Market governance, financial innovation, and financial instability: lessons from banks' adoption of shareholder value management

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Abstract

As the economy has grown increasingly financialized, the relationship between financial innovation and instability has attracted more attention. Previous research finds that the proliferation of complex financial innovations, like asset securitization and new financial derivatives, helped to erode the market governance arrangements that kept excessive bank risk-taking in check, inviting instability. This article presents an alternative way of understanding how financial innovations and market governance arrangements combine to shape instability. Market governance arrangements also shape how financial firms *receive* innovations, leading to greater or lesser instability at particular times and places. I illustrate this argument by tracing the effects of changing corporate governance arrangements at large US banks in the 1990s and 2000s. Like non-financial firms in the preceding decade, banks adopted reforms associated with the shareholder value model of corporate governance. These changes to internal bank governance arrangements affected the agendas of bank executives in ways that encouraged expanded use of securitization and derivatives. Drawing from this case, I argue that a full understanding of instability in the financialized era requires closer attention to the (institutionally-structured) interests of financial innovation *users*—not just to features of financial innovations themselves.

Keywords Bank risk-taking · Corporate governance of banks · Financial derivatives · Financialization of banking · Securitization · Shareholder value management

Increasing bank reliance on complex financial innovations is a hallmark of the recent turn towards financialization (Bryan and Rafferty 2006; van der Zwan 2014; Cetorelli et al. 2012). Prior to the 1980s, US banks made most of their money from traditional banking activities, like accepting deposits, making loans to consumers and businesses,

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or investing in low-risk government securities. But with the turn towards financialization, banks became more dependent on revenue from two financial innovations in particular: asset securitization and new financial derivatives. We can see evidence of this turn towards non-traditional activities in changing sources of bank income. In 1986, the average large US bank received 70% of income in the form of *interest income* (e.g. income earned from traditional banking activities, like lending and deposit-taking), and only 30% of income in the form of *non-interest income* (e.g., income earned from less traditional banking activities, like trading, securities, or other fee-based activities). By 2003, this gap had narrowed: the share of interest income dropped below 53%, while the share of non-interest income climbed above 47% (DeYoung and Rice 2004, p. 38, their Table 3). Asset securitization revolutionized the banking business by giving banks tools to repackage previously illiquid assets (like auto loans, mortgages, or credit card receivables) in the form of debt securities, which could then be sold and traded in the marketplace. New financial derivatives allowed banks to unbundle the ownership of risk from the ownership of the asset itself. Both innovations presented new profit opportunities to banks and helped to expand the size of the financial sector. But as the events of the global financial crisis revealed, these innovations also exposed banks and the financial system to new risks (Acharya et al. 2013; Goldstein and Fligstein 2017; Davi 2009; Shin 2009).

A large body of research in economics, finance, and sociology brings attention to different ways that securitization and derivatives contribute to financial instability. This literature emphasizes the inherent features of these innovations and how they work to weaken the formal and informal market governance arrangements that keep stability intact. One branch of research explores how the inherent complexity and opacity of securitization and derivatives disrupts the external pressures and internal incentives that ordinarily keep bank risk-taking in check (e.g., Boot 2011; Coval et al. 2009; MacKenzie 2011; Acharya 2013; Purnanandam 2011). A second branch of research examines the role of these innovations in eroding the quality of formal regulation (Funk and Hirschman 2014; Johnson and Kwak 2010). In this article, I highlight an additional way that financial innovations and market governance arrangements can combine to shape instability. The central argument is that financial innovations not only reshape market governance arrangements—market governance arrangements have reciprocal effects for the outcomes of financial innovation.

Specifically, I focus on the effects of corporate governance arrangements, which create incentives for executives to use financial innovations in more or less prudent ways. I argue that closer attention to these arrangements, which vary across countries and over time, allows for a deeper understanding of where and when financial instability is most likely to emerge. To support this argument, I analyze the causes and consequences of shifting corporate governance arrangements at large US banks in the 1990s and 2000s. Although the effects of the rise of the shareholder value model of corporate governance in the non-financial sector are now well-known (e.g., Lazonick and O'Sullivan 2000; Useem 1996; Dobbin and Zorn 2005; Fligstein 2001; Davis 2009), we know much less about the extent to which this model has traveled to the financial sector or what the effects of this have been (cf. Prowse 1997; Adams and Mehran 2012). Drawing from archival data collected from past issues of *American Banker*, a daily trade newspaper covering the financial services industry, and data on the prevalence of shareholder value practices and strategies within a sample of 157

large, publicly-traded US banks, I find that the same powerful financial market actors that pushed for radical change in the governance of non-financial firms pushed banks to adopt similar reforms in the 1990s and 2000s.¹ Institutional investors and securities analysts pressured banks to compensate executives with performance pay; to embrace riskier, market-based funding sources; to cut costs through a variety of techniques; and to adopt enterprise risk management programs with the goal of boosting risk-adjusted returns. Banks also responded to mounting market and regulatory pressures by appointing new executives, like Chief Financial Officers (CFOs) and Chief Risk Officers (CROs), to manage investor and regulatory demands. I argue that all of these trends favored increased use of risky (but also potentially lucrative) financial innovations like securitization and derivatives.

These changes to internal bank governance practices were also deeply linked to, and reinforced by, changes in the external regulatory environment. We know that lax regulation in the 1990s and 2000s encouraged banks to branch out into riskier activities (e.g., Thiemann and Lepoutre 2017; Johnson and Kwak 2010; Admati and Hellwig 2013); I suggest that this broader regulatory environment also contributed to the rise and reinforcement of the shareholder value model. Financial deregulation in the 1980s sparked the interest of institutional investors in the banking sector: in this way, external regulatory changes paved the way for internal governance reforms that promoted bank risk-taking and fragility. Moreover, the US banking regulators' commitment to enhancing market discipline in the 1990s and 2000s led them to view private market actors as important partners in effective regulation—a perspective that blinded them to the hazards of the reforms these market actors promoted. These examples highlight how external governance arrangements can also contribute to the production of financial instability indirectly, through effects for internal bank governance arrangements.

Financial innovation and financial instability

Existing scholarship on financial innovation and financial instability explains how complex innovations can disrupt informal and formal market governance arrangements. One line of research examines how innovations like securitization and derivatives interfere with the informal market mechanisms that prevent banks from assuming too much risk (Shleifer and Vishny 2011; Gennaioli et al. 2012; Boot 2011; Judge 2012; Johnson and Kwak 2012). The inherent complexity and opacity of these innovations can blind market participants to the associated risks, leading them to make excessive use of these instruments. The end products of securitization, like asset-backed securities (ABS) and higher-order collateralized debt obligations (CDOs), are notoriously complex, and Coval et al. (2009) argue that this feature led credit ratings agencies, investors, and regulators to misjudge the true risk of these instruments. Similarly, Judge (2012) argues that the complexity of ABS discouraged investors from adequately scrutinizing the quality of assets contained within these transactions, while MacKenzie

¹ The sample was constructed by collecting information on all commercial banks that ever appeared on Standard and Poor's 1500 index between 1995 and 2015. This yielded a sample of 163 banks. I excluded six banks that lacked data on derivatives holdings.

(2011) finds that the inherent complexity of ABS CDOs made it difficult for market participants to estimate correlations between the underlying assets. Financial derivatives are also notoriously complex and opaque, particularly newer variants that trade on opaque over-the-counter (OTC) markets. Contracts in OTC markets are written directly between counterparties without the supervision of an exchange, and little information on their terms is publicly available. Acharya et al. (2013) finds that participants in these markets often systematically underpriced (or required insufficient collateral for) the true risk of OTC derivatives.

A second line of research explores how securitization weakens traditional relationships between banks and borrowers that encourage prudent lending. Historically, banks have held assets (like mortgages, auto loans, or credit card receivables) to maturity, in part because there was no secondary market for these assets. Few investors were willing to take on the kind of risk a bank assumes in lending to individual borrowers. This changed with the rise of asset securitization. Pooling many assets together reduced the impact of any single default; the tranche structure of these transactions allowed for customized risk exposures to match investors' needs. As the end products of securitization became more attractive to investors, the banks that supplied loans for these transactions faced changing incentives (Purnanandam 2011; Immergluck 2009; Mayer et al. 2009; Fligstein and Roehrkasse 2016). When lenders originate new loans to sell to investors, they no longer have the same motivation to screen and monitor borrowers effectively.

A third line of research examines how the emergence of financial innovations increased pressures for financial deregulation. The deregulation of the 1980s and 1990s heightened instability in the financial system through multiple channels, like enabling households to take on more debt, increasing competition among financial institutions, and freeing commercial banks to engage in activities that proved inappropriate in hindsight (e.g., Krippner 2011; Prasad 2012; Tomaskovic-Devey and Lin 2011). Funk and Hirschman (2014) argue that the introduction of complex financial innovations helped to facilitate US financial deregulation. The authors find that the emergence of one particular kind of financial derivative—the interest rate swap—complicated distinctions between traditional commercial and investment banking by bringing banks and securities firms into more direct competition. This change in market structure led to changes in the political landscape, creating conditions where “the categorical map of the field embedded in the law no longer reflected the actual business practices of the increasingly unified financial industry” (Funk and Hirschman 2014, p. 690). This growing gap between industry and regulatory structure shifted the political burden onto actors who hoped to preserve regulations, paving the way for deregulation.

In summary, previous research shows that the rise of new, complex financial innovations (like securitization and derivatives) contributed to the weakening of a particular set of market governance arrangements, including scrutiny by financial market participants, bank self-restraint, and the quality of formal regulation. I build upon these findings by suggesting that an alternative set of market governance arrangements—specifically, the rise of shareholder-value-oriented governance practices in the banking sector—helps to explain why banks became so dependent on these innovations in the first place.

Before proceeding with the argument, it is important to clarify how heavy bank reliance on risk-transfer mechanisms like securitization and derivatives might

contribute to financial instability. On the one hand, these financial instruments allowed banks to offload certain kinds of risk. Securitization gave banks a tool to transfer credit risk to other financial market participants, reducing idiosyncratic risk for these institutions (e.g., the specific risks associated with the bank's area of lending). Derivatives also gave banks a tool to counterbalance (or hedge) undiversified risk exposures, further reducing idiosyncratic risk (Nijskens and Wagner 2011). Yet both financial instruments also exposed banks to new risks, including systemic risk. When banks used securitization and derivatives to reduce idiosyncratic risk, they also increased the correlation between their own risk exposures and those of other financial institutions (Nijskens and Wagner 2011). As this correlation increased, so did the probability that banks would suffer losses jointly, making systemic crisis more likely (Elsinger et al. 2006; Acharya and Yorulmazer 2007; Wagner 2008). Previous research also finds that banks used tools like securitization to shed less risky assets while retaining riskier ones, which had the effect of increasing risk in the banking industry overall (Jones 2000; Jiangli and Pritsker 2008; Dionne and Harchaoui 2008; Uzun and Webb 2007). Both sources of systemic risk increased with (1) the size of securitization and derivatives markets and (2) the extent of commercial bank exposure to these markets (Nijskens and Wagner 2011; Cetorelli and Peristiani 2012).²

Both factors—market size and the extent of bank exposure—varied across countries and over time. Heavy bank reliance on securitization and derivatives reached its greatest expression in a particular country (the United States) during a particular time period (after the early 2000s). The United States led the rest of the world in the issuance and underwriting of ABS, mortgage-backed securities (MBS), and CDOs (Cetorelli and Peristiani 2012, p. 52), and commercial banks were “by far the predominant force in the securitization market” (Cetorelli and Peristiani 2012, p. 58). Large US banks were also global leaders in constructing and trading financial derivatives.³ Both kinds of financial innovations had been available to banks since the mid-1980s, but their popularity soared after the early 2000s. Figure 1 presents trends in the notional amount of derivatives held between 1995 and 2007 by my sample of 157 large, publicly-traded US commercial banks. Bank holdings of newer, riskier variants of OTC derivatives (over-the-counter options, swaps, and credit derivatives) increased sharply after 2002. Similar trends hold for asset securitization: ABS issuance increased 16-fold between 1990 and 2006 (US Census 2011). Moreover, trends in the *quality* of ABS and CDOs follow a similar pattern: early vintages of these securities substantially outperformed those issued after the early 2000s (Tavakoli 2008). Existing theories offer only limited

² Heavy reliance on securitization and derivatives also presented additional, non-systemic risks to banks. After using securitization and derivatives to transfer credit risk, many banks expanded risk in other domains, including lending and capital structure (Instefjord 2005, Wagner 2007; Jiangli and Pritsker 2008). Moreover, many banks failed to transfer fully the risk of the assets they securitized. During the crisis, banks suffered heavy losses from implicit and explicit guarantees offered to securitization programs and retained investments in these programs (Acharya et al. 2013; Nijskens and Wagner 2011). OTC derivatives also increased individual bank exposure to counterparty risk (e.g., the risk that the other side of the contract will fail to pay up) and liquidity risk (e.g., the risk that the bank will not be able to unwind its exposure for the expected value) (Nijskens and Wagner 2011; Davi 2009). Banks active in these markets faced these risks regardless of whether they used derivatives to hedge or speculate.

³ The opacity of OTC derivatives markets, combined with cross-national differences in accounting standards, do not allow for direct cross-national comparisons of bank derivatives holdings. However, it is evident that large US banks were central in making markets for these financial instruments.

insight into these comparative and temporal trends. Inherent features of securitization and derivatives, like their complexity and opacity, do not explain why US banks were so comparatively eager to embrace them. Adding to the puzzle, many banks that issued MBS and CDOs also retained large investments in these securities, implying that perverse incentives for lenders explain only part of the story (Goldstein and Fligstein 2017; Acharya and Richardson 2009). Furthermore, trends in the *comparative pace* of financial deregulation suggest that the relationship between financial innovation and financial deregulation may be more complex than previously recognized. Although markets for securitization and derivatives emerged comparatively early in the United States, financial deregulation arrived comparatively late. Table 1 lists four events that have received the most attention from scholars of US financial deregulation, including the deregulation of deposit rate ceilings, limits on thrift activities, limits on interstate branching, and limits on bank participation in securities activities. Table 2 presents the dates that similar events occurred in five of the world's other major financial capitals (Germany, France, Canada, Spain, and the United Kingdom). Across all four domains of deregulation, US policymakers were consistently the last or among the last to dismantle established regulatory restrictions. While the rise of market-disrupting innovations surely amplified pressures to deregulate in all countries, these cross-national trends point to the need to look beyond the effects of the innovations alone.

I argue that the changing corporate governance practices of US banks, and their connections to changing patterns of formal regulatory governance, help to illuminate these comparative and temporal trends. I build this argument in the sections to come. The first section describes what scholars in economic sociology and related disciplines have already discovered about the causes and consequences of the shareholder value revolution among non-financial firms. The second section presents evidence that a corresponding revolution took place among US banks in the 1990s and 2000s, which

Fig. 1 Notional amount held of six types of derivatives, 1995 to 2007

Table 1 Four major events of US financial deregulation

Date	Deregulatory Event	Description
1980	<i>Depository Institutions and Monetary Control Act</i>	Eliminated regulatory ceilings on the interest rates banks could offer on time or savings deposits
1982	<i>Garn-St. Germain Depository Institutions Act</i>	Broadened the range of permitted activities for non-bank savings institutions (thrifts)
1994	<i>Riegle-Neal Interstate Banking and Branching Efficiency Act</i>	Repealed prohibitions on banks opening branch offices in other states
1999	<i>Gramm Leach Bliley Act</i>	Repealed prohibitions on bank affiliation with organizations engaged in the underwriting, sale, or distribution of securities

had many similar (but also some different) causes. It describes the shareholder value remedies that achieved widespread popularity in the banking sector, including mergers and acquisitions, performance pay for executives, heavy reliance on market-based funding sources, cost-cutting measures, and enterprise risk management programs. The third section explains how these changes to bank governance and strategy led to corresponding changes in the agendas of bank CEOs and helped to propel the rise of CFOs and CROs. These changes to bank governance encouraged executives to focus on short-term profitability and increasing share price; they also encouraged the expanded use of complex and opaque financial instruments, which were thought to boost profitability through multiple channels.

The shareholder value revolution among non-financial firms

In the late 1970s, a group of financial economists known as *agency theorists* offered a new theory to explain declining US corporate profitability. Firms were in trouble, they

Table 2 Patterns of financial deregulation in the United States, Canada, Spain, Germany, France, and the United Kingdom between 1960 and 1999

	Restriction to Be Deregulated			
	Interest Rate Ceilings	Bank Branching Restrictions	Prohibition on Securities Activities	Limits on Savings Bank Activities
USA	1980	1994	1999	1982
Canada	1967	–	1987	1980
Spain	1974	1977	1974	1977
Germany	1967	–	–	–
France	1984	1966	1966	1966
UK	1971	–	1986	1986

Note: If a country never had a similar regulatory restriction to begin with, I denote this with “–”. This table marks the date of deregulation at the federal level in each country. The same substantive patterns hold even if the timing of deregulation is measured from the date that the first US state dismantled the restriction

argued, because the interests of their managers (executives) and owners (shareholders) were fundamentally misaligned (Jensen and Meckling 1976; cf. Lazonick and O'Sullivan 2000). While shareholders sought high returns on their investments, executives sought “a quiet life” at the helm of large and stable conglomerates. To redirect executive focus towards profit maximization, agency theorists offered a series of corporate governance reforms. They encouraged firms to adopt more streamlined, specialized operations, on the grounds that greater profits for investors could be achieved if managers stuck to areas of core competence (Amihud and Lev 1981). They pushed a new model of executive compensation (e.g., performance pay) that rewarded executives for increasing shareholder wealth and encouraged firms to expand reliance on debt financing. Greater reliance on debt would help firms avoid issuing new equity (which diluted the profit share of existing shareholders) and would encourage executives to pursue more high-risk, high-reward ventures to compensate for higher borrowing costs (Jensen and Meckling 1976). Agency theorists also promoted changes to corporate board structure to allow for better monitoring and disciplining of executives.

In the 1980s and 1990s, the boards of the leading non-financial firms selectively adopted these prescriptions. The agency theory prescriptions that were widely taken up by firms were those that also aligned with the interests of powerful professional groups in financial markets, like hostile takeover firms, institutional investors, or securities analysts (Dobbin and Zorn 2005; Dobbin and Jung 2010; Fligstein 2001; Heilbron et al. 2014). As hostile takeover firms targeted diversified conglomerates, “busting up” these organizations and selling off their unrelated business lines at a profit, firms became substantially less diversified (Davis et al. 1994; Fligstein and Markowitz 1993). Institutional investors, too, used the stronger voice they had acquired in corporate strategy post-WWII to push for de-diversification; they also promoted performance pay and debt financing (Dobbin and Zorn 2005). Institutional investors are compensated on the basis of short-term fund performance, which gives them a vested interest in promoting strategies designed to maximize firm share price in the short term (Useem 1996; Fligstein 2001; Dobbin and Zorn 2005). Securities analysts further encouraged these trends. Firms that successfully “make the quarter” by meeting or exceeding analysts’ quarterly earnings forecasts are rewarded by the market, while firms that fall short are heavily penalized. The desire to attract more (and more positive) analyst coverage provided an additional incentive for firms both to streamline industry focus (Zuckerman 1999) and to appeal to investor preferences (Dobbin and Zorn 2005).⁴

Other prescriptions proved less popular. Although institutional investors and securities analysts successfully pushed firms to adopt certain kinds of performance pay (e.g., stock options, performance-linked bonuses), they failed to promote equity compensation. Stock options and bonuses reward executives for achieving short-term gains in share price, but do not penalize them for losses; this encourages these actors to pursue high-risk, high-reward strategies without regard to downside risk (Burns and Kedia 2006; Dobbin and Zorn 2005). Equity-holding, on the other hand, exposes executives to both gains and losses, which might have helped to counteract this

⁴ Zuckerman (1999) finds that conglomerates (which do not fit neatly into established industry categories) are less likely to be covered by securities analysts, who specialize by industry; since greater analyst coverage is linked to a higher market valuation, this provided yet another reason for non-financial firms to de-diversify.

short-term focus. But boards did not require executives to hold equity. While some firms did restructure their boards to improve executive monitoring, these changes were limited and their effects were minor at best (Dobbin and Jung 2010, pp. 38, 48–49, 54). The overall pattern was one of firms embracing shareholder value remedies that encouraged executive risk-taking while neglecting those that fostered executive self-restraint; these shifting corporate governance arrangements have been linked to greater corporate fragility and heightened incentives for risk-taking, short-termism, and corporate malfeasance (e.g., Burns and Kedia 2006; Efendi et al. 2007; Campello 2006; Crutchley and Hansen 1989).

Heightened pressures on firms to meet market expectations also contributed to the rise of a new executive, the Chief Financial Officer (CFO). As CEOs became more attuned to the need to present financial statements in the best possible light, they turned to finance and accounting experts for help. The popularity of the CFO position increased dramatically in the 1980s and 1990s, in line with their increased value to CEOs (Zorn 2004). CFOs often proactively managed market expectations, through issuing earnings pre-announcements and offering frequent updates on strategic direction to analysts (Dobbin and Zorn 2005; Zorn 2004, p. 352). A number of high-profile CFOs took this mandate too far in the early 2000s, using fraudulent accounting maneuvers to hide evidence of poor firm performance. This led to a wave of corporate scandals and a regulatory overhaul of accounting and risk-management practices (Sarbanes-Oxley Act of 2002).

Causes of the shareholder value revolution in banking

Compared to non-financial firms, banks are more tightly regulated, highly leveraged, and less dependent on equity capital—all characteristics that might have insulated them from pressures to adopt shareholder value management.⁵ Banks also have a well-established history of serving stakeholders beyond shareholders, like local communities, depositors, or regulators (e.g., Marquis and Lounsbury 2007; Calomiris and Haber 2014). Yet US banks did eventually follow US non-financial firms in embracing shareholder value remedies in the 1990s and 2000s, despite these countervailing pressures. In what follows, I describe the causes of this shift in the dominant model of bank corporate governance.

Financial deregulation and changing investor perceptions of banks

Institutional investors and securities analysts had little interest in banks between the early 1960s and the mid-1980s. In 1964, the price-to-earnings ratios of large money-center banks hovered around 90% of those of S&P 500 non-financial firms. By 1980, this gap had widened, with the price-to-earnings ratios of large banks at less than 45% of those of S&P 500 firms (FDIC 1997, chapter 1, p. 7). The market value of capital for the largest bank holding companies actually dropped below book value in the late

⁵ For example, market actors might have seen less need to monitor executives when government monitoring was already present or to push for greater risk-taking in an industry already known for high leverage. Less dependence on equity capital may have also reduced the influence of external financial market actors.

1970s, reflecting investors' poor perception of these institutions (Keeley 1990, p. 1185).

This lack of investor interest was rooted in the poor performance of the banking sector. Industry profits reached historic lows in the 1970s and early 1980s, as tightly regulated banks struggled to adjust to changing macroeconomic and competitive conditions. Troubles for US banks began in the 1960s, when market interest rates climbed above the maximum rates banks could offer on deposits. As depositors responded by turning to alternative savings vehicles offering higher rates of return, banks faced a serious funding crunch that also impacted their position in loan markets (Krippner 2011; Dymski 1999). In the 1970s, new markets for commercial paper, junk bonds, and asset securitization led to greater competition on the lending side and a sharp decline in interest margins (Edwards and Mishkin 1995; Dymski 1999, p. 40, their fig. 3.1). A series of financial crises in the 1980s only intensified these performance problems (FDIC 1997, chapters 3, 5).

US policymakers eventually responded with financial deregulation. In 1980, they phased out interest rate ceilings on deposits and broadened the range of activities banks were allowed to pursue (*Deposit Institutions Deregulation and Monetary Control Act* 1980). In 1982 and again in 1984, the Federal Reserve relaxed its guidelines for bank mergers, paving the way for new bank combinations (Dymski 1999). Throughout the 1980s, state policymakers dismantled longstanding restrictions on bank branching, which allowed state-chartered banks to enter new geographic markets. Federal policymakers introduced similar reforms for nationally-chartered banks in 1994 (*Riegle-Neal Interstate Banking and Branching Efficiency Act* 1994).

This changing regulatory environment ignited institutional investor interest in the banking sector. By the mid-1980s, “once-stodgy regional bank stocks” had transformed into “the darlings of the investment community” (*American Banker*, November 19, 1985). Evidence from the trade press implies that mutual funds and other institutional investors increased their investments in bank stocks because they assumed “that industry deregulation and the legal go-ahead for regional interstate banking compacts” would lead to brighter prospects for banks—and “bring about tremendous capital appreciation” for their shareholders (Valvo 1986). It is clear that investors were not motivated by objective improvement in bank performance. In 1986, bank profits reached a new low after four years of steady decline; bank profitability improved only marginally in the late 1980s and early 1990s (FDIC 1997, their fig. 1.2).

As institutional investors entered the banking sector in greater numbers, regulators faced intense pressure to engage in additional deregulation. Institutional investors had invested in banks with the expectation that other policy changes would soon follow. When these changes did not materialize as quickly as expected, bank share prices suffered. Industry consultant Robert Cole described the turbulent market landscape banks faced in the early 1990s:

Read the stock listings. Gaze in wonder at the vulnerability of bank securities to economic, political, and marketplace developments. It happens almost every day: A positive sign emerges from the deliberations in a Congressional committee. Poof! Share prices rise dramatically. The situation reverses, pointing to likely

introduction of stiff regulations—and no new bank powers. Poof again! Bank stocks plummet. (Cole 1991)

Although the US banking regulators had their own reasons for promoting financial deregulation in the 1980s and 1990s, the growing connection between bank performance (and stability) and investor perceptions of the regulatory environment provided an additional impetus.

The push for bank mergers

After institutional investors acquired a stronger voice in US bank strategy, they pressured bank boards to adopt familiar reforms. In conjunction with securities analysts and management consultants, investors in the 1990s drew from the same playbook they had used to restructure non-financial firms a decade earlier. In the name of enhancing shareholder value, they pushed banks to adopt performance pay for executives; to expand the use of riskier, market-based funding sources; and to maximize profits through cutting costs, reducing capital, and adopting enterprise risk management programs.

Institutional investors also pushed banks to merge with or acquire other financial institutions.⁶ Rapid growth through mergers or acquisitions was theorized to promote shareholder value through multiple channels. First, mergers allowed banks to achieve greater economies of scale, an increasingly important consideration at a time when banks were suffering from “lack of growth in many traditional businesses” and needed the capacity to “afford [large] investments in new products” (Zizka 1992). Second, mergers also allowed banks to minimize costs through combining (and streamlining) their workforces and operations (Moyer 1998). At the industry level, mergers were also thought to strengthen the market for corporate control. Now that well-managed banks were free to acquire the resources of poorly managed competitors, the industry was expected to become more efficient overall (Moyer 1999b).

After the earliest bank mergers appeared to produce large gains for shareholders, an additional wave of institutional investors entered the banking sector in search of similar profits in the early- to mid-1990s (Kaplan 1995). Industry participant Daniel Kaplan described the strong pressures banks encountered as a result of this shift:

Most merger stories were the same: after one blockbuster bank merger, investors and analysts would pressure the next bank to merge. With spiraling technology costs, and falling revenues, most banks had no choice. And as strong new competitors moved into their backyards, banks rushed to find merger partners. (Kaplan 1995)

Many bank executives responded by taking proactive steps to grow their institutions. Journalist James Arndorfer explained how the desire to avoid becoming a takeover

⁶ Pressures for de-diversification were much less intense in the banking sector than in the non-financial sector, probably because banks engaged in fewer unrelated activities to begin with. Most US banks in the early 1980s specialized in a narrow range of traditional banking activities.

target motivated many regional banking corporations, like Texas-based South Central Bankshares, to adopt more expansionist strategies in the 1990s:

The directors of South Central Bankshares of Flatonia, Texas, face a simple choice: make their shareholders demonstrably richer or sell out. Out-of-state holding companies continue to snap up Texas banks, and South Central knows it could be next unless it can justify its existence to its 150-plus shareholders. Edwin Zapalac, president of the \$80 million-asset banking company, acknowledged he has received indirect inquiries about a possible sale. "We can't stay the size we are, or else we'll be bought out," Mr. Zapalac said. (Arndorfer 1997)

Securities analysts further fueled this trend towards industry consolidation by devoting more coverage to large banks (e.g., Kuehner-Hebert 2002). Small community banks generally received little to no coverage from analysts, since analysts hesitated to spend time researching idiosyncratic institutions that issued comparatively few shares. This lack of analyst coverage became a serious liability for many community banks. Beyond contributing to artificially low market valuations, it also contributed to market overreactions. The experience of Harleysville National Corporation, a Pennsylvania-based regional banking corporation, provided one cautionary tale. Despite a strong record of earnings growth and a balance sheet filled with high-quality assets, Harleysville experienced a 25% drop in share price after announcing the replacement of its CEO due to retirement. Asked to explain why such a high-performing institution had been so heavily penalized, institutional investor Robert Kafafian pointed to the bank's suspicious lack of analyst coverage. He explained that management changes generally lead to a wave of analyst reports, but with no one covering Harleysville, investors had known very little about the new CEO's plans and assumed the worst: "[i]f you don't have any analysts, then nobody is touting your stock" (Reosti 2005).

These trends came together to produce a full-fledged bank merger wave, which peaked in the late 1980s and again in the early 1990s (Dymski 1999, their fig. 3.5). By the time that the merger frenzy died down in the late 1990s, the structure of the US banking system had been fundamentally transformed. Figure 2 shows trends in the number of independent commercial banks in the United States between 1980 (before the merger wave began) and 2015. In the mid-1980s, there were over 14,000 independent banks; by the start of the new millennium, only 8500 banks were left.

Performance pay

Economists Thomas Philippon and Ariell Reshef (2012) show that financial sector compensation increased dramatically after the 1980s, rising to new heights in the mid-1990s. While this pattern held for all financial sector employees, it was particularly pronounced for executives. While some of the financial sector wage premium can be explained by the rising complexity and skill intensity of financial sector jobs, Philippon and Reshef (2012) find that a full 30 to 50% remains unexplained by economic fundamentals. Attention to the changing *structure* of financial sector compensation may help to illuminate these trends. The compensation packages of bank executives became much more heavily weighted towards performance pay in the 1990s and 2000s.

Fig. 2 Number of US commercial banks, 1984–2015

In addition to the stock options favored by the boards of non-financial firms, large cash bonuses linked to prior-year performance play a particularly important role in the financial sector (Taleb 2009; Bannier et al. 2013; *American Banker*, April 22, 1994). Figure 3 presents trends in the share of bank CEO compensation that came from a bonus versus a salary for my sample of 157 large banks. In 1992, this ratio was 0.67 to 1—in other words, the average bank CEO received a bonus that was equivalent to two-thirds of salary. By 1996, this ratio had climbed to 1:1 (with the average bank CEO receiving a bonus that was equal to a year’s salary) and peaked at 1.3:1 immediately

Fig. 3 Average ratio of bonus to salary for bank chief executive officers, 1992 to 2015

before the credit crisis. Although this ratio fell in the immediate aftermath of the credit crisis, by 2012, it had surpassed 1:1 once again.

Institutional investors actively pushed banks to adopt performance-linked executive compensation in the 1990s (*American Banker*, July 23, 1990; Marshall 1987). Their stated goal, as with non-financial firms, was to redirect bank executive focus towards maximizing share price. Multiple studies link heavier bank reliance on performance pay to a steep rise in bank risk-taking. Mehran and Rosenberg (2008) find that larger stock option grants for bank executives led to greater asset and equity volatility, while Chen, Steiner, and Whyte (2006) find that greater reliance on performance pay increases idiosyncratic risk. Fahlenbrach and Stulz (2011) find that banks tended to perform worse during the crisis when executive compensation packages were more sensitive to changes in share price. Similarly, Pernell, Jung, and Dobbin (2017) find a positive relationship between the bonus share of CEO compensation and bank exposure to six types of financial derivatives.

Turn to riskier funding source

Institutional investors and securities analysts also encouraged banks to make heavier use of riskier funding sources in the 1990s and 2000s. Historically, banks have relied on *core* or *retail* deposits for the majority of their funding—these are time, savings, or demand deposits gathered from members of the local community, who often have other borrowing relationships with the bank (FDIC 2011). As disintermediation increased in the 1970s and 1980s, it became harder for most banks to grow or retain these deposits (Krippner 2011). Lacking funds to finance new lending, banks also struggled to grow and maintain profitability (Dymski 1999; Edwards and Mishkin 1995). Stagnation in core deposits became an even more pressing problem once the shareholder value paradigm took hold. To generate sufficient returns for shareholders, banks needed strong asset growth. As industry observers noted, banks' struggle to attract sufficient core deposits directly threatened this objective:

A bank needs 10% asset growth a year to cover its overhead and give its shareholders a respectable return on equity. Unless its core deposits rise by the same amount, its growth and profitability will be compromised. (Pieniazek 2000)

To achieve growth at the rate that market actors demanded, many banks turned to alternative funding sources. *Brokered deposits* were one such source. Brokered deposits are defined by statute as “a deposit accepted through a deposit broker” (12 C.F.R. § 337.6a2). In practice, banks obtain brokered deposits from individuals or firms (*deposit brokers* or *brokerages*) that specialize in facilitating placement of client funds. Brokered deposit transactions begin when banks sell large-denomination deposits to brokers; these brokers, in turn, subdivide the deposits into smaller-denomination pieces for resale to their clients. These clients are more likely to be sophisticated market participants, like institutional investors, pension funds, or other financial institutions, than consumers or small business owners (FDIC 2011).

Compared to ordinary core deposits, brokered deposits are a more expensive and volatile funding source for banks. The actors who hold core deposits accept relatively

low returns and are relatively insensitive to yield (that is, they are less likely to withdraw their funds from banks when they see they can obtain higher rates elsewhere). By contrast, the sophisticated market participants that hold brokered deposits generally demand high returns and are quite yield-sensitive (Arnold 2013; Barth and Sun 2018, p. 29). To attract and to keep brokered funds, banks must pay higher premia to deposit-holders and quickly adjust interest rates when market conditions change. Both the added expense and added volatility of this funding source expose banks to greater risk. The higher cost increases the risk that a bank will be unable to compensate depositors if performance declines, while higher volatility increases the risk of a funding shortfall.

But brokered deposits also provided banks with important advantages. To increase core deposits, banks had to engage in a relatively slow process of investing in fundamentals (e.g., adding more branches, extending operating hours, offering better customer service, or increasing rates to all classes of depositors). Brokered deposits, on the other hand, offered immediate gratification. Brokered funds could be obtained with just a phone call to a deposit broker, instantly providing banks with the liquidity required. As one bank CFO explained, this feature made brokered deposits very attractive to fast-growing banks in need of immediate funds: “[i]t’s easier to bring in deposits when you know the cost associated with a phone call [to a deposit broker] rather than going through your branch network to gather deposits from local customers” (Osuri 2005).

Institutional investors and securities analysts praised and rewarded banks that used brokered deposits to fuel rapid asset growth successfully (e.g., Reosti 2000, 2002). As one industry analyst explained, the “use of brokered deposits” was understood to “reflect ... a decision to leverage the balance sheet to stimulate growth,” in line with investors’ interest in maximizing risk and return (Reosti 2002). These dynamics contributed to a shift in bank funding sources in the 1990s and 2000s. Figure 4 shows trends in core deposits as a proportion of total bank liabilities between 1991 and 2013. In 1991, core deposits represented an average 76% of total liabilities; by 2007, this share had dropped to 42%. While bank dependence on core deposits rebounded after the credit crisis, it has not returned to its former heights. Figure 5 shows trends in bank reliance on brokered deposits as a proportion of total liabilities between 1991 and 2013. In 1991, brokered deposits only represented around 1% of total bank liabilities; by 2008, this share had climbed to 10%.

There is growing evidence that heavier bank reliance on brokered deposits contributed to greater financial instability, both by encouraging banks to adopt liability structures that increased their fragility and by incentivizing them to seek out high-risk, high-reward ventures to counterbalance high borrowing costs (FDIC 2011). Research by the FDIC (2011) and DeYoung and Torna (2013) show that greater dependence on brokered deposits was associated with greater failure probabilities for US banks during the crisis. Cross-national research also finds an association between lower dependence on core deposits and heavier bank losses during the credit crisis (Huang and Ratnovski 2009; Poghosyan and Cihák 2009).

Cost-cutting and reducing capital

Institutional investors and securities analysts also encouraged banks to enhance shareholder value by cutting costs through a variety of means. They pushed banks to trim their

Fig. 4 Core deposits as a proportion of total liabilities, 1991 to 2013

operating budgets by downsizing personnel and reorganizing and streamlining operations (*American Banker*, June 24, 1991), much as they had done for non-financial firms (Jung 2014). They also pushed banks to reduce capital. Bank capital is a measure of a bank's net worth, or the amount left over for shareholders after a bank's liabilities are subtracted from

Fig. 5 Brokered deposits as a proportion of total liabilities, 1991 to 2013

its assets. While common shareholder's equity makes up the greatest component of bank capital, capital also includes items like retained earnings or certain forms of preferred stock. Capital plays an important role in protecting banks from insolvency by absorbing losses before they affect day-to-day operations; it has historically played an important role in banking regulation (Admati and Hellwig 2013). However, capital also comes with a high opportunity cost. Earnings held in reserve cannot be used to generate new profits; similarly, expanded equity issuance dilutes the profit share of existing shareholders. These tradeoffs help to explain why institutional investors pushed banks to minimize "excess" capital in the 1990s and 2000s. As the general partners of the Kingston Fund, an investment fund that specialized in community bank stocks, explained in a 1999 *American Banker* article: "investors want banks to concentrate on performance rather than liquidity ... [and] accumulation of excess capital does not add to shareholder value" (Nadler 1999). Instead, the partners encouraged executives of shareholder value-minded banks to "reduce excess capital any way possible" (Nadler 1999).

Enterprise risk management

Institutional investors and securities analysts also pushed banks to invest in new, sophisticated *enterprise risk management* (ERM) programs. As journalist Barbara Rehm explained, centralized ERM programs allowed banks to "identify, measure, and manage a range of risks—including credit, market, operational, and liquidity—and then aggregate and correlate them across business lines" (Rehm 2006). Proponents of ERM argued that netting risk at the enterprise level would permit banks to reduce costly excess capital, which would fuel profit generation and enhance shareholder value (Bird and Skinner 2005).⁷ As one industry consultant explained, this "dynamic, interactive process of risk-based pricing, risk-based capital charges, and risk-based limits" could be expected to "drive the firm to greater profitability" (*American Banker*, March 3, 1997). Attracted by the "promise of above-average returns," institutional investors and securities analysts actively pushed banks to adopt ERM programs (Vinci 1997). They were joined in these efforts by banking and securities regulators. Regulators believed that ERM programs would also help banks develop better internal controls and risk management practices, to the overall benefit of financial stability (Bird and Skinner 2005; Pernell et al. 2017).

The rise of CFOs and CROs

Banks also responded to growing market and regulatory pressures by appointing new executives to help manage these pressures. As bank CEOs became increasingly attuned to the need to manage market expectations, they turned to CFOs for help. Figure 6 shows that 61% of banks in the sample had a CFO in 1994; this percentage had increased to 92% of banks by 2007. CFOs became even more important to CEOs after the Sarbanes-Oxley Act of 2002 increased accounting and financial reporting requirements (and the personal liability of corporate leaders). A new executive, the Chief Risk

⁷ The intuition behind this is that a centralized approach to risk management uncovers redundancy in capital allocation. If a particular risk exposure in one area of a bank's operations cancels out a risk exposure in a different area, banks can save on the capital allocated against each exposure.

Officer (CRO), also became more popular with banks after the legal and regulatory changes of the early 2000s. Figure 7 shows that less than 1% of banks in the sample had a CRO in 2000; this proportion had increased to nearly 27% of banks by 2008. CROs rose to power within banks in tandem with enterprise risk management programs. Among other duties, they were tasked with overseeing, coordinating, and implementing a centralized risk management program and sharing information about the bank's risk management practices with analysts and regulators. As one financial journalist explained, it was important for shareholder-value-minded banks to "let the rest of the world know what they're doing" regarding risk management (Vinci 1997).

To justify their continued presence in the C-suite, CROs faced strong pressures to demonstrate that ERM programs contributed to bottom-line performance. Their goal in managing these programs was not to reduce risk, but to "optimize" it—to help banks bring aggregated risk exposure as close as possible to the limits set by the board or senior management, with no wasteful margin for error (e.g., Nocco and Stulz 2006). Given this agenda to "optimize" risk, it is not surprising that CROs did little to restrain bank risk-taking in the lead-up to the credit crisis. Multiple studies show that banks with CROs did not see better performance during the credit crisis than banks without this position (see Lingel and Sheedy 2012; Aebi et al. 2012).⁸

Low CEO equity-holding

Banks also followed non-financial firms in what they failed to adopt. The CEOs of large US banks were no more likely than the CEOs of large non-financial firms to hold

Fig. 6 Percentage of banks with a chief financial officer, 1994 to 2010

Fig. 7 Percentage of banks with a chief risk officer, 1995 to 2010

long-term equity stakes in the firms they managed. Figure 8 shows trends in bank CEO equity-holding between 1992 and 2015. Although equity-holding fluctuated more among bank CEOs than non-financial CEOs, the overall trend remained relatively low and flat. The average amount of equity held by bank CEOs in this period (1.4%) was lower than that held by the CEOs of non-financial firms (1.6%) (see Dobbin and Jung 2010).

Failures of formal regulation

The US banking regulators could have counteracted increased risk-taking by restricting bank exposure to innovative activities, controlling reliance on riskier funding sources, speaking out against the changing structure of executive compensation, or cautioning banks against using securitization or ERM programs to reduce capital. Yet they failed to take any of these steps, focusing on other efforts instead. To understand why the US banking regulators failed to counteract the rise of riskier corporate governance arrangements, it is important to first understand how they conceptualized their broader mission.

The US banking regulators sought to enhance the role of *market discipline* in banking in the 1990s and 2000s. During the twentieth century, US policymakers had introduced policies and programs designed to protect the public from the hazards of bank failure, including the federal deposit insurance system and the too-big-to-fail bank supervisory regime. In the 1990s, lawmakers and regulators reframed this “government safety net” as a major cause of the bank failures of the previous decade. According to the theory, the safety net had encouraged riskier behavior by preventing market actors (like a bank’s depositors, shareholders, or creditors)

Fig. 8 Percentage of bank chief executive officer equity holding, 1992 to 2015

from bearing the full costs of bank failure. Since private market actors no longer had the same incentives to police excessive risk-taking, they did very little to restrain it. Policymakers saw this as a serious problem, since they believed that market actors were fundamentally better-equipped to discipline banks than government regulators. Guided by this understanding, US regulators themselves sought to reform the banking system by restoring the role of market discipline within it. Fed Governor Laurence Meyer summarized this approach in a 1999 speech:

I have noted that the safety net dampens the incentive of the market to assess risks in banks. The solution is not to ignore the potential for market discipline, but rather to find ways to enhance its role in banking. (Meyer 1999)

This broader commitment to enhancing market discipline helps to explain why regulators viewed powerful financial market actors, like institutional investors and securities analysts, as crucial partners in effective regulatory governance. As Fed Governor Roger Ferguson explained in 1999, financial market actors freely pursuing their own interests were regarded as the first (and the best) line of defense against excessively risky bank behavior:

Perhaps the most fundamental principle that must guide us is that private market participants are the first line of defense against excessive private and public risk in the financial system. Private borrowers, lenders, investors, institutions, traders, brokers, exchanges, and clearing systems all have huge stakes in containing their risks as individual agents and risks to the system as a whole. (Ferguson 1999)

Institutional investors were singled out as particularly important guardians of market discipline:

[I]nstitutional shareholder activism ... may help pave the way for market discipline in a broader sense ... [it] may provide market discipline directly by preventing management from pursuing its own interests at the expense of shareholders. (Bies 2003)

This conceptualization of market discipline as the governance mechanism best suited to steer banks towards appropriate and socially beneficial behavior helps to explain why the US banking regulators failed to oppose the rise of the shareholder value model in banking. After all, these corporate governance reforms were intended to make banks more responsive to market pressures- and this was a central goal for regulators too.

The introduction of international regulatory standards also failed to restrain bank risk-taking. After 1988, US banks were subject to an international regulatory framework (the Basel Capital Accord) that required them to hold a certain proportion of capital (“regulatory capital”) against their risk-weighted assets. The Basel framework enhanced global financial stability by establishing a common international floor for bank capital; however, it also increased the incentives for banks to use financial innovation to evade regulation (Jones 2000; Merton 1995). The framework allocated bank assets to one of five risk-weight categories.⁹ Many bank loans fell in the 100% risk-weight category, while the end-products of securitization (like highly-rated mortgage-backed securities) or other forms of ongoing support to securitization programs carried lower risk-weights (Johnson and Kwak 2010, p. 138; Jones 2000; Acharya et al. 2013). Scholars have argued that the unequal regulatory capital treatment of securitization and derivatives encouraged banks to use these tools to “free up” regulatory capital (Jones 2000; Johnson and Kwak 2010). Additionally, the coarse-grained risk-weight categories encouraged banks to sell off low-risk loans to the market via securitization while retaining high-risk loans (Jackson et al. 1999). Since both kinds of loans (low-risk and high-risk) carried the same regulatory capital charge, this cherry-picking strategy let banks achieve greater risk exposure at the same regulatory capital cost. These were examples of “regulatory capital arbitrage”—actions that made a bank’s capital ratio look artificially high, relative to the riskiness of its exposures.

Bank corporate governance and reliance on complex financial innovations

In 2000, securities analyst Richard Bove reflected on changes in the operating methods of large banks over the previous decade, noting that the trauma of the 1980s had led to a fundamental shift in industry practices (Matthews 2000). Cheered on by institutional

⁹ This risk-weight framework changed with revisions to the Basel Accord (known as *Basel II*), which placed greater emphasis on a bank’s internal assessment of credit risk when calculating risk-weights. However, when the financial crisis hit in late 2007, the US banking regulators had not yet implemented Basel II.

investors and securities analysts, banks had embraced performance pay for executives, increased use of brokered deposits, and cut costs by reducing excess capital, downsizing personnel, offering large dividends, and buying back stock. They also invested in sophisticated ERM programs that promised to enhance risk-adjusted returns.

This section explains how these changing corporate governance arrangements encouraged banks to expand their use of securitization and derivatives. They did so by influencing the agendas of bank executives. In the shareholder value era, bank CEOs faced considerable pressure to prioritize profit maximization above all other goals. The mounting market and regulatory pressures of this era also propelled the rise of new bank executives, like CFOs and CROs, who entered their positions with agendas of their own. In what follows, I explain how particular features of securitization and derivatives aligned with bank executive agendas in ways that encouraged the expanded use of these financial instruments.

Securitization and derivatives as sources of revenue

Faced with increasing pressure from investors and analysts to demonstrate strong performance and growth, banks turned to securitization and derivatives as alternative sources of revenue. Due to declining returns on traditional lending activities, banks in the 1990s faced strong pressures to branch out into new kinds of non-traditional activities. In a 1992 *American Banker* article, industry consultant Marilyn Seymann explained what was thought to be at stake for banks that failed to hop onto to the securitization bandwagon:

By turning loans and mortgages into marketable securities, Wall Street has found a way to channel money from pension funds and other institutional investors into private lending, using banks as originators rather than as providers of permanent funding. For banks to avoid being pushed out of the loop altogether, they must develop new ways to add value to the securitization process.... Otherwise, the show will go on without them. (Seymann 1992)

As consensus built around the idea that banks that held loans to maturity would be left behind in a modernizing financial system, securitization increasingly became an indicator that the bank was serious about creating value for shareholders. Consider the comments from Douglas A. Warner, then Chairman and CEO of JP Morgan and Co., at a 1999 industry conference. Speaking to his peers in the banking industry, Warner argued that it was past time for shareholder value-minded banks to move away from the traditional model of retaining loans in favor of the new model of participating in the different phases of the securitization process:

Warner ... said banks are at a historic crossroads as they evaluate the profitability of their traditional lending business. Increasingly, he said, banks can **create value for shareholders** by originating and structuring credits, bundling and unbundling risk, providing research, and handling trades—but not holding credits. (Moyer 1999a, emphasis added)

In short, as investors, analysts, and executives grew more attuned to short-term profitability as the defining metric of bank performance, banks faced greater pressure to expand into novel, potentially profitable activities like securitization and derivatives.¹⁰ These conditions did not favor the prudent use of these financial instruments.

Quantitative evidence supports the claim that banks became more reliant on non-traditional sources of income after the mid-1990s. For my sample of 157 large banks, the relative share of non-interest income increased to over 25% of total income by 2003, up from only 15% in 1995. This suggests that the average bank moved away from traditional banking activities in favor of less traditional activities over this eight-year span. This pattern was even more pronounced among the largest banks. For example, at J.P. Morgan and Co., the share of non-interest income was already comparatively high in 1998 (at 54% of total income); however, this share had increased to 65% by 2006. At Bank of America, the non-interest income share increased from 42% to 52% in the same period. Data limitations make it difficult to determine exactly how much of this increase was due to income from securitization or derivatives.¹¹ However, available evidence suggests that US banks did become more reliant on securitization income over time. The federal banking regulators have collected data on the income US banks earn from securitizing their own assets since 2001. According to these data, the average amount of income earned from this activity (among all US banks) increased from \$1.1 million in 2001 to nearly \$2 million in 2006.

Securitization and derivatives as tools to reduce regulatory capital and leverage risk

Participating in securitization and derivatives markets also allowed banks to boost returns (and ostensibly shareholder value) by reducing regulatory capital and leveraging risk. “Regulatory capital arbitrage” was expected to boost bank profitability through multiple channels. Using securitization to game regulatory capital restrictions allowed banks to take on greater risk at a lower (regulatory capital) cost, pleasing shareholder value advocates. It also allowed banks to reduce their dependence on equity, which was also believed to serve the interests of shareholders. As Fed researcher David S. Jones explained in a 2000 article, “[m]any banks perceive that through [regulatory capital arbitrage] they can enhance shareholder value by replacing equity with debt in their capital structures. The “freed up” equity is then either returned to shareholders as increased dividends or share repurchases or redeployed within the firm” (Jones 2000, p. 38).

¹⁰ Existing research finds that securitization was indeed a profitable activity for banks (Bakoush et al. 2019; Jiangli and Pritsker 2008; Lockwood et al. 1996). Banks could profit from multiple aspects of the securitization process, including securitizing their own loans; obtaining fee income from packaging, servicing, or underwriting others’ transactions; and trading or holding the end products of these transactions (Moyer 1999a; Bakoush et al. 2019; Loutskina 2011). We have less direct evidence about the objective profitability of derivatives activities; however, it is clear that industry participants *believed* that derivatives enhanced bank profitability (e.g., Beckett 1993, pp. 31–32; *American Banker* December 15, 1992; Davenport 2004).

¹¹ Bank financial statements do not distinguish between income generated from derivatives and income generated from other activities (e.g., a bank might use derivatives to minimize or increase its credit risk, but the bank only reports information on the performance of the credit portfolio as a whole). While we have more data about securitization income, this information is only for a subset of activities and a limited time span.

Quantitative evidence demonstrates that banks used securitization to save on regulatory capital leading up to the crisis. Drawing from a sample of US bank holding companies between 2001 and 2007, Jiangli and Pritsker (2008) find that bank participation in mortgage securitization was associated with reduced regulatory capital. Uzun and Webb (2007) find a similar negative relationship between the extent of securitization activity and regulatory capital for a sample of US banks between 2001 and 2005, while Dionne and Harchaoui (2008) find similar results for a sample of Canadian banks between 1988 and 1998. Calomiris and Mason (2004) come to the same conclusion after examining motives for the off-balance sheet financing of credit card receivables by banks.

Banks also used these financial instruments to leverage risk exposures (Segoviano et al. 2013; Minton et al. 2009). Compared to owning an asset outright, owning a derivative contract written on an asset provides the end-user with the same exposure to risk but with less capital at stake. In allowing banks to create riskier asset portfolios at a lower capital cost, securitization served a similar function. Prior research finds a clear association between bank participation in derivatives and securitization markets and increased leverage. Jiangli and Pritsker (2008) show that bank holding companies active in mortgage securitization were also more heavily leveraged, and Dionne and Harchaoui (2008) find similar results for Canadian banks. Drawing from a sample of US bank holding companies between 2001 and 2010, Beccalli et al. (2015) find a positive relationship between the extent of securitization activity and the procyclicality of bank leverage. Minton et al. (2009, p. 22) show that most US banks used credit derivatives to achieve leveraged profits as *derivatives dealers*—e.g. to take leveraged bets on asset performance, not to hedge risk.

Using securitization and derivatives for these purposes amplified financial system instability by increasing the precarity of banks' financial positions. Capital serves as a crucial buffer against unexpected losses; when banks use securitization to reduce regulatory capital (or derivatives to take leveraged bets on asset performance) they also reduce their capacity to absorb losses. The events of the 2008 financial crisis, where the government was forced to step in to bail out insolvent banks, revealed the undesirable consequences of these practices.

Derivatives as tools to tailor risk portfolios

CROs found derivatives attractive for a different reason. Compared to owning (or selling) an asset outright, writing derivatives contracts on an asset allows end-users to acquire or unwind particular risk exposures more quickly, easily, or (in the case of OTC derivatives) privately. Bespoke OTC derivative contracts also allow their users to obtain risk exposures that are precisely tailored to the exact risk management needs of the firm. In a context where CROs were charged with continually keeping a bank's aggregated risk exposure at exactly the limits established by the board or senior management (with no wasteful margin for error), these features would have seemed highly appealing (Pernell et al. 2017).

Conclusion

The turn to financialization yielded important changes for modern financial systems—and for market governance arrangements within these systems. Previous research finds

that the proliferation of risky and complex financial innovations eroded the informal and formal market governance arrangements that kept excessive bank risk-taking in check, inviting instability (e.g., Judge 2012; Boot 2011; Purnanandam 2011; Funk and Hirschman 2014). This article suggests an alternative way that financial innovation and market governance arrangements may combine to shape instability. Market governance arrangements—in this case, the corporate governance practices of banks and the formal system of regulatory governance that surrounded them—also contributed to instability by shaping how financial firms *received* innovations.

Corporate governance and financial instability

I have argued that attention to corporate governance arrangements, which vary across countries and change over time, allows for a better understanding of when and where the abuse of financial innovations will reach a greater expression. Although complex financial instruments like securitization and derivatives have been present in financial markets since the mid-1980s, banks only dramatically expanded their use of these instruments after the early 2000s. Heavy dependence on these financial instruments was especially pronounced among banks in a particular country: the United States. The rise of the shareholder value model within the US banking sector contributed to these comparative and temporal trends. Starting in the late 1980s and continuing into the 1990s and 2000s, powerful financial market actors (like institutional investors and securities analysts) pushed banks to adopt corporate governance reforms designed to align the interests of executives and shareholders. By the early 2000s, many of these practices and strategies had achieved widespread acceptance. These changing governance arrangements reshaped the agendas of bank executives in ways that encouraged expanded use of securitization and derivatives. Trends in the broader regulatory environment, particularly the turn toward financial deregulation in the 1980s and the regulatory emphasis on market discipline in the 1990s and 2000s, contributed to and compounded the effects of this shift in bank corporate governance.

Post-crisis regulatory reforms

Regulatory reforms in the aftermath of the credit crisis have focused on bolstering the informal and formal market governance arrangements that complex financial innovations were thought to have weakened. For example, the Dodd-Frank Act of 2010 sought to bring greater transparency and regulatory scrutiny to complex and opaque OTC derivatives markets and to reestablish traditional boundaries between investment and commercial banking. It also required banks to adopt enterprise risk management programs, under the theory that these programs would lead to better risk management. At the same time, the US banking regulators also introduced new risk retention rules for securitization transactions designed to reduce incentives for imprudent lending (Aguilar 2014).

Yet very little has been done to substantially reform corporate governance arrangements at large banks. Although Dodd Frank requires publicly-traded firms (banks included) to hold regular shareholder votes on executive compensation, to offer frequent disclosures to investors on compensation policy, and to include more independent board members on compensation committees, none of these changes have

transformed the interests of bank executives (or those of the powerful financial market actors who monitor them). Findings from the present article imply that reinforcing the voice of shareholders in bank corporate governance is unlikely to restrain—and may even encourage—a turn to riskier practices and strategies. Increasing the transparency of securitization and derivatives markets will not prevent banks from taking on more risk in other areas of the financial system; similarly, enterprise risk management programs are unlikely to encourage prudent behavior when they are marketed to bank executives as tools to reduce capital.

Many of the post-crisis trends in US banking are not promising. In the years since the crisis, banks have largely failed to rebuild core deposits. While the popularity of securitization and derivatives waned in the immediate aftermath of the crisis, recent evidence suggests that banks' use of these instruments is back on the rise (Phillips 2018; McLannahan 2018). Banks are also taking on greater risk through more conventional channels, like offering leveraged loans to risky corporations (Valladares 2019). My view is that preventing the next crisis will require more than a focus on market transparency or systemically important financial institutions. It will also require policymakers to reckon seriously with the fundamental incompatibility between the shareholder value model of management (at least as it is currently implemented) and financial stability.

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Source: Bank Regulatory database published by Wharton Research Data Services (contains commercial bank filings for the Report of Condition and Income submitted to the Federal Reserve). Published in Pernel et al. (2017).

Source: FRED Economic Database of the Federal Reserve Bank of St. Louis. (<https://fred.stlouisfed.org/series/USNUM>).

Source: ExecuComp database published by Wharton Research Data Service.

Source: Bank Regulatory database published by Wharton Research Data Services (contains commercial bank filings for the Report of Condition and Income submitted to the Federal Reserve).

Source: Bank Regulatory database published by Wharton Research Data Services (contains commercial bank filings for the Report of Condition and Income submitted to the Federal Reserve).

Source: Data on the presence of CROs were hand-coded from volumes of the *Standard & Poor's Register of Corporations, Directors, and Executives*.

Source: ExecuComp database published by Wharton Research Data Services.

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