Financial Reform: Making the System Safer and Fairer

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In the fall of 2008, the financial crisis crushed the U.S. economy and plunged the country into the Great Recession. The crisis shuttered American businesses, cost millions of Americans their jobs, and wiped out home values and household savings. The macro effects hit hardest and were the longest lasting for those least able to bear the brunt of the crisis. It was devastating to middle-income families and perhaps even more so to low- and moderate-income households, who had little financial buffer (Barr 2012a). Financial stability, never robust for these families, dropped precipitously (Barr and Schaffa 2016). Both in the United States and globally, the crisis has led to a series of fundamental reforms. (For an early analysis, see Barr 2012b). At the same time, more needs to be done to make the financial system safer, fairer, and better harnessed to the needs of the real economy. This essay first describes the origins of the financial crisis and then outlines domestic reforms. It then turns to the need for global coordination in financial reform, and analyzes steps taken thus far, while highlighting some of the key remaining challenges ahead. Finally, it introduces other articles in this volume, produced as part of a 2014 conference on financial reform organized by the University of Michigan's Center on Finance, Law and Policy, sponsored by the Russell Sage Foundation.[1]

THE ROOTS OF THE FINANCIAL CRISIS

The financial crisis was not an act of nature, or a fluke of history. Rather, the crisis was rooted in years of unconstrained excess and failures of risk management on Wall Street, and prolonged complacency in Washington and in major financial capitals around the world. That complacency was based on a misplaced ideology: that private markets would take care of risk regulation on their own. And it was based on a misunderstanding: that somehow, since the risk of bank runs had been conquered, there was no risk to "shadow banking." Market discipline, it was believed, would force firms to engage in sound risk management. Market-based financing, it was thought, would protect taxpayers, since no federally insured deposits were at risk. But both the ideology and the understanding were deeply flawed. The costs of failure—regardless of the nature of financial intermediation or the corporate structure of the financial firm—were borne

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1. I would like to acknowledge the contributions of participants in the conference "Financial Reform: Preventing the Next Crisis," at the University of Michigan Law School on October 23–24, 2014. The Russell Sage Foundation sponsored the University of Michigan's Center on Finance, Law, and Policy to host the conference. Portions of this introduction are drawn from some of my earlier articles cited in the references, including Barr 2012b and Barr 2014.

throughout society, and not fully internalized to the firms' managers, shareholders, and creditors. Indeed, government intervention to prevent even more brutal damage to the economy had the effect of helping to insulate the firms' stakeholders from full harm.

The financial sector engaged in highly leveraged, short-funded maturity transformation with too little transparency, not enough capital, and little restraint. Large firms became more interconnected. Investment banks and other financial conglomerates relied increasingly on short-term funding from money market funds, securities lenders, and securities lenders' prime brokerage business. This short-term funding was subject to runs during periods of market uncertainty, just like bank deposits before the age of deposit insurance and a lender of last resort in the form of the Federal Reserve (see, for example, Gorton and Metrick 2012). Huge amounts of risk moved outside the more regulated parts of the banking system to the unregulated markets, where it was easier to increase leverage. Legal loopholes and regulatory gaps allowed firms to evade oversight. Investment banks such as Lehman Brothers, insurance conglomerates such as AIG, and other entities performing the same market functions as banks escaped meaningful regulation because of their corporate form. Banks themselves moved activities off the balance sheet—for example, to special-purpose vehicles holding mortgage-backed securities, and outside the reach of more stringent regulation and capital rules.

Shadow banking markets were opaque and hid growing risk. Derivatives were traded in the shadows with insufficient capital to back the trades. Repo markets—short-term wholesale funding used by broker-dealers and banks—became riskier as they grew to be a larger portion of financial intermediation, and collateral shifted from treasuries to poorer-quality asset-backed securities. The lack of transparency in securitization hid the growing wedge in incentives facing different players in the system, and the system failed to require sufficient responsibility from those who made loans, or packaged them into complex instruments to be sold to investors. Synthetic products—essentially offsetting derivatives bets—multiplied risks in the securitization system and allowed the market to increase its exposure to mortgage-backed securities.

The financial sector, under the guise of innovation, piled ill-considered risk upon risk. Rapid growth in key markets hid misaligned incentives and underlying risk. Managers failed to understand new risks, or when they did, they took steps that made the system as a whole worse off. Financial institutions held increasingly inadequate capital against growing risks, and regulators failed to stop them. Managers, traders, firms, credit-rating agencies, and other gatekeepers all let short-term rewards from new financial products and rapidly growing markets blind them to the risks.

Congress and regulators weakened consumer and investor protections in the name of the free market. Households took on risk that they often did not fully understand and could ill afford. Investors bought implausibly labeled AAA securities. Mortgage fraud, securities fraud, fraudulent manipulation of key indices and currency markets—all harmed individuals and institutional investors and undermined the integrity of the market as a whole. Rising home prices helped to feed the financial system's rapid growth and to hide the declining underwriting standards for the origination and securitization of mortgage loans.

When home prices began to flatten, and then to decline, fault lines were revealed. Mortgage defaults soared and the assets based on mortgages plunged in value. The asset implosion in housing led to cascades throughout the financial system. Nonbank mortgage lenders collapsed. Investment banks could no longer borrow. Fire sales of assets, collateral calls on derivative contracts, and the tightening or closing off of repo and commercial paper markets drove firms closer to the edge. Contagion gripped the financial system, as the problems at weaker firms undermined stronger ones. Failures in the shadow banking system led to failures in more regulated parts of the banking system. Then, in the fall of 2008, credit markets froze. The overreliance on short-term financing and excessive risk taking that had produced significant profit in financial capitals in the developed economies across the world fanned a panic that nearly collapsed the global financial system.

OVERVIEW OF REFORMS

In the United States, passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank") ushered in comprehensive reform in key areas: enlarging the regulatory perimeter by creating the authority to regulate financial firms that pose a threat to financial stability, without regard to their corporate form; enacting a resolution authority to deal with the potential collapse of these major firms in the event of a crisis, without feeding a panic or putting taxpayers on the hook; attacking regulatory arbitrage, restricting risky activities, and beefing up banking supervision; requiring central clearing and exchange trading of standardized derivatives, and capital, margin and transparency throughout the market; improving investor protections; and establishing a new Consumer Financial Protection Bureau to look out for the interests of American households.

Today, major financial firms are subject to higher prudential standards, including higher capital and liquidity requirements, stress tests, and resolution planning through "living wills." By forcing firms to internalize more of the costs that they impose on the system, they will be incentivized to shrink and reduce their complexity, leverage, and interconnections. Should such a firm fail, there will be a bigger capital buffer to absorb losses. To stem a panic, the Dodd-Frank Act permits the Federal Deposit Insurance Corporation (FDIC) to resolve the largest and most interconnected financial companies without exposing the system to a sudden, disorderly failure that puts the economy at risk.

On the global level, the international community has put forward new rules on capital, so that there are bigger buffers in the system in the event of failures. Capital will be measured in a more conservative way, and capital levels are going up significantly. Systemically important firms will hold even higher levels of capital. There are new rules on liquidity and a global leverage limit. Derivatives reforms are proceeding, as are new approaches to dealing with the risks from repo and securities financing transactions.

Yet much more work remains to be done, and the financial sector did not leave the battlefield after their defeats in 2010. Far from it. The brutal fight over financial reform rages on, and there is serious risk that a collective amnesia about the causes and consequences of the financial crisis appears to be descending on global financial capitals that will further weaken the resolve for reform (See, for example, Coffee 2011, 2012).

COMPARING U.S. FINANCIAL REGULATION PRE-CRISIS AND POST-REFORM

Many readers may be skeptical regarding the efficacy of the reforms that have taken place thus far, either because they think they did not change the system enough, or because they think that they went too far. The following section takes the time to chart the path of reform so far, before turning to the difficulties and dangers on the road ahead.

First, before Dodd-Frank, if an entity was a bank, it had tougher regulations, more stringent capital requirements, and more robust supervision; but if an entity was an investment bank engaged in the same kind of maturity transformation, it had to abide by different rules (see Scott 2010). When U.S. investment banks needed to find a "consolidated holding company regulator" in order to meet European Union standards for doing business in Europe, the Securities and Exchange Commission set up a voluntary Consolidated Supervised Entity program which had little oversight. The SEC was not established as a prudential regulator, did not have clear supervisory power, and had little experience and few trained examiners. Moreover, the leverage ratio that served as a backstop for bank capital requirements was not applied to investment banks.

The Federal Reserve was too lax in supervising firms where it did have authority and it did not have any authority to set and enforce capital requirements on the major institutions that operated businesses outside of bank holding companies. That meant it had no supervision over investment banks, diversified financial institutions such as AIG, or the nonbank financial companies competing with banks in the mortgage, consumer credit, and business lending markets. The Office of Thrift Supervision viewed its role as supervising thrifts, not their holding companies (such as AIG). Banks and thrifts freely engaged in risky mortgage lending, and regulators did not step in until it was too late.

Today, Dodd-Frank has provided authority for clear, strong and consolidated supervision and regulation by the Federal Reserve of any financial firm—regardless of legal form—whose failure could pose a threat to financial stability. The largest investment banks that survived the financial crisis merged into or became bank holding companies subject to Fed oversight. AIG, GE Capital, Prudential, and MetLife have now been brought under Fed supervision through the Financial Stability Oversight Council (FSOC) designation. As a result of Dodd-Frank changes, thrift holding companies (including those with large insurance operations) are now supervised by the Fed. The Office of Thrift Supervision and the SEC's investment bank regime have been abolished. Thus, all bank and thrift holding companies, as well as systemically important nonbank firms, regardless of corporate form, are supervised by the Federal Reserve. We will have a single point of accountability for tougher and more consistent supervision of the largest and most interconnected financial firms.

Although the regulatory infrastructure is, to put it mildly, far from ideal, with too many divided responsibilities and too many opportunities for turf battles or regulatory gaps, Dodd-Frank created the FSOC, which is responsible for identifying threats to financial stability and dealing with them. The FSOC can recommend stricter regulatory action, and regulators must either implement such changes or explain publicly why they are not acting (see Gerson 2013). Already, this process has led the SEC to impose stricter regulation of money market funds than would otherwise have occurred (Barr 2015a). The FSOC has the potential to get information across the financial services marketplace through the Office of Financial Research (OFR), which Dodd-Frank established and empowered to collect data from any financial firm, and to develop and enforce standardization for data collection. The OFR has begun to use this authority by developing a "legal entity identifier" for financial transactions. The OFR is charged with independently assessing risks in the financial system, and can potentially serve as a counterweight to the Fed by providing independent assessments of whether the Fed is adequately supervising the largest firms and dealing with the critical issues in systemic risk. A strong OFR can serve as a check and balance for regulatory agencies, ensuring that they improve their own performance or risk being criticized (Ludwig 2012; Barr 2015a).

Dodd-Frank provides for more stringent prudential standards and higher capital and liquidity standards for the largest bank and nonbank firms. In addition to the heightened capital requirements applicable to all firms, the largest firms are subject to a capital surcharge, a leverage ratio, a toughened supplemental leverage ratio, a more stringent liquidity requirement, and capital required to pass stress tests.

Already, capital levels in the banking system have doubled, and banks' use of short-term nondeposit funding has plummeted. The annual stress tests are evaluating a firm's ability to withstand deep market contractions. There are enhanced rules on affiliate transactions and lending limits, and much stricter proposed limits on counterparty credit exposures. Deposit insurance premiums are going up on the very largest firms. The Volcker Rule prohibits banking entities from engaging in certain proprietary trading or running internal hedge funds, subject to a number of exceptions, and also helps to simplify the task of winding down major firms that are at risk of failure. Moreover, the Fed is using macro-prudential supervision as it increases its capacity to understand and mitigate risks to the financial system as a whole.

There is a healthy debate about breaking up or limiting the size of financial firms. Under the Dodd-Frank Act, major firms are subject to a concentration limit that generally prohibits a financial company from engaging in mergers or acquisitions that would result in the firm's liabilities—including wholesale funding and off-balance sheet exposures—exceeding 10 percent of the liabilities of financial companies as a whole. Dodd-Frank provides regulators with the authority to require financial institutions to restructure their activities to make it credible that they can be resolved if they are in danger of collapse; the resolution planning process has already forced firms to begin to simplify their organization form, develop "clean" holding companies, and place large amounts of capital and long-term debt in the holding company to assist with the resolution. The act also permits regulators to force firms to be broken up if they fail to submit a credible plan and thereafter fail to meet regulators' requirements to restructure themselves to make resolution credible. Such firms can also be broken up if they are found to pose a grave threat to financial stability. These enhanced prudential measures for major financial firms are likely to reduce risk in the financial system, constrain further concentration, and reduce "too big to fail" distortions.

Second, before Dodd-Frank, shadow banking markets grew dramatically with little oversight and in the absence of even regulatory or marketwide knowledge about the nature of the markets they were serving. For example, the OTC derivatives market—with a notional amount of $700 trillion at its peak—grew up in the shadows, with little oversight. Credit derivatives, which were supposed to diffuse risk, instead concentrated it. Synthetic securitization with embedded derivatives magnified failures in the real securitization market. Major financial firms used derivatives to increase their credit exposure to each other, rather than decrease it.

We should never again face a situation—such as AIG's $2 trillion derivatives portfolio—where the potential failure of a virtually unregulated, capital-deficient major player in the derivatives market can impose devastating risks on the entire system. Insufficient capital meant that major participants in the system could not reliably pay out on their obligations, and insufficient margin meant that counterparties on every transaction were more exposed to the risk of nonpayment. When the crisis began, regulators, financial firms, and investors had an insufficient understanding of the degree to which trouble at one firm spelled trouble for another, because of the opacity of the market. This lack of information magnified the contagion as the crisis intensified, causing a damaging wave of margin increases, deleveraging, and credit market breakdowns. Lack of transparency, insufficient supervision, and inadequate capital and margin left our financial system vulnerable to concentrations of risk, and to abuse.

Today, under Dodd-Frank, regulators are putting in place the tools comprehensively to regulate the OTC derivatives market for the first time. The act requires all standardized derivatives to be centrally cleared, which will substantially reduce the buildup of bilateral counterparty credit risk between major financial firms. Under Dodd-Frank rules, 75 percent of new derivative contracts were centrally cleared in 2015 as compared to only 15 percent in 2007 (Massad 2015). Central clearinghouses are subject to strong prudential supervision under the Dodd-Frank Act. Dodd-Frank requires standardized derivatives to be traded on exchanges or alternative swap execution facilities, which improves pre- and post-trade price transparency. Trading transparency will help to improve price competition as well as to improve safety and soundness, as market participants and regulators will have full access to current prices in the event of system disruptions. Even non-centrally-cleared OTC derivatives are to be reported to a trade repository, making the market far more transparent.

The act provides for prudential regulation, capital requirements, and business conduct rules for all swap dealers and major swap participants. It provides for robust capital and margin requirements for derivative transactions, and higher requirements for those that are not centrally cleared, providing a strong incentive to use central clearing and maintain a bigger buffer against losses. It also provides for regulatory and enforcement tools to go after manipulation, fraud, and other abuse.

At the same time as the act reforms derivatives markets, it provides a new framework for regulation of financial market utilities and critical payment, clearing, and settlement activities, including not only those in the derivatives markets but also those in the wholesale funding markets—securities financing transactions (such as repo and securities lending), commercial paper, and prime brokerage—that are critical to the shadow banking system.

In the lead-up to the financial crisis, major financial firms became increasingly funded not by traditional bank deposits, nor even longer-term funding in the commercial markets, but rather by overnight funding in the repo markets. An important part of that market, the triparty repo market, became increasingly concentrated in only two major clearing banks, which were themselves exposed to counterparty risk from securities firms borrowing intraday credit. As the triparty repo market became more concentrated, it also became riskier because counterparties came to accept not only Treasury securities as collateral, but also highly rated but opaque asset-backed securities. These securities in turn became riskier as credit rating agencies became increasingly willing to label as safe assets that were lower quality, including pools of securities backed only by poorly underwritten subprime and Alt-A mortgages. When the financial crisis hit, repo and commercial paper markets froze, and investors in money market funds ran, causing a massive contraction in credit not only for financial firms but also major firms in the real economy (that is, non-financial). This contraction was overcome only with massive interventions by the Fed, the FDIC, and the Treasury.

The Dodd-Frank Act provides the foundation fundamentally to reform the wholesale funding markets by providing strong authority for the Federal Reserve to regulate financial market utilities and critical payment, clearing, and settlement activities; to set new rules for capital, collateral, and margin requirements for repo and other securities financing, and other critical markets; and to establish uniform prudential standards throughout the financial system. While repo and other securities financing policies are still a work in progress, short-term financing reforms are already being reinforced by new capital and liquidity requirements, liability concentration limits under the act, and reforms to the assessment base for deposit insurance that encompass all liabilities. Once fully implemented, these reforms will have the combined effect of taxing short-term liabilities, which will force firms to internalize more of the costs of short-term funding. These steps have already reduced the use of short-term funding, and will provide incentives to manage their use more carefully even when interest rates normalize.

The act also fundamentally transforms regulation of another major element of the shadow banking system, securitization. The act requires deep transparency into the structure of securitizations, including information about assets and originators. Securitization sponsors must generally retain risk in their securitizations, unless the mortgages they pool meet guidelines as plain vanilla “qualified residential mortgages” so that incentives are better aligned among participants in the system. Capital rules will better account for risk in securitizations. Parallel changes in accounting rules will now bring the most common forms of securitization onto the balance sheet. Credit-rating agencies will be subject to heightened liability for failure to conduct ratings with integrity, with comprehensive oversight by the SEC, including policing of ratings shopping and conflicts of interest; ratings themselves will be more transparent and will include key information on rating methodology, compliance, qualitative and quantitative data, due diligence, and other protections.

Third, before Dodd-Frank, consumer protection regulation was fragmented over seven federal regulators, and prudential regulators often viewed consumer protection with hostility. Regulators lacked mission focus, marketwide coverage, and consolidated authority. Nonbanks could avoid federal supervision. Banks could choose the least restrictive consumer approach among several different banking agencies. Federal regulators pre-empted state consumer protections laws without adequately replacing these important safeguards. Fragmentation of rule writing, supervision and enforcement led to finger pointing in place of effective action.

Today, despite repeated congressional efforts to block its director, stymie its funding, overturn its structure and undermine its authority, the Consumer Financial Protection Bureau (CFPB) has been built into a strong organization. It has marketwide coverage and is setting new rules of the road for banks and nonbanks alike to police against abuses. It has strong supervisory authority over banks with at least $10 billion in assets and over broad parts of the nonbank markets. It is basing its work on an empirically grounded understanding of human behavior (see Barr, Mullainathan, and Shafir 2009), rather than abstract models and ideological assumptions. And it is already helping to end misleading sales pitches and hidden traps. Rather, it is making space for banks and nonbanks to compete vigorously for consumers on the basis of price and quality. It is strongly independent—with secure funding, policy, regulatory and enforcement authority—and strongly accountable, with regular reporting to the Congress and the public (see Barr 2015a).

The CFPB has already made significant progress in making financial services markets work better. For example, implementation of rules under the Credit Card Act of 2009 is saving consumers nearly $12 billion annually in reduced credit card fees, without increasing interest rates or undermining access (Agarwal et al. 2015). Reforms of the mortgage market are helping to eliminate some of the worst abuses such as steering low-income and minority borrowers to high-cost loans; mortgage disclosures are now both simpler and more informative; and mortgage servicing is being strongly policed. The CFPB is tackling a broad range of other critical issues, including auto, student, and payday loans; credit reporting and debt collection; and protection of military service members and their families. CFPB enforcement actions had resulted in more than $11 billion in relief to 25 million consumers as of 2015 (Cordray 2015). Key upcoming decisions include whether and how the CFPB should regulate or prohibit mandatory predispute arbitration agreements (Barr 2015b).

Fourth, before Dodd-Frank, the government did not have the authority to unwind large, highly leveraged, and substantially interconnected financial firms that failed—such as Bear Stearns, Lehman Brothers, and AIG—without disrupting the broader financial system. Firms benefitted from the perception that they were "too-big-to-fail," which reduced market discipline and encouraged excessive risk taking by firms. It provided an artificial incentive for large firms to grow and tipped the playing field in favor of the largest firms. When the financial crisis hit, the inability to resolve these firms left the government with the untenable choice between taxpayer-funded bailouts, as with AIG, or the disorderly financial collapse of a major firm, as with Lehman Brothers, the failure of which contributed to widespread financial cascades and contagion that threatened to bring down the financial system, and harmed the real economy.

Today, major bank and nonbank financial firms are subject to heightened prudential standards, including higher capital and liquidity requirements, stress tests, and "living wills." The living wills process is forcing firms to simplify their organizational forms, develop "clean" holding companies that can be resolved without disrupting their subsidiaries' functions. Firms are being required to hold sufficient capital and long-term debt at the holding company level to permit resolution. Global derivatives contracts are being rewritten to permit resolution without triggering cross-defaults and the seizure of collateral. Firms will be forced by these standards to internalize more of the costs that they might impose on the system, which will give them incentives to shrink and reduce their complexity, leverage, and interconnections. Should such a firm fail, there will be a bigger capital buffer to absorb losses. These measures will, over time, help to reduce risks in and among the largest financial institutions. In the event that such an institution fails, these actions will minimize the risk that a firm's failure will pose a danger to the stability of the financial system. But that is not enough. The government also needs the tools to respond in a crisis, to prevent financial collapse, and to protect taxpayers.

That is why Dodd-Frank permits the FDIC to resolve the largest and most interconnected financial companies, consistent with the approach long taken for bank failures. Under the Orderly Liquidation Authority, the FDIC now has the capacity to deal with the potential failure of a major financial conglomerate in an orderly fashion that limits collateral damage to the system. Shareholders and other providers of regulatory capital and long-term convertible debt to the firm will be forced to absorb any losses.

The FDIC has made significant progress in developing a strategy under the Dodd-Frank authorities, known as the "single point of entry," which would permit the holding company of a financial conglomerate to be resolved without necessarily disrupting the ability of its operating subsidiaries—bank, broker-dealer, or other parts—to function. Firms are required to hold sufficient long-term debt at the holding-company level to facilitate an orderly winding down of the holding company while permitting operating subsidiaries of the firm to continue to operate. Management can be terminated and the compensation of culpable managers can be clawed back. Critical assets and liabilities of the firm can be transferred to a bridge institution so that the firm can be resolved without causing cascading collapses in the financial system. In the event that the firm's internal capital and long-term debt are insufficient to support restructuring and ongoing operations, liquidity can be obtained through Treasury borrowing that is automatically repaid from the sale of assets of the failed firm or, if necessary, from a preauthorized, ex post assessment on the largest financial firms—not by taxpayers. In this manner, the resolution authority allows the government to resolve the financial conglomerate without exposing the system to a sudden disorderly failure that puts the whole financial sector at risk.

We need to have deep humility, however, about the ability to predict or manage the failure of a major financial firm, and even more so about the ability to deal with the failure of multiple firms during a financial crisis. Moreover, the creation of a domestic resolution authority and the broad range of domestic reforms just discussed are not enough to deal with global financial risks.

GLOBAL REFORMS: OVERVIEW

Global reforms undertaken to date have made the financial system safer, but there remain real questions about whether the financial system is safe enough. Much of the reform agenda is still a work in progress, from capital standards to regulation of derivatives and shadow banking markets, to the mechanisms necessary to wind down cross-border firms that get into financial distress. In the wake of the financial crisis, the leading economies produced a new set of institutions and institutional relationships that were more formal and more hierarchical and were designed to improve prospects for coordination. Although significant tensions still exist within this new system—particularly concerning national variation (that is, the tailoring of global standards to individual domestic landscape), extraterritorial application of national rules, and the desire for uniform global standards—the substantive outcomes to date, while imperfect, messy, and contentious, evidence a stronger commitment to meaningful, long-lasting reforms than had been in place before the financial crisis.

There is still much more substantive work to do—on capital and liquidity, resolution, and derivatives, to name a few core areas in need of action. In fact, such an approach is essential if we are to reduce the chances of another devastating global financial crisis.

Global Capital Rules

Almost immediately in the wake of the crisis, the G-20 countries began to examine the pre-crisis weaknesses in the global bank capital rules. Basel II.5, which targeted risks from off-balance-sheet assets and market risks, was developed early in 2009 and was quickly adopted by the major economies. By the G-20 summit in Pittsburgh in September 2009, U.S. Treasury Secretary Timothy Geithner had assembled a consensus in favor of higher capital standards. By late 2010, the bank regulatory standard-setting body known as the Basel Committee promulgated its "Basel III" capital standards, significantly revising the frameworks from "Basel I" and "Basel II" that had been in place prior to the crisis. Basel IV reforms are being implemented gradually across all Basel Committee member jurisdictions with full implementation set for January 1, 2019.

Basel III requires financial institutions to hold much-higher-quality capital for trading positions, securitization, and counterparty credit exposures in derivatives and secured lending transactions than its predecessor. The new capital requirements focus on common equity, significantly limiting other forms of funding that did not act as a buffer to absorb losses in a crisis. The revised rules require banks to hold Tier 1 capital in an amount no less than 6 percent of risk-weighted assets. Basel III also introduces a new Common Equity Tier 1 requirement, under which banks must hold at least 4.5 percent of risk-weighted assets in common equity. Basel III also reduces the ability of banks to rely on riskier, less-absorbent forms of regulatory capital and bars banks from including lower-quality instruments in regulatory capital. Basel III requires all firms to hold a countercyclical "capital conservation buffer," with dividends, share buybacks, or bonuses limited if Common Equity Tier I levels are within two and a half percentage points of the minimum 4.5 percent Common Equity Tier 1 level.

Basel III for the first time also imposes a global non-risk-based supplemental leverage ratio that includes firms' off-balance-sheet commitments and exposures. The leverage ratio requires banks to hold Tier 1 capital equal to 3 percent of their total exposures and is intended to supplement Basel's risk-weighted rules. Finally, firms posing the greatest risk to the financial system are required to hold even higher levels of capital—a surcharge" for systemically important financial institutions (SIFIs). All global systemically important banks (G-SIBs) will bear this surcharge, with the most systemically risky G-SIBs required to hold more capital than those with less systemic importance.

Under Basel III, minimum capital ratios are set at a level that represents a significant increase over prior rules. There are new requirements that include the creation of a capital conservation buffer above the minimums, which if breached will restrict firms' ability to pay dividends or buy back stock. The Basel Committee has put forward a graduated, risk-based, capital surcharge for the largest, most interconnected financial firms. The global rules also include new contingent capital instruments that facilitate "bail-ins"—in which privately issued debt transforms into equity under specified circumstances—to further reinforce that firms must internalize the costs of their own failure and to facilitate the resolution of globally systemically important firms. Furthermore, Basel III is instituting explicit quantitative liquidity requirements for the first time, to ensure that financial firms are better prepared for liquidity strains.

But even as some jurisdictions rightly adopt more stringent capital rules than those required under the Basel III approach, more work is needed to strengthen the global capital framework, at least for the largest firms. Risk-based capital requirements need to be made more transparent and comparable on a cross-border and institution-by-institution basis, and better substitutes need to be developed for both the discredited credit-rating agencies and the internal models of the regulated institutions. Additionally, both the global leverage ratio and the SIFI surcharge are simply too low for either to serve as an effective buffer against asset implosions or liquidity runs or to weigh effectively against any subsidies to "too big to fail" institutions. Moreover, as the countercyclical capital buffer is left to national economic circumstances and discretion, national regulators should commit to economic triggers that would increase capital requirements and use other methods to reduce leverage under specified circumstances. Furthermore, stress testing, which has served a critical role in bolstering capital oversight in the United States, is in need of further refinement, more transparency, and greater predictability.

Derivatives and Wholesale Funding Markets

G-20 leaders at the 2009 Pittsburgh summit also committed themselves to significant reforms in the OTC derivatives market. They agreed that standardized OTC derivatives should be moved onto exchange-trading platforms and should be centrally cleared. The leaders also decided that all OTC derivative trades—including those that remained purely bilateral—should be reported to trade repositories. In 2011, the G-20 further agreed that non-cleared-derivative contracts should be subject to higher margin requirements. In key jurisdictions, the statutory regimes for central clearing, exchange-based trading, and trade reporting are now in place, with the frameworks for margin requirements lagging behind. Regulatory implementation has lagged significantly behind legislation, and persistent technical, liability, and jurisdictional problems with trade reporting and trade repositories have obstructed regulators and market participants from attaining a comprehensive informational view of global derivatives markets.

Furthermore, global rules for repo and other short-term funding markets remain nascent, with most jurisdictions only in the earliest phases of proposing rules. More regulatory attention is needed on the issue of hot money, which continues to pose significant risks to systemic stability, to address weaknesses in foreign currency markets, and to restore trust and confidence to benchmark global rates such as LIBOR (London Interbank Offered Rate). In sum, much of the plumbing of the financial system is still in need of reform (see Duffie 2013).

Structural Reform and Resolution

Globally, much work remains to be done in the area of structural reform and resolution. The United States and the United Kingdom have both embraced the need for ring fencing and stronger horizontal buffers between retail deposit banks and other, riskier, financial functions, while the European Union has not adopted its expert commission's suggestions in that regard. In the Volcker Rule, the United States has adopted the strongest version of these reforms, but significant work still remains to be done on implementation in all three jurisdictions. It is particularly important, too, that ring fencing not be viewed as a panacea; structural reform will only prove effective to the extent it is integrated with broader changes in supervision, capital, and resolution mechanisms (See Barr and Vickers 2013).

Progress on structural reform is also important because of the linkages between clearer structures for financial conglomerates and ease of resolution. "Living will" requirements, such as those adopted in the United States, can help ease the process of cross-border resolution by clarifying lines of authority and aligning business risk with organizational form, but these approaches are contingent on regulators' willingness to execute along the lines of the directives of the will when most needed (see, for example, Levitin 2011). The United States and the United Kingdom have put in place a memorandum of understanding to facilitate cross-border resolution, and the single-point-of-entry approach, under which a financial conglomerate's top-tier holding company is placed in resolution while its operating subsidiaries may continue to function, may make it possible to resolve such firms even in the absence of a formal cross-border mechanism for the resolution of highly complex firms. Only time will tell.

The United States' "single-point-of-entry" model will facilitate the resolution of the largest financial conglomerates. In 2014, Europe officially adopted its Single Resolution Mechanism, which will be administered by the European Central Bank as part of its new supervisory authority over the continent's largest banks and will be funded via contributions from eligible banks, with national assessments assimilated into a communitywide fund over a number of years. The establishment of a European resolution and funding mechanism will help break the link between a national government's fiscal position and the health of domestic financial institutions—a link that exacerbated Europe's sovereign debt crisis. The crisis found many Eurozone countries unable to support troubled banks, either because the size of the bank exceeded national GDP or because public finances proved too unstable to provide any assistance.

National implementation of more effective resolution mechanisms has also been bolstered by the work of the FSB, which in 2011 released a set of best practices it considers "necessary for an effective resolution regime." The FSB is also developing a resolvability assessment process that will be used to evaluate the feasibility and credibility of national resolution mechanisms in the event of a globally systemic firm (G-SIFI) failure. Despite these significant regulatory advances, however, the orderly resolution of systemically important, highly complex cross-border firms will not be feasible without more global cooperation and a comprehensive transnational approach. Fortunately, the G-20 has recognized the important relationship between structure and resolvability. At the 2013 summit in St. Petersburg the G-20 leadership instructed the FSB, the IMF, and the OECD (Organisation for Economic Co-operation and Development) to collaborate in assessing "cross-border consistencies and global financial stability implications [of structural reforms], taking into account country-specific circumstances."

Overall, the substantive global rules developed and implemented in the post-crisis era are far more robust than their pre-crisis counterparts and provide far fewer opportunities for regulatory arbitrage and evasion. Nonetheless, significant work remains, as does the underlying question of whether the current international financial regulatory architecture is sufficient to the task of a truly sound global financial system. Achieving more organizational simplicity and clarity in the financial sector may also require new approaches altogether. For example, the United States put in place a soft cap (10 percent of total financial liabilities) on the global liabilities of U.S. firms; once the cap is hit, these firms cannot merge with or acquire other financial institutions. A tax on the wholesale liabilities of financial firms would further reinforce safety in the system by helping to constrain the size and complexity of financial conglomerates; it would also help to offset the costs to society of potential future failures, forcing firms to internalize more of those costs. The Obama administration proposed such a tax, but it never gained traction in the United States. The IMF endorsed the idea in 2010, but it has received little attention since.

Even as the post-crisis intervention of the G-20 in the global financial architecture has resulted in a harder, more formal system with a clearer hierarchy. More political accountability, and a stronger framework for generating, implementing, and monitoring cross-border rulemaking variations across domestic regulatory regimes have proliferated, with the leading economies engaged in an ambitious transnational strategy of regulatory competition. Unlike in the pre-crisis era, however, national variation and international regulatory competition to date have not resulted in widespread races to the bottom and cross-border regulatory arbitrage. Instead, the post-crisis national regulatory strategies have largely resulted in upward deviations from an already more robust global regulatory floor—a global race to the top.

This new financial architecture means that national variation alone (defined earlier as the tailoring of global standards to individual domestic landscape) can encourage this global race to the top. It also rewards first movers on a national basis, particularly as to the extraterritorial application of domestic rules. One country can take the lead in developing more robust extraterritorial standards than those required on a global level, and by doing so can effectively push other countries into the adoption of similarly stringent rules.

For instance, many countries are requiring firms to hold even more capital than the global minimum set by Basel III. In the United States, the supplemental leverage ratio for banks and thrifts is set at 6 percent, double the Basel III–required leverage ratio, and at 5 percent at the bank–holding company level. Even Switzerland, a non-G-20 nation and a traditional "offshore" banking center, has set tougher requirements than required under Basel III standards. For larger banks, Switzerland set higher capital requirements, up to 19 percent for the two largest (UBS and Credit Suisse)—the so-called "Swiss Finish," meaning a Swiss-specific addition to global standards.

In addition to regulatory variation across jurisdictions, some countries—including, most notably, the United States—have also adopted aggressive extraterritorial strategies designed to force reform upward on a global basis. For instance, the Federal Reserve Board of Governors has finalized new rules for foreign banking organizations (FBOs) operating in the United States. Under these rules, large FBOs are required to place non-branch assets under a U.S. intermediate holding company structure subject to consolidated supervision by the Federal Reserve. In many circumstances, FBOs will also now need to meet U.S. capital and liquidity rules and prudential standards with respect to their U.S. operations, in addition to the rules they must meet under their home country's laws.

These rules are prudent measures to reduce systemic risk and improve the safety and soundness of the U.S. financial system. Strong capital and liquidity rules will make these firms more robust against failure and less subject to debilitating runs in a crisis. Moreover, they help to make supervision and resolution of foreign firms operating in the United States substantially more feasible, if such resolution is required. In many ways, the rules are consistent with (or better than) the principle of national treatment, putting large FBOs and domestic banking organizations on similar footing. Nevertheless, they have also engendered significant controversy because of their extraterritorial reach, the potential to reduce the efficiency of the capital and liquidity allocation of the consolidated firm globally, and the significant structural reforms they require from firms operating in the United States that are headquartered beyond U.S. borders. It remains to be seen what effect the aggressive approach embodied in these new rules will have on the regulatory positions of foreign jurisdictions; some fear retaliation, but in my judgment, similar rulemaking by other jurisdictions would advance the aim of more effective regulation on a cross-border basis and should, ideally, contribute to an evolving global race to the top.

A similar strategy has taken hold between the United States and European Union during the development of domestic cross-border derivative regimes. The United States moved first, with strong reforms under the Dodd–Frank Act, followed by the release, by the Commodity Futures Trading Commission (CFTC), of a muscular proposed set of rules with significant extraterritorial reach. The rules drew significant criticism from foreign banking organizations, international swap dealers, and the European Commission, each of which understood the rules to effectively limit market participants who traded with U.S. parties to U.S. exchanges, in the absence of real reforms elsewhere, thus triggering significant fears over market fragmentation. As the CFTC considered these concerns and negotiated with the European Commission, in 2013 it issued an exemptive order delaying the effective date of the rules for several months. Not until the evening before this exemptive order lapsed were the CFTC and the European Commission able to agree on a "common path forward" (Barr 2014, 1014–15).

This common-path agreement embraced "equivalence," whereby the United States will consider European market participants and exchanges in compliance with both European and U.S. rules. Nevertheless, even as the CFTC's strategy of extraterritoriality has resulted in stronger European rules and reduced the potential for arbitrage, it has also increased transatlantic tensions. Ideally, implementation of extraterritorial rules would involve closer regulatory coordination between domestic and foreign jurisdictions—particularly where, as here, there is a high degree of parallelism between the European Union and the United States. Although the tensions between the United States and the European Union over cross-border derivatives rules are not likely to scuttle cooperation over other dimensions of the global-reform agenda, the possibility for transnational enmity and the need for cooperation will both grow as the global political commitment to reform wanes. The post-crisis experiences with national variation and extraterritorial strategy to date suggest that the G-20 should avoid the adoption and implementation of rigid, detailed rulemaking on a cross-border basis and should instead play the role of shepherd—working through the FSB to produce rigorous, robust prudential standards; correcting downward national deviations but otherwise encouraging strong domestic regimes that exceed minimum standards; and intervening where necessary to minimize transnational tensions.

FUTURE RISKS

Despite the enormous progress to date, we cannot afford to be complacent, and we need to keep pushing for reform. The next section focuses on five types of risk the financial system faces going forward—five ways it might fail next time. Of course, economists don't know precisely how the risk in the system will evolve. It is important to be humble about our ability to understand new risks and predict financial crises. That is why the most important step economists and policymakers can take is to build a system that is more resilient to the uncertain risks we face.

Amnesia

The first source of risk that could lead to another financial crisis is a kind of amnesia: the danger that financial institutions, regulators, lawmakers, and the public will forget the lessons of the financial crisis and let the system slip back into the practices that caused the last financial crisis. This amnesia is likely to occur as the crisis fades from memory and the financial system begins to feel safe again. No actor in the financial system is immune from such amnesia. Within financial institutions, risk managers, who are responsible for monitoring and managing a financial institution's risk, can grow complacent during good times. In addition, managers and executives may push back against risk managers who raise concerns about risky but profitable practices and activities. In the lead-up to the last crisis, some risk managers who urged firms to exercise caution or recommended that firms place limits on certain activities and investments were demoted or fired.

Regulators are also susceptible to amnesia. Regulatory discretion is essential to effective financial regulation, but it also allows regulators to soften their stance over time. We saw this before the last crisis. The public can also quickly forget the lessons of the financial crisis and the need for reform. Public attention to the financial system wanes as reporting on the financial system decreases and the fallout from the crisis fades from memory. Unfortunately, when public attention wanes, lawmakers and regulators may feel that the public will be less likely to hold them accountable in the event of a future crisis and as a result will feel less pressure to pass and implement meaningful reforms (Coffee 2011). Frankly, the financial sector can and does seek to "buy" amnesia through lobbying and campaign contributions (Roe 1996). With public pressure off, the industry can work behind the scenes—in Congress, in the federal rule-writing agencies, and in the courts—to roll back reforms and prevent any further restrictions (Coates 2015).

Although no actor in the financial system is immune from amnesia, we can take steps to ensure that institutions, regulators, and the public remain vigilant in good times. Within financial institutions we can continue to work to better align executive and managerial compensation with the time horizons of risk. For example, regulators should require that SIFIs set up compensation systems such that the senior executives of a firm would have their bonuses clawed back in the event that the firm fails to meet certain capital levels or is subject to major fines or penalties.

We can include mechanisms within the regulatory architecture designed to reduce backsliding. Several such mechanisms were included in the new regulatory infrastructure mandated by Dodd-Frank (see Barr 2015a). For example, the Financial Stability Oversight Council (FSOC) has the authority to recommend stricter actions and to require regulators to implement them, or else to explain their failure to do so to Congress and the public. Dodd-Frank imposed a similar action-forcing disclosure requirement on the Consumer Financial Protection Bureau. Twice a year the director of the CFPB is required to testify before and provide a report to Congress that includes not only a summary of the bureau's activities but also a "discussion of the significant problems faced by consumers in shopping for or obtaining consumer financial products and services," and an analysis of the complaints that the bureau has received from consumers. Dodd-Frank charged entities with competing viewpoints—the independent Office of Financial Research, the FSOC, and the Fed—to monitor and assess risks to the financial system.

Leverage and Liquidity

Concerning leverage, many ask whether the new capital levels are set high enough for the largest, most interconnected, and systemically important firms. The heightened capital requirements on these firms, known as the SIFI surcharge, require firms to have much higher levels of "total loss absorbing capacity" to meet resolution requirements; however, it is not clear that equity levels are an adequate response to the firms' systemic risks. We must keep close watch on these firms and not be afraid to adjust the surcharge up as needed.

On liquidity, firms have greatly reduced their use of short-term debt, but much more needs to be done to address the risks posed by short-term funding. As a first step, we need to implement the Basel Committee's approach to asset liquidity. In the United States, the Federal Reserve has implemented a SIFI surcharge that also takes into account liquidity risks, and such an approach should be adopted globally. Money market funds remain a source of risk in the system, even after the SEC's reforms, and I believe stable net asset value funds should hold capital against these risks. FX (foreign exchange) markets need to move toward greater transparency, while margin and collateral requirements should be improved.

Asset Bubbles

The formation of asset bubbles is a third source of risk that could lead to a future financial crisis, as it did to the last. Countercyclical prudential measures, especially countercyclical capital standards, can help risks posed by asset bubbles. Countercyclical capital standards require financial institutions to hold more capital during boom times and less capital after downturns. It is also worth thinking about whether asset-specific countercyclical rules would help limit the formation of bubbles. For example, Switzerland requires financial institutions to hold more capital against mortgage-backed assets as home values increase. Israel has adopted countercyclical mortgage lending regulations, including loan-to-value requirements. Going forward, we also need to make critical decisions about the future of Fannie Mae, Freddie Mac, and the U.S. system of housing finance. We should focus on creating a housing finance system that has broad access to affordable and sustainable mortgage credit, protects taxpayers, and provides a realistic mechanism through which the government could stem a housing crisis.

Misunderstood Innovation

A fourth risk comes from misunderstood financial innovations. Financial innovation drives economic growth by efficiently allocating capital. It lowers transaction costs, increases liquidity, and helps disperse risk. It helps ensure that the needs of market participants are fully met. At the same time, however, financial innovation can hide risk. The financial sector sometimes creates complex financial products for the purpose of exploiting uninformed consumers or investors. Financial innovations can also create risk when a product that was developed to meet the needs of a small subset of the market is offered to a broader, less-sophisticated market. We saw that happen in the mortgage market when option ARMs or "pick a pay" mortgages, designed to meet uneven cash flow experienced by a small subset of the affluent self-employed, were sold to masses of borrowers who could ill-afford the risks such products posed.

Today, we see problems with exchange-traded funds (ETFs) and high-frequency trading. ETFs are popular with investors because they provide a low-cost, tax-efficient means of investing in a diversified fund. Recently, however, innovation in the ETF market has resulted in increasingly complex and opaque funds that may pose risks to investors and to financial stability. This innovation includes the creation of synthetic, leveraged, and inverse ETFs, and runs the risks of contagions in ETF markets, when illiquidity in primary markets makes orderly investor redemptions in ETFs more difficult.

High-frequency trading uses computers and algorithms to make trades in less than a millisecond. Such high-speed trading has the potential to improve market efficiency and liquidity. But it also raises serious concerns for financial stability—high-frequency trading contributed to the "flash crash" on May 6, 2010, when stock prices inexplicably and suddenly plunged, and may undermine the fairness of financial markets. Unfortunately, regulators have been behind the curve in understanding the way such trading functions and its potential risks.

Regulating in the face of financial innovations is challenging. It is difficult to achieve the right balance between addressing the risks posed by innovation while maintaining its benefits.

I believe the solution lies in developing flexible forms of regulation that foster innovation while focusing on buffers in the system and regulatory checks and balances.

Global Risk

Last, we face the risk that global reform and recovery efforts will go off track. Sovereign risk remains real, a global mechanism to resolve ailing financial firms is still a goal rather than a reality, and the risk from lack of global coordination is great. Yet we still are building a financial architecture that relies on multiple architects and plans.

THIS VOLUME'S CONTRIBUTIONS

Scholars have developed varying approaches to assess financial reform since the crisis and no single journal issue could provide a comprehensive overview. This journal issue brings together a series of articles focused on the Dodd-Frank Act as a whole, systemic risk and resolution authority, consumer and investor protection, market structure, and global reforms. The articles were developed for a conference on the financial crisis hosted by the University of Michigan's Center on Finance, Law, and Policy.

Martin Baily, Aaron Klein, and Justin Schardin have divided Dodd-Frank's major reforms into five categories: areas that in their judgment are clear wins, clear losses, costly tradeoffs, reforms that did not go far enough, and areas where it is too soon to tell. They argue that increased capital requirements, the new single-point-of-entry resolution mechanism, and the creation of the CFPB are clear wins, and the restrictions on the government's crisis management tools in Dodd-Frank are a clear loss. They see the Volcker Rule and the Lincoln Amendment on derivatives trading as costly tradeoffs in the bill, and argue that the bill did not go far enough in consolidating the financial regulatory system. Empirical evidence will be required to test whether their initial judgments are correct.

Howell Jackson argues that the single-point-of-entry framework for the resolution of systemically important financial institutions, while it will help prevent the spread of losses through the financial system in a future crisis, nevertheless raises several concerns. First, the framework may increase moral hazard by expanding the scope of government support. Second, it may be more difficult than the FDIC anticipates for a holding company to send funding down to operating subsidiaries in a resolution. Third, there may be impediments to triggering losses of holding company creditors. Jackson suggests specific reforms that can strengthen the ability to deal with a financial firm's failure.

Lauren Willis argues for a new approach to consumer protection, moving away from mere disclosure to requiring firms to demonstrate that consumers comprehend the costs and benefits of a financial product or service before it is made available in the market. The Dodd-Frank Act directed the CFPB to promulgate rules designed to ensure that consumers understand the "costs, benefits, and risks" associated with the financial products and services they purchase. Willis argues that although mandatory disclosures may increase comprehension in lab tests, consumers take shortcuts and firms run circles around the disclosures in practice. Willis advocates for the CFPB to adopt comprehensive performance standards instead of mandating disclosures. For example, a bank imposing overdraft fees would have to prove to the CFPB, through third-party testing, that customers know how overdraft fees work under various situations.

Jonathan Macey advocates for affording home mortgage borrowers the same protections as investors in the securities market. Macey argues that adopting basic protections from securities regulation would create integral protection for consumers in the home mortgage market. For example: (1) the duty of best execution, which would require mortgage brokers to give borrowers the best deal available to them at that time, (2) the suitability requirement, which would require mortgage brokers to have reasonable grounds to believe the mortgage is suitable for the borrower, and (3) the antichurning requirement, which would prevent brokers from encouraging borrowers to refinance to collect fees.

Michael Wellman argues that researchers must evaluate the effects of trading techniques in specific contexts to understand the effects of algorithmic and high-frequency trading on financial markets. He explains the model he created that combines an agent-based market simulation with a game theoretic analysis. The model shows the effects of high-frequency trading used for latency arbitrage, which involves traders taking advantage of the time it takes information to travel from one market to another. The study found that high-frequency trading decreased overall market efficiency, even before accounting for the costs of creating the infrastructure necessary to make these trades. The model has also been used to show the effects of high-frequency trading in market making, where traders create a market for securities by maintaining offers to both buy and sell a security. Though high-frequency trading is usually thought to increase market liquidity, in many instances market efficiency decreased when liquidity was most needed.

A major post-crisis task for international finance and its regulators has been to develop better tools to measure systemic risk in the financial system. Viral Acharya suggests using a market measurement, *SRISK*, which uses a firm's size, leverage, and risk profile to measure its vulnerability to a capital shortfall in a future crisis and the health of the financial system as a whole. The *SRISK* model suggests that the U.S. financial sector has grown steadily safer since the crisis. The European financial sector grew in risk, peaking during the sovereign debt crisis of 2011, and has grown somewhat safer since then. The Asian financial sector—Chinese financial institutions in particular—has grown increasingly risky since the crisis. Acharya explains how the measure can improve regulator and market understanding of financial risk going forward.

Shedding light on one issue in global finance, Niamh Maloney argues that a fundamental shift has occurred in European financial regulation, and some fundamental new trends can be seen hidden in plain sight by the muddling, iterative, and complex regional machinations of Europe. Beneath the fractured and contentious crisis-driven negotiations lie: a strong push toward centralization; more European-level regulation of both prudential and consumer financial regulation; cross-border risk sharing by national governments; and harder law. The changes will have profound effects not only on the shape of financial regulation, but also on the continuously evolving tug between Euro-centrism and national prerogatives.

CONCLUSION

The financial system is safer, consumers and investors better protected, and taxpayers better insulated than they were before the crisis, but significant risks still remain. It will be critical to stay on the path of reform. The articles in this volume of the *RSF Journal of the Social Sciences* provide new insights into several important aspects of reform. As the volume editor I do not agree with every aspect of the analyses offered, and the same will be true for readers. But the articles provide engaging and essential reading for understanding the tradeoffs involved in policymaking, and innovative ideas for making the financial system more resilient, market structure more efficient, finance fairer for consumers and investors, and global financial regulation better coordinated and effective.

There has been progress under the Dodd-Frank Act and global reforms in tackling many of these problems, but much more work needs to be done. Dodd-Frank and global rules have increased the amount of capital the largest firms have to hold, with a higher capital surcharge. In the United States there is now a cap on the relative size of the largest firms, such that mergers or acquisitions are blocked when a firm hits the cap. New liquidation procedures under Dodd-Frank require a firm's managers, shareholders, and long-term debt holders to bear the losses of a firm's failure, not taxpayers. Living wills, structural reforms, and requirements for total loss-absorbing capacity are making it more feasible to resolve failing major financial firms, but questions remain as to who will hold the long-term debt and how knock-on effects will be managed.

Building on these reforms, we need further effective steps to regulate the shadow banking world and curb the use of "hot money," including an explicit tax on liabilities that increases with the intensity of use of short-term wholesale funding, strong collateral and margin rules for securities financing transactions, and further money market fund reform to reduce the risk that we'll experience another "bank" run or $3 trillion guarantee in that sector in the next crisis.

We must curb abusive high-frequency trading practices, bolster protections for exchange-traded funds, and make our markets more transparent and fair, by tackling conflicts of interest that too often leave regular investors exposed to unnecessary risks and fees.

We ought to require accountability at the top. Senior managers should suffer decreases of their compensation when their firms fail to meet capital standards or are hit with fines or penalties. The SEC must use its new authorities to fine credit-rating agencies that bend their analyses to meet the desires of Wall Street firms.

The Consumer Financial Protection Bureau must be strengthened and supported, not attacked at every turn. One key step is barring the kind of arbitration clauses in consumer finance contracts that prevent consumers from banding together to get their day in court (Barr 2015b). Financial innovation needs to focus on new ways to help families cope with their volatile income and expenses, and make it easier and less expensive to build a financial cushion. We also need to stop abusive small business lending practices and instead expand access to capital, skills, and business opportunities. (Barr 2015c).

The financial system is much safer and a good bit fairer than it was prior to the financial crisis, but that is not enough. We must keep fighting for a financial system that works for all of us.

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