

BANK REGULATION, RISK MANAGEMENT, AND COMPLIANCE

THEORY, PRACTICE,
AND KEY PROBLEM AREAS

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CHAPTER 6

The role of corporate governance in macro-prudential
regulation of systemic risk

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6.1 Introductory overview

Global regulators only began to think programmatically about systemic risk when the enormity of the GFC's damage to the financial system became clear. Before then, a handful of systemic events in US financial history after the introduction of FDIC insurance periodically focused attention on the topic. Systemic failures had been a recurring staple of the period prior to the inception of FDIC insurance, leading eventually to the creation of the Federal Reserve System in 1913. The term 'TBTF' originated with the failure of Continental Illinois National Bank in 1984, the largest bank failure until the GFC.¹ However, an extended period of stable economic growth in the US since the 1980s, known as the 'Great Moderation', helped downgrade financial instability to a secondary concern of regulators and other policymakers.

The country's experience in the GFC and Great Recession fundamentally reshaped prudential regulation and bank supervision. Broadly, Basel and US policymakers have chosen three avenues for mitigating the risks of future financial crises. First, the GFC revealed severe deficiencies in risk management, which post-crisis regulation and supervision have sought to remedy. The current chapter covers this aspect of post-crisis reform. Second, policymakers have extended Basel's capital adequacy framework to macro-prudential regulation in an effort to compel financial conglomerates to internalize their systemic footprint. The 'capital approach' is the subject of Chapter 7. Third, policymakers have adopted a 'structural approach' to reduce systemic risk² by proscribing or walling off certain activities deemed unduly risky, requiring financial conglomerates to

1 The US government bailed out Continental Illinois by extending deposit insurance to all of the bank's depositors and bondholders. The FDIC estimated that nearly 2,300 banks had invested in the bank and that nearly half of these in amounts greater than the FDIC deposit insurance limit. Renee Haltom, 'Failure of Continental Illinois' (22 November 2013), Federal Reserve Bank of Richmond', at <www.federalreservehistory.org/essays/failure_of_continental_illinois>. Such risky behavior reflected the absence of meaningful bank risk management at the time.

2 The use of the term 'structural approach' does not imply that Dodd-Frank's structural regulation is an innovation in regulatory policy, only that the new legislation adopted novel mechanisms to achieve its regulatory objectives. Limitation on bank activities to contain systemic risk, such as activities 'closely related to banking', has a long history beginning from the outset of bank regulation. John Coates, 'The Volcker rule as structural law: implications for cost-benefit analysis and administrative law' (2015), 10(4) *Capital Markets Law Journal* 447, 449. Coates defines a structural law as a law that bans certain otherwise unobjectionable behavior in order to increase desirable behavior or to simplify supervision of risky behavior. *Ibid.* 448.

prepare ‘living wills’, and enhancing resolution mechanisms for failing systemically important firms, the subject of Chapter 8.

The chapter proceeds as follows. After discussing key concepts relating to systemic risk such as TBTF, it turns to the GFC. To lay a foundation for understanding Dodd-Frank’s approach to tackling systemic risk, it examines three periods: the period preceding the crisis during which firms’ deficient risk management practices prepared the ground for the severity of the financial crisis when it occurred; the liquidity and credit crisis; and the Great Recession, which this chapter denotes as Phase I, II, and III, respectively. The chapter indicates the regulatory responses with respect to each phase. It then turns to recent FRB regulatory guidance on the role of large BHCs’ boards and senior and line management, risk committee requirements, and the LISCC program whose objective is to improve firm-wide risk management and compliance of the largest BHCs.

6.2 The role of the GFC in the formulation of macro-prudential regulation

This section lays the groundwork for understanding the rationale and structure of macro-prudential regulation, the associated regulatory expectations for risk management and compliance, and the capital and structural approaches to systemic risk in later chapters.

6.2.1 Definitions and concepts

Definitions matter in understanding financial crises. Because of their widespread impact on the general economy, financial crises invariably become politicized and laden with loosely chosen jargon.³ This is particularly the case with the GFC, one of the most momentous and controversial events in US and global financial history. This section discusses the concepts of *financial crises*, *banking crises*, *systemic risk*, *shadow-banking*, and *TBTF*. Such discussion, in turn, should lead to a sounder understanding of the factors contributing to the GFC that conditioned policymakers’ approach to systemic risk in Basel III and Dodd-Frank and their regulatory expectations for risk management and compliance.

6.2.1.1 Banking crises as a subset of financial crises

By definition, this book’s focus is on banking crises. In a recent, timely, and comprehensive treatment, Carmen Reinhart and Kenneth Rogoff employ both quantitative and qualitative criteria in their lengthy, empirical taxonomy of financial crises, including banking crises.⁴ According to Reinhart and Rogoff, the antecedents and aftermath of banking crises share common patterns of housing

3 Depending on one’s political persuasion, Dodd-Frank, which was overwhelmingly passed on a partisan basis, is either an ‘anti-bailout’ law ending ‘TBTF’ (the Democrats’ view), or a bailout law (the Republican view).

4 Carmen Reinhart and Kenneth Rogoff, *This Time Is Different: Eight Centuries of Financial Folly* (Princeton University Press: 2009) 3 [*This Time Is Different*]. Their categories of financial events include sovereign debt default, banking, inflationary, and exchange-rate crises.

and equity prices, unemployment, declining government revenues, and high levels of debt.⁵ Financial crises, including banking crises, by their nature last an extended period of time. Among other things, asset market collapses are deep and prolonged, and the aftermath of a financial crisis is associated with profound declines in output and employment and an explosion of government debt.⁶ All of these were true of the GFC. Banking crises by definition involve runs on banks due to their fragile business model of liquidity transformation. Banking crises also cannot be adequately understood without first understanding systemic risk.

6.2.1.2 Two theories of the causes of systemic risk

The term ‘systemic risk’ has import that extends well beyond academic theory. The concept is integral to the regulatory framework established under Basel III and Dodd-Frank. However, an absence of a clear understanding of systemic risk complicates identification of its causes, its measurement, and ultimately its regulation. The measurement of systemic risk is within the remit of the FSOC and FRB, but scholars and policymakers have only recently begun to develop methodologies to gauge this risk. This perhaps reflects the uniqueness of the genesis of each financial crisis. The FRB has endeavored to measure systemic risk as reflected in its rule mandating the G-SIB capital surcharge.⁷

In contrast to the issue of the causes of systemic risk, economists, central bankers, and other policymakers have reached some level of agreement on whether a systemic event or events have occurred by considering the *effects* of disruptions in a financial system. Financial disruptions that do not *cause* significant disruptions in the real economy are not a systemic risk event.⁸ This approach focuses on the breakdown of financial intermediation that stops the flow of credit to businesses and consumers, which is the engine of economic growth and output.

Consideration of the *causes* of systemic events have coalesced around two approaches. These are first, a simultaneous shock to the financial system, through contagion, and second, the interconnectedness of financial institutions,⁹ which transmits the problems of one or a handful of institutions to their counterparties. As this book will make clear, Dodd-Frank approaches bank regulation from both standpoints but structures its framework primarily based on the concept of

⁵ *This Time Is Different* 223.

⁶ *Ibid.* 224.

⁷ § 7.2.2.

⁸ Xavier Freixas, Luc Laeven, and José-Luis Peydró, *Systemic Risk, Crises, and Macroprudential Regulation* (MIT Press: 2015) 15 [*Systemic Risk and Macroprudential Regulation*]. The authors contrast such systemic events with the bursting of the mostly equity-financed dot-com bubble in 2000, which did not produce significant adverse effects in the financial system. *Ibid.*

⁹ The treatment in this section draws in part on David VanHoose, ‘Systemic risks and macroprudential bank regulation: a critical appraisal’ (April 2011), Networks Financial Institute, Indiana University, 2011-PB-04 [VanHoose, Systemic risks]. In placing systemic risk into two categories, VanHoose in turn draws on Craig Furfine, ‘Interbank exposures: quantifying the risk of contagion’ (2003) 35 *Journal of Money, Credit, and Banking* 111–128. See Markus Brunnermeier and others, *The Fundamental Principles of Financial Regulation* (Princeton University Press: 2009) 15–18 [Brunnermeier, *Fundamental Principles*], which also classifies systemic risk in this binary manner.

interconnectedness. Both transmission mechanisms in combination also likely played a role in the GFC.¹⁰ They can be summarized as follows:

- (1) *Simultaneous shock to the financial system.* First, there may be an external, unexpected shock to the entire financial system, causing simultaneous adverse effects throughout it, and radically disrupting its normal functioning in the transmission of funds and credit extension. There is a generalized collapse of depositor confidence. Examples are a war in the Middle East that causes a severe disruption in oil supply or a cyber-attack on the payments system. This theory has been called the ‘panic view’, or more specifically ‘illiquidity induced by a contagion of fear’.¹¹ Closely linked but different in approach is the asymmetric theory of a rational, information-based bank run, which ends in the same result – a generalized collapse of the financial system. This generalized collapse approach encompasses a demand-based concept of decisions of individual depositors acting in concert and with correlated asset strategies, known as ‘herding’ behavior.¹²
- (2) *Interconnectedness.* Second, systemic failure may begin with the failure of a single financial institution or small group of institutions, which is then transmitted throughout the system through a chain reaction, commonly called the ‘domino effect’, or more generally ‘interconnectedness’.¹³ Moreover, financial institutions trade much more among themselves than firms in other industries, particularly in the interbank lending and derivatives markets.¹⁴ Connectedness occurs on both the liability and asset sides of the balance sheet. In its pure form the theory assumes stable asset prices in the midst of market turmoil.

Critics of the domino effect argue that it unrealistically assumes a model of passive institutions that do nothing as a sequence of defaults unfolds. In practice, firms will take action to protect against unfolding events and liquidity spirals spurred by declining asset prices.¹⁵

The mechanics of interconnectedness failure vary. They typically include failures of counterparties to the institutions or group of institutions that initially failed. This transmission mechanism relies on closely knit interconnections via,

10 The GFC illustrates the two channels of contagion: cross-linkages and common shocks. *This Time Is Different* 242. The authors, however, point primarily to contagion and spillover from the US to foreign markets as the agent of transmission. *Ibid.*

11 VanHoose, *Systemic risks* 4.

12 *Ibid.* at 4–7.

13 The BIS defines this as the risk that ‘the failure of a participant to meet its contractual obligations may in turn cause other participants to default with a chain reaction leading to broader financial difficulties’. Bank for International Settlements, *64th Annual Report* 177 (1994).

14 Brunnermeier, *Fundamental Principles* 4.

15 Brunnermeier, *Fundamental Principles* 16. In particular, the domino theory assumes stable asset prices whereas prices decline in a liquidity spiral, producing contagious effects on the market as a whole. *Ibid.* 16.

e.g., payment obligations, between institutions, or between markets. Counterparty failure can disrupt the payments system, the critical plumbing of the financial markets. Certain factors can exacerbate the domino effect, such as high leverage among the financial institutions in the system, making them vulnerable to counterparty failures. The interconnectedness approach emphasizes supply-side channels regulated by central banks, such as interbank clearings, securities exchanges, and foreign currency transfers. A transaction failure between two banks can result in settlement failures in a line of financial institutions.¹⁶

The interconnectedness theory perhaps has the most relevance on the regulatory side. Regulators' *perception* of counterparty risk in the midst of a crisis may be to assume the importance of interconnectedness without telling evidence. Fear of the domino effect in large part prompted regulators globally to rescue many large, failing institutions in the GFC. Reflecting regulators' perceptions and fear of the domino effect, Dodd-Frank imposes restrictions on exposure of G-SIBs to other SIFIs.¹⁷

6.2.2 *Too big to fail*

TBTF is another concept that Basel III/Dodd-Frank seeks to resolve. This amorphous term means different things to different market participants and commentators.¹⁸ Dodd-Frank systematically addresses TBTF without truly defining it. TBTF continues to be a public policy issue because of disagreement over its definition and thus the costs and benefits of resolving TBTF firms.¹⁹ Generally, difference of opinion centers on two issues: (1) which counterparties are partially or fully protected and (2) whether losses in the bailout are funded privately or by the government.²⁰ The populist furor over taxpayer-funded bailouts in the GFC provided a driving force for many of Dodd-Frank's TBTF provisions.

6.2.2.1 TBTF and moral hazard

A unifying theme throughout the TBTF debate is the moral hazard it generates. According to the economist George Kaufman, it is not the source of funds such as taxpayers that matter in understanding TBTF, but the mere possibility of a creditor bailout, which creates moral hazard. US policymakers have established a policy of constructive ambiguity to create doubt about bailouts to mitigate the

16 VanHoose, Systemic risks 7. The Herstatt settlement failure in 1974 was a prime example of interconnectedness that had the potential of a systemic event. See § 2.2.1.

17 A G-SIB's credit exposure to another SIFI is capped at 15% of its tier 1 capital. 12 CFR § 252.72(b).

18 According to the economist George Kaufman, various definitions of TBTF have different policy and regulatory implications. These include too complex to fail, too important to fail, too interconnected to fail, too big to liquidate, or too big to prosecute. Franklin Allen and others, 'Enhancing Prudential Standards in Financial Regulations' (3 December 2014), Harvard Law School Forum on Corporate Governance and Financial Regulation, at <<https://corpgov.law.harvard.edu/2015/03/16/enhancing-prudential-standards-in-financial-regulations/>> 15 [Enhancing Prudential Standards].

19 George Kaufman, 'Too big to fail in banking: What does it mean?' (2014) 13 *Journal of Financial Stability* 214–223 [Too big to fail in banking].

20 Too big to fail in banking 216.

moral hazard problem, a policy at play in the GFC. However, the inconsistency in the US bailout strategy during the crisis likely contributed to the market turmoil, particularly to the chaos following the Lehman bankruptcy.²¹

6.2.2.2 Types of TBTF resolution

TBTF resolution undoubtedly exists when a firm is insolvent (meaning that net worth is negative and thus shareholders are ordinarily wiped out) but a third party protects shareholders against loss. All creditors are made whole. Such a bailout is one of the least disruptive in financial markets and occurred in the Bear Stearns transaction in March 2008.²² TBTF more frequently is applied to resolutions in which shareholders are not protected, the firm fails, and its assets are sold or liquidated. Some uninsured depositors and other creditors may be fully or partially paid out.²³ Regulators decide this loss allocation based on their estimated benefits of avoiding financial instability against the moral hazard and other costs of protection.

TBTF and government bailouts in the GFC are intertwined, although, more broadly, bailouts do not always involve TBTF institutions, and TBTF bailouts do not always involve the government.²⁴ As traditionally understood, bailouts range from nationalization, explicit infusion of cash through equity investment, and government guarantees to purchases of deteriorating assets and shotgun marriages. However, the Federal Reserve, acting as lender of last resort and providing liquidity loans against adequate collateral of solvent financial institutions is *not* a government bailout.

6.2.2.3 TBTF a phenomenon of the financial sector

TBTF status is particularly problematic in the financial sector given the fragile business model of financial institutions, a feature reflected in banks' ineligibility for resolution under the Bankruptcy Code.²⁵ In addition, TBTF is controversial because by definition bailouts occur outside of the established bankruptcy regime, which statutorily ensures that creditor counterparties receive liquidation proceeds according to their seniority. TBTF resolution may alter the predetermined loss allocation scheme of the Bankruptcy Code.²⁶

Large BHCs' and other financial conglomerates' increasing complexity helps to cement their TBTF status. TBTF status gives a bank a competitive edge in debt

21 Enhancing Prudential Standards 16. According to David Skeel, the bailout of Bear Stearns in March 2008 set the stage for the turmoil following the Lehman Brothers bankruptcy. David Skeel, *The New Financial Deal* (Wiley: 2010) 31.

22 JPMorgan Chase acquired Bear Stearns as an ongoing entity, paying its shareholders \$10 per share.

23 Too big to fail in banking 215.

24 The S&L rescues in the 1980s did not involve TBTF firms. The US government, through the offices of FRB Chairman Greenspan, orchestrated the private funding of the orderly liquidation of the hedge fund Long Term Capital Management, perceived as TBTF, in 1998 to limit systemic risk in the financial markets.

25 11 USC § 109(b), (d). BHC corporate parents are so eligible.

26 The Bankruptcy Code expressly sets forth the priority scheme for claimholders. Secured creditors come first in priority, followed by unsecured creditors, subordinated debt, preferred shareholders, and common stockholders. 11 USC § 507 – *Priorities*.

financing costs as investors, assuming government protection, will buy TBTF bank debt at a discount. The discount and expectation of bailouts further incentivizes banks to take on riskier activities to retain their TBTF status. Smaller banks must compete and follow suit, further worsening the negative impact of TBTF in the financial system.²⁷ Another negative feature of TBTF bailouts is inefficient allocation of resources, a result that the adversarial, privately negotiated bankruptcy process is better equipped to avoid. There is, however, evidence of a narrowing cost-of-funding advantage following the Dodd-Frank reforms, indicating some success in solving the TBTF problem.²⁸

6.2.2.4 GFC's contribution to the TBTF debate

The GFC greatly roiled the controversy involving TBTF and its contribution to systemic risk. The government's vast expansion of the federal safety net in the GFC significantly increased moral hazard in the financial system. The bailouts further incentivized financial institutions to become ever larger and increase leverage in order to fall under the government's protective umbrella.

6.2.3 *Shadow banking and bank runs*

The GFC was a banking crisis and bank run, using these terms in a broad sense. The run in the GFC was on non-bank financial institutions, or 'shadow banks', that, like commercial banks, use short-term debt financing to fund long-term, illiquid assets but fall outside FDIC insurance protection and prudential regulatory restrictions. In lieu of FDIC-insured deposits shadow banks offer liquid securities as collateral or operate on an unsecured basis in exchange for short-term funding. On the eve of the GFC, wholesale non-deposit taking shadow banks comprised the majority of short-term financing as shadow banks increasingly assumed the liquidity transformation role.²⁹

6.2.3.1 Economic equivalence of shadow bank and commercial bank runs

In both bank and non-bank financial sectors, liquidity transformation is a fragile business model. A bank or shadow bank faces, respectively, the risk of short-term creditors withdrawing deposits or ceasing to renew, or roll over, collateralized short-term debt financing. Runs occur due to uncertainty among investors about the composition and quality of both of these types of financial institutions' long-term assets. To meet these cash withdrawals, these institutions are forced to

²⁷ Gara Afonso, João Santos, and James Traina, 'Do "too-big-to-fail" banks take on more risk?' (December 2014) *FRBNY Economic Policy Review* 41–42. The authors find evidence of higher levels of impaired loans following an increase in government support.

²⁸ Martin Baily, Douglas Elliott, and Phillip Swagel, 'The big bank theory: breaking down the breakup arguments' (31 October 2014), Brookings Institution, Economic Policy Program 6. Darrell Duffie has found evidence that lenders, by and large, believe the government will cause them to suffer a loss in the failure of a financial conglomerate. Darrell Duffie, 'Prone to fail: the pre-crisis financial system' (8 December 2018), *Journal of Financial Perspectives* [forthcoming] 33–34.

²⁹ Gary Gorton, 'Slapped in the face by the invisible hand: banking and the panic of 2007' (9 May 2009) NBER 3 [Slapped in the face].

liquidate these assets in ‘fire sales’, driving down prices in these asset classes. At the extreme, a banking panic occurs. In a panic these firms are insolvent because they have insufficient capital to meet short-term creditors’ demands for their assets.³⁰ Cash withdrawal *en masse* results in the insolvency of the financial system and a freezing of the credit markets, which occurred following the Lehman bankruptcy.

Shadow banking arose in part because large creditor institutions have liquidity demands far in excess of the FDIC deposit account threshold.³¹ Insured demand deposits are of no use to large firms, other commercial banks, hedge funds, and corporate treasuries that need to deposit large amounts of money in interest bearing accounts for a short period of time. Instead, these creditors ‘deposit’ their funds in the repo and asset-backed commercial paper (ABCP) markets³² backed by high-quality collateral consisting of Treasury securities and securitization bonds. The collateral is valued at market prices. Uninsured money market funds and the interbank funding market, in which banks lend reserves on an overnight basis, are also a part of the shadow-banking system.

6.2.4 Regulatory responses to risks revealed in GFC’s three phases

In assessing the wide range of regulatory responses to the GFC, it is useful to identify three distinct phases: the periods before, during, and following the liquidity and credit crisis that began in summer 2007. Each phase presents a distinct set of risks that policymakers addressed in the Basel III and Dodd-Frank macro-prudential framework. The first phase (Phase I) involved deficient risk management decisions that contributed to the liquidity and credit crisis, particularly the decision to retain long-term MBS-related assets financed by short-term credit. The second phase (Phase II), from August 2007 to 2009, marked the critical stage of the GFC with the collapse of credit intermediation and runs on shadow banks. The third phase (Phase III) was the Great Recession, which officially extended from December 2007 into 2009 but its negative repercussions extended several years following the crisis. A brief summary of these regulatory responses follows the discussion of each phase.

6.2.5 Phase I: corporate governance and risk management failures reflected in banks’ capital structure

The severity of the crisis in the fall of 2008 that required rescues of a broad array of financial conglomerates can be attributed largely to financial institutions’

³⁰ Slapped in the face 3.

³¹ Shadow banking also includes bank deposit accounts with holdings exceeding the FDIC maximum account threshold of \$250,000. These accounts are uninsured and unsecured.

³² In the ABCP market, financial institutions sponsor that fund MBS and other asset-backed securities by issuing ABCP, with an average maturity of 90 days, and medium-term notes, secured by these assets. Prior to the GFC, both were sold primarily to money market funds. The market had viewed ABCP as equivalent to insured deposits.

excessively risky capital structure.³³ Firms' system of corporate governance had failed to keep up with changes in the complex, opaque, and globally integrated financial system.³⁴ Many banks entered the crisis with substantial exposure to long-term subprime assets financed with highly runnable short-term wholesale debt. Heated competition ensured that firms across the financial landscape shared these two weaknesses in their capital structure. The composition of these firms' balance sheet provided much of the fuel that was ignited in the liquidity and credit crisis,³⁵ leading to emergency interventions by the Federal Reserve and Treasury Department to rescue failing financial conglomerates. Faulty board decision making that downgraded the risk management and compliance functions and poorly constructed or absent internal controls (ICs) were critical elements in creating the combustible mix of assets and liabilities.

6.2.5.1 Siloed risk management

Many of the large firms had a siloed³⁶ approach to corporate governance prior to GFC. In many cases, these firms were an amalgamation of different cultures and businesses resulting from a series of mergers and acquisitions (M&A) that left a tangle of cultural conflicts and conflicting IT systems. This fragmentation poses a significant challenge to BHC boards, which need to have relevant information on existing and emerging risks in business units across their firm before acting upon it. In a 2007 survey of banks, only 10% of firms had adopted a holistic approach to risk management.³⁷ Post-crisis guidance seeks to correct this deficiency by emphasizing an enterprise-wide, integrated approach to risk and, in certain areas, compliance. Basel 239 guidance seeks to remedy the poor risk data aggregation and information flow.³⁸

6.2.5.2 Challenges in identifying, communicating, and acting on tail risk

Tail risk, the central risk management issue in the GFC, is a significant challenge for financial conglomerates to incorporate effectively into their business strategy

33 See Anil Kashyap, Raghuram Rajan, and Jeremy Stein, 'Rethinking Capital Regulation' (2008) 2008 Economic Symposium, 'Maintaining Stability in a Changing Financial System', Federal Reserve Bank of Kansas City 1–2 [Rethinking Capital Regulation]. As the authors put it, 'the proximate cause of the credit crisis (as distinct from the housing crisis) was the interplay between two choices made by banks' – significant exposure to MBS subprime-related assets financed by short-term debt (emphasis added). *Ibid.* 1.

34 Ben Bernanke, 'The real effects of disrupted credit: evidence from the global financial crisis' (13 September 2018), Brookings Papers on Economic Activity, Brookings Institution 1 [Real effects of disrupted credit].

35 Rethinking Capital Regulation 1. The financial system's reliance on short-term funding of long-term assets with potentially low market liquidity has been the main source of instability in this and previous financial crises. Brunnermeier, *Fundamental Principles* 40. Northern Rock and other casualties in the GFC might well have survived with the same assets if their funding's average maturity had been longer. *Ibid.* xii.

36 Silos are business lines, legal entities, or geographical units operated in isolation from one another, with limited information shared across the firm and, in some cases, competition between silos. Basel Committee on Banking Supervision, 'Corporate governance principles for banks' (8 July 2015) 30.

37 Stephen Bainbridge, 'Caremark and enterprise risk management' (March 2009), 34 *Journal of Corporation Law* 967, 971 [Bainbridge, ERM].

38 See § 6.3.5.

and risk management and compliance processes. Many finance industry senior executives defensively opined that they could not be held responsible for not preparing for an event of the magnitude of the GFC. This defense rings hollow. Certain other conglomerates took effective action in the face of ominous signs without being able to precisely forecast the depth and severity of the oncoming crisis.³⁹

For risk management, the challenge in assessing severe, highly improbable events is due to the fact that the outcomes associated with such risks are not normally distributed but tend to have fat tails.⁴⁰ Identifying and communicating to senior management the potential of extreme events requires quantifying the probability and magnitude of severe losses. In such instances, uncertainty in generating such a distribution poses a severe identification and communication challenge.⁴¹

A risk management function that has an independent, autonomous, and credible status in a firm with unalloyed access to the board can limit tail exposure preceding and during a market crisis.⁴² However, the pre-crisis risk management function by and large lacked these attributes. In the pre-crisis corporate environment, communicating extreme risks to senior business executives was highly problematic. Moreover, this challenge was made even more daunting by compensation schemes with hidden, embedded tail risks⁴³ or by managers who assessed risks based on historical data and thus did not account for low-probability events that later turned out to be highly material. Finally, at the apex of the corporate governance system, board directors need to have the necessary competence to understand the significance of extreme, improbable events so that they can appropriately weigh them in formulating business strategy within the firm's risk appetite. Many boards of financial conglomerates prior to the GFC did not have this level of competence.

6.2.5.3 Principal-agent conflict as a contributing cause to risk management failure

The deeper problem underlying this poor business judgment is the principal-agent conflict that is endemic in financial institutions.⁴⁴ Establishing effective incentive compensation schemes and strong ICs has been a perennial conundrum in large financial conglomerates in which the principal-agent conflict plays an

39 See § 6.2.5.5, which summarizes the Senior Supervisors Group's 2008 report on poorly and better performing firms.

40 Bainbridge, ERM 971 (citing Linda Allen, Jacob Boudoukh, and Anthony Saunders, *Understanding Market, Credit, and Operational Risk: The Value at Risk Approach* (Blackwell: 2004) 25 [Allen, VaR]).

41 Bainbridge, ERM 971 (citing Allen, VaR 26).

42 Andrew Ellul and Vijay Yerramilli, 'Stronger risk controls, lower risk: evidence from U.S. bank holding companies' (October 2013), 68 *Journal of Finance* 1757, 1796.

43 Senior Supervisors Group, 'Observations on risk management practices during the recent market turbulence' (6 March 2008) 7, at <www.occ.treas.gov/publications/publications-by-type/other-publications-reports/pub-other-risk-mgt-practices-2008.pdf> [SSG, Observations]. See § 6.2.5.2.

44 See § 3.3.2. Also see § 4.2.2.1 regarding the incentive to optimize return on equity by limiting equity financing and incurring debt in its stead.

outsized role.⁴⁵ This conflict also was a reason risk management lacked resources, authority, and independence throughout the finance industry, deficiencies that the FRB has sought to remedy in its post-crisis macro-prudential guidance.

Compensation schemes incentivized both the senior and lower executive ranks to generate high returns with little downside risk. Their focus was on the asset side of the balance sheet. Boards of directors and senior management, facing increasingly heated competition in generating high earnings, decided to enter subprime MBS origination and securitization, in some cases just as the market was reaching its peak. CEOs would be punished by the stock market, and their compensation docked, if they did not actively seek market share in subprime assets. Compensated by short-term windows of equity performance, executives viewed high-yielding subprime asset exposure as a sure bet in generating high return on equity. In sum, excessive risk-taking can occur as competition erodes banks' franchise value.⁴⁶ In an effort to reduce the agency costs revealed by the crisis, post-crisis regulation and supervision has focused on correcting compensation schemes for senior executives.

Lower in the management ranks, pay-for-performance compensation incentivized traders to game internal performance metrics that measured risk-adjusted returns. Poorly designed risk controls did not require economic capital charges commensurate with the risk assumed by trading desks.⁴⁷ Quite simply, traders had incentives to assume hidden tail risks and were able to do so.⁴⁸ Firms use VaR⁴⁹ to compare traders across business lines and compensate them for their profits in relation to the risks they assume. A trader that apparently assumes less risk for a given amount of capital than other traders will be more highly compensated and granted higher position limits. Though well intentioned, the system led to perversely distorted incentives as traders sought out exposure that was not reflected in the horizon window on which VaR is based,⁵⁰ thus generating 'fake alpha'. In sum, VaR was not measuring risk properly. Firms invested in fat tail risk without fully realizing it.⁵¹

Post-crisis agency guidance is aimed at rectifying this principle-agent problem in the lower echelon through enhanced ICs and independent risk management

45 Rethinking Capital Regulation 2.

46 *Systemic Risk and Macroprudential Regulation* 329.

47 An example was UBS's practice of not charging capital corresponding to risks relating to CDOs and other investments with long tail risk. '[E]mployee incentivisation arrangements did not differentiate between return generated by skill in creating additional returns versus returns made from exploiting UBS's comparatively low cost of funding in what were essentially carry trades.... [T]he relatively high yield attributable to Subprime made this asset class an attractive long position for carry trades.' UBS AG, 'Shareholder report on UBS's write-downs' (18 April 2008) 42, at <<http://maths-fi.com/ubs-shareholder-report.pdf>>.

48 Rethinking Capital Regulation 9. Traders could count on their income spread exceeding the low hurdle rate that contributed to bonuses. *Ibid.*

49 § 3.7.2.3 discusses VaR in greater detail.

50 The data made the standard deviation component of the VaR artificially low.

51 Till Guldimann, 'The creator of VaR explains how large banks measure the risk of their own portfolios' (25 June 2018) *Odd Lots*, podcast with Joe Wiesenath and Tracy Alloway, at <<https://podcasts.apple.com/us/podcast/creator-var-explains-how-large-banks-measure-risk-their/id105620096?i=1000414564268>>.

and compliance functions that enjoy a high level of credibility and authority in their organizations, in addition to compensation schemes that better align business strategy with longer-term, prudent risk-taking.

6.2.5.4 Risky capital structure

On the asset side, when the credit crisis gained steam in late summer 2007, many financial conglomerates had substantial holdings of subprime MBS-related assets. This strategy was contrary to the stated rationale of securitization, much lauded by regulators adhering to the market-based ethos, to off-load and spread risk into the capital markets.⁵² When housing prices and then MBS valuations began to decline, firms had to write-down their assets by hundreds of billions of dollars.⁵³ Through August 2008, UBS had written down \$43 billion; Citigroup, \$56 billion; and Merrill Lynch, \$45 billion.⁵⁴ The enormous impairment charges against a small amount of capital in turn created the ground for investor concern and the subsequent credit and liquidity crisis of Phase II. On the liability side, the financial conglomerates financed these long-term illiquid assets with short-term, low-cost debt. They sourced most of this debt with wholesale funding from the uninsured shadow-banking sector. Unlike deposits, the favored funding source of smaller banks, wholesale funding is more ‘runnable, prone to evaporate in a crisis’.⁵⁵

6.2.5.5 Senior Supervisors Group’s assessment of risk management practices

The Senior Supervisors Group (SSG), whose members are financial market supervisors from several countries,⁵⁶ surveyed 11 global financial conglomerates⁵⁷ early in the crisis. Firms began reporting material write-downs with losses concentrated in US subprime mortgage-related credits, particularly in business lines in warehousing, structuring, and trading of subprime-backed CDOs.

The SSG divided the firms into better and more poorly performing institutions. The better performing firms typically shared information effectively across business lines, had rigorous internal processes requiring critical business judgment in asset valuation, applied consistent valuations across the firm, did not rely exclusively on credit rating agencies (CRAs) but did independent credit analysis, aligned treasury functions closely with risk management practices, charged business lines for contingent liquidity exposures, and relied on a wide range of risk

⁵² Figure 1.1 at § 1.1.3.1 illustrates the securitization process.

⁵³ Banks, including sophisticated investment banks, were some of the most active buyers of structured products. Markus Brunnermeier, ‘Deciphering the liquidity and credit crunch 2007–2008’ (Winter 2009), 23 *Journal of Economic Perspectives* 77, 80 [Deciphering the liquidity crunch].

⁵⁴ Julia Werdigier, ‘After \$43 billion in write-downs, UBS to split main businesses’, *New York Times* (12 August 2008).

⁵⁵ Jeremy Kress, ‘Solving banking’s “too big to manage” problem’ (7 March 2019), [forthcoming 104 *Minnesota Law Review* 2019], 17–18, at <<https://ssrn.com/abstract=3348593>>.

⁵⁶ Representatives included banking and securities regulators from France, Germany, Switzerland, UK, and the US, represented by the FRB, FRBNY, SEC, and OCC. The SSG shares information on risk management, governance, and other issues involving financial conglomerates.

⁵⁷ SSG, Observations.

measures to gain different perspectives on risk.⁵⁸ The more poorly performing firms were deficient in some or many of these areas. Table 6.1 summarizes the SSG's findings concerning risk management practices of the two groups in four areas.

6.2.5.6 Regulatory response relating to risks revealed in Phase I

Regulators, pursuant to Basel III/Dodd-Frank as well as under their discretionary authority, adopted a number of enhanced prudential approaches to address the deficiencies in risk management exhibited in Phase I in the run up to the GFC. These measures included increasingly enhanced expectations regarding corporate governance, risk management, and compliance specifically relating to the roles of the board of directors, senior management, and line management, and structural mandates such as board-level risk committees (Chapter 6). The FRB instituted Pillar II supervisory measures consisting of the LISCC program on liquidity management and capital planning and the CCAR and the DFAST stress testing programs (Chapter 7).

6.2.6 Phase II: liquidity and credit crisis

The financial conglomerates' poor risk management practices reflected in the severe mismatch of assets and liabilities and overdependence on subprime MBS-related assets to generate high returns were one of many factors that contributed to the liquidity and credit crisis of the GFC. Nevertheless, these practices share significant blame for the depth and severity of the crisis once it began in late summer 2007.

6.2.6.1 Starting point of liquidity and credit crisis

Incipient signs of a liquidity problem appeared in February 2007 with an increase in subprime mortgage defaults, reflected in the increase in CDS prices for subprime mortgages.⁵⁹ In June, Bear Stearns bailed out two MBS-related hedge funds, and in July, the ABCP market showed refinancing difficulties. As the series of events unfolded in 2007, their balance sheets exposed commercial and investment banks to a severe maturity mismatch through their off-balance sheet liquidity facilities backed by MBS-related assets and increased reliance on repo financing.⁶⁰

58 David Viniar, Goldman Sachs' CFO during the GFC, observed that the firm reviewed its P&L position under VaR every day to make sure the P&L was consistent with its risk model forecasts. In December 2006, its mortgage business lost money ten days in a row. 'It wasn't a lot of money, but by the 10th day we thought we should sit down and talk about it.' Goldman Sachs reviewed every trading position of the firm. They examined VaR and other risk models. They talked about how the MBS market 'felt'. 'We decided to "get closer to home"'. Joe Nocera, 'Risk mismanagement', *NYT Magazine* (2 January 2009).

59 This was reflected in a decline in the ABX price index, which is based on CDS prices. Deciphering the liquidity crunch 82–83.

60 Deciphering the liquidity crunch 80. The structured investment vehicles (SIVs) that sold ABCP were subject to funding liquidity risk, whereby investors, mainly money market funds, would cease

Table 6.1 Risk management practices of better and more poorly performing firms in GFC

<i>Best-practice risk management area</i>	<i>Better performing firms</i>	<i>Poorly performing firms</i>
1. Effective firm-wide risk identification and analysis	<ul style="list-style-type: none"> • Shared quantitative/qualitative information effectively across firm • Thus, able to identify sources of significant risk early on, reducing exposures and hedging while still practical and not prohibitively expensive 	<ul style="list-style-type: none"> • Business line and senior managers did not discuss firm's risks in light of evolving market conditions • Left business lines to act in isolation regarding business growth and hedging, in some cases increasing rather than mitigating risk exposure
2. Consistent firm-wide application of independent and rigorous valuation practices	<ul style="list-style-type: none"> • Rigorous internal processes requiring critical judgment and discipline in valuations of complex or potentially illiquid assets • Skeptical of CRAs' assessment of complex structured credit; developed inhouse expertise to conduct independent assessments • Once deciding on valuation, sought consistent use across firm 	<ul style="list-style-type: none"> • Continued to price super-senior CDO tranches at or close to par despite observable deterioration in performance of underlying RMBS collateral and declining market liquidity • Management did not exercise sufficient discipline over valuation process • Relied sometimes too passively on credit risk from CRAs
3. Effective management of funding liquidity, capital, and balance sheet	<ul style="list-style-type: none"> • Aligned treasury functions closely with risk management practices, incorporating information from all business lines in global liquidity planning • Incentivized control over balance sheet growth by charging business lines for contingent liquidity exposures, reflecting liquidity cost in challenging market conditions 	<ul style="list-style-type: none"> • Weaker controls over balance sheet growth • Treasury functions not closely aligned with risk management processes • Lacked complete access to information across all business lines • Did not properly consider risk of certain exposures or price appropriately for balance sheet use
4. Informative and responsive risk management reporting and practices	<ul style="list-style-type: none"> • Management information systems assessed risk positions with variety of tools and with several underlying assumptions • Management had more adaptive (not static) risk management processes and systems that could rapidly alter assumptions to reflect current market conditions • Relied on wide range of risk measures to gather more information and different perspectives on same exposures • Many able to integrate measures of market risk and counterparty risk positions across businesses 	<ul style="list-style-type: none"> • More dependent on specific risk measures using outdated or inflexible assumptions • Lost sight of how risk was evolving or could change in the future • Some could not easily integrate market and counterparty risk positions across businesses, making it difficult to identify consolidated firm-wide sensitivities and concentrations

Source: Senior Supervisors Group, 'Observations on Risk Management Practices During the Recent Market Turbulence' (6 March 2008).

Most commentators mark 9 August 2007 as the starting point of the liquidity and credit crisis. BNP Paribas halted redemptions in three investment funds due to its inability to value their underlying structured investments. Beginning August 9, the critical interbank lending market became highly illiquid, with rapidly rising LIBOR rates.⁶¹ In short order the ECB and Federal Reserve collectively injected over \$100 billion of overnight credit into the interbank lending market. ABCP outstanding plunged by hundreds of billions of dollars in August and for the remainder of 2007.⁶² In December, for reputational reasons Citigroup brought its SIV programs onto its balance sheet to avoid downgrades of the programs' creditworthiness, further eroding its capital.⁶³ In the repo market creditors demanded increasing haircuts in a run on that market, leading to a downward spiral of asset sales and further declines in the value of the collateral backing this debt.⁶⁴ Ultimately lenders ceased to roll over banks' repo debt due to concerns about the value and liquidity of the collateral backing these obligations.⁶⁵

The crisis spread through contagious sentiment to other repo securitization asset classes as creditors began to doubt the value of underlying non-MBS related collateral. In December the FRB initiated the first of several unconventional liquidity facilities with the creation of the Term Auction Facility that provided depository institutions collateral-backed short-term loans.⁶⁶

6.2.6.2 Escalation of the liquidity and credit crisis: bailouts of TBTF firms

The first non-bank bailout, of Bear Stearns, occurred in March 2008 when hedge funds withdrew short-term funds, causing a severe loss of liquidity. The FRB orchestrated a purchase of the company by JPMorgan Chase, with a loan

buying SIVs' ABCP that had funded SIVs' long-term assets. The bank sponsors of SIVs provided a liquidity facility to the SIVs that committed the banks to fund SIVs' long-term assets if necessary, in effect, bringing these assets back onto the banks' balance sheets.

61 In the interbank market, banks lend to each other at LIBOR on an unsecured basis with maturities ranging from overnight to three months.

62 SIV-backed ABCP fell by about \$70 billion, or 80%, and new issue maturities shortened considerably as investors sought to hedge their risk. Daniel Covitz, Nellie Liang, and Gustavo Suarez, 'The evolution of a financial crisis: panic in the asset-backed commercial paper market', Finance and Economics Discussion Series, Federal Reserve Board (18 August 2009) 12–13.

63 Liz Moyer, 'Citigroup goes it alone to rescue SIVs', *Forbes* (13 December 2007).

64 The percentage of total bank assets financed by overnight repos had increased approximately twofold from 2000 to 2007, with a higher portion consisting of overnight funding, thus increasing liquidity risk. Brunnermeier, Deciphering the liquidity crunch 80.

65 Such collateral ceased to be 'informationally insensitive', causing investors to reduce their exposure. Slapped in the face 4. Insured bank deposits are truly 'informationally insensitive', meaning that depositors and counterparties need not worry about the value of the checks that depositors write due to FDIC insurance so that checks function as currency. The AAA-rated MBS and other collateral used in shadow banking served as 'insurance', making the short-term debt informationally insensitive. *Ibid.* 7–9.

66 This facility allowed banks to bid for loans anonymously backed by a wide range of collateral, including MBS. Deciphering the liquidity crunch 87. In March 2008 the FRB extended liquidity assistance to non-banks in launching the Term Securities Lending Facility, permitting investment banks to swap agency and other mortgage-related bonds for Treasury bonds, and the Primary Dealer Credit Facility, which provided overnight funding to investment banks. *Ibid.* 88.

guarantee of \$30 billion of toxic assets. A major concern of the regulators concerned Bear Stearn's interconnectedness.⁶⁷ The crisis reached a crescendo in September 2008. The US government put the two GSEs, Fannie Mae and Freddie Mac, into conservatorship on September 7. Lehman Brothers filed for bankruptcy protection on September 15, and on September 16, again due to concerns on interconnectedness, the FRB injected \$85 billion of equity into AIG.

The financial markets completely shut down in the weeks following the Lehman bankruptcy. The US Treasury provided an \$80 billion guarantee for money market funds to avoid a shutdown of their market after a leading fund 'broke the buck', with its share price falling below \$1. The Federal Reserve introduced a commercial paper funding facility after non-asset-backed securities (ABS) backed commercial paper suffered a dramatic decline in issuance. The stock market lost \$8 trillion in market value. The government launched additional facilities to buy commercial paper, ABS, and GSE bonds.⁶⁸

6.2.6.3 Both types of systemic risk occurred in GFC

As this narrative makes clear, a combination of the two models of systemic failure, a simultaneous shock and interconnectedness, occurred in the financial crisis of 2007–09.⁶⁹ The financial conglomerates were connected to one another in an opaque network involving thousands of derivatives and short-term debt transactions. Regulators, unable to decipher firms' balance sheets, intervened in hastily orchestrated bailouts. CCR, the risk of default of a trading counterparty on its obligation, paralyzed the debt markets.⁷⁰ Subprime mortgages, at the heart of the crisis, were too small in amount to cause a systemic event. This makes contagion a necessary element in spreading the panic to the credit markets generally.⁷¹

6.2.6.4 Regulatory response relating to risks revealed in Phase II

Dodd-Frank addresses potential future liquidity and credit crises through a comprehensive and multifaceted approach. The legislation seeks to reduce the likelihood of government bailouts of TBTF firms and prevent future bank runs. Policymakers' measures include enhanced expectations for corporate governance

67 According to testimony by FRB Chair Ben Bernanke, if the government had allowed Bear Stearns to fail, it would have led to a 'chaotic unwinding' of the bank's investments held by its counterparties. 'Bernanke Defends Bear Stearns Bailout', *CBS News* (3 April 2008).

68 Deciphering the liquidity crunch 90.

69 There is a continuing debate among academic commentators and policymakers on the primary causes of the financial crisis. Hal Scott has made a strong case that contagion, the first model described in § 6.2.1.2, was the root cause of the crisis, not interconnectedness. Scott defines contagion as run behavior in which fears of widespread financial collapse lead to withdrawal of funding from financial institutions. Hal Scott, *Connectedness and Contagion: Protecting the Financial System from Panics* (MIT Press: 2016) 5.

70 Viral Acharya and Matthew Richardson, 'Causes of the financial crisis' (2010), 21 *Critical Review* 209.

71 A useful analogy, suggested by Gorton, is an E. coli outbreak. An isolated outbreak in a small part of the food supply will lead a large portion of the population to avoid many other types of foods. As with E. coli, no investor knew where the risks were, leading to uncertainty concerning which counterparties would fail. Gary Gorton and Andrew Metrick, 'Haircuts' (November–December 2010), *Federal Reserve Bank of St. Louis Review* 507, 511.

and the control functions and FSOC as a systemic risk coordinator with SIFI designation authority (Chapter 6); liquidity regulation and more loss-absorbent capital that more closely reflects a firm's risk profile (Chapter 7); capital planning through CCAR and DFAST stress testing and LISCC capital planning oversight⁷² (Chapter 7);⁷³ resolution plans, SPOE resolution with BHC capital structure requirements, and the OLA rules (Chapter 8).

6.2.7 Phase III: the Great Recession

The Great Recession, which officially began in December 2007 and ended in June 2009, was the worst economic downturn since the Great Depression. Recessions that are associated with systemic banking crises impose huge costs on an economy.⁷⁴ In the Great Recession, US GDP contracted by more than 4% and it took nearly four years for it to regain the prerecession GDP level.⁷⁵ According to the International Monetary Fund the recession became global in 2009, the fourth and deepest recession since World War II.⁷⁶ The panic in the GFC played a central role in the severity of the Great Recession.⁷⁷ According to Ben Bernanke, a leading scholar of the Great Depression and FRB chair during the GFC, the collapse of the financial system in the early 1930s was a major reason for the persistence of the Great Depression.⁷⁸

Moreover, the factors most strongly associated with financial panics, the run on short-term funding and other forms of contagion such as occurred during the crisis in the securitization markets, are the best predictors of poor economic performance.⁷⁹ A strong link exists between the breakdown of financial intermediation and economic downturns:

Financial instability occurs when problems (or concerns about potential problems) within institutions, markets, payments systems, or the financial system in general significantly impair the supply of credit intermediation services – so as to substantially impact the expected path of real economic activity.⁸⁰

72 The CCAR and LISCC programs supplement Dodd-Frank's systemic risk regulation but were not mandated by it.

73 The GFC was a run on the shadow-banking sector. FSOC's designation authority is a key tool in Dodd-Frank's multiprong approach to systemic risk.

74 *This Time Is Different* 172. Such banking crises are typically an amplification mechanism of a previous shock. *Ibid.*

75 Diane Schanzenbach and others, 'Nine facts about the great recession and tools for fighting the next downturn' (May 2016), The Hamilton Project, Brookings Institution 1.

76 Bob Davis, 'What's a global recession?', *Wall Street Journal* (22 April 2009).

77 *Ibid.* 4.

78 *This Time Is Different* 146.

79 Real effects of disrupted credit 4.

80 Eric Rosengren, 'Defining financial stability, and some policy implications of applying the definition' (3 June 2011), Keynote remarks at the Stanford Finance Forum, Graduate School of Business, Stanford University, at <<https://www.bostonfed.org/news-and-events/speeches/defining-financial-stability-and-some-policy-implications-of-applying-the-definition.aspx>> (cited in Anil Kashyap, Dimitrios Tsomocos, and Alexandros Vardoulakis, 'Principles for macroprudential regulation' (April 2014), *Financial Stability Review* No. 18, 173, 174).

Exacerbating the effect of downturns associated with financial crises, in a recession, as bank asset quality deteriorates and bank capital declines, banks seek to preserve liquidity and capital by reducing lending, leading to less investment and consumption and further output declines.⁸¹ Risk aversion also certainly plays a role. Financial crises raise intermediation costs and restrict credit, thereby restraining activity in the real sector and resulting ultimately in low growth and recession.⁸²

An important lesson drawn by lawmakers and policymakers from the Great Recession was that banks need capital sufficient to continue their vital role in credit intermediation. Due to their enormous MBS-related write-downs, banks had to replenish their capital before they would be able to lend further. Such unprecedented balance sheet impairments later served as precedent for the Federal Reserve's severely adverse scenarios in its stress testing programs.

6.2.7.1 Regulatory response relating to risks revealed in Phase III

Dodd-Frank adopts measures involving enhanced expectations for corporate governance (Chapter 6): hard-wired capital ratios, capital planning through CCAR and DFAST stress testing, and LISCC capital planning oversight (Chapter 7). All these responses are designed to ensure that banks can absorb losses while still adequately serving as credit intermediaries.

6.2.8 *Regulators' lessons from the GFC and their macro-prudential response*

The GFC has had a profound impact on lawmakers, bank regulators, banks' systems of corporate governance, and financial economists and macroeconomists. The great majority of Dodd-Frank's provisions relate to systemic issues involving risk management, capital planning, liquidity management, avoiding financial institutions' disorderly failure, and TBTF more generally in some form or fashion.⁸³ They are animated by a desire to avoid future taxpayer-funded bailouts.

6.2.8.1 Pre-GFC focus on safety and soundness of individual banks

Policymakers realized that prudential regulation had been too preoccupied with the safety and soundness of individual banks by seeking to make regulatory capital move more closely in accord with banks' own calculation of economic capital.⁸⁴ In addition, firms' efforts to remain solvent in a crisis through asset sales, reducing loans to good credits, or requiring more collateral ultimately undermines

81 *This Time Is Different* 144.

82 Franklin Allen and Douglas Gale, 'Financial contagion' (2000), 108 *Journal of Political Economy* 1, 2. See Ben Bernanke and Mark Gertler, 'Agency Costs, Net Worth, and Business Fluctuations' (March 1989), 79 *American Economic Review* 14–31.

83 This statement is also true of Title X, which created the Consumer Financial Protection Bureau (CFPB). Predatory retail lending to millions of borrowers who could not afford their mortgage payments was a contributing systemic risk factor in the GFC.

84 Brunnermeier, *Fundamental Principles* 6.

the financial system's stability.⁸⁵ Before the GFC, prudential regulation largely ignored interconnections between financial institutions resulting in CCR. Another example of myopia was regulators' lack of awareness of systemic risks from the rapidly increasing reliance on securitization throughout the financial markets.⁸⁶

6.2.8.2 Objective of new macro-prudential framework to internalize systemic risks

The new framework of macro-prudential bank regulation reflects regulators' understanding of the key risks revealed in the three phases outlined in this chapter⁸⁷ and a deeper understanding of the concepts of systemic risk and TBTF. The primary macro-prudential regulatory objective of Basel III/Dodd-Frank is to compel financial conglomerates to internalize the negative externalities that they impose on the financial system due to failures as both *going* and *gone* concerns. The former involves firms' excessive balance sheet shrinkage following a financial crisis and the latter, potential market instability from their failure and taxpayer-funded rescues. Where firms' practices do not lead them to internalize these costs, regulators seek to understand why, and to regulate and supervise them accordingly.⁸⁸

6.2.8.3 Systemic risk coordinators in the US, UK, EU, and globally

The GFC brought home the importance of coordinating regulatory responses in modern financial crises, which invariably involve both banking and capital market instability, and the critical need for international coordination in light of the globally integrated financial system. In the US, the primary financial agency officials worked relatively well together in crafting *ad hoc* solutions in the rapidly escalating crisis. Coordination was much less successful in Europe, in both the GFC and the subsequent sovereign debt crisis. Authorities in the world's major financial markets realized that such coordination needed to be systematized and formalized.

Dodd-Frank created FSOC to coordinate systemic risk oversight and designate certain large financial conglomerates by supermajority vote as 'systemically important financial institutions' (SIFIs), a defined term in the statute.⁸⁹ FSOC has ten voting members, which include the heads of the major federal financial regulators and the Treasury Secretary, acting as chair. FSOC is charged with proactively detecting, and recommending measures to prevent, potential risks to the

85 Kenneth French and others, *The Squam Lake Report: Fixing the Financial System* (Princeton University Press: 2010) 135.

86 *Ibid.* 136.

87 Phase I (§ 6.2.5); Phase II (§ 6.2.6); Phase III (§ 6.2.7).

88 Samuel Hanson, Anil Kashyap, and Jeremy Stein, 'A macroprudential approach to financial regulation' (Winter 2011), 25 *Journal of Economic Perspectives* 3, 5.

89 Dodd-Frank also authorizes FSOC to designate 'financial market utilities' (FMUs), such as the Chicago Mercantile Exchange, Inc., as SIFIs, of which there are eight. FMUs undertake clearance and settlement of cash, securities, and derivatives transactions. Several FMUs are central counterparties that clear trades in their specialized markets.

stability of the US financial system.⁹⁰ Financial institutions FSOC designates as SIFIs are subject to FRB supervision and EPS, Dodd-Frank's prudential regulatory requirements for financial conglomerates. FSOC's global counterpart, the FSB, monitors and makes recommendations regarding systemic risk globally and coordinates national authorities and standard-setting organizations with the aim of strengthening and maintaining the stability of the international financial markets.

FSOC is one of the primary mechanisms for regulating TBTF. It is also one of the only devices under Dodd-Frank for regulating the shadow-banking system. FSOC's interagency coordinating role is especially important in light of the US's highly fragmented, institutional supervisory structure. However, FSOC's record in regulating non-bank SIFIs is less than stellar. It designated four non-bank financial conglomerates as SIFIs, but none of these remains so designated.⁹¹ BHCs with \$250 billion in assets are automatically SIFIs under Dodd-Frank.

Globally, coordination among regulators to mitigate systemic risk is also not well institutionalized. In the UK the BoE oversees regulation and supervision of systemic risk, but a legally separate body is not charged with this task. The BoE's FPC, with representatives from the BoE, PRA, and FCA, external members, and a Treasury observer, oversees systemic risk issues. In the EU, the European Systemic Risk Board (ESRB), established in 2010, is responsible for the macro-prudential oversight of the EU's financial system with a view to preventing or mitigating systemic risks to financial stability. However, its recommendations are non-binding.

6.2.8.4 Political and organizational challenges involving systemic risk oversight

The experience of FSOC in designating non-bank financial institutions, and subsequently rescinding, all of the non-bank SIFI designations, and the lack of a separate legal entity in the UK, albeit under the BoE's aegis, responsible for systemic risk, and the ESRB's lack of regulatory authority, underscores the challenges facing supra-agency bodies tasked with systemic risk oversight. It is difficult to design an effective supervisory structure accountable for macro-prudential policy. Several factors may contribute to this, including the lack of experience in identifying and measuring systemic risk, specifying goals for macro-prudential policy, or understanding the transmission mechanism of systemic risk.⁹²

⁹⁰ Dodd-Frank also created the Office of Financial Research to assist FSOC in assessing emerging systemic risk.

⁹¹ FSOC designated American International Group, Inc., General Electric Capital Corporation, Inc., Prudential Financial, Inc., and MetLife, Inc. as SIFIs. However, a federal district court rescinded MetLife's SIFI designation in March 2016. FSOC rescinded GE's designation in June 2016, AIG's in September 2017, and Prudential's in October 2018.

⁹² Ed Balls and Anna Stansbury, 'Twenty years on: is there still a case for Bank of England independence?' (1 May 2017), VOX CEPR Policy Portal. See 6.2.1.2, which discusses the lack of a unified concept of systemic risk.

6.3 Risk management and compliance expectations for large BHCs

The GFC is widely viewed as a failure not only of financial regulation but also of private-sector risk management and compliance. The BHCs' fragile capital structure, exacerbated by the conglomerates' complex corporate operations,⁹³ played a key role in these governance failures. By the time the crisis in Phase II began in late summer 2007 it was too late for most financial conglomerates to take preventive measures. These firms were unable to resist the competitive market dynamics. However, certain firms, such as Goldman Sachs, drew in their horns before it was too late, and other firms, such as JPMorgan Chase, had strategically decided not to strive for high market share in subprime assets in the first place.⁹⁴

In response, Dodd-Frank mandates several risk management and compliance requirements for the largest BHCs and FSOC-designated SIFIs and somewhat less rigorous requirements for other large BHCs. The implementing rules are in Regulation YY.⁹⁵ In a series of regulatory policy letters and releases that supplement or revise pre-GFC guidance under this regulation, the FRB has spelled out its internal governance expectations for financial conglomerates. Collectively, the FRB guidance serves as a foundation for the post-crisis regulatory program concerning corporate governance. More generally, policymakers seek to establish a forward-looking set of regulatory expectations. Rather than correcting specific risk management failures of the past, the agencies have formulated a broader corporate governance reform designed to enhance conglomerates' ability to detect, and take effective measures to reduce, exposure to new, yet unidentifiable, emerging systemic risks.

A key theme that runs throughout this guidance is the crucial necessity for large BHCs to ensure that business strategies do not exceed the capability of business line management and of the risk management function to effectively contain and control the risks arising from each business line charged with executing its strategy. Risk tolerance must reflect the capacity of the risk management infrastructure.

Most recently, the FRB issued two sets of proposed guidance which this section discusses in detail, one on boards of directors in 2017 and the other on business management and the control functions in 2018. This guidance is based on a comprehensive review of large BHCs' corporate governance practices. The guidance sets forth highly explicit regulatory expectations for these components of BHCs' corporate governance. This guidance is part of the FRB's broader initiative to develop a supervisory rating system for LFIs.⁹⁶

93 See § 1.3.3.

94 JPMorgan generally ceased its subprime mortgage origination in fall 2006. From July 2007 through the second quarter of 2008, JPMorgan incurred only \$5 billion in losses on high-risk CDOs and leveraged loans, compared with \$33 billion at Citigroup and \$26 billion at Merrill Lynch. Shawn Tully, 'How J.P. Morgan steered clear of the credit crunch', *Fortune* (2 September 2008).

95 12 CFR Part 252.

96 Large Financial Institution Rating System; Regulations K and LL, 82 Federal Register 39049 (17 August 2017). The LFI initiative would apply generally to depository institutions with \$50 billion

6.3.1 FRB guidance on large BHCs' board effectiveness

The FRB published proposed guidance in August 2017 on the effectiveness of boards of directors of BHCs and savings and loan holding companies with total consolidated assets of at least \$50 billion, a threshold likely to increase to \$250 billion, and non-bank designated SIFIs.⁹⁷

The FRB views an effective board of directors as central to maintaining the safety and soundness and continued resiliency⁹⁸ of a firm's consolidated operations. The key thrust of the guidance is to distinguish between the roles of a board and of senior management by focusing on boards' 'core responsibilities' as a key means of enhancing financial stability. The FRB listed five core responsibilities of a board:

- (1) Set clear, aligned, and consistent direction for the firm's strategy and types and levels of risk, or 'risk tolerance'.⁹⁹
- (2) Actively manage information flow and board discussions.
- (3) Hold senior management accountable.
- (4) Support the independence and stature of risk management, compliance, and internal audit.
- (5) Maintain a capable board composition and governance structure.¹⁰⁰

The practical objective of the guidance is to ensure that boards maintain their oversight role by not becoming enmeshed in the chore of implementing their own approved strategy and risk management directives. This implementation is the function of senior management.¹⁰¹

6.3.1.1 Business strategy clearly aligned with risk tolerance

The primary focus of and priority in the 2017 guidance on effective boards is to ensure that a board's business strategy and risk tolerance are 'clear and aligned'

or more in total consolidated assets, a figure likely to be raised to \$250 billion to harmonize with the 2018 amendment to Dodd-Frank.

97 Proposed Guidance on Supervisory Expectation for Boards of Directors, 82 Federal Register 37219 (9 August 2017) [FR, Board of Directors Guidance]. In finalizing the guidance, the FRB will likely modify the \$50 billion threshold, since Congress in June 2018 enacted amendments to Dodd-Frank's EPS regulation from \$50 billion to \$250 billion in consolidated total assets but granted discretion to the FRB in regulating BHCs with total consolidated assets of at least \$100 billion.

98 The guidance defines 'resiliency' as maintaining effective governance and controls, including effective capital and liquidity governance and planning processes and sufficient capital and liquidity, to provide for the firm's continuity, and promote compliance with laws and regulations, including those related to consumer protection, through a range of conditions. Ibid 37224.

99 This book considers 'risk tolerance' and 'risk appetite' to have an equivalent meaning.

100 FR, Board of Directors Guidance 37220.

101 A leading legal practitioner in corporate governance has stressed the same dividing line between the board and senior management. According to Martin Lipton, boards cannot be involved in day-to-day management. Instead, through their oversight role, directors should satisfy themselves that senior executives and risk managers have designed and implemented risk management P&Ps that are consistent with the firm's strategy and risk appetite. The board should be aware of the type and magnitude of the company's principal risks and ensure that the CEO and the senior executives are fully engaged in risk management. Martin Lipton, 'Risk Management and the Board of Directors' (20 March 2018), Harvard Law School Forum on Corporate Governance and Financial Regulation, at <<https://corpgov.law.harvard.edu/2018/03/20/risk-management-and-the-board-of-directors-5/>>.

with one another and that business strategy includes a long-term perspective on risks and rewards consistent with the capacity of a firm's risk management framework. Put another way, a firm's business initiatives should not outrun its capacities to manage the risks created by these firms. For example, if a firm expands into a new line of business the board should consider the increased level of risk and the need to enhance control requirements to ensure that the risk management infrastructure can adequately incorporate the new business line.

The board should ensure that its risk tolerance is sufficiently detailed so that senior management can identify strategic objectives, create effective management structures, implement plans and budgets for each business line, and establish effective control functions. When clearly stated, risk tolerance will enable the CRO to set firm-wide risk limits, in the aggregate (by concentration and risk type) and on a granular basis. P&Ps that formalize these processes would promote alignment of business strategy with risk management. A firm's business strategy and risk tolerance are aligned when they are 'consistent, developed, considered, and approved together'. A board should approve 'significant policies, plans, and programs',¹⁰² such as liquidity risk management, if consistent with business strategy, risk tolerance, and risk management. To this end, significant policies, plans, and programs should contain sufficient clarity and allocation of responsibilities to allow a board to oversee senior management's implementation.

6.3.1.2 Information flow

The FRB found in its review that boards are overwhelmed by the quantity and complexity of the information they receive. Its guidance seeks to remedy this weakness.¹⁰³ A board actively manages information flow and deliberations so that it can make sound, well-informed decisions. The guidance states that effective boards direct senior management to provide timely and accurate information with an appropriate level of detail and context. Directors should take an active role in setting board meeting agendas so that content, organizations, and time allocation allows the board to discuss strategy trade-offs. If needed, directors can seek information outside routine board meetings. The BCBS 239 guidance on risk data aggregation and risk reporting dovetails with the FRB guidance on information flow.¹⁰⁴

6.3.1.3 Accountability of senior management

The FRB guidance identifies several attributes of effective boards vis-à-vis senior management. Broadly, boards should hold senior management accountable

102 'Significant policies, plans, and programs', in effect a defined term, consist of a capital plan, recovery and resolution plans, an audit plan, enterprise-wide risk management policies, liquidity risk management policies, compliance risk management programs, and incentive compensation and performance management programs. FR, Board of Directors Guidance 37225.

103 In separate, related guidance, the FRB also revised its policy to provide MRAs and MRAs to senior management rather than to directors in the first instance. See § 2.7.1.1 for a discussion of MRAs and MRAs.

104 § 6.3.5.1.

for implementing strategy and risk tolerance and maintaining a sound control framework. The guidance specifies a number of actions and activities by a board that can promote these objectives.

First, boards should evaluate senior management's performance and compensation. Second, boards must 'actively engage' with senior management. This entails ensuring sufficient time to hold frank discussions and debate on management presentations, encouraging diverse points of view, and considering how senior management's assessments and recommendations support board-approved strategies and risk tolerance. Third, effective boards translate robust and active inquiry into drivers, indicators, and trends related to current and emerging risks.¹⁰⁵ Fourth, boards should inquire into senior management's adherence to board strategy and risk tolerance, material and persistent deficiencies in the control functions, compensation programs that encourage 'prudent' risk-taking, and practices that emphasize regulatory compliance. Fifth, an effective board sets clear financial and non-financial performance objectives for the CEO, CRO, CAE, and other senior management that are aligned with the approved strategy and risk tolerance.¹⁰⁶

6.3.1.4 Support of independence and stature of control functions

Effective boards support the independence and stature of the control functions through active engagement on their audit and risk committees. They promote this goal by inquiring into material or persistent breaches of risk appetite and risk limits, timely remediation, and the appropriateness of the annual internal audit plan.

The FRB guidance indicates several ways in which boards can support such independence and stature. Boards should communicate directly with the CRO on material risk management issues; review its risk budget, staffing, and systems; give it direct, unrestricted access to the risk committee; ensure its inclusion on senior management committees; and ensure that risk tolerance and strategy align with risk management capacity after considering the risk management framework in relation to the firm's risk profile, size, and complexity. The FRB gives similar guidance with respect to internal audit.¹⁰⁷

6.3.1.5 Maintain capable board composition and governance structure

Boards should have a composition, governance structure, and set of practices relative to the firm's size, complexity, operations, and risk profile that ensure it can govern the firm effectively. To this end, the composition of the board should have the appropriate diversity of skills, knowledge, experience, and perspectives that enable it to perform its oversight role.¹⁰⁸

¹⁰⁵ Independent directors should be empowered to serve as a check on senior management. As examples the FRB points to a lead independent director with authority to set board meeting agendas or call meetings without the CEO and board chair.

¹⁰⁶ FR, Board of Directors Guidance 37225.

¹⁰⁷ Ibid. 37225–37226. See § 3.7.1, which describes the key elements in a risk management framework.

¹⁰⁸ FR, Board of Directors Guidance 37226.

6.3.2 FRB guidance on senior and business line management of large BHCs

The FRB issued proposed guidance in January 2018¹⁰⁹ on a board's role and responsibilities vis-à-vis senior management and the control functions that dovetails with its 2017 guidance on board effectiveness. The 2018 guidance presents its expectations for both senior management¹¹⁰ and line management¹¹¹ and for the risk management and internal audit functions.

6.3.2.1 Senior management

Senior management has responsibility for managing the firm's day-to-day operations, ensuring safety and soundness, and compliance with regulations and internal P&Ps. Key responsibilities include overseeing the activities of the firm's business lines¹¹² and the firm's independent risk management (IRM) function and system of ICs. Senior management is responsible for implementing the board-approved business strategy and risk tolerance. In this connection, it should maintain and implement an effective risk management framework and ensure that the firm appropriately manages risk consistent with its strategy and risk tolerance. Senior management also ensures a smooth firm-wide flow of information. In these day-to-day roles, it should base its decisions on a full understanding of the firm's risks and activities.¹¹³

6.3.2.2 Business line management

The FRB's expectations for business line management's risk management responsibilities and business decision making are to operationalize senior management's directives. Line managers set business and risk objectives for each business line in alignment with firm-wide strategy and risk tolerance. Line managers need to manage information flow upward effectively by explaining how they manage risks consistently with the firm's risk tolerance so that senior managers can act effectively regarding business strategy and risks. In addition, line managers should identify and manage risks stemming from business line activities and

109 Proposed Supervisory Guidance, 83 Federal Register 1351 (11 January 2018) [FR, Proposed Guidance on Business Management and Control Functions]. The guidance applies to domestic BHCs with at least \$50 billion of total consolidated assets, the combined US operations of FBOs with combined US assets of at least \$50 billion, and SIFI-designated non-banking firms. It also applies to savings and loans at the same threshold. FBOs are required to create intermediate BHCs and US risk committees in order to fulfill the FRB's corporate governance requirements.

110 These individuals are defined as the core group of individuals directly accountable to the board of directors for the sound and prudent daily management of the firm. *Ibid.* 1353.

111 These individuals are defined as the core group of individuals responsible for the prudent day-to-day management of the business line and who report directly to senior management. *Ibid.* 1353–1354.

112 A 'business line' is a defined unit or function of a financial institution, including associated operations and support, that provides related products or services to meet firm's business needs and of its customers, such as corporate treasury.

113 FR, Proposed Guidance on Business Management and Control Functions 1371. These include staying on top of key risk drivers and trends and material limit breaches; assessing the impact of the firm's activities and risk positions on the firm's capital, liquidity, and overall risk profile; and maintaining robust MIS. *Ibid.*

changes in external conditions. Managers should understand how risks of their individual business lines affect their business line in the aggregate.¹¹⁴

The FRB emphasizes the importance of clearly delineated roles and responsibilities to ensure that the business units act within the approved risk tolerance and within risk limits established by the IRM. Internal controls should demarcate the respective roles relating to business strategy and risk management. P&Ps should clearly define management's authority and align behavior with performance incentives. In addition, managers should ensure that their business lines ensure accountability for operating within internal policies and guidelines and regulations.¹¹⁵

Consultation with senior managers on limit exceptions should result in well-informed decisions on whether to accept or reduce risk exposure. Line managers also are responsible for testing controls to ensure that they are managing risks effectively and for remedying deficiencies. As the first line of defense, line managers are responsible for ensuring that controls prevent, detect, and remediate risk management and compliance failures.¹¹⁶

6.3.3 *FRB guidance on risk management and other control functions*

The FRB devotes considerable space to the 'IRM' function,¹¹⁷ illustrating its increasingly high regulatory expectations regarding risk management. The FRB's proposed guidance builds on Regulation YY, which mandates risk management's independence and appointment of CROs. Even in the context of other recent guidance, IRM guidance is quite prescriptive¹¹⁸ compared to that for other corporate governance roles. Chapter 3 provides a basic understanding of corporate governance and the principles and elements of risk management that is useful in understanding this FRB guidance. This section also covers the compliance risk function, the CRO, the CAE, and ICs, all of which support or otherwise promote the IRM function.

6.3.3.1 Overall objective of the IRM

The overall objective of IRM is to provide an objective, critical assessment of risks and ensure that a firm's business strategies remain aligned with its stated risk tolerance.¹¹⁹ The FRB guidance covers three areas of IRM's remit: risk tolerance and limits; risk identification, measurement, and assessment; and risk reporting.

114 Ibid. 1358.

115 Ibid. 1359.

116 Ibid. 1358.

117 The FRB's defined term for risk management is 'independent risk management'. This book uses the term risk management while discussing the attributes that contribute to its independence. It assumes this defined term does not alter the FRB's overall substantive guidance on this topic.

118 Nevertheless, the FRB states that except for CRO and CAE roles, the guidance does not 'purport to prescribe in detail the governance structure for a firm's IRM and controls'. FR, Proposed Guidance on Business Management and Control Functions 1359.

119 Ibid.

6.3.3.2 IRM: risk tolerance and limits¹²⁰

IRM should evaluate whether the firm's risk tolerance appropriately captures the firm's material risks and confirm that the risk tolerance is consistent with the capacity of the risk management framework. This specifically involves assessment whether the firm has sufficient resources and infrastructure. Notably, the FRB states that IRM should separately evaluate the firm's risk tolerance, which the board presumably has already approved,¹²¹ to ensure it appropriately captures material risks and aligns with the firm's strategy and corresponding business activities. IRM should additionally evaluate the risk tolerance to determine whether it:

- addresses risks under normal and stressed conditions and considers changes in the risk environment;
- includes risks associated with the firm's revenue generation and other aspects of risks inherent to the business, such as compliance, IT, and cybersecurity;
- incorporates realistic risk and reward assumptions that, for example, do not overestimate expected returns from business activities or underestimate risks associated with business activities; and
- guides the firm's risk-taking and risk mitigation activities.

IRM should also determine that enterprise-wide risk limits are consistent with the firm's risk tolerance for the firm's full set of risks. In addition, it should ensure assignment of clear, relevant, and current limits to specific risk types, business lines, legal entities, jurisdictions, geographical areas, concentrations, and products or activities that correspond to the firm's risk profile.¹²² Quantitative risk limits can relate to earnings, assets, liabilities, capital, or liquidity, among other areas. Qualitative limits can relate to other areas such as constraining business in a specified country.

The FRB states that, where possible, risk limits should:

- consider the range of possible external conditions;
- consider firm-wide aggregation and interaction of risks;
- be consistent with the firm's financial and non-financial resources; and
- reinforce compliance with regulation and consistency with supervisory expectations.

IRM monitoring should be ongoing. Thus, IRM should update risk limits, particularly when the firm's risk tolerance is updated, its risk profile changes, or

¹²⁰ This guidance is found at *ibid.* 1360–1361.

¹²¹ Several groups in the firm, including IRM, provide input and advice to the board in the approval process for the risk tolerance.

¹²² The guidance gives several examples, including single counterparty credit exposures and funding concentrations. FR, Proposed Guidance on Business Management and Control Functions 1361.

external conditions change. In addition, IRM should identify significant trends in risk levels to evaluate whether risk-taking and risk management practices are consistent with the firm's strategic objectives.

6.3.3.3 IRM: risk identification, measurement, and assessment¹²³

IRM should identify and measure current and emerging risks within and across business lines, and by legal entity or jurisdiction, as necessary. If quantitative risk assessment is difficult, IRM should do so qualitatively. Risk identification and assessment should be ongoing to reflect changes in exposures, business activities, the broader operating environment, and regulatory expectations.

IRM should identify risk types¹²⁴ and establish minimum identification and measurement standards to ensure consistency across risk types. Standards should be dynamic, inclusive, and comprehensive. IRM should obtain access to information about all risk-related exposures and seek input across the firm in risk identification while not relying on business line information exclusively. In addition, it should aggregate risks across the entire firm and assess them relative to the firm's risk tolerance and assess the likely and potential impact of material or critical concentrations of risks. Furthermore, it should assess risks and risk drivers within and across business lines and risk types.

IRM should analyze any assumptions related to risk identification, including information gaps, uncertainties, and limitations in risk assessments for senior management or the board, as appropriate. An example are new products or business lines. In such a case, IRM should acknowledge areas of insufficient information that limit a complete risk assessment and provide a plan to obtain the necessary information.

6.3.3.4 IRM: risk reporting¹²⁵

IRM should provide the board and senior management risk reports accurately, concisely, and in a timely manner, conveying material risk data and assessments and covering current and emerging risks and adherence to risk limits and the firm's ongoing strategic, capital, and liquidity planning processes. Reports should enable prompt escalation and remediation and support or influence strategic decision making. Such reporting should cover aggregate risks within and across business lines.

6.3.3.5 CRO¹²⁶

The CRO's role is to guide IRM to establish and monitor compliance with enterprise-wide risk limits, identify and aggregate the firm's risks, assess the firm's risk positions relative to the parameters of the firm's risk tolerance, and provide relevant risk information to senior management and the board. The CRO

123 Ibid.

124 These include credit, market, operational, liquidity, interest rate, legal, compliance, and related risks (such AML/BSA).

125 FR, Proposed Guidance on Business Management and Control Functions 1361–1362.

126 Ibid. 1359–1360.

should escalate issues to senior management and the board when firm-wide, risk-specific, or business line activities do not align with the firm's overall risk tolerance. An example is if risk management capacity is insufficient to manage risks of a new product line.

The FRB stresses the importance of the independence, authority, and stature of the CRO. The CRO must report directly to the board's risk committee and the CEO in order to promote the IRM's stature¹²⁷ and independence and must submit quarterly reports to the risk committee. The CRO should inform the board if his or her stature, independence, and authority are insufficient to provide independent assessments of the firm's risk management framework. Also, the CRO should be included in key decisions relating to strategic planning and other areas. To ensure independence from the business lines, the CRO should establish clearly defined roles, responsibilities, and reporting lines. The CRO should also assess whether IRM has appropriate staffing, sufficient authority to identify and escalate material risk management and control deficiencies, and challenge business managers when warranted.

6.3.3.6 Chief audit executive¹²⁸

The internal audit function conducts independent assessments of the effectiveness of a firm's IC system and risk management framework. The board should appoint a CAE who has sufficient capability, experience, independence, and stature to manage the internal audit function's responsibilities and the authority to oversee all internal audit activities. The CAE should report findings and audit-related issues to the board's audit committee and senior management.

6.3.3.7 Internal controls¹²⁹

The FRB sets forth two principles governing ICs. First, a firm should identify its IC system and demonstrate that it is commensurate with the firm's size, operations, activities, risk profile, strategy, and risk tolerance and is consistent with all applicable regulation. Business line management, among other parties, is responsible for developing and maintaining an effective system of ICs. A firm should integrate control activities into daily functions of all relevant personnel. The FRB guidance lists several categories of ICs.¹³⁰

127 The guidance defines stature, among other things, as the ability and authority to influence decisions and effect change throughout a firm. *Ibid.* 1359 n. 43.

128 *Ibid.* 1360.

129 *Ibid.* 1362.

130 The guidance specifies the following categories:

- P&Ps that set expectations relating to the firm's business activities and support functions.
- P&Ps that establish levels of authority, responsibility, and accountability for overseeing and executing the firm's activities and standards for prudent risk-taking behaviors.
- Clear assignment of roles and responsibilities and appropriate separation of duties.
- Physical controls for restricting access to tangible assets.
- Approvals and dual authorizations for key decisions, transactions, and execution of processes.
- Verifications of transaction details and periodic reconciliations, such as those comparing cash flows to account records and statements.

Second, a firm should regularly evaluate and test the ICs' effectiveness using a risk-based approach, and monitor their functioning to identify and timely communicate deficiencies. Thus, a firm should have mechanisms to test ICs and identify and escalate issues concerning deficiencies. Typically, testing is periodic and monitoring is ongoing. A firm should establish management information systems (MIS) that track IC weaknesses and escalate serious matters to all appropriate parties, including the board.

6.3.4 Board risk committee requirements for large BHCs¹³¹

Dodd-Frank originally required publicly traded BHCs with at least \$10 billion and less than \$50 billion in total consolidated assets to have risk committees and an enterprise-wide risk management framework, with more stringent requirements for BHCs at the \$50 billion threshold. The Bipartisan Banking Act in 2018 continued to require FRB rules for \$50 billion BHCs and *reserved* authority for it to require risk committees for BHCs with at least \$10 billion in total consolidated assets. The FRB stated that BHCs in the latter category do not need to comply with the risk committee requirements until it has issued a revised rule. This section thus summarizes the rule provisions applicable to BHCs with \$50 billion in total consolidated assets

6.3.4.1 Risk committees of BHCs with \$50 billion or more in total consolidated assets

BHCs must maintain a risk committee that approves and periodically reviews the risk management policies of its global operations and oversees the operation of its global risk management framework. Such a framework must correspond to the firm's size, risk profile, and complexity and, at a minimum, include the following components:¹³²

- *Policies and procedures.* P&Ps are required for risk management governance, procedures, and infrastructure for global operations.
- *Processes and systems.* These facilitate implementing and monitoring compliance with the aforesaid P&Ps.¹³³
- *Risk committee's responsibility.* The committee must include liquidity risk management as per the liquidity rule's specifications.¹³⁴

-
- Access controls, change management controls, data entry controls, and related controls.
 - Escalation procedures with a system of checks and balances in situations allowing for managerial or employee discretion.Ibid.

131 This section covers only requirements for US BHCs. Separate requirements apply for FBOs.
132 12 CFR § 252.33.

133 Such 'processes and systems' must identify and report risks and risk management deficiencies, establish managerial and employee responsibility for risk management, ensure independence of the risk management function, and integrate risk management and associated controls with management goals and compensation structures for global operations. 12 CFR § 252.33(a)(2)(i)–(ii).

134 The BHC's board, among other things, must annually approve an acceptable level of liquidity risk and at least semi-annually determine if the BHC is operating within its liquidity risk tolerance.

- *Corporate governance requirements.* The committee must be an independent board committee with sole, exclusive responsibility for IRM policies for global operations and oversight of the global risk management framework, report directly to the BHC's board, and receive and review quarterly reports from the BHC CRO. The committee must have a board-approved formal, written charter, and quarterly meetings with fully documented proceedings.
- *Member requirements.* At least one member must have experience in identifying, assessing, and managing risk exposures of large, complex firms. The chair must be an independent director.¹³⁵

6.3.5 Regulatory expectations for risk data aggregation and risk reporting

The BCBS has issued guidelines concerning risk data aggregation and risk reporting for large banking organizations that the US banking agencies have yet to implement. Nevertheless, these guidelines form an important source of regulatory expectations for internationally active banking firms. US regulatory expectations for BHCs and intermediate holding companies (IHCs) of FBOs¹³⁶ regarding stress testing and living wills are consistent with these BCBS principles. This section covers the most important aspects of these guidelines.

6.3.5.1 BCBS 239

The BCBS issued 14 principles, known as BCBS 239, on data aggregation and risk reporting in 2013. It noted that a key lesson of the GFC was the inability of management of large, complex financial institutions to obtain timely, material information on the risk exposures throughout their firms.¹³⁷ Timothy Geithner had flagged a warning in a similar vein in 2005.¹³⁸ Shortcomings in data aggregation likely materially contributed to risk management deficiencies highlighted in this chapter during Phase I that preceded the crisis.¹³⁹ Leading up to and during

The rule provides in granular detail the parameters of required liquidity risk management pertaining to contingency planning and event management, risk limits, testing, and types of acceptable collateral for counterparties. 12 CFR § 252.34.

¹³⁵ UK and EU regulators focus more on the composition of the risk committee as a whole. The EBA requires members with 'appropriate knowledge, skills, and experience concerning risk management and control practices'. Steve Marlin, 'Bank risk committees: desperately seeking risk managers', *Risk.net* (27 June 2018). Members' skill set can include an understanding of non-financial risks such as geopolitical, reputational, and cyber risk. *Ibid*.

¹³⁶ Foreign banking organizations are required to form IHCs in order to operate in the US.

¹³⁷ Basel Committee on Banking Supervision, 'Principles for effective risk data aggregation and risk reporting' 1 (January 2013) [BCBS, Risk data aggregation].

¹³⁸ Timothy Geithner, FRBNY president at the time, stated that most firms faced considerable challenges in aggregating exposures across the firm, capturing exposure concentrations in credit and other risks, and conducting stress tests and scenario analysis on a fully integrated bases to gauge exposures generated across an increasingly diverse array of activities. Timothy Geithner, 'Risk management challenges in the US financial system', Speech before the Global Association of Risk Professionals (28 February 2006), at <www.bis.org/review/r060303a.pdf>.

¹³⁹ § 6.2.5.

the GFC many banks lacked the ability to aggregate risk exposures and identify concentration quickly and accurately at the BHC level, across business lines, and between legally separate entities. This significantly undermined their ability to conduct risk management, with systemic risk ramifications.¹⁴⁰

BCBS 239's ultimate objective is to ensure that banks have a strong governance framework, risk data architecture, and IT infrastructure.¹⁴¹ 'Risk data aggregation' involves defining, gathering, and processing risk data according to a bank's risk reporting requirements to enable it to measure its performance against its risk appetite.¹⁴² In this regard, IT systems are of paramount importance to achieve compliance with BCBS 239. Banks need IT and data aggregation capabilities to support firm-wide management of risks.

Aggregated risk reporting is a key need for regulators to identify emerging systemic risks. Improving banks' risk data aggregation capabilities also improves resolvability, such as finding merger partners, often an eleventh-hour but preferable solution to insolvency during a market crisis. National resolution authorities should have access to this information for G-SIBS.¹⁴³ The FSB has launched several initiatives to improve data aggregation and reporting for regulatory purposes.¹⁴⁴

6.3.5.2 Progress in compliance with regulatory expectations under BCBS 239

Progress in BCBS 239 compliance has been uneven. The BCBS noted in a 2017 assessment that most banks had made, at best, marginal progress in implementation of BCBS 239, with only three of the 30 G-SIBS achieving full compliance.¹⁴⁵ In the US, the CCAR and DFAST stress testing, which are data intensive exercises, and living will programs have led the large BHCs to devote considerable resources to enhancements in data governance and reporting, which should bring US banking organizations closer to BCBS 239 expectations. A core CCAR requirement includes ICs to ensure reliable data and information systems. However, as the 2018 CCAR results show, progress has not been smooth.¹⁴⁶

140 BCBS, Risk data aggregation 1.

141 Ibid. 6. A banking group's structure should not hinder consolidated data risk aggregation at any level. Ibid. 7.

142 Ibid. 1–2.

143 Ibid. 1. Moreover, such capability results in efficiency gains, reduced probability of losses, enhanced strategic decision making, and ultimately increased profitability. Ibid.

144 These include a Legal Entity Identifier system and a common data template for G-SIFIs to address key information gaps identified during the GFC, such as OTC bilateral exposures and exposures to countries, sectors, and instruments. Ibid. 2.

145 Basel Committee on Banking Supervision, 'Progress in adopting the principles for effective risk data aggregation and risk reporting' (21 June 2018) 4.

146 The FRB objected to a foreign bank's capital plan due, in part, to material weaknesses in data capabilities and controls. Federal Reserve Board, 'Comprehensive Capital Analysis and Review 2018: Assessment Framework and Results' (June 2018) 24. More generally, certain firms fell short of regulatory expectations in data and IT infrastructure. Ibid. 3.

6.3.6 Supervisory regime for LISCC firms and other large, complex BHCs

The FRB established the LISCC in 2010 to coordinate supervisory oversight of SIFIs. LISCC firms are the largest BHCs and FSOC-designated non-banks.¹⁴⁷ There were 12 LISCC firms as of 9 November 2018. To put this number in perspective, 35 BHCs participated in the CCAR 2018 program. As necessary, the LISCC takes action to increase the financial and operational resiliency of SIFIs in order to reduce the potential of their material financial distress or failure. To achieve these objectives, the LISCC develops both micro- and macro-prudential views of LISCC firms, using multidisciplinary input from the Federal Reserve Banks. This input includes feedback from supervisors, economists, payments system experts, and market analysts; information from horizontal examinations, stress testing, and scenario analysis; and increased collection and use of consistently and timely reported firm-specific data.¹⁴⁸

6.3.6.1 CCAR, CLAR, and SRP components of LISCC program

The Federal Reserve has four priority areas in supervising LISCC firms: capital adequacy and capital planning; liquidity sufficiency and resiliency; corporate governance; and recovery and resolution planning. The LISCC operating committee oversees the execution of the three horizontal exercises involving LISCC firms and directs resources toward these priorities: the CCAR, the Comprehensive Liquidity Analysis and Review (CLAR), and the Supervisory Assessment of Recovery and Resolution Preparedness (SRP). Chapter 7 discusses the CCAR program in detail.¹⁴⁹ The CLAR is the Federal Reserve's annual, horizontal, forward-looking program to evaluate LISCC firms' liquidity position and liquidity risk management practices. The SRP is the Federal Reserve's annual horizontal review of LISCC firms' progress in removing impediments to orderly resolution. This SRP review is an additional layer of oversight over the 'living will' program.

6.4 Conclusion

Global regulators have developed a comprehensive program that tackles systemic risk on multiple fronts. This chapter has focused on the lessons learned in Phase I that preceded the GFC regarding the deficiencies in risk management and corporate governance practices that contributed to the ensuing liquidity and credit crisis. Those firms that performed relatively well had reduced their exposure to subprime mortgage assets or limited their entry into that market in the first instance.

147 FRB, 'SR 12-17: Consolidated Supervision Framework for Large Financial Institutions' (17 December 2012). The Federal Reserve designates LISCC BHCs based on size, interconnectedness, lack of available substitutes for services they provide, and cross-border activities. As of December 31, 2018, there were no non-bank financial institutions designated by FSOC as SIFIs.

148 Federal Reserve Board, 'SR 15-7: Governance Structure of the LISCC Supervisory Program' (17 April 2015) 2.

149 § 7.4.2.

The SSG identified certain governance processes and risk controls of these better performing firms. The guidance on boards, management, and risk management subsequently issued by the FRB and BCBS largely mirror these firms' risk management practices. These firms' internal governance mechanisms ensured that information relating to problems on the ground level moved promptly and effectively across business lines and up to the senior management. They generated asset valuations using a variety of internal and external sources and applied these valuations consistently across the firm. They imposed economic capital charges on business lines, reflecting a genuine attempt to incorporate the underlying fat-tail risks of a given banking or trading book exposure into their risk management framework and within their risk appetite. These internal processes allowed these firms not only to gather critically relevant information on a firm-wide basis but to act promptly to change strategic direction before risks became an existential threat to their franchise.