

The Causes of Fraud in Financial Crises: Evidence from the Mortgage-Backed Securities Industry*

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Key words: white-collar crime; finance; organizations; markets.

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ABSTRACT

The financial crisis of 2007-2009 was marked by widespread fraud in the mortgage securitization industry. Most of the largest mortgage originators and mortgage-backed securities issuers and underwriters have been implicated in regulatory settlements, and many have paid multibillion-dollar penalties. This paper seeks to explain why this behavior became so pervasive. We evaluate predominant theories of white-collar crime, finding that those emphasizing deregulation or technical opacity identify only necessary, not sufficient conditions. Our argument focuses instead on changes in competitive conditions and firms' positions within and across markets. As the supply of mortgages began to decline around 2003, mortgage originators lowered credit standards and engaged in predatory lending to shore up profits. In turn, vertically integrated mortgage-backed securities issuers and underwriters committed securities fraud to conceal this malfeasance and to enhance the value of other financial products. Our results challenge standard economic models, and we consider implications for regulatory standards based upon them. We also discuss the overlooked importance of opportunistic behavior to the sociology of markets.

INTRODUCTION

A large journalistic and scholarly literature explores the causes and consequences of the U.S. financial crisis of 2007–2009 (Lo 2012). Sociologists have contributed diversely to these accounts (Lounsbury and Hirsch 2010). But one of the most interesting and important aspects of the crisis remains its least-studied—fraud among the largest financial institutions (Shover and Grabosky 2010). This paper examines the characteristics and causes of fraud in the mortgage securitization industry during the financial crisis. Fraud was diverse. Mortgage originators deceived borrowers about loan terms and eligibility requirements, and sold loans they knew were likely to default. Banks that packaged mortgages into securities misrepresented the quality of the loans and the extent of their due diligence. Issuers and underwriters of mortgage-backed securities (hereafter MBSs) bet against them even as they sold them to trusted clients, and lied to shareholders about their own MBS holdings.¹

These activities were not the aberrant schemes of rogue individuals or firms. Rather, we show that 32 of the largest 60 financial institutions operating in the markets for mortgage origination and MBS issuance and underwriting have reached regulatory settlements over allegations of malfeasance. These institutions included mortgage lenders, commercial and investment banks, savings and loan associations, and other companies with substantial finance operations. Collectively, they have settled at least 43 predatory lending suits and 204 securities fraud suits, totaling more than \$79 billion in penalties and reparations.

What explains the extent and pattern of fraud throughout the mortgage securitization industry? In this paper, we use an original dataset on regulatory settlements resulting from alleged fraud to test several leading theories of financial malfeasance. Our results support an account of systemic financial fraud that emphasizes the interdependent effects of organizational

and market structures. Specifically, we argue that competition within and vertical integration across markets for mortgage origination and MBS issuance and underwriting were strong drivers of fraud. We use regression models to provide quantitative evidence that amid mounting competition for increasingly scarce mortgages, integrated financial institutions were more likely to commit predatory lending and mortgage-related securities fraud.

Our findings highlight three criminogenic mechanisms related to vertical integration. Perhaps counterintuitively, vertical integration can increase firms' sensitivity to scarcity. This increases their motivation toward fraud in the face of resource constraints. In the 1990s, deregulated financial institutions expanded their businesses into mortgage origination and MBS issuance and underwriting. Through related fee-based income, financial firms achieved record profits between 1995 and 2003 (DeYoung and Rice 2004; Krippner 2011:33). After 2003, market entrants and a dwindling supply of legally contractible mortgages created new competitive pressures. These were felt more acutely by those financial institutions whose business stretched across multiple markets, each depending on underlying mortgage assets (Fligstein and Goldstein 2010:41). This drove fraud in two ways. First, in order to sustain profits, vertically integrated financial institutions encouraged their originators to contract mortgages fraudulently. Second, this in turn compelled MBS issuers and underwriters to misrepresent the quality of mortgage assets the bundled into securities. Evidence of these mechanisms provides a strong challenge to neoclassical economic theories of financial behavior that suggest that stiff competition among firms will increase incentives to deal fairly in order to protect their reputations (Stigler 1971; Posner 1974; Peltzman 1989).

Third, vertical integration can decrease monitoring and due diligence in value chains. When performed by multiple firms, the mortgage securitization process entails several distinct

transactions. Each provides opportunities not only for malfeasance but also monitoring. When the creation and securitization of mortgages is vertically integrated within firms, originators, issuers and underwriters share rather than oppose one another's interest in misrepresenting the characteristics of mortgages and MBSs. Monitoring opportunities by interested parties are deferred until the end of a long and complex value chain, increasing opportunities for fraud. In the late 1990s and early 2000s, firms internalized transactions by expanding operations across multiple markets (Fligstein and Goldstein 2010, 2012). The greater concealment capacity of integrated issuers and underwriters positioned them to dissemble securities buyers more successfully, regardless of fraud by originators. Evidence of this mechanism offers a likewise strong critique of institutional economic theories of malfeasance that recommend integrating transactions within firms in order to mitigate incentives toward opportunism (Williamson 1975).

If economic theories of markets and firms largely fail to explain the *existence* of fraud in the recent financial crisis, our results also show how predominant sociological theories of financial crime fall short of explaining its *timing* and *patterns* in terms of individual and firm characteristics, regulatory oversight or product complexity. Instead, we advance a theoretical perspective that emphasizes interaction between firm and market structures. This approach offers the best explanation of the observed data. In particular, we show how market competition and firms' vertical integration across markets shaped both motivations and opportunities for financial malfeasance through the recognizable pattern of "criminogenic tiers" (Simpson 2011). Our analysis therefore advances a theory of systemic fraud in the context of historic financial crises.

Our paper is organized as follows. First we describe the evolving structure of the MBS industry in the pre-crisis period and the laws and regulations that governed it. Second, we review sociological and economic theories of white-collar crime, from which we derive hypotheses

about fraud in the mortgage securitization industry. Third, we describe and analyze an original dataset of mortgage- and MBS-related fraud settlements. Finally, we conclude with a discussion of what our findings suggest for sociological theory and research, as well as for financial regulatory policy.

THE MORTGAGE SECURITIZATION INDUSTRY

The Social Structure of Securitization

A mortgage-backed security is a bond that bundles mortgage loans together. It entitles its holder to part of the monthly payments made by borrowers. The creation and sale of MBSs—the mortgage securitization process—is complex (see Kendall [1996] for an overview). Each component process occurs a distinct *market*—a social space in which a particular good or service is produced and exchanged. For example, we refer to the mortgage origination market, where home lenders compete to lend to homebuyers, or the MBS issuance market, where issuers vie to sell the securities they create. Together, these highly interdependent markets make up the mortgage securitization *industry*—the social space contiguous with the entire mortgage securitization process. Because mortgages and MBSs are classified into prime and subprime categories (among others), we also refer to heterogeneous *sectors* within the industry corresponding to specific classes of mortgage products. We say that a firm is *vertically integrated* if it operates in multiple, contiguous markets in the same sector—for example, if it originates subprime mortgages and issues subprime MBSs, or issues and underwrites prime MBSs.

[Figure 1 about here]

Figure 1 illustrates the mortgage securitization industry. Mortgage originators, usually home lenders, sell loans to mortgagors, usually home borrowers. Originators sell mortgage debts to securities issuers who bundle them together into MBSs. Issuers register and sell MBSs and are responsible for their legal compliance. The sale of MBSs also involves the services of an underwriter, usually an investment bank, who works closely with the issuer to price and market MBSs to investors. These investors include commercial and investment banks, savings and loan associations, mutual funds, pension funds, and government sponsored enterprises like Fannie Mae and Freddie Mac. Underwriters assume some of the risks of distributing MBSs because they are usually obligated to buy securities they cannot sell. Other actors like mortgage servicers, ratings agencies, credit enhancers, and trustees play important roles in mortgage securitization, but for the purpose of our analysis the key industrial actors are those who play the most direct role in creating and selling MBSs—originators, issuers and underwriters.

Historically, the mortgage securitization process has been highly profitable. For one, actors in each market collect substantial fees for the services they perform. For another, MBSs pool risk, which allows for relatively high rates of return for bondholders. The growth of the mortgage origination market from \$1 trillion in 1997 to \$3 trillion in 2007 made MBS securitization a central source of profit for American financial firms (Fligstein and Goldstein 2010:41). The mortgage securitization process changed significantly over that same period. In the early 1990s, each component process tended to be performed by a specialist firm (Jacobides 2005). By the early 2000s, however, the largest financial institutions had vertically integrated, originating mortgages and issuing, underwriting, and trading in MBSs (Currie 2007; Levine 2007; Fligstein and Goldstein 2010, 2012). DeYoung and Rice (2004:41-2) document this shift across the population of commercial banks, which in the 1980s began extending their activities

beyond origination markets and into issuance and underwriting markets. The proportion of loan assets composed by real estate loans grew from 32% in 1986 to 54% in 2003. Over the same period, non-interest income as a proportion of total income increased from 29.9% to 47.1%. The largest sources of this shift were fees for securitizing and servicing mortgage and credit card debt.

Fraud in the Mortgage Securitization Industry

The mortgage securitization industry comprises markets for mortgage origination and MBS issuance and underwriting. Each entails the exchange of specific goods and services. As in any market, actors in these markets may exhibit opportunistic behavior. Opportunism is behavior that deliberately disappoints a transaction partner's expectations (Williamson 1993). It is most severe when it reduces the transaction's usefulness to the deceived party so much that they would not have agreed to its true terms if they had known them *ex ante* (Von Werder 2011:1347-8). Among other things, market governance seeks to enforce exchange that is fair or efficient by preventing opportunistic behavior. What exactly does opportunism look like in the markets in question, and what laws and regulations aim to curtail it?

In the context of the mortgage securitization industry, opportunism most often takes the form of fraud—behavior that manipulates or falsifies information for gain. Of course, because financial law depends greatly on business politics (Calavita, Tillman and Pontell 1997), we maintain only that fraud as legally defined in the United States captures a meaningful portion of opportunistic behavior (Passas 2005). We focus on two of the most consequential forms of fraud—in mortgage origination markets, predatory lending; in MBS issuance and underwriting markets, securities fraud.

Predatory Lending in Mortgage Origination. Predatory lending is a kind of fraud in which loan originators engage in unfair and deceptive practices during the loan origination process. While predatory lending has no consensus legal definition, the Federal Deposit Insurance Corporation characterizes the behavior as “imposing unfair and abusive loan terms on borrowers, often through aggressive sales tactics; taking advantage of borrowers’ lack of understanding of complicated transactions; and outright deception” (Federal Deposit Insurance Corporation 2006:1). A variety of laws regulate predatory lending. At the federal level, deceptive lending practices are punishable under the Truth in Lending Act of 1968 and the Home Ownership and Equity Protection Act of 1994. Discriminatory lending practices are covered under the Fair Housing Act of 1968 and the Equal Credit Opportunity Act of 1974. Moreover, at least 25 states have some form of anti-predatory lending laws.

Lenders stand to gain (and borrowers lose) from predatory lending practices in two ways. First, they may misrepresent or conceal information about eligibility criteria. Equivalently, they may discriminate among borrowers by race, ethnicity or gender. In these ways, lenders can channel borrowers into loans that are more expensive than those to which they are legally entitled. Second, lenders may misrepresent or conceal information about loan features such as add-ons or balloon payments, or about the estimated likelihood that a borrower will default. This practice allows lenders to extract unforeseen fees and penalties from borrowers.²

Securities Fraud in MBS Issuance and Underwriting. Securities fraud is a kind of fraud in which actors misrepresent or withhold information used by investors to make decisions. Securities fraud is regulated by diverse federal and state laws and enforced by an array of federal and state agencies. In our case, however, it is pursued chiefly by the Securities and Exchange Commission, the Department of Justice, and the Attorneys General of major states.

In the mortgage securitization industry, securities fraud usually takes the form of misleading securities buyers about the quality or composition of the mortgage assets underlying MBSs. Issuers and underwriters stand to gain at the expense of investors and shareholders in at least two ways. First, they may inflate securities prices by willfully or negligently misrepresenting the characteristics of MBS products to investors. Short of material falsehoods, issuers or underwriters may market and sell investments they but not their customers know to be poor ones. Second, issuers and underwriters—themselves among the largest purchasers of low-quality MBSs (Fligstein and Goldstein 2010:47)—may misrepresent their own MBS holdings, with traders deceiving managers in pursuit of commissions or executives deceiving shareholders to secure corporate performance-based compensation.

THEORIES OF FINANCIAL FRAUD

How do social scientists explain financial fraud? We review the theoretical literature in sociology and economics in order to develop hypotheses about the prevalence and distribution of fraud in the mortgage securitization industry during the financial crisis of 2007–9.

The Sociology of “White Collar Crime”

The study of “white-collar crime” has a long history in sociology (Sutherland 1940, 1949).³ As such, it is characterized by a diversity of theories, methods, and levels of analysis. Early microsociological theories of white-collar crime sought to adapt insights from the study of “conventional” crime (Gottfredson and Hirschi 1990). Although white-collar criminals are significantly different than other criminals in social background, career trajectory, and motivation (Piquero and Benson 2004), inquiries into the psychological traits of white-collar

criminals have been fruitful (Sykes and Matza 1957; Benson 1985). Studies have shown that the values and attitudes of corporate actors are central to their proclivity toward crime (Blickle et al. 2006; Smith, Simpson, and Huang 2007; Piquero, Schoepfer and Langton 2010; Zona, Minoja and Coda 2012). Raine et al. (2011) have even shown that white-collar offenders differ from matched non-offenders in neurocognition, psychophysiology, and brain structure. Such findings provide compelling insights into individual cases. But unless coupled with strong theories about professional selection or learning and diffusion, they are unable to explain crimes that require complex coordination among multiple actors, a hallmark of major financial malfeasance.

Meso-level studies have therefore focused on just this problem, examining organizational contexts in which local norms, identities, and beliefs catalyze patterned malfeasance (Vaughan 2002; Pontell and Geis 2007; Aguilera and Vadera 2008). This literature, however, has provided only mixed empirical conclusions about the organizational correlates of white-collar crime (Wang and Holtfreter 2012; Simpson 2013). More problematically for our purposes, intra-organizational approaches are generally unable to explain historic waves of malfeasance that stretch across a large number of firms.

Understandably, then, analysts of widespread white-collar crime have focused on macrosociological factors. This adjustment in the level of analysis usually entails a shift in emphasis from motivation toward opportunity (Shover and Hochstetler 2006; Benson and Simpson 2015). Explanations focus on variation and change in the feasibility of actually undertaking illegal behavior, as well as in the risk of detection and certainty and severity of punishment. On the one hand, this makes the state a key factor in the explanation of corporate malfeasance (Calavita 1990; Calavita, Tillman, and Pontell 1997; Edelman and Suchman 1997; Vaughan 1999:288; Passas 2005; Prechel and Morris 2010). Actors behave opportunistically in

response to the perceived interest and ability of regulators to enforce relevant laws. On the other hand, a focus on opportunities emphasizes the key roles of technology and market structure, especially in finance (Needleman and Needleman 1979; Zey 1999; MacKenzie 2011; Furfine 2014). The complexity of exchange increases the sheer possibility of opportunism. Moreover, anonymous and arms-length transactions and the opacity of products and processes decrease the likelihood of detection. Unsurprisingly, most evidence indeed suggests that actors are more likely to engage in white-collar crime when they believe they are unlikely to be caught, or if caught, unlikely to be punished (Simpson 2013).

Despite the explanatory power of such theories, they leave important questions unanswered, particularly in the case of the financial crisis of 2007–2009. Specifically, by focusing on regulatory and technological aspects of an environment that all firms occupy, they fall short of explaining the timing and distribution of malfeasance. For example, regulatory relaxation in the financial services industry occurred as much as 10 to 20 years prior to the financial fraud we document (Crotty 2009; Immergluck 2009; Patterson and Koller 2011; Koller 2012). Why the increase in fraud only in the early 2000s?⁴ For another, if firms faced similar legal, regulatory, and technological environments, why did some firms commit fraud and not others? Given these challenging questions, we consider regulatory and technological factors necessary but insufficient conditions for the observed illegal behavior.

Structural Theories of Criminogenesis

In order to explain the extent and distribution of predatory lending and securities during and after the financial crisis, we focus on the interaction between the organizational characteristics of firms and the structural features the markets in which they operate. In doing so,

we build upon a long tradition of analyses of white-collar criminogenesis that focuses on how social structure shapes motivations as well as opportunities for malfeasance (Clinard and Yeager 1980; Coleman 1987; Baker and Faulkner 1993; Tillman and Pontell 1995; Tillman and Indergaard 2007; Tillman 2009). Most especially, we draw from a strain of early research in economic criminology that examines “criminogenic tiers,” the genesis and diffusion of crime through interactions between firms across interdependent markets within an industry (Leonard and Weber 1970; Farberman 1975; Denzin 1977).

Analyses of criminogenic tiers show in particular how supply chain dependencies—for example, the relationship between auto dealers and producers—can create special pressures on firms to engage in malfeasant or opportunistic behavior (McKendall and Wagner 1997; Wang and Holtfreter 2012). When profits in one market depend upon revenue in a second market that experiences intense competition or scarcity, powerful actors in the first market may exert coercive pressure upon actors in the second to commit fraud. This approach helps show how malfeasant and opportunistic behavior can emerge from relatively normal market processes, and how it can be historically patterned but variously distributed throughout an industry.

Aspects of the criminogenic tier approach have begun to be applied to financial markets, including the mortgage crisis (Shover and Grabosky 2010; Simpson 2011; Rorie and Simpson 2012; Barnett 2013). We extend this application, but with two important modifications. First, while the theory tends to emphasize dependency relationships *between* firms in related markets, we ask whether criminogenic tier effects are accentuated by firms’ vertical integration across those markets. Hence, we add to an analysis of market structure attentiveness to organizational structure. Second, in parts of our analysis we flip the usual causal direction of criminogenic tiers on their head. We ask whether fraud, when occurring widely in a market upon which firms in

another market depend, in turn causes dependent firms to perpetrate offenses in their own domain.

We develop hypotheses about the pattern of fraud and predatory lending between 2006 and 2014. One of the basic insights of structural criminogenesis theory is that firms in industries facing crises of profitability will experience greater pressure to generate profits through illegal behavior (Coleman 1987; McKendall and Wagner 1997; Shover and Hochstetler 2006; Simpson 2013). Such a scenario clearly characterized the mortgage origination market, wherein business models relied heavily on fees, and therefore on a steady stream of mortgages (DeYoung and Rice 2004). Although low interest rates following the stock market crash of 2001 spurred new origination and refinancing (Fligstein and Habinek 2014), the pool of viable mortgagors and refinancers declined rapidly beginning in 2003. While the long-term industry trend has been toward greater concentration, between 2003 and 2006 many firms newly entered mortgage markets (Scharfstein and Sunderam 2013). In doing so, they exacerbated intensifying competition for loans that could be securitized. Despite new entrants, between 2003 and 2004 the conventional mortgage market contracted from \$2.7 trillion to \$1.4 trillion (Fligstein and Goldstein 2010:41). Originators responded by turning to nonconforming loans that also yielded higher fees. Between 2003 and 2007, the proportion of originations that were nonconforming increased from 30 to 70 percent (Fligstein and Goldstein 2010:41). The exhaustion of the nonconforming market around 2006 increased the relative attractiveness of profits acquired through negligent or fraudulent origination (Renuart 2004).

Moreover, decreasing mortgage supply also cut against the fee-based profits of issuers and underwriters that depended upon the throughput of underlying assets—in other words, the volume of new mortgages originated. With only temporary success, issuers and underwriters

sought to close this gap through technological innovations such as the development of collateralized debt obligations (MacKenzie 2011). But they ultimately faced the same supply constraints as originators. Criminogenic their theory suggests that powerful actors in a dependent market should be expected to pressure suppliers in highly competitive markets. Therefore:

Hypothesis 1: A significant proportion of mortgage originators will commit predatory lending.

By extension, if new challengers, increased borrower scarcity, and coercive pressure created new motivations toward malfeasance that were uniform throughout the origination market, originators with equal propensities toward contracting fraudulent mortgages may be expected to commit predatory lending in proportion to the volume of their business:

Hypothesis 2: Predatory lending by mortgage originators will be positively associated with origination market share.

We also ask whether criminogenic tier effects were accentuated by the inter-market organization of firms. While the demand of MBS issuers and underwriters for securitizable mortgages exerted a general pressure on originators to contract mortgages fraudulently, evidence from industry insiders suggests that mortgage originators experienced coercive pressure from in-house MBS issuers and underwriters that was more direct, intense, and explicit (Dinapoli 2010; Nguyen and Pontell 2010). This motivation-based mechanism suggests that:

Hypothesis 3: Predatory lending by mortgage originators will be positively associated with vertical integration.

Because they faced similarly structured threats to their profits, MBS issuers and underwriters shared many of the same market-wide motivations toward securities fraud as did mortgage originators toward predatory lending. This suggests, in parallel, that:

Hypothesis 4: A significant proportion of MBS issuers and underwriters will commit securities fraud.

Hypothesis 5: Securities fraud by MBS issuers and underwriters will be positively associated with issuance and/or underwriting market share.

But our approach also suggests a relationship between vertical integration and the commission of securities fraud, an inversion of the conventional directionality of criminogenic tier effects. We test two distinct mechanisms by which this might occur, one emphasizing motivations toward securities fraud, and the other emphasizing opportunities for it.

On the one hand, if in-house originators fraudulently contract mortgages, issuers and underwriters of MBSs built upon them are compelled in turn to deceive transaction partners about the qualities of the securities. In other words, the motivation toward fraud increases with vertical integration because the diffusion of fraud is a precondition of continuing normal operations. In the event that issuers or underwriters sell the securities, victims will be institutional investors; in the event they hold the securities, shareholders are misled. Initial fraudulent acts—or, “origination sins”—will cascade across dependent markets primarily through firms spanning those markets. This mechanism suggests that:

Hypothesis 6: Securities fraud by MBS issuers and underwriters will be positively associated with predatory lending.

Hypothesis 7: A positive association between vertical integration and securities fraud by MBS issuers and underwriters will be strongest among firms committing predatory lending.

On the other hand, vertical integration provides greater opportunities for fraud. Not only is coordination easier within firms than between them. Because fraudulent acts are more easily concealed from victims at the end of complex value chains, the likelihood of detection is lower. In other words, the transaction points that vertical integration eliminates are not only sites of potential fraud (Williamson 2008). They also represent key opportunities for quality control and due diligence. If MBS issuers and underwriters generally shared motivations to bolster profits

through fraud, vertically integrated firms had greater opportunities to deceive investors successfully. In a sense, the effects of organizational complexity mirrored the effects of product complexity (Furfine 2014). Fraud enabled through the concealment capacity of vertically integrated firms needed not follow from “origination sin.” Rather, it could be initiated at the level of securitization rather than origination. This suggests:

Hypothesis 8: Securities fraud by MBS issuers and underwriters will be positively associated with vertical integration in the absence of predatory lending.

Economic Approaches

We also review and test two distinct economic perspectives on the link between firms and illegal behavior: the neoclassical approach, exemplified by the law and economics movement (Stigler 1971; Posner 1974; Peltzman 1989), and the institutional approach, exemplified by theorists of transaction costs (Williamson 1975, 2000). Both of these approaches diverge from sociologists’ understanding of the causes of financial fraud. But they also show that economists do not share a single view of the determinants of illegal behavior.

The Neoclassical Approach. The neoclassical approach holds that competitive markets will curb widespread illegal behavior. The approach identifies at least three separate mechanisms. First, competition compels fair dealing because transaction partners can eschew exchange with fraudulent actors in favor of honest ones (Shleifer 2005). Second, when repeated transactions are desirable or necessary, actors will play fair in order to maintain the benefits of trust-based relationships (Greif 1989; Ellickson 1991; Bernstein 1992). If these two mechanisms fail to align incentives against cheating, then victims’ ability to recognize and recoup damages through litigation will militate against fraud (Posner 1972). Financial markets tend to be

characterized by intense competition among sophisticated actors whose reputations matter and who possess strong capabilities to monitor and seek restitution. Therefore, external regulation—even as simple as a prohibition against fraud—is often seen as unnecessary to prevent malfeasance (Easterbrook and Fischel 1991:283). In some cases, it may even be undesirable because it is prone to capture, regulatory rent-seeking, and various unintended consequences.

Economists have applied neoclassical insights in analyzing recent trends in the mortgage securitization industry. On the one hand, certain features of the industry—its competitiveness, the importance of actors' reputations, and actors' expansive litigative capacities—suggest most basically that malfeasance should be widely suppressed. Hence:

Hypothesis 9: A small minority of originators will commit predatory lending.

Hypothesis 10: A small minority of MBS issuers and underwriters will commit securities fraud.

On the other hand, facing evidence of fraud in the mortgage securitization industry, neoclassical economists have sought to explain its patterns. They have argued that firms that faced little competition or were marginal or poorly performing were less likely to value their reputations, and therefore more likely to engage in overly risky or fraudulent mortgage origination or MBS issuance or underwriting (Boyd and De Nicoló 2005; Titman and Tsyplakov 2010; Dell'Araccia, Igan and Laeven 2012; Piskorksi, Seru and Witkin forthcoming). Therefore, the neoclassical approach suggests that:

Hypothesis 11: Predatory lending by mortgage originators will be negatively associated with origination market share and/or firm survival.

Hypothesis 12: Securities fraud by MBS issuers and underwriters will be negatively associated with issuance and/or underwriting market share and/or firm survival.

The Institutional Approach. Like the neoclassical approach, the institutional approach in economics regards market actors as innately prone toward opportunism, or self-interest “with guile” (Williamson 1975, 1993). While neoclassical economists tend to see competition as a mechanism that adequately compels actors to respect the interests of their trading partners, institutional economists accept the empirical reality of imperfect competition. Instead, they argue that actors tend to craft institutions—especially firms and other hierarchies—in order to ameliorate widespread force and fraud (North 1981; cf. Granovetter 1985). Therefore, the institutional approach suggests that financial malfeasance will vary as a function of firms’ ability to self-organize governance structures that reduce incentives and opportunities for fraud.

The institutional approach treats vertical integration as the paradigmatic solution to the problem of opportunism (Coase 1937). When an opportunity for malfeasance exists, incorporating the exchange within a single firm eliminates incentives toward bad behavior. This approach has been popular in economic analyses of the financial crisis. Institutional economists have argued that atomistic actors in the mortgage securitization industry faced greater motivations and opportunities toward fraud. In particular, because atomized originators, issuers and underwriters sold rather than invested in most of the products they created, they faced perverse incentives to deal in riskier mortgages and MBSs that yielded higher fee income, and to dissemble transaction partners about the quality of the mortgages and MBSs they sold (Jacobides 2005; Ashcraft and Schuermann 2008; Immergluck 2009; Mayer, Pence, and Shurland 2009; Purnanandam 2011; Demiroglu and James 2012).

Taken together, the institutional approach provides a clear set of predictions about the extent and patterning of predatory lending and securities fraud. On the one hand, because rational firms should self-organize to prevent widespread opportunism, fraud in the MBS industry should

be anomalous. Institutionalists therefore share the neoclassical predictions about the extent of malfeasance expressed in Hypotheses 9 and 10. Of course, they identify a different mechanism that explains why this should be true. If mortgage originators are integrated with the MBS issuers and underwriters with whom they would otherwise transact, they will face fewer incentives to contract fraudulent mortgages and misrepresent them for gain. In other words:

Hypothesis 13: Predatory lending by mortgage originators will be negatively associated with vertical integration.

Likewise, if MBS issuers and underwriters are integrated with each other and with originators with whom they would otherwise transact, they will be less likely to profit through the misrepresentation of their products. Therefore:

Hypothesis 14: Securities fraud by MBS issuers and underwriters will be negatively associated with vertical integration.

RESEARCH DESIGN

Data and Variables

Data problems in research on white-collar crime have been widely documented and discussed (Reiss and Biderman 1981; Braithwaite 1985; Coleman 1987; Simpson 2013). Our analysis encounters several commonly occurring challenges. Nevertheless, our data allow us to provide the first systematic description of the extent of MBS-related opportunism associated with the financial crisis of 2007-2009, and preliminary findings about its causes.

Using industry data from Inside Mortgage Finance (2009), we draw our sample from the largest firms in the mortgage origination, MBS issuance and MBS underwriting markets in 2006 and 2007. Specifically, the sample includes the top twenty originators and issuers and the top ten underwriters for each year in terms of prime and subprime market share. These 60 firms are

listed by name in Appendix A1. Between 2006 and 2007, the sample accounts for between 81% and 89% of revenue in origination markets, between 80% and 92% in issuance markets, and between 70% and 80% in underwriting markets.

Outcome variables. No systematic firm-level data on bank malfeasance have emerged from the financial crisis. Therefore, we constructed an original dataset of regulatory settlements between financial institutions and federal and state regulators over alleged instances of predatory lending and MBS fraud. The dataset includes all settlements occurring before September 1, 2014 that pertain to regulatory investigations and lawsuits initiated between January 1, 2008 and January 1, 2014. Because we draw our sample based on 2006 market share, in order to guard against false inferences we drop all suits with “causes of action”—or alleged instances of fraud—before January 1, 2006.⁵

We constructed the dataset using Law360, a database that includes a legal newswire and case law materials. We searched for federal- and state-level regulatory settlements with each of the 60 financial institutions for predatory lending or MBS fraud. Our search operationalized predatory lending as any alleged incidence of “predatory lending” or any citation of unlawfully unfavorable mortgage terms or unlawful mortgage marketing tactics.⁶ We operationalized MBS fraud as any alleged instance of “fraud” or fraud-like activities (deception, false statements, misrepresentation) pertaining to securities backed by residential mortgages.⁷ We verified all Law360 search results with relevant regulator databases, and replicated a subset of the search through PACER, the document management system for federal courts, and Justia.org, a case law database.

Regulatory data offers some distinct advantages. Recent economic studies have instead used loan performance as an indicator of fair dealing (Demiroglu and James 2012; Furfine 2014).

But these metrics necessarily conflate illegal acts with marginal and aggressive yet legal behavior. By comparison, the use of regulatory data offers a conservative estimate of opportunistic behavior. We also prefer regulatory data to data on private litigation because they avoid the problem of frivolous lawsuits, which are difficult for researchers to identify.⁸

Though powerful, the use of regulatory data to measure fraud is also problematic. First, regulatory data introduces potentially confounding sources of variation such as the goals and capabilities of regulators. We outline our approach to dealing with this problem as we discuss our explanatory variables and our results. Second, we are compelled to use data on settlements because famously few individuals or organizations have been prosecuted, let alone convicted for criminal activities (Rakoff 2014a). The general strategy of regulators, many working under the umbrella Residential Mortgage-Backed Securities Working Group, has been to negotiate monetary settlements with financial institutions over alleged civil and criminal wrongdoing. A small but growing number of settlement agreements entail explicit admissions of culpability. But the validity of our measure rests on the assumption that financial institutions will not settle suits in which the alleged action did not in fact occur to any significant degree.⁹

Third, regulatory settlements do not allow for the precise measurement of specific *behavioral instances* of predatory lending and fraud. Predatory lending suits often name hundreds, thousands, or even hundreds of thousands of specific behavioral instances of fraud, each with a small number of victims (Morgenson 2008; Savage 2011). Conversely, securities fraud suits tend to relate to a small number of behavioral instances of fraud that affect a large number of victims who purchase securities. However, settlement data do not allow us to identify such instances exactly and consistently. An additional challenge is that two single behavioral instance of fraud can violate different numbers of laws or do so in different numbers of

jurisdictions, giving rise to different numbers of lawsuits. This is a fundamental problem of relying on data generated by legal processes to measure human behavior. For descriptive purposes, it means that our data is better at illustrating the extent of fraud across firms than the intensity of fraud within them.¹⁰ But unless our explanatory variables are associated with a propensity to engage in behavioral instances of fraud that violate a disproportionate number of laws—an association we have no reason to suspect—the limitations of our data do not bias our explanatory analysis.

Therefore, we take the *regulatory settlement* as our primary unit of analysis for outcome variables. Each such settlement corresponds to a unique alleged violation of the law by a distinct firm.¹¹ Therefore, when we refer below to the “commission of fraud,” we mean on the one hand the presumed rather than proven commission, and on the other hand the legal rather than behavioral definition of fraud. Our outcome variables include the number of *total settlements*, the number of *predatory lending settlements*, and the number of *MBS fraud settlements*. The dataset includes 43 predatory lending settlements and 204 securities fraud settlements. New suits, ongoing regulatory negotiations, and recently disclosed confidential settlements suggest that our estimates of the actual extent of predation and fraud in MBS-related markets are conservative (Reckard 2013).

Explanatory variables. We measure vertical integration in terms of firms’ presence in the markets for mortgage origination, MBS issuance and MBS underwriting. Market presence is a binary indicator determined by whether or not the firm is listed as a top twenty originator or issuer or a top ten underwriter in 2006 or 2007 in the Inside Mortgage Finance (2009) database. Because prime and subprime MBSs must be built upon prime and subprime mortgages

respectively, we measure integration separately for the two sectors. Values for our two variables *prime integration* and *subprime integration* therefore range from zero to three (Table 2).

A challenge arises in measuring vertical integration. Nominally distinct firms are sometimes subsidiaries of parent companies that also hold firms in related markets, and these firms may rightly be seen as one integrated business unit. To distinguish between the relative effects of integration within firms and within corporate families, we reproduce our analysis by aggregating the 60 firms listed as nominally distinct by Inside Mortgage Finance into 49 “conglomerates” as distinguished by their highest-order parent company (e.g. BNC Mortgage and Aurora Loan Services were owned by Lehman Brothers Holdings Inc.; conglomerates are listed in Appendix A2). We note meaningful differences across levels of analysis in the discussion of our results, and present results for the conglomerate-level analysis in Appendix B.

We also include a number of control variables in our analysis. The firms in our sample vary greatly in size. Firms having equal propensities toward fraud but different volumes of transactions will commit different amounts of fraud. We therefore include variables measuring the dollar amount (in billions) of *origination*, *issuance*, and *underwriting revenue*, as well as the sum of these variables, *total revenue*. Because integration is positively associated with market share, including these variables allows us to identify the effect of integration on fraud.¹²

Finally, our sample of firms experienced modest attrition over the period of analysis. Because liquidated firms were subject to regulatory litigation for less time, we include a variable capturing the number of years between 2006 and 2014 in which each firm was *litigable*, which we define as being operational regardless of acquisition. For example, while Bear Stearns (acquired by JPMorgan Chase in 2008) remained litigable, Taylor, Bean & Whitaker (liquidated in bankruptcy in 2009) did not.

Models

We estimate ordinary least squares (OLS) models of the number of total MBS-related suits, predatory lending suits and MBS fraud suits settled in 2009-2014. The simplicity of our modeling is largely dictated by data constraints, especially sample size. For our industry-wide analysis of all fraud lawsuits, we use our full sample of 60 financial institutions. Because only originators can commit predatory lending, and only issuers and underwriters can commit securities fraud, we restrict our two market-specific analyses respectively to samples of the 43 firms that originated mortgages and the 34 that issued and underwrote MBSs.

RESULTS

Table 1 presents data on the types of financial institutions in our sample and the number of institutions of different types that reached settlements with regulators.¹³ The table illustrates several points. First, it shows clearly that fraud was not confined to a particular type of financial institution. Rather, the majority of commercial and investment banks and a sizable proportion of mortgage specialists reached settlements alleging malfeasance. This offers preliminary support for Hypotheses 1 and 4 and evidence against Hypotheses 9 and 10—both predatory lending and securities fraud were indeed widespread. Second, the table offers *prima facie* evidence of the significance of vertical integration to the commission of fraudulent acts. A greater proportion of investment banks than mortgage specialists settled for predatory lending, pointing possibly to the influence of issuers and underwriters on in-house originators (Hypothesis 3). Conversely, 87% of the firms that settled for predatory lending also settled for securities fraud, and mortgage specialists were as likely to settle for MBS fraud as for predatory lending. This suggests that

predatory lending may have cascaded upward through vertically integrated originators to produce securities fraud (Hypotheses 6 and 7).

[Table 1 about here]

Table 2 presents summary statistics of variables used in regression analysis for the entire sample of firms. The average firm settled .58 predatory lending suits and 3.33 securities fraud suits. (The average number of settlements *among those that settled* was 1.51 for predatory lending and 6.90 for securities fraud.) The worst offenders settled a total of 3 predatory lending suits (Countrywide, SunTrust and Wells Fargo) and 22 securities fraud suits (Countrywide). While a similar numbers of firms have settled predatory lending and MBS fraud suits (Table 1), firms settled many more issuance- and underwriting-related suits than origination-related suits. Importantly, this helps validate our regulatory measure of fraud by discounting the claim that regulators selectively pursued litigation against the largest firms. The conditional means in Table 2 show that the average mortgage originator did 13% more business than the average MBS underwriter, and 136% more business than the average MBS issuer. Moreover, most firms remained litigable for the period of analysis, and attrition appears only weakly correlated with other explanatory variables. Firms' likelihood of settling for predatory lending or securities fraud increases with their share of the relevant market and with firm survival, offering support for criminogenic predictions (Hypotheses 2 and 5) and evidence against neoclassical economic hypotheses (11 and 12). Contrary to the institutional hypotheses (13 and 14), integration also correlates positively with settlements.

[Table 2 about here]

Our sample captures a good mix of specialist and integrated firms. Table 3 presents a cross-tabulation of our measures of integration across origination, issuance and underwriting

markets within the prime and subprime sectors. It shows that the modal firm—representing about half of our sample—was a specialist in one market. But Table 2 shows that that conditional on being in a given sector (prime or subprime), firms operated in an average of 1.5 markets in that sector.

Our descriptive statistics also illustrate the logic of vertical integration. Table 3 shows that the vast majority of integrated firms operated in two markets within any given sector. The correlation coefficients between origination, issuance, and underwriting revenue in Table 2 show that such firms were much more likely to develop operations in markets for adjacent functions in the MBS value chain—i.e. origination and issuance or issuance and underwriting. The weak correlation coefficient between prime and subprime integration in Table 2 suggests that firms preferred to expand vertically within the prime or subprime sector rather than horizontally across a particular function in the securitization process. Indeed, Table 3 shows that 17 firms (28%) were horizontally integrated while 25 firms (42%) were vertically integrated. Firms operating in only two markets were five times more likely to be integrated vertically than horizontally. This suggests that the gains accruing from combining functions along the MBS value chain outweighed the cost savings of specializing and scaling within a given operation.

[Table 3 about here]

Taken altogether, these descriptive statistics corroborate other evidence that both mortgages and MBSs were widely misrepresented to their buyers (Piskorski, Seru and Witkin forthcoming). Moreover, they show that the largest financial institutions were also the most integrated, and that both characteristics are associated with the settlement of predatory lending and securities fraud suits. Our descriptive findings provide preliminary evidence in support of Hypotheses 1–7, which test a structural theory of criminogenesis. They offer tentative refutation

of neoclassical and institutional economic Hypotheses 9–14, which hold that fraud should be negligible and inversely associated with market prominence, firm longevity, and vertical integration. Descriptive statistics aggregated to the level of corporate conglomerates reveal nearly identical patterns (see Appendix B, Tables B1–3).

We turn to the results of our simple linear regression modeling to parse out these relationships in greater detail. Table 4 presents the results for OLS models of total MBS-related fraud settlements by all 60 firms in our sample. Model I shows that vertical integration across markets within prime and subprime sectors is strongly associated with settlement. Model II shows that the integration effect is not simply an artifact of equal propensities toward fraud and unequal volumes of MBS-related activity—the effect of integration on settlements is diminished but robust when accounting for firm survival and for the combined revenue from mortgage origination and MBS issuance and underwriting. For each additional function a firm occupied within the MBS value chain, it reached more than two regulatory settlements for predatory lending or MBS fraud. Model II also weakly suggests that firms reached an additional settlement for every \$69 billion in total revenue. The results presented in Table 4 tentatively corroborate the implications offered by our descriptive statistics for Hypotheses 1–5 and 11–14: both market-wide and within-organization pressures drove rather than suppressed fraud.

[Table 4 about here]

Two more sets of models examine the commission of fraud in specific parts of the MBS industry. Table 5 presents the results of OLS models of predatory lending settlements for the 42 financial institutions that originated mortgages. Model III shows that integration in the prime but not subprime sector strongly predicts settlement. However, accounting for the volume of mortgage origination in Model IV and other controls in Model V nullifies the effect of prime

integration on settling for predatory lending. Instead, there is a strong and significant effect of origination revenue on predatory lending settlements. Taken together, these results suggest an association between fraud and vertical integration across prime markets, but one that is overwhelmed by the effect of firms' positions within origination markets. Financial institutions that originated mortgages settled a predatory lending suit for every \$125 billion in mortgages they originated.

[Table 5 about here]

The results presented in Table 5 offer strong support for Hypothesis 2, which emphasizes the effects of competitive pressures between firms within markets.¹⁴ They offer weaker support for Hypothesis 3, which focuses on the effects of pressures within firms across markets. Our estimates provide a clear refutation of neoclassical theory (Hypothesis 11) by showing that predatory lending was common among prominent firms rather than marginal or foundering ones.¹⁵ The predictions of institutional economic theory (Hypothesis 13) are weakly rejected.

Table 6 presents the results of OLS models of securities fraud settlements for the 34 financial institutions that issued or underwrote MBSs. Model VI shows that vertical integration is a strong and statistically significant predictor of securities fraud, but Model VII introduces controls that yield results suggesting that the effect of integration on securities fraud likely operates through the prime sector alone. Each prime market across which the average issuer or underwriter was integrated increased by more than three the number of securities fraud lawsuits they were likely to settle. Models VIII–XII aim to identify the exact mechanism through which vertical integration drove fraud. Model VIII indicates that for each predatory lending settlement a firm reached, it was likely to settle an additional three securities fraud suits (Hypothesis 6). Models IX and X restrict the sample to issuers and underwriters who settled for predatory

lending. Even after introducing relevant controls, the effect of prime vertical integration upon securities fraud is strong and statistically significant. Moreover, a cross-model test strongly rejects ($p < .01$) the null hypothesis that among firms that settled for predatory lending, the effect of integration on securities fraud is equal to those that did not (Clogg, Petcova and Haritou 1995). In other words, vertical integration in the prime sector drove the fraudulent sale of MBSs most strongly among firms who had already contracted fraudulent mortgages. This confirms the mechanism expressed by Hypothesis 7—that vertical integration accentuated criminogenic tier effects by increasing motivations to perpetuate “origination sin” upward through the MBS value chain.

[Table 6 about here]

Models XI and XII estimate the effect of vertical integration on securities fraud among those firms who did not necessarily bundle their own fraudulent mortgages into MBSs. Among such firms, vertical integration might instead be expected to enable greater opportunities to conceal fraud, especially when beginning at the level of MBS issuance and underwriting. Model XI shows weak evidence that such an opportunity-based mechanism drove fraud in the subprime sector (Hypothesis 8), but this effect is not robust to the relevant controls. Moreover, in no model presented in Table 6 are firms’ positions within markets—as measured by market share—a significant predictor of securities fraud (Hypothesis 5). Intra-market competition was not as salient to securities fraud as it was to predatory lending. The results do not support neoclassical economic predictions about the inverse relationship between market marginality and fraudulent behavior (Hypothesis 12), but cut even more strongly against the institutional economic predictions of securities fraud (Hypothesis 8)—vertical integration was positively, not negatively associated with fraud.

A comparison of the results of our regression analysis at the firm and conglomerate levels is revealing (see Appendix B, Tables B4–6). In models that test motivation-based mechanisms predicting a relationship between vertical integration and predatory lending or securities fraud, conglomerate results closely mirror firm-level results. In these cases, vertical integration within nominal firms appears more important to criminogenesis than integration within corporate conglomerates. This suggests that where significant, vertical integration more likely motivates fraud through social interaction than through shared accounting. However, in models testing opportunity-based mechanisms of securities fraud, estimated coefficients for conglomerates are about one third higher and more statistically significant than for firms. This offers modest evidence that vertical integration achieved through corporate conglomeration may have increased opportunities to misrepresent MBSs.

Taken together, our regression results provide compelling evidence for an account of fraud in the mortgage securitization industry that emphasizes the position of firms within and across competitive, interdependent markets. While our data do not enable us to go inside the firms that perpetrated predatory lending and securities fraud, our findings corroborate diverse accounts of how exactly fraud worked. Increased competition within the mortgage origination market for a dwindling supply of viable mortgagors motivated financial institutions to engage in predatory lending. As one loan officer for subprime mortgage specialist AmeriQuest Mortgage recalled: “Every closing we had, really, was a bait and switch because you could never get [borrowers] to the table if you were honest” (Sebert and Fritz 2009). Moreover, originators who were vertically integrated experienced an especially acute degree of pressure to originate fraudulent mortgages. Another loan officer for Ameriquest, which also issued MBSs, described coercion from superiors to generate a steady stream of securitizable loans: “Internally, the

incentive was to do whatever you needed to do to get them out, and that sometimes meant that you manipulated documents to get them out” (Sebert and Fritz 2009). In some cases, vertical integration actually appears to have occurred for the purpose of enabling fraud in mortgage origination markets. For example, a complaint by the Comptroller of the State of New York illustrates how investment bank Merrill Lynch, shortly after purchasing an ownership stake in Ownit Mortgage Solutions, instructed the subprime originator “to weaken its underwriting guidelines to originate more stated income (or ‘liar’) loans” out of a “desire for increasing amounts of mortgages to repackage” into MBSs (Dinapoli 2010:5).

In turn, vertical integration created both motivations and opportunities for MBS issuers and underwriters to behave opportunistically toward institutional investors and shareholders. On the one hand, vertically integrated firms were especially likely to commit securities fraud because they were more likely to originate fraudulent mortgages, and therefore relatively more motivated to perpetuate fraud upward through the MBS value chain. For example, a 2013 suit by the Justice Department and the U.S. Securities and Exchange Commission against Bank of America noted that some 40 percent of the underlying mortgages it originated and packaged into one of its securities failed to meet the bank’s stated underwriting standards (Ingram and Rudegear 2013) On the other hand, vertical integration may also have driven fraud by creating opportunities for issuers and underwriters to misrepresent MBSs even when they were not built upon fraudulently contracted mortgages. For example, brokers at Credit Suisse, which issued and underwrote MBSs but did not originate mortgages, sold securities to investors they claimed were backed by federally guaranteed student loans, but which were actually built upon legal but risky mortgages (Hurtado 2010).

Fraud emerged and diffused throughout the mortgage securitization in diverse ways. But our results corroborate other evidence that the extent and patterns of financial fraud can be explained successfully using structural theories of criminogenesis.

CONCLUSION

Our analysis of fraud in the mortgage securitization industry straddling the financial crisis of 2007-2009 offers several important insights. It provides a critique of conventional wisdom about the relationship between market structure, regulation, and economic behavior. The most striking challenge our evidence presents is to neoclassical and institutional economic theories. The volume and distribution of fraud throughout the markets for mortgage origination and MBS issuance and underwriting highlight the limitations of theories suggesting that reputation costs impel market actors toward self-regulation. The strong relationship between vertical integration and fraudulent behavior suggests that the central claim of institutional—that the self-organization of firms efficiently militates against opportunism—is also limited.

Instead, our findings advance sociological approaches to the explanation of white-collar crime. The historical pattern of widespread fraud points to the importance of financial deregulation and the increasing complexity of financial products and processes. These established a crime-facilitative environment in the mortgage securitization industry by greatly expanding perceived opportunities for undetected malfeasance (Needleman and Needleman 1979). But the fact that many but not all firms settled with regulators over predatory lending and securities fraud shows that lax regulation and technical opacity were necessary but not sufficient conditions of opportunism in the mortgage securitization industry. The structure of firms and markets caused fraud. Increased scarcity and competition within markets catalyzed widespread

illegal behavior, and firms' positions within and across markets shaped its extent and character. Our analysis therefore demonstrates the usefulness of an expanded conception of "criminogenic tiers" for showing exactly how bad business emerges and spreads (Simpson 2011, 2013). Dependencies across markets can drive fraud. But by focusing on firms that span multiple markets within a value chain, we illustrate new mechanisms that clarify how organizational structure interacts with market structure to create both motivations and opportunities toward fraud.¹⁶

Our results also have implications for two key theories in economic sociology—of embeddedness and of market devices. Economic sociologists generally view the functions of social structures as benignly regulatory, often forgetting that in Granovetter's (1985:490-492) seminal paper, embeddedness is thought to facilitate malfeasance as easily as it mitigates it. Our research points to the need to move beyond studies of the effects of embeddedness on price and partnership (DiMaggio and Louch 1998; Mizruchi, Stearns, and Marquis 2006) toward analyses of its effects on fair-dealing and opportunism (Prechel and Morris 2010).

Moreover, the literature on market devices generally sees financial instruments not only as constitutive, but also as constructive. Insofar as they have a dark side, it is that they are relatively immune to manipulation and abuse, taking on a power above and beyond their users (Knorr Cetina and Bruegger 2002; Callon, Mill, and Muniesa 2007). Unsurprisingly, then, market breakdowns tend to be understood in terms of myopia and misrecognition rather than strategic and malevolent abuse (Carruthers 2010; Lepinay 2011; MacKenzie 2011). We see a productive opportunity to expand the analysis of market devices—to ask how their complexity gives form to the goals of market actors, fair or fraudulent as they may be.

In addition to its theoretical interventions, our paper arguably raises more empirical questions than it answers. It thereby points toward several trajectories of productive future research. One line of inquiry should examine the diffusion mechanisms of fraudulent behavior with more detailed attention to social interaction and organizational structure. Across firms, did fraud spread through leadership and imitation, or emerge independently from parallel structural positions (Pinto, Leana and Pil 2008; Patterson and Koller 2011)? Within firms, was fraudulent behavior the result of managerial edicts or oversights? Because settlement records provide few and shallow insights into the interactive and organizational aspects of vertical integration, ethnographic and interview studies of industry specialists are warranted (e.g. Ho 2009; Nguyen and Pontell 2010).

Another line of inquiry should investigate why financial institutions bought the very MBSs and CDOs built upon fraudulently contracted or misrepresented mortgages. Between 2002 and 2007, MBS holdings by commercial banks, investment banks, and foreign investors increased respectively from \$725 billion to \$1 trillion, from \$25 billion to \$285 billion, and from \$200 billion to \$1.25 trillion. Were originators, issuers and underwriters operating independently of those who managed banks' own portfolios? Did banks hold poor quality MBSs to advance the fee-based financial interests of employees over the equity-based interests of shareholders? Did banks seek to hold such MBSs only until they were debunked, or did they hold them only because they could not sell them?¹⁷

Finally our research also has implications for financial regulators. Our findings suggest that regulators should pay more attention to understanding business models—that is, how firms actually make money. They should then monitor competitive conditions and structural changes in markets to anticipate when the eroding viability of business models might reach tipping points

that drive many firms toward illegal behavior. Most certainly, this task is a daunting one. The descent of the world's largest financial market—the market for American mortgages and mortgage-backed securities—into widespread predation and fraud is evidence enough that good regulatory solutions in the arena of complex and dynamic financial markets are not straightforward. But even as it gives us pause, our investigation provides insights into how such episodes might be prevented in the future.

ENDNOTES

¹ For reasons of space and clarity, this paper does not address evidence of widespread illegality in related activities like MBS rating, residential mortgage servicing, and interest rate setting (Protess 2012, 2015; Schwartz and Dewan 2012).

² Lenders may also conceal aspects of the origination process such as commissions earned by brokers. They thereby misrepresent their partiality.

³ The literature on economic deviance has long debated the proper conceptualization of “white-collar crime” (Shapiro 1990; Simpson 2013). We set aside these questions presently in pursuit of understanding how, given a set of financial laws, sociologists and economists have explained financial behavior.

⁴ Evidence overwhelmingly suggests that mortgage fraud and predatory lending became a systemic problem only in the years immediately preceding and concurrent with the mortgage crisis. Between 2003 and 2008, for example, mortgage fraud-related “suspicious activity reports” from financial institutions to the Federal Bureau of Investigation increased from 6,936 to 63,713, and the Bureau’s mortgage fraud investigations increased from 436 to 1,644 (Federal Bureau of Investigation 2007, 2008). Between 2006 and 2008, an estimated \$60 billion in fraudulent loans

were originated (Federal Bureau of Investigation 2010). Evidence strongly supports a similar narrative at the level of securities fraud. For example, between 2005 and 2008, the percentage of financial firms listed on the Standard and Poor's 500 index who were newly subject to securities-related class action lawsuits rose from 2% to 31%—weighted by market capitalization, an increase from 8% to 55% (Cornerstone Research 2015).

⁵ For six cases whose causes of action are imprecisely dated, we weight outcome variables based on a distribution of incident–filing lag times imputed from our dataset.

⁶ This included allegations of: deception, false statements, misrepresentations, or other mortgage-related fraud; breaches of fair dealing or fiduciary duties in connection with the mortgage; violations of the Truth in Lending Act, Fair Housing Act, or Equal Opportunity to Credit Act; and the violations of other loan-related civil rights such as reverse redlining or racially discriminatory mortgage terms.

⁷ These comprised violations of the U.S. Securities Act; Securities Exchange Act; False Claims Act; Financial Institutions Reform, Recovery and Enforcement Act; Fraud Enforcement and Recovery Act; and New York State's "Martin Act" (General Business Law article 23-A, sections 352–3).

⁸ Our sampling of private suits against three large and highly integrated banks revealed that between 19 and 31 percent of suits brought between January 1, 2008 and January 1, 2014 had been dismissed by August 2014. Ongoing dismissals make it difficult to estimate the validity of private litigation as a measure of fraud.

⁹ While innocent individuals often plead guilty (Rakoff 2014b), the calculus is different for large firms. The enormous size of the settlements in our sample and the significant financial and legal power of large banks support the assumed relationship between settlement and culpability.

¹⁰ For this reason, another useful unit of analysis for our explicandum would be the dollar amount of settlements. But this poses two serious liabilities. The first is a data problem. Because settlement agreements and case law materials do not reliably disaggregate multi-settlement fines and reparations, it is impossible to infer the severity of specific alleged actions from settlement amounts. The second is a measurement problem. Because settlements are negotiated rather than adjudicated, they introduce political and financial bias to the measurement of actual malfeasance. We assume that the fact of settling a suit includes less such bias than the settlement amount.

¹¹ To be clear, this differs from the way in which “settlements” are sometimes reported in popular and trade press. For example, the so-called “National Mortgage Settlement” resolved multiple legal violations by multiple banks. We disaggregate these omnibus settlement events.

¹² An alternative interpretation of this variable is as a control for regulators’ selective pursuit of larger firms. We discuss the consequences of this interpretation in the Results section.

¹³ “Commercial banks” operate primarily in consumer markets (e.g. Bank of America); “investment banks” operate primarily in capital markets (e.g. Goldman Sachs); “mortgage specialists” operate primarily in mortgage origination markets (e.g. Countrywide); “savings and loan banks” are mutually held commercial banks, or “thrifts” (e.g. Washington Mutual); and “other financial institutions” (Table B1 only) are companies whose primary business is non-financial (e.g. General Electric).

¹⁴ An alternative interpretation of this result is as evidence of regulators’ disproportionate enforcement against larger firms (see n. 12). If so, this would suggest that the true distribution of predatory lending was more uniform with respect to origination market share. Hypothesis 2 may still be supported if competitive pressure is understood as exerting a uniform, rather than proportional pressure upon originators. However, we are skeptical of regulatory bias given the

descriptive evidence presented on p. 26, and given the fact that market share is not a significant predictor of settlement for securities fraud.

¹⁵ Models estimating firm survival as a function of predatory lending or securities fraud also offer no support for Hypotheses 11 or 12.

¹⁶ Arguably, our analysis also supports a variant of “Gresham’s law,” which states that bad business, when feasible, will crowd out good business (Akerlof 1970; Black 2005a, 2005b). The structural characteristics of firms and markets, combined with conditions of intense competition, high scarcity, and large expected profits, engendered lucrative fraud that likely crowded out fair dealing.

¹⁷ A parallel line of inquiry should ask whether similar agency problems led institutional investors knowingly to purchase fraudulent MBSs at the expense of their clients. This does not alter the material fact of fraud, but it does call into question who exactly is the “victim.” It might also help to explain part of the opportunity structure (if not motivation) for fraud in the MBS industry. We thank an anonymous reviewer for this insight.

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TABLES

Table 1. Sampled firms by firm type and settlement status

	Total firms sampled	Firms that settled		
		Any	Predatory lending	MBS fraud
Commercial banks	11	9 (.048)	9 (.002)	9 (.020)
Investment banks	9	9 (.002)	4 (.721)	9 (.001)
Mortgage specialists	37	13 (.000)	9 (.007)	10 (.000)
Savings and loan banks	3	1 (.594)	1 (1.00)	1 (1.00)
All firms	60	32	23	29

Note: Numbers in parentheses are Fisher's exact tests.

Table 2: Descriptive statistics

Variable #	1	2	3	4	5	6	7	8	9	10
Mean	3.83	.58	3.33	.95	1.02	45.09	15.43	13.30	70.74	7.50
Standard deviation	6.23	.88	5.90	.93	.85	79.73	21.65	26.88	104.44	2.85
Mean of nonzero values	7.18	1.51	6.90	1.54	1.53	64.42	27.23	57.02		
S.d. for nonzero values	7.00	.80	6.91	.69	.55	88.74	22.52	24.37		
Minimum	0	0	0	0	0	0	0	0	3.66	1
Maximum	25	3	22	3	3	435.07	118.47	98.09	636.63	9
1. Settlements										
2. Predatory lending settlements	0.45									
3. MBS fraud settlements	0.99	0.35								
4. Prime integration	0.58	0.42	0.55							
5. Subprime integration	0.48	0.23	0.49	0.13						
6. Origination revenue (\$B)	0.51	0.57	0.44	0.49	0.27					
7. Issuance revenue (\$B)	0.60	0.35	0.59	0.57	0.69	0.55				
8. Underwriting revenue (\$B)	0.59	0.29	0.59	0.69	0.57	0.17	0.68			
9. Total revenue (\$B)	0.65	0.58	0.66	0.66	0.48	0.92	0.79	0.53		
10. Years litigable	0.29	0.23	0.29	0.29	0.14	0.18	0.18	0.27	0.24	

Table 3. Cross-tabulation of integration measures

		Subprime integration				Total
		0	1	2	3	
Prime Integration	0	0	17	6	0	23
	1	16	2	3	0	21
	2	4	0	8	0	12
	3	0	1	2	1	4
Total		20	20	19	1	60

Table 4. OLS regression estimates of settlements

	(I)	(II)
Integration, prime	3.556*** (.6260)	2.414** (.8708)
Integration, subprime	3.036*** (.6808)	2.257** (.7976)
Total revenue (\$B)		.0145^ (.0086)
Years litigable		.1704 (.2099)
Constant	-2.637* (1.026)	-3.067 (1.715)
	.512	.541
Observations	60	60

Note: Numbers in parentheses are standard errors.

^ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table 5. OLS regression estimates of predatory lending settlements

	(III)	(IV)	(V)
Integration, prime	.4271** (.1382)	-.0631 (.1610)	.0203 (.2625)
Integration, subprime	.1417 (.1527)	-.2031 (.1495)	-.1352 (.2603)
Revenue, origination (\$B)		.0083*** (.0019)	.0079*** (.0021)
Revenue, issuance (\$B)			-.0002 (.0110)
Revenue, underwriting (\$B)			-.0051 (.0099)
Years litigable			.0106 (.0405)
Constant	.0932 (.2282)	.3226 (.1964)	.1611 (.3889)
	.213	.473	.479
Observations	42	42	42

Note: Numbers in parentheses are standard errors.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table 6. OLS regression estimates of MBS fraud settlements

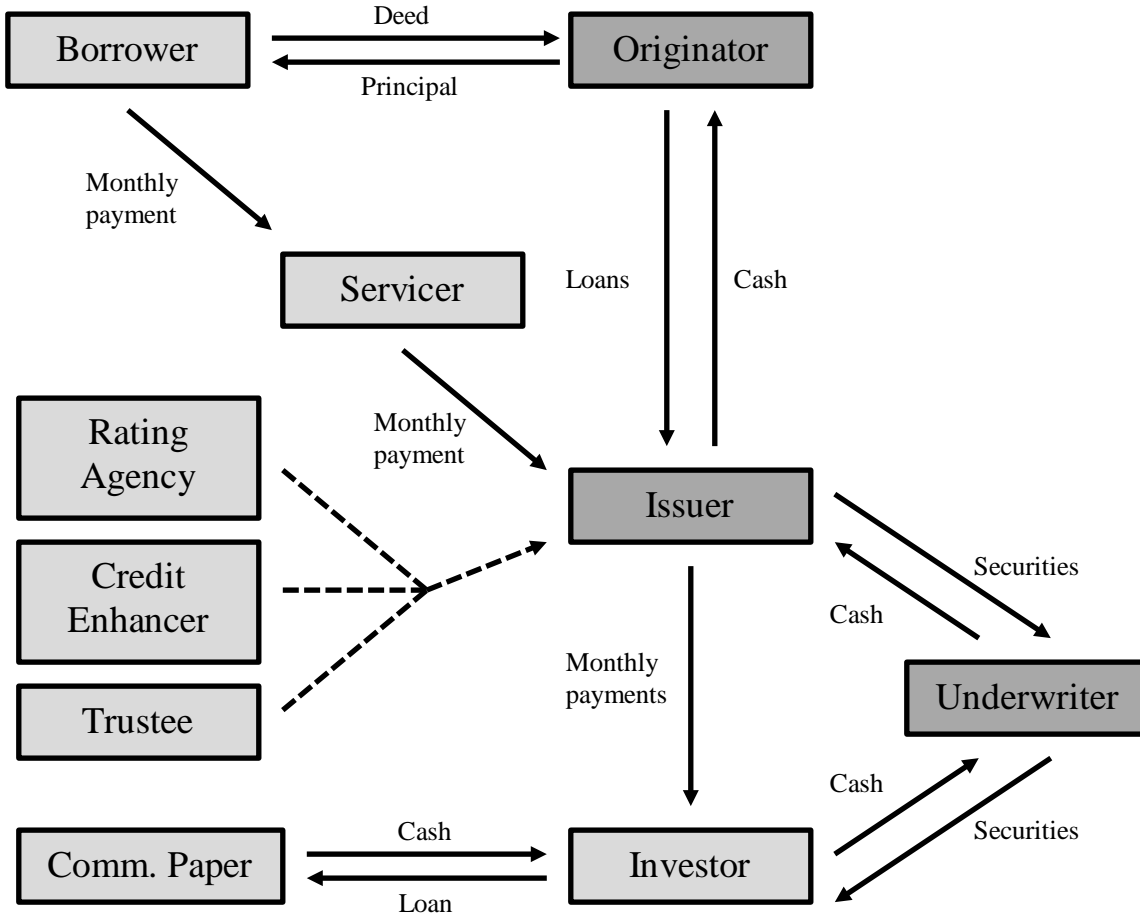
	All issuers/underwriters			Issuers/underwriters settling for predatory lending		Issuers/underwriters not settling for predatory lending	
	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)
Number of predatory lending settlements			3.232* (1.188)				
Integration, prime	3.538*** (.8276)	3.335* (1.513)		4.978** (1.278)	5.155* (2.255)	2.076 (1.257)	-1.283 (3.256)
Integration, subprime	3.202** (1.038)	2.932 (1.735)		3.003 (1.978)	3.301 (.389)	2.714^ (1.427)	.0931 (3.104)
Revenue, issuance (\$B)		.0223 (.0653)			.0183 (.0913)		.0027 (.1375)
Revenue, underwriting (\$B)		-.0093 (.0498)			-.0308 (.0715)		.1199 (.1083)
Years litigable		.2288 (.4050)			1.379 (3.249)		.2585 (.4371)
Constant	-3.832 (1.920)	-5.408 (3.544)	2.957* (1.335)	-5.636 (4.163)	-18.315 (29.403)	-2.173 (2.412)	-.1345 (5.042)
Observations	.495 34	.502 34	.188 34	.611 15	.625 15	.252 19	.342 19

Note: Numbers in parentheses are standard errors.

^ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

FIGURE

Figure 1. The social structure of the mortgage securitization industry



APPENDIX A: SAMPLED FIRMS AND CONGLOMERATES

Table A1. Financial firms included in the sample

1. ABN AMRO Mortgage Group	31. GreenPoint Mortgage
2. Accredited Home Lenders	32. HSBC
3. Aegis Mortgage	33. Impac
4. AmTrust Bank	34. IndyMac
5. American General Finance	35. JPMorgan Chase
6. American Home Mortgage	36. Lehman Brothers
7. Ameriquest Mortgage	37. Merrill Lynch
8. Aurora Loan Services	38. Morgan Stanley
9. BNC Mortgage	39. National City Mortgage
10. Bank of America	40. Nationstar Mortgage
11. Barclays	41. New Century
12. Bear Stearns	42. NovaStar Financial
13. CBASS	43. NovaStar Mortgage
14. CIT Group	44. Option One Mortgage
15. Chase Home Finance	45. Ownit Mortgage Solutions
16. Citi	46. PHH Mortgage
17. Countrywide	47. Provident Funding
18. Credit Suisse	48. RBS Greenwich Capital
19. Delta Financial	49. Residential Capital
20. Deutsche Bank	50. Residential Funding
21. EMC Mortgage	51. Saxon Mortgage
22. Equifirst	52. SunTrust
23. First Franklin Financial	53. Taylor, Bean, & Whitaker
24. First Horizon Home Loans	54. Thornburg Mortgage
25. First Magnus Financial	55. UBS Warburg
26. Flagstar Bank	56. US Bank Home Mortgage
27. Fremont General	57. WMC Mortgage
28. Fremont Investment & Loan	58. Wachovia
29. GMAC Residential Holding Corp.	59. Washington Mutual
30. Goldman Sachs	60. Wells Fargo

Table A2. Financial conglomerates included in the sample

1. ABN AMRO Holding N.V.	26. HSBC Holdings Plc
2. ACC Capital Holdings	27. Impac Mortgage Holdings Inc.
3. Accredited Home Lenders Holding Co.	28. IndyMac Bancorp, Inc.
4. AmTrust Financial Corp.	29. JPMorgan Chase & Co.
5. American Home Mortgage Investment Corp.	30. Lehman Brothers Holdings Inc.
6. American International Group, Inc.	31. Merrill Lynch & Co., Inc.
7. Bank of America Corp.	32. Morgan Stanley Group Inc.
8. Barclays Bank Plc	33. National City Corp.
9. Bear Stearns Companies	34. Nationstar Mortgage Holdings Inc.
10. Block (H&R), Inc.	35. New Century Financial Corp.
11. CIT Group, Inc.	36. NovaStar Financial Inc.
12. Capital One Financial Corp.	37. PHH Corp.
13. Cerberus Capital Management	38. Provident Funding Associates L.P.
14. Citigroup Inc.	39. Radian Group Inc.
15. Countrywide Financial Corp.	40. Regions Financial Corp.
16. Credit Suisse Group	41. Royal Bank of Scotland Group Plc
17. Delta Financial Corp.	42. SunTrust Banks Inc.
18. Deutsche Bank AG	43. Taylor, Bean, & Whitaker Mortgage Corp.
19. First Horizon National Corporation	44. Thornburg Mortgage Inc.
20. First Magnus Capital Inc.	45. U.S. Bancorp
21. Flagstar Bancorp, Inc.	46. UBS AG
22. Fremont General Corp.	47. Wachovia Corp.
23. General Electric Co.	48. Washington Mutual, Inc.
24. General Motors Corporation	49. Wells Fargo & Co.
25. Goldman Sachs Group, Inc.	

APPENDIX B: CONGLOMERATE-LEVEL ANALYSES

Table B1. Sampled conglomerates by conglomerate type and settlement status

	Total conglomerates sampled	Conglomerates that settled		
		Any	Predatory lending	MBS fraud
Commercial banks	17	13 (.038)	11 (.017)	13 (.034)
Investment banks	8	8 (.006)	3 (1.00)	8 (.005)
Mortgage specialists	15	3 (.002)	3 (.064)	2 (.000)
Savings and loan banks	3	1 (.581)	1 (1.00)	1 (.594)
Other financial institutions	6	2 (.388)	2 (1.00)	2 (.400)
All conglomerates	49	27	20	26

Note: Numbers in parentheses are Fisher's exact tests.

Table B2: Descriptive statistics, conglomerate level

Variable #	1	2	3	4	5	6	7	8	9	10
Mean	4.68	.71	4.08	1.12	1.24	53.50	18.90	16.29	84.33	8.04
Standard deviation	7.54	1.03	7.16	.99	1.07	86.41	22.57	28.95	116.94	2.40
Mean of nonzero values	8.51	1.73	7.69	1.67	1.91	67.22	27.23	57.02		
S.d. for nonzero values	8.43	.91	8.34	.74	.69	92.12	22.52	24.37		
Minimum	0	0	0	0	0	0	0	0	3.66	1
Maximum	31	3.56	31	3	3	435.07	118.47	98.09	636.63	9
1. Settlements										
2. Predatory lending settlements	0.43									
3. MBS fraud settlements	0.99	0.32								
4. Prime integration	0.64	0.41	0.61							
5. Subprime integration	0.54	0.25	0.55	0.19						
6. Origination revenue (\$B)	0.60	0.59	0.54	0.56	0.30					
7. Issuance revenue (\$B)	0.65	0.42	0.62	0.59	0.69	0.70				
8. Underwriting revenue (\$B)	0.61	0.22	0.62	0.67	0.61	0.24	0.66			
9. Total revenue (\$B)	0.71	0.58	0.66	0.70	0.50	0.93	0.87	0.55		
10. Years litigable	0.23	0.18	0.23	0.23	0.25	0.16	0.23	0.23	0.20	

Note: Non-integer maximum value for variable “Predatory lending settlements” results from weighting scheme used to address imprecise dates of causes of action (see n. 6).

Table B3. Cross-tabulation of integration measures, conglomerate level

		Subprime integration				Total
		0	1	2	3	
Prime Integration	0	0	8	8	0	16
	1	13	0	1	2	16
	2	4	0	7	1	12
	3	0	1	1	3	5
Total		17	9	17	6	49

Table B4. OLS regression estimates of settlements, conglomerate level

	(XIII)	(XIV)
Integration, prime	4.206*** (.7305)	2.831** (1.040)
Integration, subprime	3.080*** (.6768)	2.296** (.8020)
Total revenue (\$B)		.0185^ (.0099)
Years litigable		.0219 (.3084)
Constant	-3.869** (1.273)	-3.084 (2.497)
	.589	.620
Observations	49	49

Note: Numbers in parentheses are standard errors.

^ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table B5. OLS regression estimates of predatory lending settlements, conglomerate level

	(XV)	(XVI)	(XVII)
Integration, prime	.3887*	-.0558	.2275
	(.1627)	(.1856)	(.2843)
Integration, subprime	.1233	-.0167	.2262
	(.1479)	(.1332)	(.2349)
Revenue, origination (\$B)		.0078***	.0072*
		(.0021)	(.0029)
Revenue, issuance (\$B)			-.0039
			(.0133)
Revenue, underwriting (\$B)			-.0143
			(.0113)
Years litigable			.0184
			(.0604)
Constant	.1741	.3168	-.1497
	(.2892)	(.2524)	(.5100)
	.167	.398	.439
Observations	39	39	39

Note: Numbers in parentheses are standard errors.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

Table B6. OLS regression estimates of MBS fraud settlements, conglomerate level

	All issuers/underwriters			Issuers/underwriters settling for predatory lending		Issuers/underwriters not settling for predatory lending	
	(XVIII)	(IXX)	(XX)	(XXI)	(XXII)	(XXIII)	(XXIV)
Number of predatory lending settlements			2.579 [^] (1.276)				
Integration, prime	3.955*** (.9315)	3.958* (1.651)		5.294*** (1.008)	5.886** (1.561)	2.886 (1.739)	-1.169 (5.503)
Integration, subprime	3.409** (1.007)	3.367 [^] (1.654)		3.000 [^] (1.469)	3.603 (2.088)	3.694* (1.526)	.7115 (4.629)
Revenue, issuance (\$B)		.0187 (.0726)			.0160 (.0588)		-.0007 (.2319)
Revenue, underwriting (\$B)		-.0122 (.0567)			-.0473 (.0476)		.1716 (.1890)
Years litigable		.0950 (.7159)					1.536 (.9680)
Constant	-5.144* (2.198)	-6.120 (6.236)	3.683* (1.663)	-7.015 [^] (3.581)	-8.351 (4.394)	-4.206 (3.148)	-.5877 (9.705)
Observations	.515 34	.517 34	.113 34	.710 16	.736 16	.358 18	.402 18

Note: Numbers in parentheses are standard errors. “Years litigable” statistic omitted in Model X because all settling conglomerates survive.

[^] p < .1; * p < .05; ** p < .01; *** p < .001 (two-tailed tests).