Drift and Adjustment in Organizational Rule Compliance:
A Grounded Theory of the 'Regulatory Pendulum' in Financial Markets

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Abstract

This article integrates research on rule development, compliance, and organizational change to model rule development and compliance in organizations, using causal-loop modeling from system dynamics to articulate explicitly a few key underlying processes. We focus on financial markets as a case area, suggesting that recurring regulatory problems in financial markets in the United States over the past 60 years, while differing in specifics, are structurally similar. At the heart of the model is the tension between production goals that focus on short-term, certain, salient benefits and required adherence to production-constraining rules that attempt to mitigate long-term, uncertain, and non-salient risks. It describes systemically how organizations attend to rules depending on the nature of the benefits of production compared to those of rule compliance. The model captures the operative mechanisms responsible for the development of pressures for production and for rule compliance in organizations, providing a structural explanation both for problem-prone organizations characterized by erosion of standards and increased violations and for organizations following rules more reliably. Drawing on studies of institutional work, we conclude by suggesting research on how agency, through strategic and tactical choice, potentially modifies structure in rule compliance.

INTRODUCTION

All organizations produce output of some type, whether computers, air traffic control, medical services, processed applications, and an almost infinite variety of other objects and activities. Higher levels of production usually help organizations economically and politically, and high-performing producers earn greater incomes and prestige (Pfeffer 1994). However, incentive-driven individual producers who disregard the broader effects of their actions can cause problems ranging from failed coordination to catastrophic legal violations and accidents. Thus, organizations always have rules and procedures, however structured, governing production (Adler and Borys 1996).

While producers might respect rules in principle, they tend to resist constraining rules more when facing high-volume and time pressures (Rudolph and Repenning 2002; Vardi and Weitz 2004). How organizations manage the tension between production pressures and rule compliance affects the quality of service provided to their customers, patients, or clients, as individuals weigh completing tasks thoroughly versus taking shortcuts. It affects organizations’ frequency of accidents, as individuals balance safety
procedures against faster completion of tasks. It affects their criminal and regulatory violations, as
individuals consider bypassing controls to complete transactions that otherwise would be delayed or even
not allowed at all (Ashforth et al. 2008; Oliva and Sterman 2001; Reason 1997; Vaughan 1999; Weick
and Sutcliffe 2007). The tension between production and rule compliance is a fundamental topic for
organizational science from the standpoint of both theory and practice.

It has been difficult to measure through correlational analysis the effects of this tension because of
the complexity of underlying relationships and challenges in operationalizing variables. These include,
among other factors, the challenges of constructing statistical analyses that capture important but subtle
interactions within organizations; of accounting for the effects of ongoing and shifting social construction
of key variables, such as negotiations over what is or is not a rule violation in ambiguous cases; and
recognizing the ways in which the institutional (e.g., industry and policy sector), organizational (e.g.,
specific firm), and individual (e.g., operators and managers) levels jointly shape rule compliance (Clinard

This article complements and extends prior research on rule dynamics by using causal-loop modeling
from system dynamics to articulate explicitly a few key underlying processes of rule development and
compliance. System dynamics modeling is well-suited to exploring ongoing adjustments among variables
in complex processes, including how levels of levels of production pressures interact with rule
development and rule compliance over time (Richardson 1991, 2001; Sterman 2000). The model
developed here integrates research on rule development, compliance, and organizational change (March
2010; March et al. 2000; Parker and Nielsen 2011) with analysis of financial markets as a case area. It
suggests that recurring regulatory problems in financial markets in the United States over the past 60
years, while differing in specifics, are structurally similar. Analyzing the structural drivers of behavior
provides a model of drift and adjustment in rule dynamics that can be evaluated in light of regulatory and
market patterns and that applies to settings beyond financial markets (Shapira 2011).

At the heart of the model is the tension between production goals that focus on short-term, certain,and salient benefits with required adherence to production-constraining rules that attempt to mitigate
long-term, uncertain, and non-salient risks. It articulates relationships among producers, control systems within firms, and external regulators that commonly are discussed separately but not jointly and systemically, describing how incentives and social processes produce dysfunctional cycles of accumulating rule violations and compensating regulation, including development of new rules. Industry and regulatory participants and scholarly research in financial markets commonly refer to a “regulatory pendulum” but as a general metaphor (McCaffrey et al. 2007). We model the conditions, incentives, and behaviors actually leading to the outcome, operationalizing the feedback loops that interact to create the cycles of eroding compliance followed by strong compensatory regulatory responses. However, the model is not one of inherently failing systems. The simple set of interacting feedback processes provides a structural explanation both for problem-prone organizations characterized by erosion of standards and increased violations and for organizations following rules more reliably. We discuss how it applies to both situations.

This work follows in the tradition of research in organizational learning and adaptation showing how organizational behavior arises from the interactions of physical and institutional structures with boundedly rational decision making, often leading to unintended and dysfunctional outcomes (Barnett and Hansen 1996; Forrester 1961; Levinthal and March 1981; Masuch 1985; Rasmussen 1997; Sastry 1997; Sterman et al. 2007; Sterman et al. 1997; Woo and Vicente 2003). The article is structured as follows. We first describe the financial industry context and then discuss the information used to study rule compliance within financial firms. Next we describe behavior within firms, their internal controls on rule compliance, and the resulting erosion of industry-wide standards generating crises. We then explore how external regulatory controls apply to firms and why these controls fail to avoid regulatory crises. We briefly consider why market controls and private litigation do not alter these patterns. The article concludes by discussing the model’s broader applicability to compliance dynamics, including situations in which rules are followed more reliably, and complementary research on the structural mechanisms examined here drawn from scholarship on the institutionalization of work.
INDUSTRY CONTEXT AND DATA

Financial markets allocate funds among investors, firms, and other participants with different goals so that, ideally, they use the funds most efficiently to produce goods and services and manage financial risks. Research has shown that effective systems of rules and procedures are critical to successful financial markets because they give participants the confidence to enter transactions and stabilize expectations (Black 2002). Participants have to be willing to buy or sell assets that commonly are intangible or unobservable (e.g., stakes in distant businesses), at risk, and not insured. Investors hardly ever understand the transactions fully and so depend on the integrity of the financial firms facilitating transactions (Langevoort 1996; U.S. SEC Staff 2011). Financial regulation’s purpose is to assure market participants of these transactions’ reliability and integrity so they will continue to invest.

The quality of United States financial markets rank highly in comparison with other nations. For example, the World Economic Forum rated U.S. banking and “non-banking” financial services, financial markets, and “financial access” 21st, first, first, and fifth, respectively, among 62 nations (World Economic Forum 2012: 14). Still, recurring significant problems in operational and legal controls occur in financial institutions. These problems include—among others—widespread breakdowns in securities firms’ financial controls in the 1960s and 1970s, concerns about insider trading beginning in the 1980s, and complaints about deceptive marketing of complex financial products beginning in the 1990s (Benn 2000; Das 2010; Stewart 1991; U.S. GAO 1997). One major banking crisis related to investment fraud occurred in the 1980s and another began in 2008, and in between came the bubble and collapse of internet stocks in the late 1990s and early 2000s (Black 2005; Bookstaber 2008; Financial Crisis Inquiry Commission 2011). Such events led to the Sarbanes-Oxley Act in 2002 and the Dodd-Frank Act in 2010 but new laws following financial crises are a longstanding pattern in United States history (Barth et al. 2012; U.S. GAO 2009). The timing and specifics of these problems vary but industry observers say that they form a pattern of cyclical lapses. One experienced attorney commented in 2003, just after passage of the Sarbanes-Oxley Act, that “the nature of change is cyclical. I’ve seen plenty of crises. It may be that the pressures now are somewhat more intense than in other crises. You had a perfect storm developing in
the Internet bubble. But…there are ebbs and flows to these things” (McCaffrey et al. 2007: 308). Similarly, a financial reporter wrote “In this world, risk management is applied retroactively … Unlike virtually any other industry, Wall Street shakes, twists, and hammers on its innovations until they break” (Berman 2007).

Some analysts highlight how these disruptions are part of a process in which problems are recognized and corrected, establishing a foundation for continued positive development (Shiller 2012). In contrast, other analysts highlight ways in which financial markets’ technologies and structures facilitate continued crises and unbalanced political power, with problems likely becoming worse given greater complexity in finance and industry concentration (Bookstaber 2008; Johnson and Kwak 2011). This article acknowledges the value of both points of view. It develops a model of how financial institutions and regulators address emerging specific problems but through a cycle of crisis and response driven by biased incentives and social processes. The solutions to specific problems address immediate issues but do not alter substantially the underlying processes that likely will appear in other problems followed by intense compensatory regulatory responses in the future. The relative success of the markets suggests that internal and regulatory controls perform their core function tolerably well. However, incentives, ambiguities, and biases in financial services delay balancing responses, resulting in the system oscillating more strongly than it would ideally.

Figure 1 provides one example of how regulatory actions fluctuate in financial markets. It charts civil fines reported in the annual statistical releases of the Securities and Exchange Commission (SEC) as a percentage of corporate securities underwriting in billions of dollars (Securities Industry and Financial Markets Association 2012; U.S. SEC 2012). Congress first gave the SEC power to impose substantial civil money penalties through the Insider Trading Sanctions Act of 1984 and expanded the SEC’s authority to use civil penalties over time (Weiss 2006). The amount of total fines ranged from $200,000 in Federal fiscal year (FY) 1985 to $2.3 billion in 2006, and was $978 million in 2011. The variability is similar if we scale the fines by other measures of market activity, and data for other financial regulators would show similar fluctuations in regulatory actions (Barth et al. 2012).
This article focuses on how two levels of control shape behavior within this system. These are the internal controls within firms, which include the firms’ legal and compliance officers, internal auditors, and risk management units; and external regulatory controls by private and public regulatory organizations. To avoid making the model too complex for an article-length treatment we do not formally build other controls, in particular market controls and private litigation, into the model. However, later we review how market controls and private litigation relate to the dynamics described here.

Financial firms range from global firms like JPMorgan Chase and Goldman Sachs to firms with only a few employees. Financial regulatory policy follows a principle that firms’ internal control systems are the most important defense against legal breakdowns, with external regulatory enforcement as a necessary but blunter control mechanism (McCaffrey and Hart 1998). Even aggressive external regulators must rely heavily on the firms’ internal control systems to function reasonably effectively.

Industry regulators discussed in this article are self-regulatory organizations (SROs). Prior to mid-2007, the two most important SROs in the securities industry were the National Association of Securities Dealers (NASD) and the New York Stock Exchange (NYSE). In July 2007 the NASD merged with the largest part of the NYSE’s regulatory operations to form the Financial Industry Regulatory Authority (FINRA), now the largest private regulator of securities markets (Karmel 2008). The Securities and Exchange Commission is the primary national public regulator of the securities industry. Other regulators like the Commodity Futures Trading Commission, Federal Reserve, Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Consumer Financial Protection Bureau, and state agencies also regulate financial firms’ operations. We focus on the SEC because it is a principal regulator of operations discussed here and the central issues apply to other financial regulatory agencies (Barth et al. 2012). The SEC relies heavily on self-regulatory organizations, and especially FINRA, for routine external regulation of firms’ securities operations (U.S. GAO 2012a). However, the SEC is a critically important participant because it is responsible for the overall effectiveness of the securities industry, including overseeing SROs and its own examinations of financial firms.
Organizational research highlights how ambiguities about events and about how rules apply in context shape rule development and compliance (Feldman 2000; Feldman and Pentland 2003; March 2010; March et al. 2000). Such ambiguities influence how participants in financial markets assess the rewards and risks of business transactions and the rules governing them. Participants with different stakes clash over the need for controls over the transactions and evidence hardly ever settles the debates (Bookstaber 2008; Rebonato 2007). There are large “gray areas” in which views of whether or not a transaction complies with rules differ. Participants wanting to complete profitable transactions will frame them so that they appear to fall into a gray area or as clearly legal. Differentially powerful participants have different interests in how these issues are handled (Cox 2006; Langevoort 2007, 2011). The salient short-term rewards of completing transactions and the ambiguous longer-term risks from transactions, and how debates over those play out in firms and between firms and external regulators given differential technical capacities and power, are key elements of the behavioral model developed below.

Understanding this process requires that we understand how internal controls and external private and public regulatory controls interactively shape rule development and compliance within financial firms. We analyze compliance dynamics in financial firms by closely examining diverse data related to the subject (Strauss and Corbin 1998). We draw on interviews with regulators and industry participants, observations of their panels at industry conferences, examinations of New York Stock Exchange disciplinary cases, and numerous reports and hearings on regulatory compliance in the financial industry.

From 2003 to 2012 we conducted about 70 interviews with individuals involved directly in or overseeing this regulatory system. Most of the individuals interviewed were at the executive or senior-staff level and the interviews lasted between 1 and 2 hours. The interviewees included individuals at the SEC and self-regulatory organizations, in financial firms and in law firms advising financial firms, in state regulatory agencies, in Congressional committees, and in other public organizations such as the Government Accountability Office. The interviews focused on factors shaping regulatory design and compliance and quotations used here were produced from notes taken during them.

The paper also draws on observation of numerous panels at conferences on financial market
regulation between 2003 and 2012 involving regulators, legal and compliance professionals in financial
firms, and attorneys. These include attendance at eight of the ten annual conferences of the Compliance
and Legal Society (“Society” replacing “Division” in 2009) of the Securities Industry and Financial
Markets Association (SIFMA), with examination of proceedings from all ten conferences. We also
observed other conferences of SIFMA, the New York Stock Exchange, and the New York Federal
Reserve. Individuals from industry, regulators, and related organizations engage each other on these
panels in a setting different from an interview with an academic outsider and so the conferences
complemented interviews. Quotations used here were produced from notes taken during the panels.

We also examined and coded the minutes of the New York Stock Exchange’s disciplinary
proceedings reported on its web site from 1990 through 2007 (NYSE Regulation 2012). The NYSE
enforcement series ends in 2007 when most of the NYSE’s regulatory operations merged with the NASD
to form FINRA. We coded the minutes of all 3,461 cases from 1990 through 2007, recording the firm and
individuals involved, up to five violations per case, penalties, time period of violation, how the violation
was brought before the NYSE, and other aspects of the case. The NYSE cases from 1990 through 2007
usefully indicate details of individual cases and patterns of regulatory compliance.

Hearings and reports, including documents from legal proceedings, have documented extensively
how internal controls and external regulation jointly shape behavior in financial firms. We examined
numerous Congressional hearings focusing on regulatory compliance within financial markets since 1990.
While Congressional hearings are largely staged they do describe main events and the questioning often
becomes unscripted and informative. We also reviewed the frequent reports on regulatory compliance
since 1990 by the Government Accountability Office (GAO, renamed from General Accounting Office in
2004), regulatory agencies, and other public and private sources. The interviews of regulators and market
participants, observation of industry conferences, and examinations of NYSE disciplinary proceedings,
Congressional hearings, and private and public reports since 1990 describe deeply and in complementary
ways the dynamics of rule compliance in financial firms.
THE INTERNAL REGULATION CHALLENGE

Competition for revenues drives behavior in a financial firm because revenues from transactions enhance the firm’s reputation, in turn attracting more transactions and more revenues and producing more profit. Competition among firms for rankings in “league tables” for business areas is strong and financial firms compensate, promote, and demote brokers, traders, investment advisers, and investment bankers (their “producers”) based mainly on the revenues they bring into the firm (Eccles and Crane 1988; Ho 2009; Langevoort 2011). A 2007 article on financial industry pay commented that

Top producers within investment banking generally saw their total compensation rise 20% and at times more… But pay increases vary widely among bankers, with some receiving a smaller or higher increase. ‘Pay is now a meritocracy,’ says Sterling’s [Laura] Lofaro. ‘The increase in 2006 over 2005 was 15% to 20%,’ she says. ‘If you are a business developer and produced a lot of revenue, your compensation would be higher than that’ (Louria 2007: 16).

Figure 2 captures this reinforcing mechanism where producers try to acquire revenues through transactions, enhancing their market reputation and profitability, in turn bringing additional transactions (Loop R1 in Figure 2). Conceivably, once they achieve a desired revenue level, pressures could ease, leading them to consider goals other than raising revenues (Loop B1). However, short-term success does not reduce producers’ desires for revenue-based bonuses and firms’ incentives to acquire market shares of attractive lines of business. Instead, success tends to create additional pressure to further increase the desired level of revenue and profits (Loop R2 in Figure 2). The output of financial services as a percentage of gross domestic product has increased substantially from the mid-1940s to the present; thus, the drive for revenues persists (Kedrosky and Stangler 2011).

Rules constraining producers’ activities slow or inhibit transactions and so producers live uneasily with them (Economist 2012). Kuznetsov conveys the image of such rules: “Compliance officers … oversee the operations of existing business lines and play an important restraining role in the development of any new business processes (as one of my trader colleagues used to tell me, compliance’s job was to say that anything I wanted to try was not a good idea.)” (2007: 37). Thus, an alternative way of responding to the pressure to produce is to increase the output through “cutting corners” on rules that
govern and limit transactions (Loop B2).

The processes outlined above will destroy the firm because of persistent legal problems from eroded rule compliance unless balancing mechanisms come into play. Regulators expect that firms will have some compliance deficiencies that should not lead to enforcement actions. In 2007, 80% of the SEC’s examinations of securities firms resulted in compliance deficiency letters, with 14% of its examinations resulting in referrals to the SEC’s Enforcement Division that may or may not have resulted in enforcement actions (Richards 2008). An SEC Director of Enforcement, commenting on such referrals at an industry conference in 1996, said that “a lot of the cases we deal with don’t make the six inch limit and we throw them back” (McCaffrey and Hart 1998: 61). However, the frequency and severity of violations can increase to the point where they eventually damage the organization’s reputation, repel customers, and thereby reduce transactions (Karpoff et al. 2008a; Karpoff et al. 2008b) (Loop B3 in Figure 3).

Organizations, however, do not usually wait for external market signals to enforce rule compliance. Pressure to comply with rules increases as evidence of rule violations accumulates, strengthening internal compliance and risk management systems designed to prevent more violations (Loop B4). The increased compliance, however, slows down the rate at which transactions can be processed (Loop B5), further increasing pressures for revenues and continuing the cycle of production–internal control tensions.

Figure 4 integrates figures 2 and 3 and summarizes the underlying feedback structure of the internal regulation challenge. On the left-hand side of the diagram, four feedback mechanisms describe the revenue-generating operations of the firm, while on the right-hand side three mechanisms describe the compliance-regulation processes. On the production side, two reinforcing processes (R1 and R2) create escalating pressure to complete transactions and erode compliance. On the compliance-enforcement side, three balancing mechanisms counter the effects of unchecked rule violations and resulting problems for the firm. The relative strength of each feedback mechanism determines how the firm balances revenue-generating production and rule compliance at any time.
Generally, the feedback structure in Figure 4 permits revenues to grow while inhibiting rule violations enough to prevent serious losses. This balancing has permitted the financial industry to grow substantially; if pervasive and continuous regulatory breakdowns were the norm, the industry would have collapsed (Black 2002). Nevertheless, the processes are unbalanced sufficiently frequently to create damaging legal problems. Individuals within the firm often do not identify regulatory violations until long after they have occurred and then respond only after further delay, so the pressure to comply with internal controls does not increase in a timely way. These delays are represented in the figures by lines perpendicular to the causal arrow. On these occasions, violations accumulate, often in subtle ways, eventually harming the firm, investors, or other market participants (Loop B3).

Political processes inside firms intensify the biases in favor of transactions over compliance mechanisms. Revenue producers and internal control personnel such as legal and compliance offices negotiate how the firm will handle compliance-related issues. At this point the ambiguities of how transactions might work out and how rules and procedures do or do not apply to them come into play (Feldman and Pentland 2003; March 2010). In these debates compliance personnel justify greater attention to internal controls by citing examples of firms that suffered devastating legal and economic consequences after rule violations. Producers counter those arguments by pointing to how their competitors are proceeding with similar transactions and arguing that control personnel are extending rules to situations where they do not apply. The day-to-day debate is not about whether to forgo immediate high-priority revenues because of a high probability of regulatory problems. Rather, the debate is about whether to forgo immediate revenues because of a relatively low probability of unspecified regulatory or reputational sanctions at some unknown future point (Bookstaber 2008; Ho 2009; Langevoort 2011; McCaffrey and Hart 1998).

Others have observed, in different areas, this bias toward the salient, immediate benefits of production and corresponding neglect of ambiguous indicators of long-term consequences. Oliva and Sterman demonstrated how firms that lack accurate measures of service quality and customer satisfaction can interpret the reduced attention to customers by service employees as “productivity increases.” Even
though stretched employees are working harder, there are subtle, serious declines in service quality (Oliva and Sterman 2001). Similarly, Repenning and Sterman discussed how the pressures of “hitting [production] targets” bias manufacturers toward short-term fixes of production problems and away from deeper process improvements that would provide long-term benefits but slow immediate production (Repenning and Sterman 2002). One of their manager subjects noted that “‘nobody ever gets credit for fixing problems that never happened’” (p. 280). In strikingly equivalent words applying to financial market regulation, an attorney wrote:

The cost analysis [of noncompliance] is further complicated by the contingent nature of liability, i.e., a particular problem may never be discovered by the regulators and therefore actual costs may never be incurred. Even if a problem is discovered, it may not result in actual costs to the firm for a number of years, by which time the P&L [Profit & Loss] has already been booked and employee bonuses paid. Responsible employees may have left the firm or moved to different positions, never knowing the negative impact of the problems they left behind. And, past success tends to remove the urgency and undercut concern about future risks. Complacency leads to under resourcing of critical support functions. (Citera 2007: 3).

Accordingly, incentives to follow best internal control practices or to forgo profitable “gray-area” transactions because of a low risk of future regulatory problems tend to be weaker than incentives for immediate production and profit. Producers are in stronger positions in related internal debates because they bring in the revenues on which the firm visibly depends and they are most familiar with the transactions. In contrast, internal control personnel are likely to be arguing for actions that certainly will slow transactions in order to reduce an ambiguous risk of problems; furthermore, they almost always understand the transactions at issue less than the business units. Incidents later judged to be rule violations or control failures are regarded, as they occur, as reasonable business judgments.

For example, reports on control failures related to the financial crisis beginning in 2008 emphasized that internal control personnel did not challenge producers’ judgments effectively because they lacked the technical ability or the power to override business unit views on the transactions’ benefit-cost balance for the firm (Economist 2008; Senior Supervisors Group 2008, 2009; Société Générale General Inspection Department 2008; UBS 2008). In sanctioning Credit Suisse International for securities-pricing violations, England’s Financial Services Authority noted that
Certain personnel within control functions with responsibility for checking prices were overly deferential in challenging certain [Structured Credit Group] traders and do not appear to have had sufficient seniority or management support to challenge effectively…. Undue reliance was placed on the technical ability and revenue contribution of certain Front Office [business unit] staff, who were highly influential in down-playing price testing variances and in influencing the price testing methodology used, and did not take appropriate action to control and manage such staff effectively (Financial Services Authority 2008: 4).

Compensation patterns reflect this disparity in power (Pfeffer 1994). In 2005 the weighted average compensation for the Sales and Trading/Financial Management area of securities firms was about $130,000, compared to about $72,000 for the Compliance, Audit, Examiners and Lawyers area (Securities Industry and Financial Markets Association 2007: 31).

It should be noted that pressure to produce often has an operational manifestation different from the explicit rule violations described above. If the firm as a whole is under pressure to produce, this might stimulate the creation and introduction of new products and services. Since the 1970s, financial firms have continuously developed new lines of business to sell unique, high-margin products. Substantial deregulation of financial services accelerated such financial innovation since the mid-1980s; firms frequently developed the products because firms could plausibly argue that existing regulations did not apply to them (Miller 1986: 460; U.S. GAO 2009).

Several ambiguities intensify the tension between production and rule compliance in such newer lines of business and so make related regulatory problems particularly likely. How regulations might apply to novel, complex activities is not as settled as how they apply to familiar activities. Participants differ over what the rules should be because the activities present new tradeoffs between potential gains and liabilities. The rules are not taught or programmed as easily because the activities are less understood and so require more interpretation. The creation of novel products increases the number of transactions and the revenue generated by the firm. These transactions, however, often result in abuses that had not been anticipated by the regulatory bodies as activities are less understood. As these abuses are detected, after significant delays, consumers and markets put pressure to increase and improve regulation for those new products. This feedback loop (B6), and the resulting impact on production (B7) and firm reputation (B8) are captured in Figure 5. The structure and behavior described by these loops is analogous to the
structure and behavior of the loops describing rule violations (Figure 3). To keep our diagrams and explanations simple, we will not include this response in future explanations. We ask the reader to keep in mind that a parallel structure exists for novel products every time we talk about rule violations.

[Insert Figure 5 here.]

Thus, the production-side loops tend to dominate the compliance-side loops, creating an environment in which production pressures tend to lead and compliance efforts follow in order to maintain the level of violations and problems within acceptable parameters. Once enforcement is achieved, compliance reestablished, and violations contained, production pressure increases once again, eroding compliance and creating additional violations and regulatory problems.

**EROSION OF THE RULE ENFORCEMENT STANDARD**

Financial firms tolerate eroding rule compliance when managers favor erring on the side of production over rule compliance because they see salient, certain competitive pressures and non-salient and uncertain regulatory risk. As noted above, even regulators expect some compliance deficiencies in the course of securities firms’ operations, with 80% of SEC examinations in 2007 resulting in deficiency letters but no formal enforcement action (Richards 2008). At the firm level, lower levels of rule compliance allow an increased number of violations that gradually become the norm. Over time, norms of industry behavior evolve from business practices. The drive for transactions and revenue—the two engines of growth described above (Loops R1 and R2 in Figure 2)—can put enough pressure on the producers that results in permanently eroding rule compliance (Oliva and Sterman 2001). As a result, producers get used to a lower rule enforcement standard, further diminishing intensity of rule enforcement, eroding rule compliance even further, increasing the number of rule violations (Loop R3 in Figure 6). What happens within individual firms becomes a standard of behavior across the industry and even accepted by regulators in the absence of compelling evidence of present harm.

[Insert Figure 6 here.]

Firms thus slip into what Vaughan (Vaughan 1998, 1999) called “normalization of deviance.” Identifying the existence of violations takes time; assessing the impact of the violations takes even longer,
especially when the transactions are complex and potential legal problems are ambiguous. With these delays and the pressures to reduce compliance from the production side of firms attempting to maximize profits, it becomes normal for some rule violations to be seen by producers and business managers as trivial technical violations or bypassing of “obsolete” rules incompatible with current business realities. Firms’ standards propagate throughout the industry, becoming industry’s standards by changing what the governing bodies in the industry consider acceptable, leading the industry into a time not only of prosperity and large numbers of transactions but also of accumulating violations (U.S. House Committee on Financial Services 2003; U.S. Senate Committee on Homeland Security and Governmental Affairs 2011). Industry and government regulation can come to accept deteriorating industry standards as normal slippage from ideal compliance, allowing the erosion to become structural and pervasive (McCaffrey and Hart 1998: 68-71; McCaffrey et al. 2007). An attorney who advises firms and has extensive regulatory experience observed in one of our interviews that

This is probably why you have a dumbing down of industry rules by consensus. The comment you always hear is “so and so does it.” Everyone takes comfort from the fact that everyone does it. Meanwhile the SEC and NYSE, even if they might be generally aware of something, may come to accept it in the absence of a major breakdown or scandal. There is a comfort and confidence from what is going on the Street, sometimes a false comfort.

At the Compliance and Legal Division national conference in 2005, the Director of Enforcement at the SEC reflected on why regulators and firms had not challenged conflicts of interest between investment banking and investment analysts that were widely recognized and had even been accepted as a business model (U.S. GAO 2012b). He commented, “You can be completely comfortable with practices, and they can be legal, but things evolved in a sufficiently slow way in a direction that becomes unmoored from the original situation so people did not respond to the change.” Such erosion of standards has been documented in other contexts (Oliva and Sterman 2001; Sterman et al. 1997).

Internal controls tend to be structurally insufficient to prevent serious compliance problems given incentives within firms and so external regulation is required to maintain the behavior of the system within tolerable limits. The next section reviews external regulation as a control mechanism.
THE ROLE OF EXTERNAL REGULATION

External regulators try to prevent rule violations through inspections, market surveillance, and enforcement. The controls operate well enough to allow the markets to function reasonably effectively but do not prevent the cycle of crisis, strengthening of controls, erosion of controls, and further crises.

We discussed earlier how revenue producers within firms usually win debates with internal controllers over gray-area transactions. Ambiguities in rules coupled with the distribution of power within the firm shape these debates. Producers bring in the revenues on which the firms depend, they understand the transactions more than internal controllers, and the transactions’ risks are uncertain and thus discounted outside of moments of heightened regulatory scrutiny. Similar inequalities in power and technical ability shape debates between industry and external regulators and so external regulators respond slowly to accumulating problems and new regulatory pressures diminish rapidly following crises.

Just as firms’ needs for revenue favor revenue producers and reduce internal controls’ effectiveness, the political and organizational strength of the financial services industry reduces external regulation’s effectiveness. Congress and the President oversee regulatory agencies; private groups also influence regulatory agencies as a matter of law (Croley 2008). The financial services industry, working through Congress, the President, and agencies directly, constrains external regulators by affecting their budgets, staffing, jurisdiction, and rule development and enforcement. From 1998 through 2012 “Finance/Insurance/Real Estate” ranked third among industry sectors in lobbying expenses vis-à-vis the Federal government, behind “Health” and “Miscellaneous Business” and substantially ahead of groups like Communications/Electronics, Energy/Natural Resources, and Defense (Center for Responsive Politics 2012). Significant violations or breakdowns in the financial system are almost always required prior to new controls on major financial firms (Barth et al. 2012; Coffee 2012).

The SEC and self-regulatory organizations are small organizations relative to the volume of business they must oversee. FINRA has about 3,200 employees overseeing 4,420 organizations with 162,575 branch offices and approximately 629,280 registered personnel (Financial Industry Regulatory Authority 2012). The Securities and Exchange Commission, with about 3,853 employees at the end of 2011 and
responsibility for implementing almost all aspects of the Federal securities laws, is far smaller than
required to oversee its markets effectively (American Bar Association 2012; Boston Consulting Group
2011). Regulators thus enforce the law selectively based on the political and economic costs of action.
External regulators especially recognize their problems in overseeing complex financial technology
(Bookstaber 2008; Faerman et al. 2001). What a risk manager at a financial firm said in 1994 still applies:

I’ll tell you, if I woke up one day and, God forbid, I was a regulator, I don’t think I’d know what
to do. Here in this place, I’m the guy the CEO looks at and says, ‘What are our exposures? What
do we not want to have happen? What could be the costliest thing that could go wrong?’ And for
me to get the information I need to answer him is a real challenge. And yet I have unlimited
access to any information I want. Anybody will take my phone call and answer any question. I
tend to know the sort of questions that should be asked. … And I say to myself, “If I’m in this
position, what is a regulator going to do?” (Loomis 1994: 57).

Numerous reports document the difficulties external regulators have in responding to accumulating
problems from financial innovations such as different forms of asset-backed securities and
derivative financial instruments (Financial Crisis Inquiry Commission 2011; U.S. SEC Inspector General
2008a, b). For example, Charles Gasparino described reactions to an SEC examination of Bear Stearns in
2007:

SEC officials held a series of meetings in Bear Stearns forty-second-floor conference room,
where the head of each division talked about the health of his unit…with six SEC officers poring
over everything on Bear’s books. The funding was the last topic to be covered. Paul Friedman,
who was in charge of repo, along with the rest of the finance team, spent nearly three hours going
over all of Bear’s credit facilities—its repo lines, its short-term funding obligations, its cash and
cash equivalents on its books—stressing that Bear’s liquidity was fine. By the end, the SEC guys
were staring at Friedman with glazed eyes, but Bear had passed the test. Friedman actually felt
sorry for them. “I think they might have understood about twenty-five percent of that,” he said to
a colleague after the presentation…At Bear, executives had had several conversations with SEC
staffers. “They all had this deer-in-the-headlights look, as if they didn’t know what was
happening and were afraid to do anything on their own,” said one Bear Stearns executive with
direct knowledge of the matter (Gasparino 2009: 276, 374).

Agencies tend to focus on problems fitting their stable procedures and competencies and do not have
incentives to attend to problems that may be accumulating but that have not yet caused conspicuous
damage. A senior congressional staff member commented on this point in an interview with us:

Historically, the agencies have acted reactively. That’s the nature of enforcement agencies. It’s a
catch-22 for the SEC. In the mutual funds cases, the SEC allegedly messed up, and so the SEC is
blamed for being reactive. So, they want to move actively in regulating hedge funds, they want to
be proactive. But now they are being severely criticized for moving into hedge funds and over-
regulating. It’s going to take a while to change the mindset.

The SEC abandoned the effort to regulate hedge funds after an adverse court decision and because it could not point to economic problems linked to unregulated hedge funds (U.S. Court of Appeals for the D.C. Circuit 2006; U.S. House Committee on Financial Services 2007). Only after the financial crisis beginning in 2008 did the Dodd-Frank Act grant it authority to regulate hedge funds (McCaffrey 2011).

Major financial firms, which are distinctively powerful participants in the system, develop lines of business partly to avoid existing regulatory restraints and usually can block new controls in the absence of overwhelming evidence of related harms. Critics charge that financial regulatory agencies do not target these newly profitable lines of business because their staffs lack the requisite technical abilities and want to avoid the political and economic costs of litigating related cases. These critics add that relatively close working relationships between regulatory staff and financial firms and the law firms representing financial firms worsen this problem (Coffee 2012; Project on Government Oversight 2011; Taibbi 2011; U.S. GAO 2011a). Agencies respond that they must operate within legal and political constraints and that trying aggressively to head off problems in the absence of evidence of violations, particularly in complex, new, and profitable lines of business, would drain their limited resources in extended judicial and political conflicts (Gallagher 2012; Khuzami 2011). Either way, external regulation, like internal corporate regulation, does not prevent the accumulation of serious problems in securities markets, intense reactive regulatory pressures, and ensuing easing of controls permitting the next cycle. As noted earlier, dramatic spikes in the failures of financial firms or sharp declines in market values associated with financial crises do produce strong regulatory responses such as new statutes and escalating regulatory actions reflected in Figure 1. Such vivid disruptions, however, occur only after the underlying problems have accumulated unaddressed for sufficiently long periods.

**RESPONSE TO ACCUMULATED VIOLATIONS**

Problems exist in relation to other problems, “embedded within a complex institutionalized system of problem formulation and dissemination” (Hilgartner and Bosk 1988: 55). Industry addresses a problem when outsiders hold the industry accountable for events or when insiders become concerned about
broaden reputational effects; firms respond aggressively to violations when they exceed a level considered damaging to the firm (Billings et al. 1980; Hoffman and Ocasio 2001). Recognizing violations, and their impact, draws attention to other violations, and dormant problems suddenly become evident (Loop R4 in Figure 7). Referring to the subprime mortgage crisis, one analyst observed that “prolonged close scrutiny often turns up all kinds of dubious practices that in normal times are under the radar” (Jewell 2008: C1). Among the first responses to the new awareness of accumulated rule violations is to make the rule enforcement standard more stringent, redefining as violations practices that previously had been tolerated. Heightened scrutiny of practices triggers an increase in the identification of rule violations leading to even higher rule enforcement standards (Loop R5 in Figure 7).

Raising the acceptable standard of compliance by tolerating fewer gray-area violations and increasing the pressure to comply with the rules eventually leads to higher rule compliance (notice the delay in the link between pressure to comply and rule compliance), slowing the emergence of actual and detected violations, along with their impact, completing an important control loop (Loop B9 in Figure 7). However, the faster response of the two reinforcing loops in Figure 7 accounts for the oscillatory behavior observed in the data and often cited in interviews and conferences; attention to rule violations and rule enforcement intensifies sporadically after the perceived impact of rule violations tips over a certain limit. Once standards are enforced and the salience of violations diminishes, the firms individually, the industry as a whole, and external regulators return to a bias toward tolerating transgressions they see as minor, low priority, or falling into gray areas. This sets up a subsequent erosion of standards.

After compliance standards have eroded during periods of prosperity the impacts of accumulated violations eventually become evident. External regulators and internal controllers tighten enforcement of existing rules, generate new types of rules, and try to close loopholes in rules to prevent new violations. We represent these responses in Figure 8 as sanction- and regulation-based responses (Loops B10 and B11 respectively). These responses further amplify the oscillatory behavior described above as they push the system for more violent reactions to its departures from equilibrium. Escalating regulatory activity
makes violations less likely for a period, reducing the level of problems experienced by the firm. These changes increase the strength and sensitivity of control systems as internal controllers and external regulators acquire more resources and organizational and political power.

[Insert Figure 8 here.]

The intense focus on compliance, however, eases as changes are enacted and external pressures recede. Controls over some lines of business do ratchet up because of mandated organizational changes (U.S. GAO 2012b). However, the increased intensity of controls diminishes as the salience of a financial crisis or violations diminishes. Also, as discussed above and depicted in Figure 5, new lines of business emerge, partly to minimize the impact of regulatory controls, producing new types of violations.

These fluctuations in regulatory pressures appear in various ways. Congress historically has passed most laws giving financial regulatory agencies substantial new powers only after financial crises (Barth et al. 2012; Coffee 2012; U.S. GAO 2009). Regulatory penalties also reflect the cycles (see Figure 1). An individual in a major financial firm remarked during an interview in late 2003—shortly after the passage of the Sarbanes-Oxley Act—that

Good regulation is talking to stakeholders, coming to some reasonable agreement that preserves integrity and allows business to get done. Now, so much of regulation is by fiat and its credibility is undermined. The environment is a lot tougher now and bad regulations get through. We had a good relationship with the majority of regulators and had a good debate but the relationship now is different, even with the ones that are smart and rational. Now they’re afraid to be perceived as too close to industry. They’re scared. The regulators have a gun to their heads by Congress and the press…What had been a healthy relationship has become more adversarial.

However, by 2005, a common argument was that the Sarbanes-Oxley Act and regulatory enforcement had become too aggressive. A panelist from the Consumer Federation of America described the title of one panel at the June 2005 NYSE regulatory conference—“Ethics and Compliance in the Securities Industry”—as “so six months ago. Now what you hear is talk of the need to restore balance to regulatory system that has gone too far. Needless to say, this is a view that I do not share.” The Dodd-Frank Act similarly is a potentially strong regulatory statute passed during a financial crisis that, as implemented, likely will be much less constraining than envisioned originally (Coffee 2012; Krawiec 2012). Internal control and regulatory standards ratchet upwards following accumulated violations but
recede enough from the high point of the cycle to permit the development of a new cycle.

**MARKET FORCES AND PRIVATE LEGAL ACTIONS**

We have focused on firms’ internal controls and external regulatory controls to explain dynamics of regulatory violations and intermittent elevated regulatory pressures. Market forces and private legal controls are two additional social controls on financial services but to simplify the diagrams we have not included these in the model. It is important to note briefly, however, why market and private legal controls do not prevent the patterns discussed here.

Market controls in this context mean customers refusing to deal with financial firms that violate regulations governing customer protection and operational integrity. These customer pressures do not prevent the eroding compliance standards that lead to periodic crises modeled above. About 68% of the 3,461 NYSE disciplinary cases that we examined for 1990-2007 originated at least partly from a customer complaint, but customers usually complained after they incurred substantial losses. Extensive research documents that individual investors’ cognitive biases work against effective market controls. Individual investors are far more likely to assess the value of investment advisors by the personal attentiveness of the advisor than by examining investment results. Investors also tend to overestimate their probable success in rising markets and usually do not challenge the firms advising them (Hung et al. 2008; infogroup/ORC 2010; U.S. SEC Staff 2011).

Institutional investors like mutual, pension, and hedge funds have information, knowledge to evaluate alternatives, and economic power to deal with financial firms more effectively than individual investors (Ljungqvist et al. 2007). Still, financial firms regularly are in a much stronger position even when dealing with institutions because they exist precisely because of their specialized information and ability to handle transactions (Morrison and Wilhelm 2007). Institutional investors, like individuals, regularly do not challenge their advisors’ recommendations (Langevoort 1996). Furthermore, institutional investors’ portfolio managers are evaluated on the basis of the returns for the funds they manage. Like business offices within financial firms, they push for profitable transactions, punish financial firms with stock prices lagging more aggressive competitors, and do not counter the bias
towards transactions and against tight controls modeled above (Bratton and Wachter 2010). Institutional investors also sometimes collaborate with financial firms in the corner-cutting leading to rule violations (New York Stock Exchange 2006a, b). Thus, market controls from individual or institutional investors do not prevent the observed dynamics of rule violations and reactive regulation.

Besides refusing to deal with deceptive firms and individuals, investors can file private legal actions alleging rule violations against firms when the violations harmed the investors. Legal and compliance personnel from firms regularly comment that the costs of private litigation after regulatory violations justify stronger internal controls and more diligent compliance with external regulation (Gentin et al. 2011; Turan et al. 2007).

However, pressures from private litigation, like customer complaints, emerge especially after violations occur and are far less intense when markets appear to be healthy, even though problems are accumulating within firms (Cornerstone Research 2012). Also, legislation and a series of 5-4 Supreme Court decisions since the mid-1990s have made it much more difficult for investors to file lawsuits alleging securities fraud. The narrow Supreme Court majorities justified the new restraints on private litigation partly on the grounds that the SEC retained broad powers to file fraud claims but, as noted above, the SEC does not prevent the cycles of rule violations modeled here (U.S. GAO 2011b). Political and economic power affect decisions particularly when the technical merits of competing options are unclear (Latour 1986; Lukes 2005). Plausible arguments can be made for either expanding or narrowing private litigation in financial markets; the political strength of the financial services industry tipped the outcomes in favor of new restrictions on private litigation (Glover 2012; Hittinger and Bona 2008; McCaffrey and Hart 1998: chapter 5).

DISCUSSION

The model developed here describes how incentives and social processes produce dysfunctional cycles of accumulating rule violations and compensating regulation. Pressures for production compete with production-slowing rules in financial firms, as in other types of organizations. In financial markets this dynamic generally favors production because of the salient, certain, and short-term need for revenues.
and the less salient, uncertain, and long-term chance of regulatory problems. Undetected or tolerated regulatory problems accumulate because firms are under pressure for revenues, eventually leading to regulatory breakdowns and then demands for stronger enforcement of existing rules and new controls. As existing rules are enforced more strongly and new rules are enacted, the problems recede; external pressures diminish; the firms’ discretion over their internal operations again increases; and the accumulation of regulatory problems leading to compensating regulation begins anew. Political circumstances favoring production within firms and between the financial industry and regulatory organizations help perpetuate the lagged corrective adjustments generating these imbalances.

This sequence appeared in the collapse of brokerage firms’ financial controls at the New York Stock Exchange in the 1960s and 1970s (the “back-office crisis”) (Benn 2000; Seligman 2003) and the wave of insider trading cases and related legislation associated with merger and acquisition activity in the 1980s (Stewart 1991). It fits the regulatory problems associated with the development of the derivatives industry from the early 1990s to the present, the savings and loan crisis of the 1980s and early 1990s, the dot.com bubble and collapse of the 2000s, and the events leading to the financial crisis beginning in 2008 (Black 2005; Bookstaber 2008; Das 2010; Financial Crisis Inquiry Commission 2011; McCaffrey et al. 2007). The sequence outlined here fits more recent private and public regulatory breakdowns in futures trading, the development of the London Interbank Offered Rate (LIBOR), risk management at major financial institutions even after the financial crisis of 2008, and in the core technologies of executing and processing financial transactions (Freeh 2013; Patterson 2012; U.S. CFTC 2012; U.S. Senate Permanent Subcommittee on Investigations 2013). Financial industry analysts have referred for decades to its “regulatory pendulum” and to the persistent illusion that “This Time It’s Different” (Reinhart and Rogoff 2009). The model here operationalizes the feedback mechanisms that interact to create the cycles of eroding compliance followed by strong compensatory regulatory responses found in these events.

While we have focused on financial markets, the model integrates more general findings in organizational sciences about situations in which pressures for production and rule compliance conflict. We believe that its main contribution is to describe systemically how organizations attend to rules
depending on the salience, time horizon, and relative certainty of the benefits of production compared to those of compliance. The model captures the operative mechanisms responsible for the development of pressures for production and for rule compliance in organizations (Figure 4). The model derives long-term consequences from day-to-day transactions, that is, explains macrobehavior by using a transaction-based microstructure of the system. It combines short-term and long-term responses to organizational problems and pressures to produce and comply with rules. This simple set of interacting feedback processes provides a structural explanation both for problem-prone organizations characterized by erosion of standards and increased violations and for organizations following rules more reliably. Erosion of compliance and increased violations and problems are more likely to occur in organizations in which production-generating loops dominate (Loops R1 and R2 in Figure 4) than in organizations in which compliance-generating loops dominate (Loops B4 and B5 in Figure 4, R3 in Figure 6, and B9 and R4, in Figure 7). The salience, time horizon, and relative certainty of production benefits compared to those of good compliance affect the different loops’ strength. In some areas, including financial markets, rule enforcement erodes when the short-term benefits of production diminish concerns about unspecified, distant risks from rule or procedural violations (Jackall 1988; Oliva and Sterman 2001; Reason 1997; Repenning and Sterman 2002). Beliefs, cognitive assumptions, formal and informal procedures, and rewards for completing transactions versus maintaining tight internal controls reinforce the bias toward completing transactions and away from equally mindful enforcement of rules (Jarzabkowski 2008; Lange 2008; Misangyi et al. 2008).

The consequences are different when failures are quickly and prominently visible. Studies of high-reliability organizations like aircraft carriers, air traffic control, and nuclear power plants show how training, rewards and sanctions, and working assumptions grow out of concerns that serious accidents will jeopardize the organization and responsible parties. These studies do document the same production-regulation tensions found in financial firms and how production goals sometimes prevail over effective internal controls. However, the mechanisms for weighing the two concerns are more balanced because the potential damages and liabilities from control failures are more immediate and salient physically and
so internal controls generally are more robust (Boin and Schulman 2008; LaPorte and Consolini 1991; O’Neil and Krane 2012; Perin 2005; Roberts 1990a, b; Roberts et al. 1994; Rudolph and Repenning 2002; Weick and Sutcliffe 2007). The model’s ability to account for different modes of behavior—rule erosion versus more reliable compliance—helps provide a useful integrated theory of rule development and compliance (Repenning 2000).

The model also suggests policy implications, as the rule compliance cycles discussed here could be smoothed if even one of the main control mechanisms operated reliably and without delay. For example, the effect of loop B4 (figure 4) that describes enforcement triggered by detected violations could be strengthened by decreasing the time between the identification of rule violations and an increased pressure to comply, i.e., rule enforcement. This would result in higher pressure to comply and more stable rule compliance. Similarly, decreasing the time between the detection and impact of abuses will result in faster and stronger pressure to create new regulation to bind the operating system (see loop B6 in Figure 5), i.e., accelerating rule evolution.

Yet, the model’s fundamental drivers—the salience, relative certainty, and timing of the benefits of production compared to the risks of cutting corners in rule compliance—and the data analysis which generates the model lead us to be pessimistic about the success of such interventions in easing the regulatory cycles in financial markets. Congress and agencies have established new rules targeting each of these levels of control after financial crises. Since the 1970s regulatory agencies have increased supervisory requirements within firms’ business and internal control offices after conspicuous internal control failures (McCaffrey 2011; McCaffrey and Hart 1998), and Congress has given regulatory agencies new enforcement powers, including powers to potentially “claw back” pay awarded for illegal or damaging transactions (Chan et al. 2012; Fried and Shilon 2011; Govtrack 2012; Miller 2012). The new rules developed over the past few decades have helped support larger and more diverse financial markets, and, as noted earlier, U.S. financial markets operate reasonably well in comparison with those of other nations (World Economic Forum 2012). However, the cycles in which regulatory problems accumulate, controls abruptly increase, and controls subsequently erode persist (Coffee 2012). The relative salience,
timing, and certainty of transactions’ benefits and risks and the political processes driving the system—the conditions generating the problem in the first place—erode the new controls (Barth et al. 2012; Bookstaber 2008). Thus, the impediments to improving controls enough to diminish these oscillations are formidable.

One line of research to understand the possibilities of mitigating these structural forces would study how agency, through strategic and tactical choice, potentially modifies structure in rule compliance. Research on institutional work—the processes of creating, maintaining, and disrupting institutions, including systems of rules—focuses on how participants construct institutional processes even as they are constrained by them (Barley and Tolbert 1997; Feldman and Pentland 2003; Jarzabkowski 2008; Lawrence and Suddaby 2006; Lawrence et al. 2009). Empirical research has not strongly differentiated corporations’ rule compliance or regulatory agencies’ effectiveness based on measures of organizational structure. However, one consistent finding is that upper managers who focus on regulatory compliance and ethics tend to strengthen corporate compliance programs (McKendall et al. 2002; McKendall and Wagner 1997; Parker and Nielsen 2011; Tyler and Blader 2005; Weaver et al. 1999a, b). Audits of large banks by their regulators reported that the banks’ risk management implementation, and their losses from the financial crisis beginning in 2007, varied substantially. The scope and depth of managerial attention to internal control best predicted effective or deficient risk management (Senior Supervisors Group 2008, 2009). Similarly, research on government organizations, including regulatory agencies, has discussed how, in some cases, upper and middle managers manage to operate more autonomously within established power structures by how they handle constraints and events (Breyer 1993; Carpenter 2010; Carpenter 2001; Carpenter and Krause 2012; McCraw 1984). So, it would be worthwhile to consider the extent to which active agents in organizational systems potentially can alter the deeply embedded dynamics among technology, incentives, political power, and rule dynamics examined here.
Figure 1. Variability of SEC Civil Penalties

Figure 2. Operations Structure

Figure 3. Compliance Structure

Figure 4. Internal Regulation Challenge Structure

Arrows indicate the direction of causality. Signs ("+" and "-".) indicate the polarity of relationships. A plus sign means that, all else being equal, if the cause increases (decreases), the effect increases above (decreases below) what it would otherwise have been. Similarly, a minus sign means that, all else being equal, if the cause increases (decreases), the effect decreases below (increases above) what it would otherwise have been.

Balancing loop polarity (denoted by B in the loop identifier) indicates a regulating (negative) feedback loop. Reinforcing loop polarity (denoted by R in the loop identifier) indicates a self-reinforcing (positive) feedback process.

Delays separating the cause and the effect are indicated in the diagrams by a line perpendicular to the flow of the causal arrow (e.g., between "revenue" and "desired revenue").
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