

Deregulating Wall Street

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I. Introduction

When a large part of the financial sector is funded with fragile, short-term debt and is hit by a common shock to its long-term assets, there can be en masse failures of financial firms and disruption of intermediation to households and firms. This occurred in the fall and winter of 2008–2009, following the collapse (or near collapse) of many of the largest financial institutions. Over the next six months, the economy and financial markets worldwide tumbled.

In the aftermath of this disaster, governments and regulators cast about for ways to prevent—or render less likely—its recurrence. The existing regulatory framework was wholly unsuited to deal with *systemic risk*: the widespread failure of financial institutions and freezing up of capital markets that impair financial intermediation. In the United States, this recognition led to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010.

Faculty at the NYU Stern School of Business and the NYU School of Law provide a detailed analysis of the strengths and weaknesses of Dodd-Frank in *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance* (2011). Drawing on this book, in an earlier piece in *Annual Reviews of Financial Economics*, Acharya & Richardson (2012) offer an economic assessment of Dodd-Frank in terms of the likely efficacy of the proposed financial sector regulation, with some emphasis on its unintended consequences.

Given the passage of time, and with the change in power in Washington, DC, the NYU faculty reinvestigate Dodd-Frank and for illustrative purposes compare it to legislation, the CHOICE Act, passed by the House of Representatives. The CHOICE Act represents one possible approach to repealing parts of Dodd-Frank and streamlining regulation. NYU's book, *Regulating Wall Street: CHOICE Act vs. Dodd-Frank* (2017), provides a topic-by-topic analysis of Dodd-Frank and the CHOICE Act's two approaches to regulation. It also points to key issues that are addressed by neither Act. Not unlike the aforementioned earlier *Annual Reviews of Financial Economics* piece, this paper represents a summary of our main findings.

Systemic risk arises when there is a breakdown in aggregate financial intermediation, which in turn results from aggregate capital shortfalls in the financial system. When investors or depositors question the extent to which a class of financial institutions or the financial system as a whole can absorb losses, access to short-term funding and liquidity dries up, preventing even solvent institutions from taking over the financial intermediation activities of failed firms.

It follows therefore that the systemic risk of individual firms relates to how these firms contribute to this aggregate capital shortfall.¹ A financial firm might rationally have high leverage or engage in risk-taking activities that are optimal on an individual basis but, aggregated with all other financial firms, lead to either too much leverage or to greater risk emanating from the financial sector. This negative externality suggests the need for financial regulation.² With respect to such regulation, the regulator can pull on one or more of three levers: capital (i.e., equity funding) requirements; liquidity requirements; and regulation of scope (such as restrictions on activities or asset holdings).

The breadth of financial regulation in Dodd-Frank applies to all three of these levers; and, arguably, the CHOICE Act can be viewed as a call to remove (or at least dial back) one of these levers: regulation of scope. In our view, the CHOICE Act correctly views stronger capital requirements as a substitute for other forms of regulation.³ *Ceteris paribus*, higher bank capital provides a buffer to a bank's risk exposures, thus reducing the likelihood of its failing, and, when applied broadly across the financial sector, a lower probability of an aggregate capital shortfall. As Schnabl (2017) points out, banks with sufficient capital require less supervision and regulation of scope because the bank shareholders have better incentives. That is, they are on the hook for more of the bank's initial losses. In other words, the greater is bank capital, the smaller

¹ See Acharya, Pedersen, Philippon, & Richardson (2017) for both a theoretical and empirical analysis of measuring systemic risk in this way.

² Note that this issue exists even without the presence of moral hazard in financial firms. This is because these firms have no incentive to take into account the effect that their actions have on a systemic crisis. The existence of government guarantees – deposit insurance, too-big-too-fail, and government sponsored enterprises (like Fannie Mae and Freddie Mac), among others – however, tends to amplify moral hazard issues, albeit with the potential for better management of systemic risk (e.g., Diamond & Dybvig (1983), Chan, Greenbaum, & Thakor (1992), Cooper & Ross (2002), and Allen, Carletti, Goldstein, & Leonello (2015)).

³ Nevertheless, we are fairly critical of many features of the CHOICE Act's approach to systemic risk management, a number of which are discussed later in the paper. For the largest, most complex, and most interconnected institutions, we emphasize the need for strict scrutiny to ensure that capital is adequate and that resolution is feasible with limited spillover effects.

are the benefits of other forms of financial regulation in reducing systemic risk. This is a key point that was missed or downplayed by Dodd-Frank. Of course, these higher capital requirements need to be judged against the costs of capital regulation.

This paper is organized as follows: In the first part, we provide a brief assessment of Dodd-Frank. As an exercise, we compare key features of Dodd-Frank to those of the CHOICE Act, not because of the likelihood that the CHOICE Act becomes law, but instead as an alternative way of thinking about financial regulation. In the second part of the paper, we trade-off higher capital requirements against regulation of scope by focusing in particular on the Volcker Rule.⁴ Indeed, a considerable portion of this paper is devoted to the proposition that regulation of scope is likely an inferior way to manage systemic risk.

II. Dodd-Frank Assessment

The Dodd-Frank Act is an all-encompassing piece of financial regulation, spanning 845 pages, 16 titles, and requiring hundreds of regulatory rule-makings across 11 agencies (with still some rules yet to be proposed or implemented). The financial crisis of 2007-2009 exposed many holes in the financial system's architecture, and many experts reasonably argue that the financial system in the United States and abroad was in need of massive changes. But the Dodd-Frank Act led to a buildup of regulations that do not achieve the key goal—of reducing systemic risk—in the most efficient way. It also overlooks some sources of systemic risk, while focusing much attention on issues that have little to do with making the financial system resilient.

How did Dodd-Frank aim to address systemic risk?. It called for: higher capital and liquidity requirements for banks; the establishment of the Financial Stability Oversight Council (FSOC) to focus regulatory attention on monitoring and containing systemic risk, including the designation of selected banks *and* nonbanks as *systemically important financial intermediaries* (SIFIs); the introduction of stress tests and resolutions plans for SIFIs; the creation of a resolution authority for failing SIFIs, among numerous other regulations.

⁴ The Volcker Rule acquired this particular name because former Federal Reserve Chairman Paul Volcker was an early and enthusiastic supporter of this specific regulatory provision.

On one level, Dodd-Frank has been successful. The NYU Stern Volatility Lab produces systemic risk rankings of financial firms and sectors worldwide (see <https://vlab.stern.nyu.edu/en/welcome/risk/>). The evidence clearly points not only to much lower systemic risk in the U.S. financial system today relative to the crisis, but also relative to other regions in the world, especially the large countries (and their financial systems) in Europe and Asia. And it can be argued that this improvement in safety has been associated with (rather than prevented) the relatively good business performance of U.S. banks compared with others.

On the negative side, for all its good intentions, Dodd-Frank arguably does not fully address either the emergence or full-blown onset of systemic risk, implying a need for further reform. Moreover, Dodd-Frank's approach to regulation is more burdensome than necessary for containing systemic risk. Dodd-Frank imposes a range of new and complex rules on the regulation of banks and financial products that probably do not reduce systemic risk. Along with the costs of compliance, these rules tend to reduce competition and restrict innovation. Some of these new rules impact "Main Street" banks by drawing them too far into the regulatory net. In effect, Dodd-Frank threw the proverbial kitchen sink at the financial system. In trying to address problem areas, Dodd-Frank offers multiple regulations, with accumulating costs matched against the same benefit.

To this point, at a recent conference at the NYU Stern School of Business, Nobel Laureate financial economist Robert Merton described the many financial innovations that arose during the 1980s in response to severe macroeconomic problems and volatility in the United States in the 1970s (see also Litan (2010)). For example, the period around the 1970s were characterized by the collapse of the Bretton Woods currency system, two serious recessions from 1973-75 and 1980-81, and particularly high inflation rates -- to name just a few macroeconomic shocks. During this period, financial innovations include: a widening variety of mutual funds; the development of the high-yield bond market; the creation of asset-backed securities, especially those tied to mortgages; the creation of currency and interest-rate swaps; and the emergence of options and futures derivative markets. As Merton points out, many of these innovations came about as direct solutions to real-world problems that faced households and businesses during these years and allowed greater access to financing, hedging currency or interest rate risk, and

the widening of investment markets so that households could make better consumption and savings decisions.

Given the severe economic and financial conditions in 2007-2009, Merton then asks provocatively: Where are all of the financial innovations over the last decade? The concern is that the increased range and complexity of financial regulation has helped diminish the financial sector's incentive and ability to provide solutions.⁵ With this in mind, the next section compares and contrasts the use of capital requirements versus regulation of scope (and in particular the Volcker Rule) in addressing systemic risk.

III. Capital Requirements vs Regulation of Scope

a. Capital Requirements⁶

The benefits of higher capital are relatively straightforward: the safety and soundness of banks and other financial institutions. The often cited cost to higher capital requirements is that bank equity may be costly due to informational frictions, which can lead to less lending by the banking system. If firms and households cannot access other financing, then the real economy may not take on potentially valuable investments (e.g., Calomiris & Kahn (1991) and Diamond & Rajan (2000)). There is no uniform view, however, on the magnitude of the costs of equity capital (e.g., consider the different views by Admati & Hellwig (2013) versus Calomiris (2012)). Nevertheless, there does seem to be some empirical consensus that banks with more equity capital do better in a crisis and lend more (e.g., Peek & Rosengren (2000), Cornett, Ors, & Tehranian (2002), Ivashina & Scharfstein (2010), Schnabl (2012), and Paravisini, Rappoport, Schnabl, & Wolfenzon (2015)). Evidence also suggests that better-capitalized banks lend to healthier firms, while poorly capitalized firms have incentive to evergreen loans to “low-quality firms” (see Caballero, Hoshi & Kashyap (2008) and Acharya, Eisert, Eufinger & Hirsch (2017)).

⁵ One area of innovation, in particular, is FinTech, which has seen substantial growth the last decade. Of course, it is not clear that FinTech arose in response to problems that occurred during the financial crisis. Moreover, at least in the U.S., FinTech has emerged outside the traditional finance sector and thus away from financial regulation.

⁶ Many of the ideas that are presented in this section derive from Schnabl (2017) and Koijen & Richardson (2017).

For the rest of this section, we put aside this cost-benefit analysis and instead focus on the optimal type of capital regulation.

As a way to frame Dodd-Frank in terms of its approach to financial regulation, consider the recent legislation that passed the U.S. House of Representatives: the Financial CHOICE Act. As an alternative to Dodd-Frank, the CHOICE Act provides an “off-ramp” provision that trades off higher capital requirements against an exemption from much of the Dodd-Frank regulation. As described above, if the goal is to reduce systemic risk, higher capital requirements can substitute for other regulatory interventions. If one lever (e.g., bank capital requirement) is pulled, then the other lever (e.g., regulation of scope) can be relaxed.

Nevertheless, capital regulation is only useful to the extent that the regulator can accurately measure the financial firm’s leverage⁷ and risk. The CHOICE Act allows *all* banks to access the “off-ramp”; but surely a better solution would be making it available to 99% (but not all) of the banks. In particular, up to a few dozen large, complex, and highly interconnected intermediaries should still be subject to the key systemic risk regulations of Dodd-Frank. This is necessary because it is difficult to get an accurate measurement of these banks’ risk and leverage.

To understand this point, note that leverage ratios tend to be computed using book rather than market values. Relative to market values, book values offer stale information about banks when banks enter into stressful periods. In fact, going into the financial crisis of 2007-2009, banks appeared healthy based on book values, while market values gave very different answers. (See, for example, Acharya, Engle, & Pierret (2014) who examine this issue in the context of the European sovereign debt crisis. See also Kapur (2015) for the difference between Lehman’s book and market value in the runup to its September 2008 bankruptcy.) Moreover, there is a question of how well leverage can truly be measured, given artificial reductions through off-balance-sheet financing (see Acharya, Schnabl, & Suarez (2009)), the use of various accounting loopholes (e.g., see Valukas (2010) and Huizinga & Laeven (2009)), or even manipulation of internal risk models (e.g., Plosser & Santos (2015) and Begley, Purnanandam & Zhang (2016)). For complex financial institutions, enhanced supervision seems necessary.

⁷ Accurately measuring the bank’s leverage involves accurate measurements of both the banks’ aggregate asset size (the denominator) *and* its capital (the numerator).

One way simultaneously to capture the banking system's risk and leverage is through stress tests. Indeed, one can make the argument that the only true systemic risk assessment tool included in Dodd-Frank is the annual stress test that is applied to SIFIs. The stress test measures whether an intermediary will fall short of capital during a stress event. Stress tests, by measuring potential capital shortages across all SIFIs during a common shock, capture the key element of systemic risk measurement.⁸ In contrast, the CHOICE Act would exclude banks from these tests if they choose the "off-ramp" and, in any event, require them to be run less often. It also would eliminate the designation of nonbanks as SIFIs. Since stress tests can reveal what happens to the system when all systemic intermediaries are simultaneously under duress, reducing their frequency or eliminating them altogether would make the financial system substantially less safe.

A key feature of Dodd-Frank (and, for that matter, the Basel III accords) is that, in conjunction with the heightened leverage ratio, there should also be a risk-weighted capital requirement to control excess risk-taking. In contrast, the CHOICE Act requires a simple 10% leverage ratio. The authors of the CHOICE Act argue that risk-weights failed miserably during the crisis. While there is some truth to this point, a leverage ratio of course also imposes risk weights—albeit equal across all assets. This provides the incentive for a bank to load up on the riskiest of assets because they are treated the same as the safest assets; in essence, corporate bonds near default would be treated similarly to AAA-rated corporate bonds. Using both a simple leverage ratio and risk-weighted capital ratios alleviates this problem.

Another reason that the "off-ramp" from financial regulation is a poor idea for SIFIs is their impact on the financial system when the SIFI fails. Whether the "Orderly Liquidation Authority" (OLA) of Dodd-Frank or the CHOICE Act's alternative bankruptcy procedure is employed, it is crucial that these SIFIs have supplied credible resolution plans ("Living Wills") to the regulatory bodies. This way, the failure of the SIFI can be better managed, reducing the likelihood of any bailout and helping to bring back market discipline. Authority for federal funding also would be needed under either alternative -- for example, to provide debtor-in possession finance in a bankruptcy procedure. Finally, because most systemic intermediaries operate internationally, an

⁸ Acharya, Pedersen, Richardson, & Philippon (2017) find that the first bank stress tests that were performed post Dodd-Frank produce similar findings to systemic risk measures that were based on publicly available market data, providing some external validity to the government-run tests.

effective resolution mechanism requires coordination between domestic and foreign authorities, a feature of OLA that is lacking in the CHOICE Act's bankruptcy procedure..

As a final comment, note that higher capital requirements on banks will encourage regulatory circumvention by incentivizing nonbanks to perform *de facto* banking activities. By eliminating the designation of non-bank SIFIs, the CHOICE Act worsens the tendency (already evident in Dodd-Frank) to regulate by legal form, rather than by economic function. For example, had the CHOICE Act been in place prior to the last crisis, the very large investment banks such as Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch, and Morgan Stanley would not have been subject to enhanced prudential supervision. Given their large-scale financial intermediation activities and very high leverage, it is not clear why these non-banks should be regulated less rigorously than the large, complex, and interconnected banks. Rather, they (and other systemic nonbanks) should be subject to minimum capital requirements, stress tests, and Living Wills, and should be put through a credible resolution process if failing.

To better understand this point, note that the authors of the CHOICE Act describe a potential inconsistency or flaw with Dodd-Frank's FSOC designation of SIFIs: They argue that, while the Dodd-Frank Act attempts to constrain leverage and risk-taking of SIFIs through enhanced prudential regulation, it creates moral hazard through a "too-big-to-fail" mantra that in turn encourages leverage and risk-taking.

But the authors of the CHOICE Act have the causality the wrong way. It is precisely because these SIFIs will be treated differently in a financial crisis that these firms must be subject to enhanced regulation. The fundamental challenge is one of *time consistency*: It is not feasible for a current policymaker to commit credibly a future policymaker to let a systemic intermediary fail if doing so will result in a massive economic collapse. The incentive for the future policymaker to renege will be too great. The same applies to Dodd-Frank's category of financial market utilities (FMUs)—the payment, clearance and settlement firms that form the backbone of the financial system—that are widely expected to be bailed out in a future crisis. If market participants recognize that these firms are "special," then excess leverage and risk-taking may take place unless these firms are constrained in the broader financial system.

To see the impact of such systemic moral hazard, consider the example of Fannie Mae and Freddie Mac, which were poorly regulated on a prudential basis and yet were repeatedly described as not having access to a government backstop. Investors and creditors rightly did not believe these claims, and the actions and subsequent failures of these two firms greatly contributed to the debacle of mortgage finance.

b. Regulation of Scope: The Case of the Volcker Rule⁹

As described above, a key objective of bank regulation since the financial crisis of 2007-2009 has been to reduce systemic risk. Banks have been required to hold more risk-weighted capital, to operate within new restrictions on leverage and liquidity, and to pass newly introduced stress tests. Dodd-Frank also, however, introduced a number of other bank regulations, several of which are best understood as a *regulation of scope*. These include: the Volcker Rule (section 619 of the Dodd-Frank Act); the creation of the Bureau of Consumer Finance Protection (CFPB) (Title 10) to deal with misleading products and more generally predatory lending practices; new underwriting standards especially in residential mortgages (Title 14); and rules for trading and the clearing of most derivatives transactions (Title 7), among others. In this section, we focus on one of the more prominent regulations: the Volcker Rule.

While regulations of scope have a long history, arguably the most famous regulation of scope arose in response to the Great Depression. Through the stock market crash of 1929 and the banking crisis of 1933, securities affiliates of national banks were – with questionable evidence (e.g., Benston (1990)) - blamed for the troubles of the time. This view led to the separation of commercial and investment banking by the Glass-Steagall Act of 1933.¹⁰ Over the next half century, as U.S. banks lost business both to domestic non-banks and to foreign universal banks, bank regulators gradually loosened the restrictions of Glass-Steagall. In 1999, when banks were for all practical purposes already back in the securities business, the U.S. government, with

⁹ Much of this section derives from Richardson & Tuckman (2017).

¹⁰ While deposit insurance was introduced at the same time, the separation of commercial and investment banking was not proposed to allay fears of moral hazard arising from deposit insurance. Deposit insurance was added as a political necessity late in the life of a bill that had been years in the making. In fact, until just before its passage, both Senator Carter Glass and President Roosevelt opposed deposit insurance.

overwhelming bipartisan support, repealed Glass-Steagall through the passage of the Gramm-Leach-Bliley Act.

The Volcker Rule, passed in the wake of the financial crisis of 2007-2009, is the latest iteration of a regulation of scope. Rather than addressing risk directly (or even seeking to measure it), the Volcker Rule restricts banks from particular holdings and activities. In essence, the rule prohibits banks from proprietary trading in most securities and derivatives and severely limits banks' connections to hedge funds and private equity funds.

Some exceptions aside, the Volcker Rule's "backstop prohibitions" outlaw transactions that result in any of the following: a material conflict of interest between a bank and its customers, clients, or counterparties; material exposure to high-risk assets or trading strategies; a threat to the safety and soundness of the banking entity; or a threat to the financial stability of the United States.

Following a public comment period, the Financial Stability Oversight Council (FSOC) offered recommendations to implementing the Volcker Rule in January 2011. Then, between late 2011 and early 2012, five regulators with jurisdiction proposed rules for public comment: the Federal Reserve Board (FRB), the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), the Commodity Futures Trading Commission (CFTC), and the Securities and Exchange Commission (SEC). The proposed rules were long and complex, and attracted more than 18,000 comment letters. The five agencies released final rules jointly in December 2013.

To understand why the rules are long and complex, consider the ban on proprietary trading (see, e.g., Davis Polk (2013)). A short list of explicitly exempted securities (e.g., U.S. Treasuries) and explicitly exempted transactions (e.g., securities lending) are recognized as outside the realm of the Volcker Rule. All other trades are essentially assumed to be proprietary and forbidden, *unless* they can be justified as part of one of the broad permitted activities (e.g., market-making) and can be shown not to violate a backstop prohibition (e.g., conflicts of interest or exposure to high-risk assets and trading strategies).

Justifying that a trade belongs to a permitted category, however, is difficult and subjective. With respect to market-making, for example, some of the criteria are: "routinely stands ready to

purchase and sell”; “willing and available to quote, purchase, and sell... in commercially reasonable amounts... throughout market cycles... appropriate for the liquidity, maturity, and depth of the market”; “not exceeding on an ongoing basis, the reasonably expected near-term demands of clients, customers, and counterparties” (Davis Polk (2013), p. 6). The backstop prohibitions are similarly hard to interpret. Trades may not “result in the bank’s interest being materially adverse to the interests of its client, customer, or counterparty.” Similarly, high-risk assets and trading strategies “significantly increase the likelihood... of a substantial loss... or pose a threat to the financial stability of the United States” (Davis Polk (2013), p. 16).

Precisely because it is so difficult to demonstrate that a trade is permitted, the rules require that banks establish compliance programs to justify *all* of their covered trades, at the level of a trading desk, in a consistent way. The rules are quite detailed about the attributes of these compliance programs, including the specification of seven quantitative metrics to be used in the process. (See, for example, Davis Polk 92013), pp. 17-23.) The complexities of compliance are further multiplied by the fact that five regulatory agencies have jurisdiction over the implementation of the rules.

As described earlier, there are two reasons to believe that banks, without constraints, will take on too much risk relative to what is optimal for their creditors, customers, and the broader financial system: First, the government provides an underpriced safety net in the form of deposit insurance, access to Federal Reserve liquidity facilities and, for the most systemic banks, an implicit too-big-to-fail guarantee. The long-standing policy of undercharging banks for this safety net may increase the availability of credit, but it also incentivizes banks to take on too much risk. Second, even without an underpriced safety net, individual banks do not bear the costs to others of a general financial crisis that may be caused or exacerbated by their own failure. In other words, these banks do not internalize systemic risk costs that arise from excessive risk-taking or leverage. This, too, implies that banks may take on too much risk (e.g., Acharya, Pedersen, Philippon, & Richardson (2017)).

While the best solution might be to charge banks appropriately for their reliance on the safety net and for their contribution to systemic spillovers, even today implementation of this approach

remains limited.¹¹ Instead, in the run-up to the 2007-2009 crisis, risk-taking was regulated directly through bank examinations and risk-weighted capital requirements. In response to the crisis, risk-weighted capital requirements, which had proved far too low, were increased (Cecchetti and Schoenholtz (2017)). At the same time, however, there was a recognition that this sort of capital requirement could not stand on its own (Acharya & Richardson (2012)).

In particular, a firm with adequate capital might fail in a general crisis because its funding was too susceptible to runs: over-reliant on repo, wholesale funding, etc. The 2007 failure of Northern Rock, a British bank, is a useful example.¹² Despite the high quality of its mortgage portfolio, it could not roll over its short-term funding nor securitize its assets through the general crisis. In any case, the international regulatory response was to introduce liquidity ratios that limit the extent of such funding.

In addition, regulators might easily set some risk weights too low, as had been the case for mortgage-backed securities prior to and during the crisis and, in Europe, for bonds of “peripheral” governments, such as Greece. Even worse, the effect of such errors will always be magnified by banks’ loading up on precisely those assets with mistakenly low risk weights. Alternatively, banks manage to circumvent the risk weights through regulatory arbitrage. In the crisis of 2007-2009, this took forms ranging from setting up and guaranteeing off-balance-sheet vehicles to reducing underwriting standards on mortgages with specified risk weights.

Regulators responded to concerns about risk weights by introducing: (i) a leverage ratio -- a minimum level of capital relative to total -- rather than risk-weighted assets (i.e., in this way, leverage cannot get too high, even for assets with erroneously assigned risk weights); and (ii) stress tests that would detect risks that are not captured by other regulatory and internal risk models.¹³

¹¹ The leading example of such a systemic risk fee is Dodd-Frank Act’s imposition on SIFIs of a capital surcharge. See Acharya, Pedersen, Philippon, & Richardson (2013) for a discussion of how to charge for systemic risk costs.

¹² See Tuckman (2016). While Bear Stearns and Lehman Brothers are often cited as examples, it is arguable that funders ran because these firms were insolvent.

¹³ A fundamental problem remains unresolved. Capital regulation is ill-suited to deal with certain kinds of activities, such as carry trades and financial guaranty insurance. These activities generate small gains with high probability and large losses—likely systemic—with low probability. Regulators should, therefore, require banks to hold sufficient capital to cover losses against these low probability events. Unfortunately, however, this policy would

Another response was to focus on regulations of scope, arguably the most controversial one being the Volcker Rule. Many experts correctly note that neither banks' proprietary trading nor their connections with hedge funds and private equity funds played a significant role in the crisis of 2007-2009.¹⁴ The more important question, however, is whether the Volcker Rule is a useful tool for reducing the likelihood and minimizing the damage of future crises.

The difficulty of defending the Volcker Rule as a means of regulating risk-taking, however, is that Volcker Rule prohibitions are *not* closely aligned with risk. Here are some illustrations of this proposition:

- Consider three similar bank business lines that are treated differently by the Volcker Rule: making and trading corporate loans (permitted); buying and trading corporate bonds for the account of the bank (forbidden); and investing in a private equity fund that makes corporate loans (forbidden except in very small size).
- A trading strategy that buys some stocks and shorts others may well be safer than making corporate loans, but the Volcker Rule prohibits the former and permits the latter.¹⁵
- A market-maker in corporate bonds, facing interest rate risk and credit risk, may hedge both risks, one, or neither. They may even over-hedge to take on additional risk. When does permitted customer business become forbidden proprietary trading?
- A junk-bond trader at Goldman Sachs earned the bank more than \$100 million by buying junk bonds from customers from January 2016 and selling out of the position to other customers by the end of June (Market Watch (2016)). Is that customer or proprietary trading?
- Citigroup's proprietary mortgage trading group—because it traded only U.S. and GSE-backed mortgages—was in compliance with the Volcker Rule (Wall Street Journal (2014)).

Given these considerations, it is difficult to make a general case that trading and fund investment businesses are riskier than traditional banking businesses. In fact, a bank's loan portfolio is likely to do poorly in a general crisis and contribute to the capital shortfall of the financial sector as a whole.

Supporters of the Volcker Rule might counter that nonbanking businesses—from investment banking to insurance—are more correlated with market fluctuations and, therefore, increase the

require banks to hold too much capital relative to the set of overwhelmingly likely outcomes. See Kashyap, Rajan, & Stein (2008).

¹⁴ The crisis was very much related to large, complex financial institutions' manufacturing securitized products and retaining tail risk that was systemic in nature and inadequately capitalized. See Acharya, Cooley, Richardson, & Walter (2010, 2011).

¹⁵ There is a robust debate around whether traditional banking businesses—like corporate lending—are more volatile (and more illiquid) than trading activities. (See, for example, Chung, Keppo, & Yuan (2016) and Demirguc-Kunt & Huizinga (2010) compared with Stiroh (2006), Fraser, Madura, & Weigand (2002), and DeYoung & Roland (2001)).

systemic risk of banks. The empirical evidence on this point, however, is mixed.¹⁶ Alternatively, supporters of the Volcker Rule might argue that banks are given a safety net because their core businesses—taking deposits and lending to households and businesses—are systemic, highly levered, and not easily replicable outside the banking sector.¹⁷ Trading and fund investments, by contrast, which are easily accomplished outside banking, are best left to institutions that generally carry less systemic risk, such as pension funds, mutual funds, hedge funds, and sovereign wealth funds.

To analyze this “core business” argument, consider a related, though more extreme, proposal: restrict banks to making only short-term personal and corporate loans. This proposal, however, is questionable for several reasons: First, banks are really in two businesses: creating liabilities that customers want; and lending or investing funds.¹⁸ Discussions of banking often lose sight of the first business. Individuals and businesses want a relatively liquid and safe place to park their money, from super-liquid deposits to less-liquid but more remunerative certificates of deposit or commercial paper (e.g., Gorton & Pennacchi (1990)). Any profitable activity with appropriate risk characteristics on the assets side—whether making loans or proprietary trading—allows a bank to provide customers with relatively safe and liquid assets that pay interest. Second, to the extent that there are synergies across financial services, regulations of scope reduce the efficiency of the banking sector. A corporation, for example, might easily find it efficient—from an informational and operational perspective—for a single intermediary to handle its operational deposits, its bank borrowings, its private debt offerings, the management of its pension plan, its insurance policies, etc.

There are even synergies across relatively pure customer trades and relatively pure proprietary trades. In a “back book,” for example, traders try to profit through proprietary positions in particular markets. From time to time, customers of a bank who want to do large trades—but are turned away by the market-making desks—could be accommodated by the capacity that is

¹⁶ For papers that find that nonbank activities increase systemic risk, see Baele, De Jonghe, & Vennet (2007), Brunnermeier, Dong, & Palia (2012) and King, Massoud, & Song (2013). For papers that find that non-bank activities decrease or do not change systemic risk, see Akhigbe & White (2004), Boyd, Graham, & Hewitt (1993), Cornett, Ors, & Tehranian (2002), Geyfman & Yeager (2009), and Jorion (2005).

¹⁷ See Fama (1985), Diamond (1984, 1991), and Petersen & Rajan (1994) for a discussion of the unique lending services that are provided by banks.

¹⁸ Banks also provide liquidity on the asset side of their balance sheets by making loan commitments that customers can draw down when needed.

created by the back book. The empirical evidence on the synergies across financial services is mixed.¹⁹ But the universal bank has been the reality in Europe and a recurring dream of financial service companies in the United States from the early 1900s.

Another problem with tight restrictions of scope is that they may push systemic risk from the banking system elsewhere. Systemic risk would probably be reduced, for example, if a stand-alone commodities trading business moved from a bank into a hedge fund. But what if that trading business, because of its synergies with trade financing and with commodity derivatives trading and hedging, moved from a bank into a large and important nonbank financial intermediary? Systemic risk might very well increase. The failure of either the bank or nonbank, as significant intermediaries, might cause systemic disruption; but the bank might be better diversified and better regulated.

More generally, *de facto banking activities* involve transformations of liquidity, maturity, and credit that “take place without direct and explicit access to public sources of liquidity or credit backstops” (see Pozsar, Adrian, Ashcraft, & Boesky (2013)). They are typically financed by systemically important liabilities (SIL) that have no government guarantee or insurance (see Acharya & Öncü (2013)) and that (like uninsured bank deposits) are subject to a run. As examples, SILs include repurchase agreements, securities lending, and asset-backed commercial paper (ABCP).

In the logic of Acharya & Öncü (2013), *de facto* banking becomes a systemic threat when SILs are used to finance systemically important assets (SIA). SIAs are either the SILs of other highly leveraged intermediaries (fueling interconnectedness and systemic vulnerability) or high-risk assets that can become illiquid. The latter includes loans to systemic intermediaries, mortgage-backed securities (MBS)—especially when used as collateral for repo or financed through securities lending—ABCP, and the like. How substantial is *de facto* banking activity today? Updated estimates that are provided by the Federal Reserve Bank of New York show gross liabilities of *de facto* banks (including those held by other *de facto* banks) totaled \$15.6 trillion as

¹⁹ For papers that find evidence of synergies, see Cornett, Ors, & Tehranian (2002), Elsas, Hackethal, & Holzhauser (2009), Lown, Osler, Strahan, & Sufi (2000), and Yu (2003). For papers that find that diversification of financial businesses reduces value, see Delong (2001), King, Massoud, & Song (2013), Laeven & Levine (2007), and Stiroh (2004). Schmid & Walter (2009) find that synergies are evident in some combinations of businesses but not in others.

of mid-2016, compared with \$19.1 trillion for traditional banks (including chartered depositories, foreign banking offices, and bank holding companies). These numbers illustrate the potential danger of forcing synergistic intermediation businesses outside banking.

Another concern is cost. Because the Volcker Rule was passed as an amendment to the Bank Holding Company Act, rather than to securities laws, the rulemaking necessary for its implementation does not require cost-benefit analysis (e.g., Gallagher (2013) and Stein (2013)). It is certainly difficult to compare even large costs of compliance plus the costs of forgone business opportunities and financial innovation with the massive costs of a financial crisis. But cost-benefit analysis would be extremely useful to compare the efficiency of the Volcker Rule with the other tools of the regulatory regime with respect to reducing individual bank and systemic risks.

In comparisons of this sort, the Volcker Rule will almost certainly rank very poorly. First, with the need to justify all trades as proprietary or not and as prohibited investments or not, compliance costs are particularly high.²⁰ Second, Volcker Rule prohibitions simply do not correlate well with risk reductions. Risk-weighted capital requirements, leverage ratios, liquidity ratios, and stress tests, on the other hand, are all aimed directly at controlling risk.

Finally, critics also claim that the Volcker Rule has contributed to a decline in market liquidity. The argument is that dedicated market-makers and proprietary traders all provide liquidity by taking positions and bearing risks that others choose to avoid. By limiting risk-taking of this sort, the Volcker Rule reduces market liquidity (see, for example, Duffie (2012) for a detailed analysis). The empirical support for this claim, however, is mixed. First, keep in mind, that the Volcker Rule does not apply to government bond markets. Second, in the corporate bond market, for example, bid-ask spreads, volume, and issuance all indicate that liquidity is the same as it

²⁰ As just one gauge, there are estimates that, to comply with the Volcker Rule, banks spent more than 6 million hours initially and need to spend an additional 1.75 million hours annually (Piasio (2013)). As an alternative implementation, Richardson (2012) argues for a Volcker Rule to be principles-based with safe harbors as opposed to a strictly rule-based approach. The reason relates to the difficulty (and irrelevance for risk) of measuring principal trading versus market-making. Proprietary and hedge activities would be permitted within well-defined confines of the Volcker Rule. These boundaries could reasonably be related to the firm's aggregate gross and net inventories of assets. Any trading activity outside these inventory constraints would require permission by the bank's (or nonbank SIFI's) regulator.

was before the crisis or better.²¹ Moreover, there are a range of factors limiting corporate bond liquidity—most importantly, the fragmentation of issues, many of which are bought and never trade (BlackRock (2015)). However, execution of large corporate bond trades has become more expensive and riskier.²²

In any case, the Volcker Rule is only one of several factors bearing on liquidity, including; other regulatory changes at banks (i.e., increased capital requirements and the newly imposed leverage ratio); decreased risk appetites at banks; and the structural shift to high-frequency trading in U.S. Treasuries. The entire debate about bond market liquidity, however, may be off point. To the extent that banks took too much risk before the crisis, because of an underpriced safety net or systemic risk externalities, banks may very well have also provided too much liquidity. In that case, market liquidity should be appropriately lower post-crisis.

IV. Conclusion

The debate about regulations of scope is an old one. Carter Glass argued in the 1920s and 1930s that banks should have no connection with stock or corporate bond markets. In contrast, Charles Mitchell, the chairman of National City Bank, argued that credit markets were an integrated whole that did not divide sensibly into loans versus securities. Echoing Charles Mitchell in the 1930s, a recent spokesman from Goldman Sachs captured these ambiguities:

“Banks are in the business of providing businesses with the capital they need to grow. Sometimes that means offering a loan and other times making an equity investment... We ensure our investments comply with all regulations, including the Volcker Rule.” (Popper (2015).)

Taking into account the disconnect between the Volcker Rule and risk, along with its steep costs of compliance, this paper concludes that policymakers who wish to limit systemic risk should scrap the Volcker Rule in favor of other prudential tools, such as risk-weighted capital

²¹ See the survey on market liquidity after the financial crisis by Adrian, Fleming, Shachar, & Vogt (2016), and, more broadly, Mizrach (2015), Trebbi & Xiao (2015), Adrian, Fleming, Shachar, & Vogt (2015), Adrian, Fleming, Vogt, & Wojtowicz (2016) and Bessembinder, Jacobsen, Maxwell, & Venkataraman (2016).

²² See recent papers by Bao, O’Hara, & Zhou (2016), Dick-Nielsen & Rossi (2016), Blackrock (2015, 2016), BIS (2016), Committee on Capital Markets Regulation (2015), and Deutsche Bank (2016), among others, for concerns about market liquidity in the corporate bond sector.

requirements, leverage ratios, liquidity ratios, Living Wills, and stress tests. Where other regulations of scope exhibit a comparable cost-benefit shortfall, the same conclusion would apply.

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