeing the ABCP funding of an off-balance-sheet entity. So even though the risks to a bank from guaranteeing or holding an asset were the same, they could lower their capital requirement by moving assets off-balance sheet.¹¹ This particular form of regulatory arbitrage, however, has largely disappeared because of accounting and regulatory changes that have been implemented since the crisis.

New activities make it more difficult to manage and monitor risk

Overall, the largest banking companies conduct a variety of traditional and non-traditional banking activities, many of which have increased the complexity of their operations and portfolios. The potential problem is not that the new activities are risky – all financial activities are inherently risky, even traditional banking activities. These companies may even benefit from additional activities, for example, if they increase the diversification of their assets

¹¹Acharya, Schnabl, and Suarez provide evidence consistent with regulatory arbitrage being a reason for the use of ABCP programs by banks. They also document changes in regulatory rules that enabled banks to perform this type of regulatory arbitrage. In July 2004, the OCC, Federal Reserve, FDIC, and OTS exempted assets in ABCP programs from the calculation of risk-weighted assets. As a result, assets moved from banks' balance sheets to ABCP programs did not have to be considered when calculating risk-weighted assets for capital requirements. Moreover, under the Basel I and Basel II Accords, assets placed in ABCP programs carried lower capital charges than the same assets carried on balance sheets.

and revenue streams. However, it is more likely that these benefits are outweighed by the significant complications the activities pose for management, the market, and regulators to assess, monitor, and contain risk taking that is ultimately borne by the public safety net and endangers financial stability. Specifically, as explained below, combining banking and nonbanking activities makes it more difficult for management to manage risk, for the market to monitor and effectively discipline banking firms, and for regulatory authorities to supervise and regulate the firms and price deposit insurance.

Risk management complexity. Complexity makes risk management much more difficult.¹² Risk management is particularly difficult when a banking organization has many different operational divisions and activities. Examples include understanding all of the different business lines and their interactions, having appropriate management information systems, and appropriately allocating and pricing capital across activities. Such difficulties and shortcomings in risk management practices and effectiveness at several U.S. and foreign global banking organizations leading up to and during the recent financial crisis are highlighted in two reports by the Senior Supervisors Group (2008, 2009). More recently, examples of difficulties in managing risk at the largest banking organizations include the London whale incident, Libor rigging, money laundering, misrepresentation of mortgages and other collateral in mortgage- and asset-backed securities, and shoddy foreclosure practices.

The risk management of a complex institution can also vary with the background of its senior leadership. For example, trading is risky in the short term, so it attracts people predisposed to taking risks. In contrast, lenders tend to have a longer term perspective. As a

¹² All aspects of managing a large, complex financial company is difficult, but given the context of this paper, the focus is on risk management.

result, an organization's risk culture and appetite is likely to be lower if its senior leadership has a commercial banking background rather than a trading background.

To the extent that a bank's senior management has difficulty understanding and managing its risks, it is even more difficult for supervisors to scrutinize and monitor a banking organization's risks.

Reduced transparency reduces market discipline. Banking organizations with a variety of nontraditional activities tend to be less transparent than others, which makes it difficult for the market to discipline their risk taking. Relative to nonfinancial companies, it is difficult for investors to evaluate the condition of traditional banks and their riskiness because their balance sheet assets and activities are opaque and easily changed.¹³ Traditional banking is opaque because banks have more information than investors about the quality and risk of their loans. Banking firms that engage in nontraditional activities, such as trading, hedge funds, private equity, and market making are even less transparent because the success of these strategies depends on the confidentiality of their positions and speed at which their exposures can be changed. Given the lack of transparency, regulators must play a larger role relative to the market in monitoring and disciplining banking firms, but as discussed below, regulators also are at a disadvantage when dealing with firms that are engaging in nontraditional activities.

Some activities make bank supervision more difficult. The goal of prudential supervision is to control excessive risk taking by banks so that they are safe and sound and do not endanger the safety net. Supervision includes reviewing a bank's operations and risk management policies; monitoring its financial condition, lending, operations, risk management, and other practices; and enforcing regulatory rules.

¹³ Morgan provides evidence on the increased opacity of banks from combining lending and trading activities.

Because of the periodic nature of bank supervision, supervisors get only a snapshot of bank processes, risk exposures, and capital positions at a given time. For the largest, complex banking organizations, the process is even less informative. Although supervisory staff work on site at these companies and are continuously monitoring the organization and its operations, they still have only limited information that is based on internally generated management reports. Targeted examinations that take a deeper look at various operations provide only snapshots of very limited aspects of a firm's overall business. Transaction testing of individual loans – which involves looking at the documentation of a credit file, making an independent judgment of the loan's quality, and comparing that to the bank's assessment – is the core of a community bank exam, but for the largest banks it generally occurs only for the largest syndicated loans. Thus, the ability to accurately assess the safety of a bank's processes, its risk exposures, and its capital positions is much more limited for the largest banking firms than more traditional banks.

Another difficulty is that many of the nontraditional activities that the large, complex banking organizations engage in are very risky in the short term, which can quickly change a bank's risk profile. For example, trading and market-making are high frequency activities that result in thousands of daily transactions. As a result, even with continuous monitoring, trading activities can be very risky and lead to large losses. Again, the London whale incident is an example of how quickly losses can arise.

Continuous supervision at the largest banking organizations clearly provides a better understanding of their risks than the traditional approach of periodic exams. In addition, U.S. supervisory authorities have increased their oversight and improved their processes since the crisis. For example, the largest firms are now subject to annual supervisory capital stress tests, and supervisory staff review the results and compare them across all the largest firms in making

their final assessments. Nevertheless, understanding and monitoring the risks still can be difficult, especially when management itself has difficulties in understanding and monitoring risk. Thus, while bank supervision is not meant to prevent risk taking, and is subject to errors regardless of a bank's activities, effective supervision of complex organizations that engage in many nontraditional banking activities is even more difficult.

Regulation complexity. Banking firms with a variety of activities require much more complex regulations, which can be difficult for management, the market, and regulators to monitor and understand. The history of the Basel capital requirements provides a good example of the difficulty in effectively regulating complex financial companies. The increased variety and complexity of banking firm activities required much more complex capital standards, which the financial crisis showed were not very effective in adequately aligning capital levels with risks.

One problem is that the various capital requirements under Basel are essentially relative prices, and they are set either administratively through regulation or using the banking firms' own internal models. Administratively setting risk weights generally will misprice risks. In addition, allowing the firms to set risk weights with their own risk models can systematically under price risk. News articles (Braithwaite, Vaughan) cite several examples of U.S. and foreign banking companies that plan on "managing" risk weights or are engaging in "risk-weighted asset optimization" to lower their risk-weighted assets and increase their risk-based capital ratios.

The Basel requirements also created opportunities for regulatory arbitrage that was a major contributor to the risk taking of the large, complex banking companies and the financial crisis. For example, the capital charge for an MBS based on a pool of subprime loans was lower

than that for a portfolio of mortgages held on the balance sheet. Capital charges were also lower for an MBS held in off-balance-sheet conduits than on the balance sheet.

Recent empirical studies support the view that the complexity of Basel regulations make them less reliable. For example, studies have shown that the variability in estimated probabilities of default and risk weights across banks for a given hypothetical portfolio are too large to be explained by reasonable diversity in risk models (Haldane, Basel Committee (2013a,b)). Mariathasan and Merrouche found that the average risk weights declined for 115 OECD banks after their Basel II internal models were approved, presumably as the result of manipulating risk weights. A 2012 survey of 130 investors found that less than 15 percent viewed risk weights as trustworthy, while more than 60 percent said their confidence in risk weights has declined (Barclays Equity Research). Thus, it should not be surprising that leading up to the financial crisis the regulatory capital requirements did not adequately align banking firm capital levels with their risk.

Deposit insurance pricing. Complexity of activities makes it difficult to price deposit insurance. Deposit insurance would not lead to excessive risk taking if the premiums were priced appropriately to reflect a bank's risk. However, pricing deposit premiums correctly is difficult for the same reasons that it is difficult to determine capital requirements.

Resolution complexity. To the extent it is possible, resolving large, complex banking organizations is much more difficult and costly. Even with the FDIC's new authority under the Dodd-Frank Act to liquidate a failed complex banking organization and the potential use of a single point of entry (SPOE) resolutions strategy that is under consideration, doing so in a quick and orderly manner is likely to be difficult.¹⁴

¹⁴ The single point of entry resolution strategy is described in Federal Deposit Insurance Corporation and the Bank of England. There is a broad spectrum of views on whether the SPOE strategy would be able to resolve a large,

The Lehman Brothers failure in 2008 is a good example of the difficulty in resolving a complex company. The number of transactions and complexity of interconnections – internally among affiliates, externally, and globally – made it very difficult to determine the company’s value and settle international jurisdictional issues quickly, let alone quickly enough to find a buyer and have it reopened the following Monday morning. Moreover, Lehman Brothers was the smallest of the largest U.S. banking and securities firms, and relatively simple compared to the larger firms. Some of these BHCs have a thousand or more majority-owned subsidiaries, several of which could be as large and complex as Lehman Brothers. It would be much harder to wind down or find enough buyers to transfer the critical operations necessary for an orderly resolution.

Theoretical and empirical research on combining banking and trading activities

The rationale for allowing banking organizations to engage in broader activities is they (1) provide new sources of income so firms can respond to the increased competition that they have faced over the past 30 years and (2) have the benefit of reducing risk by diversifying assets and revenue streams. However, as we have argued, it also allows the firms to take greater risks that can offset any diversification benefits. Recent theoretical and empirical research supports the view that the net effect of allowing banking firms to trade increases risk taking.

Theory. Boot and Ratnovski show how allowing banks to trade can be distortive and inefficient. Specifically, a bank may trade too much and in too risky a fashion relative to what is *ex ante* optimal for its shareholders, and that financial innovation and the deepening of financial markets provides banks greater opportunities to shift from traditional activities to trading. Boot argues that complexity and the more intertwined nature of banks and financial markets expose

complex banking organizations in an orderly manner. Many of these views were discussed at the “2013 Resolution Conference: Planning for the Orderly Resolution of a Global Systemically Important Bank (G-SIB)” sponsored by the Federal Reserve Bank of Richmond on October 18, 2013.

banks and the financial system to greater risk because they induce opportunistic decision making and herding behavior. Simsek shows that differences in beliefs among traders naturally lead to speculation, and that financial innovation and new assets increase portfolio risk by providing traders opportunities to make new bets and by amplifying their bets on existing assets. He also shows that a profit seeking market maker endogenously introduces speculative assets that increase average portfolio risks. Similarly, Kero shows that financial innovation increases bank appetite for risky investments, and that the banking system becomes less stable because the portfolio risk of each bank increases. Hu argues that a bank's activities may be too complex to disclose given existing disclosure tools and methodologies, and that it may lead to bank management truly not understanding the bank's situation.

Empirical studies. DeYoung and Torna show that the probability of distressed failures of U.S. banks declined with pure fee-based nontraditional activities such as securities brokerage and insurance sales, but increased with asset-based nontraditional "stakeholder" activities such as venture capital, investment banking, proprietary trading, and asset securitization. Moreover, banks that engaged in risky nontraditional activities also tended to take greater risk in their traditional lines of business. Köhler shows that German banks with a retail-oriented business model become significantly more stable if they increase their share of non-interest income, but investment-oriented banks become significantly less stable. Surprisingly, he finds that while trading income is significantly more volatile than fee and commission income, trading income has no significant effect on bank stability and that the increase in instability comes from fee and commission income. Using a sample of international banks, Brandao-Marques, Correa, and Saprizay find that higher expected government support is associated with more risk taking, but

that restricting the ability of banks to engage in securities, insurance, real estate, and ownership of non-financial firms reduces the magnitude of the risk-taking.

Summary

The financial system has become less stable over the past 30 years as banking organizations have expanded into complicated nontraditional activities, while investment banking firms have expanded into bank-like activities. The root of this decline in stability is that these large, complex financial companies are the result of combining the already risky business of funding long-term, illiquid assets with liabilities available upon demand with even riskier activities. As just discussed, both theoretical and empirical research suggest that the growth of nontraditional activities within a banking organization increases its overall risk. The problem worsened significantly after the crisis as the concentration of the industry increased even further. The result is a banking industry that has become dominated by a handful of companies that combined are half as large as annual U.S. economic output, and the failure of any of them could cause financial instability. Finally, these companies are so large, complex, and interconnected, that they are viewed as systemically important and receive an implicit government guarantee on their debt and sometimes on their equity. This expectation that the government will rescue a firm and bear any resulting losses creates an even greater *ex ante* incentive to take excessive risk, thereby further increasing systemic risk (the too-big-to-fail problem).

Proposal to Reduce Costs and Risks to the Safety Net and Financial System

This proposal to reduce costs and risks to the safety net and financial system has two parts. The first part proposes to restrict banking organization activities to the core activities of making loans and taking deposits and to other activities that do not significantly impede management, the market, and regulators in assessing, monitoring, and controlling risk. However,

prohibiting banking firms from engaging in activities that do not meet these criteria and that threaten financial stability would provide limited benefits if those activities migrate to shadow banks. The second part proposes changes to the shadow banking system by making recommendations to reform money market funds and the repo market.

Restricting activities of banking organizations

The financial activities of commercial, investment, and shadow banks can be categorized in the following six groups (Richardson, Smith, and Walter):

- Commercial banking – deposit taking and lending to individuals and businesses.
- Investment banking – underwriting securities (stocks and bonds) and providing advisory services.
- Asset and wealth management services – managing assets for individuals and institutions.
- Dealing and market making – securities, repos, over-the-counter (OTC) derivatives.
- Brokerage services – retail, professional, and institutional investors, and hedge funds (prime brokerage).
- Proprietary trading – trading for own account and owning hedge and private equity funds.

Using the criterion for permissible activities stated above, banking organizations would be able to conduct the following activities: commercial banking, investment banking, and asset and wealth management services. Investment banking and asset and wealth management services are mostly fee-based services that do not put much of a firm's capital at risk. In addition, asset and wealth management services are similar to the trust services that always have been allowed for banks. Essentially, banking organizations would be allowed to engage in new credit intermediation and managing investments, but restricted from activities that simply trade existing assets and financial claims.

In contrast, the other three categories of activities – dealing and market making, brokerage, and proprietary trading – have little in common with core banking services and create risks that are difficult to assess, monitor, and control. Banking organizations would not be allowed to do any trading, either proprietary or for customers, or make markets because it requires the ability to do trading.¹⁵ In addition, allowing customer but not proprietary trading would be difficult to enforce because the securities inventory used to facilitate customer trading cannot be easily distinguished from proprietary assets. Prime brokerage services not only require the ability to conduct trading activities, but also allow companies to finance their activities with “free balances,” which can be highly unstable funds.¹⁶

Other potential restrictions include limits on bank investments. Historically, bank investments were restricted to loans and investments in investment-grade securities. As demonstrated in the financial crisis, the complexity of many asset-backed securities made it very difficult to determine their credit quality. As a result, consideration should be given to limiting investments in ABS to “first-level” securities, in which the collateral is the original loan to a borrower, and restricting investments in “complicated” securities, such as multilayer structured securities (e.g., CDOs) that are difficult to value, and to determine and monitor credit quality.

Off-balance-sheet holdings and exposures should be supervised and regulated as if they were on-balance-sheet because, as was also demonstrated in the crisis, they ultimately put a bank’s capital at risk.

The recommended activity restrictions would make banking firms more transparent and would enable better risk management, market discipline, supervision, regulation, and resolution. Specifically, the proposed activity restrictions will improve the risk management of banking

¹⁵ Banking organizations would be allowed to purchase and sell derivatives to hedge their assets and liabilities.

¹⁶ Hedge funds hold cash balances with their prime brokers to finance and facilitate transactions. “Free balances” is the cash a hedge fund client has a right to demand on short notice.

organizations by focusing their activities solely on the traditional banking business with exposure only to risks inherent in these activities.

The underlying factors that make commercial banking successful are inherently different from those that make securities firms successful. Banking is based on a long-term customer relationship where the interests of the bank and customer are the same. Both the bank and loan customers benefit if borrowers do well and are able to pay off their loans. In contrast, trading is an adversarial zero-sum game – the trader’s gains are the customer’s losses. Thus, restricting these activities removes a conflict of interest between a bank and its counterparty customers, which could produce a more stable, less risky company.

The inherent riskiness of securities trading, dealing, and market-making attracts, and in fact requires, people who are predisposed to taking short-term risks rather than lenders with a long-term perspective. The combination of securities with commercial banking activities in a single organization provides opportunities for the senior management and boards of directors to be increasingly influenced by individuals with a short-term perspective. As a result, the increased propensity of these corporate leaders to take risk leads to more of a short-term-returns culture throughout the organization.

Prohibiting the activities mentioned above would allow capital regulation to be simplified and improved. Capital regulation would be simpler and more effective because there would be less need for complicated risk-based requirements if the balance sheet is largely limited to loans and investment-grade securities. For example, capital regulation could be structured as a relatively high, simple leverage ratio combined with supervision.¹⁷ Moreover, regulatory

¹⁷ Admati, DeMarzo, Hellwig, and Pfleiderer provide an excellent discussion of the reasons for substantially increasing bank capital requirements. Hellwig provides arguments for abandoning risk-sensitive capital requirements.

arbitrage between balance-sheet and off-balance-sheet activities and between banking and trading books is difficult to prevent with regulation.

Critics of restricting banking firm activities argue it would reduce the economies of scale and scope that are critical for the largest banking firms to be successful in global markets and that large corporations want one-stop shopping for their financial services. These arguments, however, are not persuasive.

First, whether there are economies of scale is not relevant because our proposal is not about size per se – it is about the activities that increase complexity and therefore the scope of the activities covered by the safety net and subsidized. However, whether there are economies of scope is relevant, and there is little evidence suggesting they are significant and substantial. Moreover, there is evidence they are detrimental when commercial banking firms move into investment banking (Boot; Gambacorta and van Rixtel).¹⁸ Richardson, Smith, and Walter argue there is evidence that multiple functions of large, complex banking organizations actually increase systemic risk and anecdotal evidence that if activities are restricted as suggested here, a more competitive nonbank financial industry would emerge and thrive.

Second, large corporations do not necessarily want complete one-stop shopping because they would be too dependent on that single organization. For those that do want one-stop shopping, they would still be able to do so for commercial and traditional investment banking services, although they would have to go to securities dealers to purchase swaps and other derivatives for hedging purposes.

Finally, even if there are economies of scope, it does not necessarily mean that banking organizations should be allowed to continue to conduct all of their current activities. Whether

¹⁸ Gambacorta and van Rixtel provide an extensive list of empirical studies on economies of scope, including summaries of results. Richardson, Smith, and Walter also provide a survey of empirical studies on economies of scope.

they should depends on comparing the marginal benefits from the reduced risks and improved efficiencies of operation to the social costs associated with financial crises. Given the large costs of the 2007-9 crisis and the continued weakness of the economic recovery five years after the crisis began, the efficiencies and cost benefits of greater scope would need to be extremely large.

Critics of restricting activities also question how we would go about divesting the prohibited activities. The divestitures that were required by the Glass-Steagall Act and the breakup of AT&T in the 1980s suggest that divestitures can be conducted in an orderly manner in a relatively short period of time.

Critics of restricting activities also are concerned that it would cause two major problems for U.S. banking firms because they would face a competitive disadvantage relative to universal banks, mostly from Europe, that are allowed to conduct the full range of activities. One problem is it would drive U.S. banking organizations to move to other countries. However, it seems highly improbable that any other country would be willing or able to expand its safety net to new large and complex banking organizations. Second, the competitive disadvantage of U.S. banking firms would lower their franchise values, which would provide an incentive to take even greater risks to raise lost revenues and maintain ROEs. However, the virtue of restricting activities is that it is easier for the supervisors and the market to detect, prevent, and if necessary take appropriate actions to restrict excessive risk taking.

Reforming the shadow banking system

Restricting the activities of banking organizations alone, however, does not completely address the stability of the financial system. In fact, it could worsen the risk of financial instability by pushing even more activities from the regulated banking sector to large,

interconnected securities firms, which would expand the sector that was an integral part of the financial crisis.

As previously discussed, the source of this instability is the use of short-term funding for longer-term investment in the shadow banking market, i.e., the maturity and liquidity transformation conducted by a lightly regulated/unregulated sector of the financial system. We believe this source of systemic risk can be significantly reduced by making two changes to the money market.

The first recommendation addresses potential disruptions coming from money market funding of shadow banks – money market mutual funds and other investment funds that are allowed to maintain a fixed \$1 NAV should be required to have floating net asset values. This is actually one of the alternatives proposed by the Securities and Exchange Commission in a recent proposal on MMMF reform (Securities and Exchange Commission). The primary MMIs today are MMMF shares and repos. Individuals, state and local governments and agencies, institutional investors, and nonfinancial companies are the primary holders of MMMF and other MMI funds with a fixed \$1 NAV, which in turn are major investors in repos along with other financial companies.

Some have suggested that MMMFs should be backed by government guarantees. We see no reason why the safety net should be extended and the taxpayer put at risk when other solutions are feasible. In addition, providing government guarantees would require prudential supervision to prevent excessive risk taking, but it would not be effective because of the ability of funds to rapidly shift their risk profiles.

The runs during the crisis on MMMFs occurred because of concerns about the quality of their investments and because of the promise to maintain a \$1 NAV. MMMF investment rules

have been strengthened by increasing the minimum average quality and decreasing the maximum average maturity of their investments.¹⁹ However, because of the difficulty in calibrating these requirements, it is not clear that the vulnerability of MMMFs to runs in a systemic event would be significantly reduced as long as the fixed \$1 NAV is maintained. We believe reliance on this source of short-term funding and the threat of disruptive runs would be greatly reduced by eliminating the fixed \$1 NAV and requiring MMMFs to have floating NAVs.

Critics of eliminating a \$1 NAV for MMMFs argue that this limits cash management options for large corporations. However, MMMFs were first introduced to evade interest rate ceilings on deposits, and the only remaining Regulation Q deposit rate ceiling – the prohibition of paying interest on business transactions deposits – was eliminated by the Dodd-Frank Act. Some may be concerned that their deposits will be largely uninsured, but they are uninsured when invested in MMMFs. In addition, European MMMFs historically have mostly used floating NAVs. Although the percentage of fixed NAV European MMMFs has increased in recent years, the majority still have floating NAVs.

The second recommendation addresses potential disruptions stemming from the repo financing of shadow banks – the bankruptcy law for repurchase agreement collateral should be rolled back to the pre-2005 rules. By making this change, investors in repos collateralized by mortgage-related assets would no longer be exempt from the automatic stay in bankruptcy when a repo borrower defaults on its repurchase obligation.

One reason for the runs on repos during the crisis was because of the prevalence of repo borrowers using subprime mortgage-related assets as collateral. Essentially, these borrowers funded long-term assets of relatively low quality with very short-term liabilities. The price

¹⁹ Some of the new rules for MMMFs are: 30 percent of assets must be liquid within one week, no more than 3 percent of assets can be invested in second-tier securities, the maximum weighted-average maturity of a fund's portfolio is 60 days, and MMMFs have to report their holdings every month.

volatility of subprime MBS rose sharply when subprime defaults started reducing MBS income flows. As a result, haircuts on subprime repos rose sharply or the repos were not rolled over.

The eligibility of mortgage-related assets as collateral exempt from the automatic stay in bankruptcy in case of default by the borrower is relatively recent. The exemption from the automatic stay allows the lender to liquidate the collateral upon default as opposed to having to wait for the bankruptcy court to determine payouts to secured creditors.

Prior to 2005, collateral in repo transactions eligible for the automatic stay exemption was limited to U.S. government and agency securities, bank certificates of deposits, and bankers' acceptances. The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 expanded the definition of repurchase agreements to include mortgage loans, mortgage-related securities, and interest from mortgage loans and mortgage-related securities. This meant that repos collateralized by MBS, CMOs, CMBS, and CDOs backed by mortgage-related assets became exempt from the automatic stay.

We believe the problem of runs by repo lenders would be significantly reduced by rolling back the bankruptcy law for repurchase agreement collateral to the pre-2005 rules. The problem with the current bankruptcy law for repos is it provides special treatment – that is, it essentially subsidizes – short-term funding with mortgage-related collateral relative to other longer-term repo collateral or securities-based lending. As with the safety net for banks, the subsidy leads to the overuse of short-term repo funding, and therefore the overproduction of risky shadow banking activities.

Overall, these two changes to the rules for money market funds and repo would increase the stability of the shadow banking system because term lending would be less dependent on “demandable” wholesale funding and more reliant on term funding. Fixed NAVs, like the just-

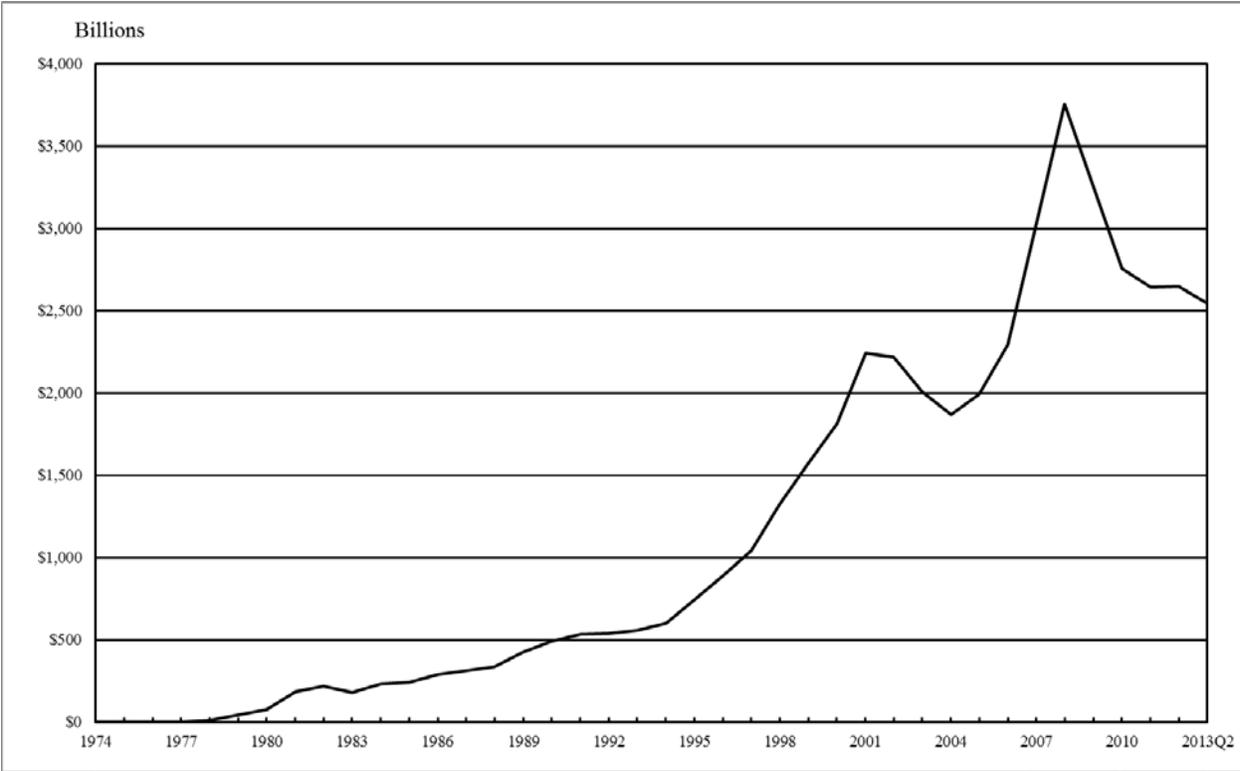
noted problem with current repo bankruptcy law, provide special treatment and therefore subsidize short-term funding. These subsidies lead to an overreliance on short-term funding and excessive risk in shadow banking activities. With the recommended changes, shadow banks would rely less on short-term wholesale funding and more on term funding, which would continue to be provided by institutional investors such as mutual funds, pension funds, and life insurance companies. While this might increase the cost of funds and, therefore, the cost of mortgages and other consumer loans, it would be less risky and more reflective of the true costs.

References

- Acharya, Viral, Philipp Schnabl, and Gustavo Suarez. 2011. "Securitization Without Risk Transfer," working paper (Social Science Research Network), August.
- Admati, Anat R., Peter M. DeMarzo, Martin F. Hellwig, and Paul Pfleiderer. 2011. "Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is *Not* Expensive," Rock Center for Corporate Governance at Stanford University Working Paper No. 86, Stanford Graduate School of Business Research Paper No. 2065, March.
- Barclays Equity Research, 2012, "Bye Bye Basel? Making Basel More Relevant," May 23.
- Basel Committee on Banking Supervision, Regulatory Consistency Assessment Programme (RCAP), 2013a "Analysis of Risk Weighted Assets for Market Risk," BCBS 240, January (rev February).
- _____ 2013b "Analysis of Risk-Weighted Assets for Credit Risk in the Banking Book," BCBS 256, July.
- Boot, Arnoud W.A., (2011), "Banking at the Cross Roads: How to deal with Marketability and Complexity?," Amsterdam Center for Law & Economics Working Paper No. 2011-07, March 31.
- Boot, Arnoud W.A. and Lev Ratnovski, 2013, "Banking and Trading," April 30.
- Braithwaite, Tom. 2011. "Banks Turn to Financial Alchemy in Search for Capital," *Financial Times*, October 24.
- Brandao-Marques, Luis, Ricardo Correa, and Horacio Saprizay, 2013, "International Evidence on Government Support and Risk Taking in the Banking Sector," Board of Governors of the Federal Reserve System International Finance Discussion Papers, No. 1086, August.
- DeYoung, Robert and Gokhan Torna, 2013, "Nontraditional Banking Activities and Bank Failures During the Financial Crisis," *Journal of Financial Intermediation*, 22: 397-421
- Federal Deposit Insurance Corporation and the Bank of England, 2012, "Resolving Globally Active, Systemically Important, Financial Institutions," December 10.
- Gambacorta, Leonardo and Adrian van Rixtel, 2013, "Structural Bank Regulation Initiatives: Approaches and Implications," Bank for International Settlements, BIS Working Paper No. 412, April.
- Gilbert, R. Alton, 1986, "Requiem for Regulation Q: What It Did and Why It Passed Away," *Federal Reserve Bank of St. Louis Review*, February.
- Haldane, Andrew, 2013, "Constraining Discretion in Bank Regulation," Federal Reserve Bank of Atlanta Conference on "Maintaining Financial Stability: Holding a Tiger by the Tail(s)," April 9.
- Hellwig, Martin, 2010, "Capital Regulation after the Crisis: Business as Usual?" Max Planck Institute for Research on Collective Goods, reprint 2010/31.
- Hu, Henry T. C., 2012, "Too Complex to Depict? Innovation, 'Pure Information,' and the SEC Disclosure Paradigm," *Texas Law Review*, Vol. 90, No. 7, June.

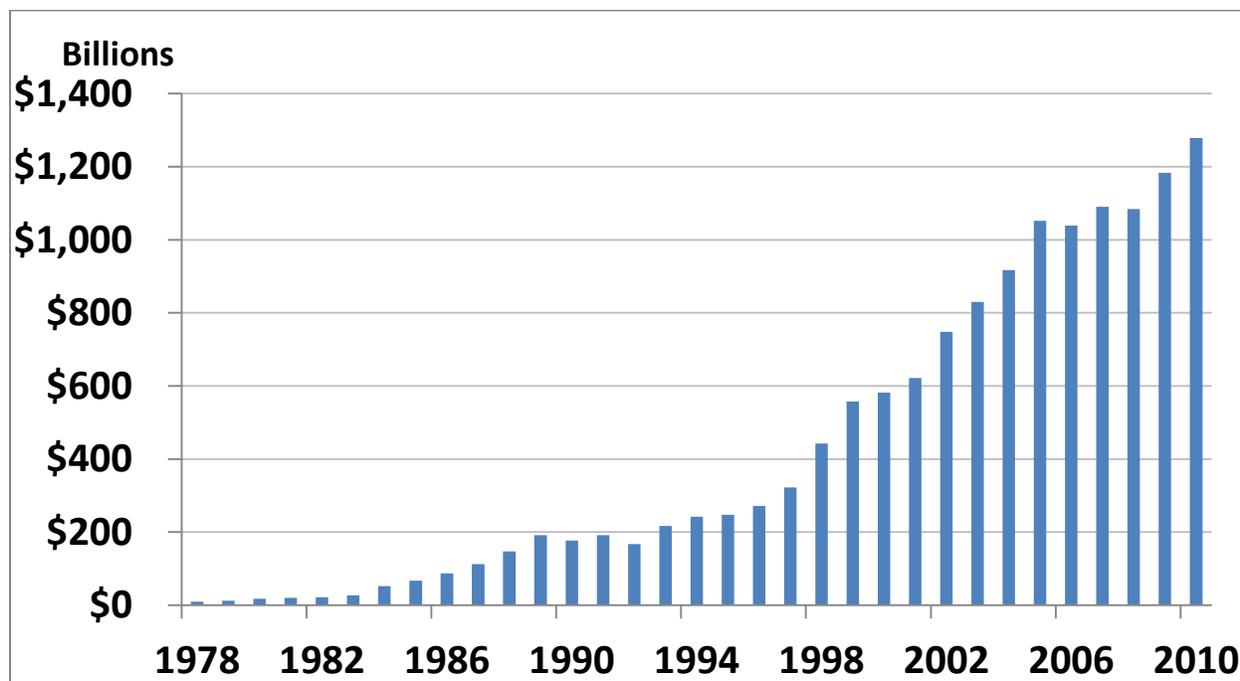
- Kero, Afroditi, 2013, "Banks' Risk Taking, Financial Innovation and Macroeconomic Risk," *The Quarterly Review of Economics and Finance*, 53, p. 112-24.
- Köhler, Matthias, 2013, "Does Non-interest Income Make Banks More Risky? Retail- versus Investment-oriented Banks, Deutsche Bundesbank Discussion Paper, No. 17/2013, June.
- Mariathasan, Mike and Quarda Merrouche, 2013, "The Manipulation of Basel Risk-Weights," CEPR Discussion Paper No. 9494, May.
- Morgan, Donald, 2002, "Rating Banks: Risk and Uncertainty in an Opaque Industry," *American Economic Review*, September.
- Pozsar, Zoltan, Tobias Adrian, Adam Ashcraft, and Hayley Boesky, 2010, "Shadow Banking," Federal Reserve Bank of New York, Staff Report no. 458, July.
- Richardson, Matthew, Roy Smith, and Ingo Walter, 2010, "Large Banks and the Volcker Rule," *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance*, edited by Viral V. Acharya, Thomas F. Cooley, Matthew Richardson, Ingo Walter, New York University Stern School of Business, John Wiley & Sons Inc., Chapter 7, pp. 181-212.
- Securities and Exchange Commission, 2013, "Money Market Fund Reform; Amendments to Form PF," SEC File No. S7-03-13, 78 FR 36833, June 5.
- Senior Supervisors Group. 2008. "Observations on Risk Management Practices during the Recent Market Turbulence," March.
- _____ 2009. "Risk Management Lessons from the Global Banking Crisis of 2008," October.
- Simsek, Alp, 2013, "Speculation and Risk Sharing with New Financial Assets," *Quarterly Journal of Economics*, Advance Access published March 26.
- Vaughan, Liam. 2011. "Financial Alchemy Foils Capital Rules as Banks Redefine Risk," Bloomberg, November 9.

Chart 1
Money Market Mutual Fund Assets



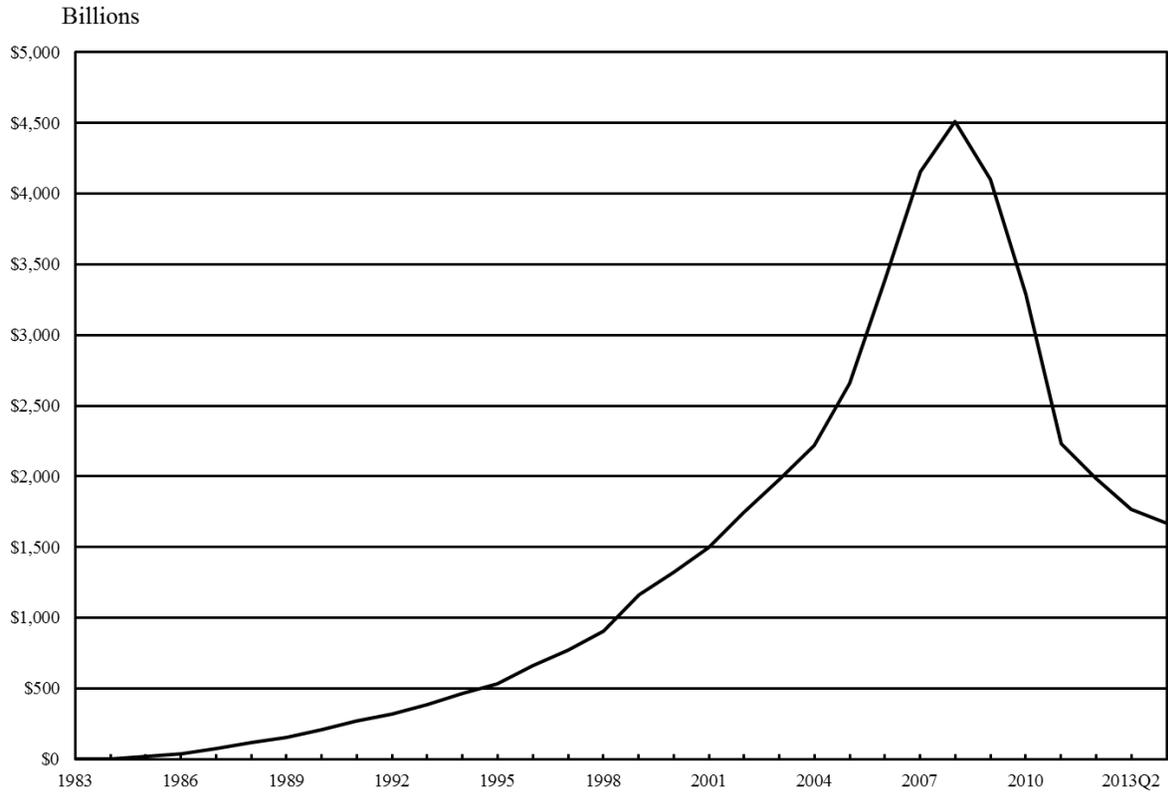
Source: Board of Governors of the Federal Reserve System, Flow of Funds Accounts of the United States, Release Z.1, Table L121, Sept. 25, 2013

Chart 2
High-Yield Bonds Outstanding



Source: Edward I. Altman, “Default, Recovery Rates Defy Forecasts in High-Yield, Distressed Debt Markets,” October 2006, and “Defaults and Returns in the High-Yield Bond and Distressed Debt Market,” published yearly February 2007-11

Chart 3
Private Label Asset-Backed Securities Outstanding



Source: Board of Governors of the Federal Reserve System, Flow of Funds Accounts of the United States, Release Z.1, Table L125, Sept. 25, 2013

Table 1
Expansion Into Non-Traditional Activities

	1997 (Dec.)			2013 (June)	
	Total Assets (billions)	Banking Assets* (Share of Total)		Total Assets (billions)	Banking Assets* (Share of Total)
The Chase Manhattan Corp.	\$366	90%	JPMorgan Chase & Co.	\$2,439	78%
Citicorp	\$311	87%	Bank of America Corp.	\$2,126	73%
Nationsbank Corp.	\$265	86%	Citigroup Inc.	\$1,884	70%
J.P. Morgan & Co. Inc.	\$262	82%	Wells Fargo & Co.	\$1,441	91%
Top 4 Total	\$1,203	86%	Top 4 Total	\$7,890	77%
Top 10 Total	\$2,088	87%	Top 10 Total	\$10,971	67%

*Banking assets are the total assets of a BHC's bank subsidiaries.

Note: Data for 1997 are as of December 31; data for 2013 are as of June 30.

Source: Board of Governors of the Federal Reserve System