

When the Invisible Hand Isn't a Firm Hand: Disciplining Markets That Won't Discipline Themselves

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The housing crisis of the 2000s exposed fissures in the U.S. financial system. These shortcomings allowed the system to become encumbered with excessive risk and ultimately triggered the worst economic downturn since the Great Depression. In the wake of the deep recession, many academics and researchers wrote post-mortems identifying key causes of the crisis. In 2010, Congress passed the Wall Street Reform and Consumer Protection Act, also known as Dodd-Frank, and President Obama signed it into law. It sought to address many of the identified problems by reforming regulations pertaining to mortgage lending, securities trading, banking, insurance, consumer protection, and corporate governance.

This chapter explores three causes of the crisis that the regulatory reforms have yet to fully address. First, we highlight challenges that prevented credit rating agencies from being a useful source of information for mortgage-backed securities investors to impose effective market discipline on issuers. Second, we show the failure of several institutional arrangements designed to prevent firm owners and managers from looting the institutions over the short run at the expense of shareholders, who are expecting a maximization of profits over the longer term. Finally, we consider markets from the consumer perspective. We note the tension between overcoming market tendencies to ration credit and exposing households with limited resources to risks associated with products that can broaden access to credit by easing borrowing constraints.

In each case, we offer possible strategies for more effectively tackling these problems. Regarding ratings agencies, we propose a new structure where agency-investor conflicts of interest are removed and agencies only assess “ratings eligible” products. Reforms in executive compensation, covenant banking for investment banks, and increased penalties for looting that make criminal liability a real deterrent for firm owners and managers are possible avenues to reduce the likelihood of looting by insiders. Third, we argue that significant investments should be made in financial education to make consumers an additional bulwark – to go with laws and regulations – against abuses and bad outcomes.

To begin, we tell the story of Black Friday, a deep financial crisis that occurred in the mid-nineteenth century. We take this historical approach because Black Friday

shares many of the features that brought down the economy during the recent crisis, including the issues that we highlight. Indeed, a punchline of the current analysis is that many of the problems in the recent episode are enduring and inherent to virtually all regulatory structures. This fact should inform what we ask our regulators to address and how we define transparency in financial markets.

13.1 A CAUTIONARY TALE OF UNDISCIPLINED MARKETS

It was Wednesday evening in downtown Manhattan, and Jay Gould had a problem. He had just learned, through a secret letter written from the First Lady to her sister-in-law Virginia Corbin, that the president of the United States was “very much annoyed” by Gould’s speculation in the gold market and wanted him to unwind his positions immediately. “I am undone,” Gould said to Corbin’s husband, Abel, “if that letter gets out” to the public.

The date was September 22, 1869, and Gould had been buying gold since April. By himself, Gould didn’t have enough money to move markets, but in this era before securities regulation, he didn’t have to work alone. He formed a pool with some of the biggest investors on Wall Street and instructed them to push up the price of gold with their purchases. Meanwhile, he leveraged his position as the president of the Erie Railroad to borrow tens of millions of dollars and multiply his wager. He even paid President Ulysses S. Grant’s brother-in-law to lobby the government not to sell its gold reserves.

Now, it seemed, the president had caught on to his scheme.

The next morning, Gould started selling gold at the opening bell, but he didn’t tell all of his partners in crime. He feared a fire sale would ensue if everybody tried to exit at the same time, so he got out stealthily and let them keep buying unaware.

It took only a day for the market to figure out what he was up to. Sell orders came in so fast that the telegraph couldn’t keep up. “Nearly a thousand individual investors were bankrupted on the day’s activity,” writes Gould’s biographer Edward J. Renehan Jr. “Fourteen brokerage houses went under, along with several banks.” Henceforth, September 24, 1869, would be known as Black Friday (Renehan 2005).

We begin our story here because Jay Gould was arguably the first trader to stoke a speculative bubble on Wall Street, followed by a nationwide financial panic, using real estate as collateral. Railroads were the first great real estate companies in American history, gobbling up land to lay tracks across the country and building the biggest corporations the world had ever seen. In their manipulations and innovations, we see many parallels to the housing booms and busts in our own time.

But we also begin our analysis with the tale of Jay Gould because it evokes such a fitting reaction in those who hear it: *This wasn’t supposed to happen*. One investor wasn’t supposed to have the power to trigger a national wave of bankruptcies. One

cabal wasn't supposed to be able to overpower the laws of supply and demand for any asset. One market wasn't supposed to threaten the entire economy.

This is a message of basic economics. Competition forces companies to minimize prices and maximize quality, lest their customers find a better deal elsewhere. We don't need central planners to tell us what to produce or how to invest. And don't worry about bad actors like Jay Gould. The market will discipline them.

We have found this story incomplete – in Gould's day and in our own. The housing bubble, the twin financial and foreclosure crises, and the Great Recession all demonstrated that markets are insufficient safeguards against bad behavior.

Perhaps the most compelling confession of this omission came from the chief regulator himself, former Federal Reserve Chairman Alan Greenspan, when he said, "I made a mistake in presuming that the self-interests in organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms" (Knowlton and Grynbaum 2008).

Market discipline, in other words, was absent. In this chapter, we document the ways in which it was absent, and we propose new forms of discipline to minimize bad behavior in the future. Throughout, we hope you will see that regulation is a necessary component of financial stability, as well as social justice, without which powerful and savvy players like Jay Gould can take advantage of less advantaged individuals and change the very direction of progress in our society.

Jay Gould was not an anomaly. His successful rent-seeking was a creation of undisciplined markets, as evidenced by the many robber barons who played the same predatory game to similar effect. We highlight three levels, though there are others, at which they could have been stopped – investors, board of directors, and customers – and all three had to fail for their ploy to work.

13.2 STEP ONE: FOOL THE INVESTORS

Investors are not stupid. They know that there's a lot they don't know about a firm. There is an information *asymmetry* between what the managers know and what the investors think they know. This is the classic explanation put forth by Myers and Majluf (1984), for example, for why stock prices tend to fall when firms issue new shares. The investors assume that the managers are more likely to issue shares when they think the market is willing to pay more than their assets are really worth, which means the stock price is too high. Managers, anticipating this price fall, will prefer to issue debt instead. So if they issue stock, it means they're really in need of cash, confirming investors' fears. It's in the interest of both the investors and the managers of undervalued firms, therefore, to have better public information to weed out the managers who are trying to get investors to overpay.

The king of getting investors to overpay in this way, of course, was Jay Gould. He issued so much stock during his run of the Erie Railroad that one of his successor's first actions as president was to recall 650,000 shares that he deemed "fraudulent"

(Renehan 2005). But Gould wasn't the only one oversubscribing investors to his cause. By the time Gould left the Erie in 1872, the entire industry was "heavily dependent on capital from Continental European investors," according to economist Scott Mixon. Eventually, it became clear that assets weren't growing as fast as liabilities. Investors started pulling out. Credit spreads widened between high- and low-grade bonds, and equity prices fell for the latter. In September 1873, Jay Cooke & Co., one of the nation's largest and most prestigious banking houses, filed for bankruptcy when it couldn't sell enough bonds to cover the losses on its railroad investments. The stock market lost 25 percent of its value that week, triggering the Panic of 1873 and a six-year recession that came to be known as the "Long Depression" (Mixon 2008). Watching his father lose his fortune in this indiscriminate crash, one young lad resolved to do something someday to help investors sort out those risks – some way to provide the kind of information that might have spared them from being manipulated by insiders like Jay Gould.

That young lad was named John Moody.

Moody's was not the first company to report credit information. As early as 1832, *The American Railroad Journal* was reporting on the state of the industry, extending to financial data such as assets, liabilities, and earnings when Henry Varnum Poor took up the editorship in 1849. The first actual "rating agency," though, was probably the Mercantile Agency, started by Lewis Tappan in 1841. As a merchant in New York, Tappan had accumulated deep knowledge of the major firms' creditworthiness. He figured it would be profitable to share that knowledge with other merchants for a fee. Over time, he built an entire army of information collectors across the United States. By the turn of the century, they were opining on the creditworthiness of more than 1 million businesses every year (Sylla 2001).

Despite this wide reach, the early rating agencies failed to prevent investors like William Moody from buying into the railroad craze that precipitated the Panic of 1873. To John, it was a classic failure of forecasting, a statistical art that was just coming into its own at the turn of the century. Moody's innovation in 1909 was to issue *forward-looking* credit ratings so investors could see the losses coming before it was too late. By 1924, his competitors Standard, Poor's, and Fitch Publishing Company had followed his lead. By 1941, S&P had merged, giving us the "Big Three" as we know them today (Voznyuk 2015).

All this was the market's way of attempting to discipline itself. The strange thing is, it never really seemed to work very well. More than 70 percent of the money invested in bonds that defaulted in the Great Depression had received the stamp of approval from Moody's as "investment grade" (i.e., low risk of default) (Sylla 2001). Despite this mediocre track record, in 1936, regulators prohibited banks from investing in any securities that the rating agencies hadn't designated as investment grade. Essentially, they outsourced their regulatory power to these private agencies. Soon thereafter, state regulators set minimum capital requirements for insurance companies, with higher-rated securities requiring less capital. The Securities and Exchange

Commission took the same approach in 1975 with broker-dealers. They officially defined the Big Three as “nationally recognized statistical rating organizations” (NRSROs) whose ratings were valid for this purpose. In the 1990s, they extended this approach to money market mutual funds (White 2010).

Many critics have pinpointed these regulations as a key cause of the recent housing boom and bust, as they gave financial institutions an incentive to load up on investment-grade securities that weren’t as safe as they seemed. The lessons of history point in a different direction. First, we have seen that far more severe booms and busts occurred *before* the rating agencies became powerful arbiters of capital requirements. As Myers and Majluf taught us, high-risk securities issuers have always had an incentive to hide the truth about their assets, and investors have always been willing to take a chance when times were good. Second, the rating agencies have historically performed on par with the markets in predicting default risks (Sylla 2001). The regulators had to use *some* metric to confine institutions, and the rating agencies were the best the market had to offer. It’s hard to see how this was worse than the status quo that existed before 1936.

In fact, it turns out that the mistakes the rating agencies made – and investors followed, to their detriment – had virtually nothing to do with regulation. They were, on the contrary, a classic example of undisciplined markets at work.

We can trace their undoing back to 1968, when the world of finance began to change. Ever since the Great Depression, the credit rating business had been a sleepy affair. A generation of Americans had learned its lesson when bonds defaulted, and they were slow to ante up again – partly out of lingering risk aversion, partly due to regulation, and partly because the economy was growing so rapidly that firms and governments could finance their investments with their own earnings. Eventually, those motivations faded. Bonds were back, and they were bigger than ever.

If you need to convince investors to buy a lot of bonds, you need credit ratings. Starting in the late 1960s, bond issuers needed investors – and that meant they needed rating agencies. The agencies were overwhelmed. They couldn’t sell enough subscriptions to investors to cover the costs of rating all those bonds. So they changed their business model. Instead of asking the investors to pay, they asked the issuers to pay. It was a simple matter of supply and demand. Bond issuers needed to borrow more than investors needed to lend. The rating agencies went to the highest bidder.

S&P began charging municipalities in 1968. Moody’s followed suit in 1970. Later that year, Moody’s started charging corporate bond issuers, and S&P joined them four years after that.

As soon as bond issuers started paying rating agencies, investors started complaining about conflict of interest. The issuers wanted high ratings, and the agencies had an incentive to keep their customers happy. Investors could have countered by paying for their own ratings, but they had a coordination problem. Each bond had a lot of investors, but it only had one issuer. There was no mechanism for all those

investors to work together to split the cost that it would take to outbid the issuer. It was a classic “free rider” problem.

The “issuer-pays” model has historically underperformed its “subscriber-pays” counterpart. In 2001, Fitch, Moody’s, and S&P all failed to downgrade Enron until a few days before it filed for bankruptcy, while the lesser-known Egan-Jones Rating Company, sticking to the old-fashioned subscriber-pays model, was months ahead. The following year, the issuer-pays agencies were late in predicting the defaults of California utilities, WorldCom, Global Crossing, and AT&T Canada (Egan-Jones Rating Company 2002). These failures prompted Johnson (2003) to compare the two models for all their ratings, and he found that Egan-Jones consistently predicted defaults earlier than the issuer-pays agencies since its inception in 1995. Three years later, Beaver, Shakespeare, and Soliman (2006) came to the same conclusion in more exhaustive detail. Even after the SEC designated Egan-Jones as an NSRSO, their superior performance persisted, suggesting that the source of the difference really is their business model and *not* regulation (Bruno, Cornaggia, and Cornaggia 2016).

It shouldn’t come as a surprise, then, that the issuer-pays agencies failed to predict the financial crisis in 2008. Fitch, Moody’s, and S&P didn’t downgrade Bear Stearns until a few days before it collapsed, and they were still rating Lehman Brothers as investment grade on the day it went bankrupt. Egan-Jones was months ahead on both counts. Rapid Ratings, another subscriber-pays agency, had started downgrading homebuilders as early as 2006 (Shorter and Seitzinger 2009).

So far, the research had been telling a David and Goliath story. The subscriber-pays agencies were tiny compared to the Big Three. So, in the wake of the financial crisis, Jiang, Stanford, and Xie (2012) thought it would be more convincing to compare S&P and Moody’s between 1971 and 1974, when S&P was still charging investors and Moody’s had started charging issuers. They found that Moody’s ratings were significantly higher. After 1974, however, when S&P started charging issuers, the difference disappeared. S&P raised its ratings to Moody’s level. Finally, economists had clear evidence that undisciplined markets were driving the agencies to inflate ratings and hide risk from investors – precisely the behavior they were created to prevent.

Faced with all this evidence, you might wonder why investors still rely on the Big Three to monitor their investments for them. Why not do the work themselves? The question practically answers itself. Monitoring is hard work. Investors can’t afford to spend all day investigating every potential investment. It’s more efficient to delegate the job. It would be better if they didn’t have to rely on the issuer-pays model, but as we saw earlier, the subscriber-pays model isn’t very lucrative. The Big Three can afford to pay large staffs to issue far more ratings, and they have the brand-name recognition to out-market and out-lobby smaller competitors. That’s why, eight years after the financial crisis, they’re bigger than ever (Martin 2016).

The solution is now obvious. Policy makers must discipline this market by removing the conflict of interest, but they must do so in a way that the agencies can earn enough revenue to rate all large firms and securities on a regularly updated basis. Ideally, an independent government agency would pool investors to overcome the coordination problem, perhaps by charging a fee as a percent of each investment. If this is not feasible, the government should randomly assign a rating agency to each investment with a pre-negotiated fee, so the issuer has less power to shop for the highest rating and reward the most favorable agency with a higher payment.

Unfortunately, this arrangement only benefits investors if the rating agencies have an informational advantage that's worth paying for. In the corporate bond market, the agencies had deep expertise and a long historical record to inform their analyses. When they ventured into structured finance, however, this advantage disappeared. Private-label mortgage-backed securities and collateralized debt obligations were new. They didn't have a track record that rating agencies could use to predict future defaults. They were so innovative that most analysts didn't even understand them completely. Retrospective accounts have discovered, for example, that they didn't account for the correlation between different tranches within the same security (Lewis 2010). Nor did they account for the *timing* of default. The tranches were designed to default one at a time. The "safest" tranche wouldn't default unless all the others had defaulted, basically an economic catastrophe. But this is a very bad time to default – if the economy is in a catastrophe, investors can't afford another loss – so the "safest" tranche wasn't safe at all! It was an "economic catastrophe bond," as Coval, Jurek, and Stafford (2009) named it, and that meant it should have paid investors four to five times more to compensate them for the risk.

The lack of a track record of performance for new financial products and strategies places ratings agencies in a position where their best guess about the risks posed by the new instruments is nothing more than that, a guess. Without past performance, the agencies must rely exclusively on theoretical constructs and analyst intuition. Given that there is no way to create historical data for something that has no history, there is no practical workaround that can result in a high-quality rating. This suggests that the best solution may be for the ratings agencies to simply throw up their hands in those circumstances in which there is no track record and acknowledge that any rating is likely to have much lower precision than a comparable rating for an established product. In the extreme, the ratings agency might limit its analysis only to "ratings eligible" products, where the definition of "ratings eligible" could be established by a government agency or an independent review board. Future research could be helpful for identifying principles and parameters that could be used in defining ratings-eligible thresholds.

Rating agencies are useful. They may even be necessary for a deep, liquid financial market. They are not, however, a panacea for predatory financial behavior for the simple reason that Myers and Majluf elucidated three decades ago: They don't have inside information. The managers who run the firms – and the boards

who hire them – will always have better information about the riskiness of the investments they're issuing. That's why the next part of our story is about corporate governance.

13.3 STEP TWO: FOOL THE BOARD OF DIRECTORS

When the new management opened the company's books, they found that Jay Gould had left the Erie Railroad insolvent. They announced that Gould's accounts "were exercises in fiction." The stock price plummeted, making even more money for Gould, who had shorted the stock in anticipation of this discovery. They sued him, but they didn't have the cash to fight a long court battle – and Gould knew it. He made them an offer, and they took it. He got to keep almost his entire loot. A few years later, the Erie filed for bankruptcy (Renehan 2005).

Gould knew that the money he could extract from the Erie Railroad was worth more than the value he could create with it. Put another way, taking out a dollar today was a better bet than investing that dollar in the company and taking it out tomorrow. Akerlof and Romer (1993) crystallized this logic in a now-classic paper. They called it "bankruptcy for profit," or more succinctly, "looting."

Akerlof and Romer had witnessed several "crises" in the 1980s that seemed to defy the Econ 101 story of market discipline. These episodes, we now know, were all warnings for the much bigger global crisis that would strike two decades later. In each case, Akerlof and Romer showed that market participants were acting so recklessly that they couldn't possibly have been trying to make a profit in the long run. They weren't just taking big risks. *They were actively choosing not to do their job.*

Their findings came with a sour whiff of irony. Like characters in an O. Henry story, investors had pursued many of these financial products largely in order to avoid a very similar outcome. Junk bonds and takeovers were solutions to the so-called principal-agent conflict. Shareholders, the *principals*, hire managers, the *agents*, to run the companies they own. Managers, being self-interested, want to maximize their *own* profits. Shareholders must figure out a way to get the managers to maximize the *firm's* profits. In the 1980s, financiers led by Michael Milken at Drexel Burnham Lambert thought they had found one such way. They issued bonds and used the proceeds to take control away from underperforming managers. What investors didn't know, however, was that Milken was pushing up the price of junk bonds with a cabal of fellow bankers, like Jay Gould in the run-up to Black Friday, misleading many of them into firms that couldn't be saved – and that would default in large numbers (Akerlof and Romer 1993; Alcaly 1994).

How was it that, more than a century after the machinations of Jay Gould, investors still hadn't figured out how to discipline these looting bankers?

In Gould's day, they didn't stand a chance. Most corporations were controlled by only a few men. Gould and his cronies, for example, owned the majority of shares in the Erie Railroad. Gould himself was the largest shareholder. It wasn't until his

partner in crime, James Fisk, died suddenly that the board of directors was able to wrest control away from him (Renehan 2005). Today, such concentration of ownership is virtually unheard of.

The Erie Railroad wasn't an isolated case. The Vanderbilt family owned the majority of the New York Central Railway. Andrew Carnegie owned the majority of the Carnegie Steel Corporation. The Guggenheims owned the majority of the American Smelting and Refining Company. John D. Rockefeller, along with his brother and brother-in-law, owned exactly half of the Standard Oil Company. Three of his close partners owned another 40 percent. In such an environment, there was no principal-agent conflict. The principal (owner) was the agent (manager).

The separation began around the turn of the century. Antitrust policy broke up Standard Oil and other trusts into multiple smaller companies. The big family shareholders sold their majority blocks. According to Becht and DeLong (2005), they wanted to diversify their holdings as a sensible hedge against idiosyncratic risk. The Glass-Steagall Act separated the big banks into independent entities for commercial banking, investment banking, and insurance. By the 1930s, the United States had made the transition from "financial capitalism," with corporations run by a few large investors, to "managerial capitalism," with a professional management class elected by diffuse shareholders.

Adolf Berle and Gardiner Means were the first to warn about the dangers of this separation in their classic book *The Modern Corporation and Private Property*. In the initial decades after its publication in 1932, they needn't have worried. The countervailing forces against executive malfeasance were strong. Regulations limited risky behavior. Labor unions pushed back against outsized profits and bonuses. And even if managers could get away with looting, high tax rates gave them less incentive to seek high rents.

One by one, those protections fell away. The Carter and Reagan administrations initiated sweeping deregulatory reform. The Federal Reserve punished high wage settlements with disinflation and high unemployment. The White House broke the air traffic controllers' union. Congress cut taxes on the rich (Orlando 2013). And for the first time in its history, the New York Stock Exchange, bowing to the same demand for financial capital that was transforming the rating agencies, allowed investment banks to sell shares in their ownership to the public (Morrison and Wilhelm 2008). The principal-agent conflict was back, and it was bigger than ever.

Enter Michael Milken.

Many economists hailed the "junk bond king" for bringing much-needed market discipline to bear on corporate managers. Most famously, Jensen (1986) argued that fixed debt payments forced managers to pay out extra cash, rather than spend it on low-yield projects or other "inefficiencies." More generally, Jensen and Meckling (1976) contended in their classic paper that managers had more incentive to divert profits into their own pockets if they had less of an ownership stake in the firm. This argument was the one that stuck long after the junk bond king went to jail. Starting

in the 1980s and continuing to today, firms have increasingly compensated their executives with stock options so that their fortunes were tied to that of their shareholders (Holmström and Kaplan 2001).

What Jensen – and the boards of directors who followed his advice – failed to realize was that *this solution had been tried before*. The robber barons of the nineteenth century owned bigger shares in their companies than today's executives could ever dream of, yet they still managed to walk away with their investors' money. Sure enough, that's exactly what Milken and his cronies did. They borrowed from banks and took deposits from thrifts, they used the money to buy risky companies, they paid themselves handsomely, they hid the initial defaults by issuing more debt, and then when they couldn't hide them anymore, they left all the losses on the doorstep of the banks and the taxpayers who bailed out the thrifts. This was the key insight of Akerlof and Romer: Turning managers into owners didn't necessarily solve the problem – because they still had an incentive to take advantage of creditors and depositors!

The opportunities for looting don't end there. Boyd and Hakenes (2014) show that “owner-managers” (like Jay Gould) and “outside owners” (like the rest of us) are really two different classes of stakeholders, and only the ones on the inside can do the looting. Even an executive who receives all his compensation in stock options has an incentive to exercise them early and leave the other shareholders with the eventual losses. Case in point: In the years before the housing bubble crashed, the top five executives cashed in \$1 billion at Lehman Brothers and \$1.4 billion at Bear Stearns (Bebchuk, Cohen, and Spamann 2009). Gould would have been proud.

When Lehman and Bear met their grisly end, outside owners were clearly caught unaware. They quickly discovered that every checkpoint that was supposed to protect them – checkpoints that were hidden from their view but they assumed were there – had failed. Executives had built sprawling empires that were too big and complicated to manage (Dash and Creswell 2008). Risk managers had relied on one very imperfect number – known as “Value at Risk,” or “VaR” – to measure risks it couldn't possibly predict. Traders had ignored the possibility of unprecedented catastrophic events, known as “black swans” (Nocera 2009). Boards of directors were in a similar disadvantaged outsider position. In order to ferret out the schemes devised by unscrupulous owners and managers, a board would have to conduct ongoing, full-fledged audits of every aspect of these large institutions. Such audits would have to delve into considerable accounting and risk-management minutiae, and would require a large inspection team, not a group of experts only able to devote part-time attention to the company. Such an expectation was (and remains) impractical and never likely to completely eliminate the possibility of looting (Berman 2008).

On balance, the system was practically designed to lose money. And why wouldn't it be? The whole governance arrangement was premised on short-term profits at the expense of long-term solvency. Nocera (2009) got it right when he said, “At the height of the bubble, there was so much money to be made that any firm that pulled back

because it was nervous about risk would forsake huge short-term gains and lose out to less cautious rivals. The fact that VaR didn't measure the possibility of an extreme event was a blessing to the executives. It made black swans all the easier to ignore. All the incentives – profits, compensation, glory, even job security – went in the direction of taking on more and more risk, even if you half suspected it would end badly.” Is there any doubt that the outcome would have been different if the managing directors couldn't cash out until they retired? Would Chuck Prince and John Theil and Ken Lewis have given free rein to divisions worth tens of billions of dollars if their life savings were on the line? Of course not. They would have been cautious. They would have asked questions. *They would have done their job* – and so would everyone else.

This solution too is now obvious. Bankers need to have a bigger stake in the success *and failure* of their enterprises. Stock options expose them to the upside, but not the downside – and they're too easy to cash out before the market realizes the true value of the stock. That's why Bebchuk (2010) advocates “grant-based limitations” that require executives to hold their equity for a fixed number of years, along with provisions that allow firms to adjust the grants downward if the profits are subsequently wiped out and “anti-hedging requirements” so they can't offset the limitations with side bets.

But these rules only solve the principal-agent conflict. They don't solve the looting problem. To do that, owning equity isn't enough. Owner-managers still have an incentive to extract high salaries and perks in the short run and leave creditors and depositors with the losses in the long run – unless they are personally liable for those losses. The market has proven that it cannot discipline looters. The judicial system must fill the void.

First, investment banks should return to a partnership form – or if that is too restrictive for them to raise sufficient capital, they should adopt “covenant banking” where they agree to be personally liable for part of the bank's debts (Hill and Painter 2015). Second, intentional looting is a crime against society, not just creditors and shareholders. The white-collar crime division at the Department of Justice should be fully funded to make criminal liability a real threat for these banks' willful neglect of their fiduciary responsibility.

For too long, we have left boards of directors and shareholders to govern corporations, but they, like rating agencies, do not have inside information. Even if they do manage to catch looters in the act, it is usually too late – and too costly – to claw back the loot. Undisciplined markets favor the insiders, especially the wealthy ones. That is one reason why it has been so difficult to prosecute alleged fraud in the wake of the recent financial crisis. Making executives liable is an important step, but it still places the burden on the accusers to prove their case. On this turf, outside investors have always struggled to compete with the Jay Goulds of the world.

If we really want to stop looting, we can't simply attempt to punish it after the fact. We have to prevent it before it happens. It is there, in the trenches, that we find the third and final act of our story.

13.4 STEP THREE: FOOL THE CUSTOMERS

It's easy to forget, in all this talk of villains and violations, that there are heroes in finance. The age of Jay Gould was also the age of John Creswell. The age of Mike Milken was also the age of Ron Grzywinski. If you haven't heard these names before, you're not alone. They never became as famous as their wealthier contemporaries. They were on a different mission. Where Gould and Milken chose to exploit their customers, Creswell and Grzywinski sought to empower them.

The market has never done a very good job at providing financial services for everyone. Stiglitz and Weiss (1981) taught us why. Their classic paper showed that banks might not lend to risky borrowers, even if they can earn a higher interest rate. Much like health insurance companies that cherry-pick healthy patients, banks face an "adverse selection" problem. When they can't differentiate between borrowers, they can only charge one interest rate. Safe borrowers won't pay a high rate because they'd have to give away too much of their profit. Only risky borrowers will pay because they're not likely to make a profit anyway, so why not take the gamble? Banks can get rid of some of these risky borrowers by *rationing* credit. They can charge a low rate and only offer enough loans to satisfy a fraction of the borrowers. This way, at least the safe borrowers will balance out the risky ones, whereas a higher rate would have attracted only risky borrowers. If the banks *can* differentiate between borrowers, they will give the loans to the safe borrowers, and the risky borrowers will be shut out completely.

When financial markets first developed, this was exactly what happened. The average American in the nineteenth century didn't have a checking account. They couldn't get a mortgage. "The poor and the middle class . . . put their savings under their mattresses," writes Baradaran (2015), "and, should they need credit, were left to the mercy of loan sharks." Banks wouldn't go near them.

Into this void stepped John Creswell.

As postmaster general in 1871, Creswell recognized the U.S. Postal Service was in a unique position to serve the "unbanked." Its post offices reached more communities than any other institution on the continent. He proposed that it open savings banks. For nearly 40 years, the banking lobby beat back repeated proposals in Congress to create postal savings banks. Only in 1910, after multiple financial panics, did President William Howard Taft sign them into law. Within three years, they had attracted \$33 million in deposits with "virtually no bank withdrawals" from the private sector. Clearly, there was pent-up demand for banking services.

The market had tried to fill this void on its own. In 1909, Massachusetts created credit unions to pool the resources of the community for local borrowing and lending. Building and loan associations, or "thrifts," had had some success financing homeownership with this model in the nineteenth century. These models overcame the rationing problem by eliminating the information asymmetry. The lenders knew the borrowers personally. They knew who would pay them back, and they could hold

them to it. But such a system only worked for small loans and steady deposits, both of which could be monitored and predicted easily, and that meant they couldn't make big profits. Compared to commercial banks, credit unions and thrifts were small but safe.

It was not enough. Without a coordinating authority, cooperative institutions are difficult to forge and doubly difficult to maintain. Most communities couldn't pull it off. Postal savings banks, meanwhile, only accepted deposits. They never lent. And so, the void remained.

Absent better options, many people turned to nontraditional lenders. Loan sharks overcame the rationing problem by eliminating the risk altogether. They didn't care if borrowers eventually defaulted, as long as they could string them along, renewing the loan over and over, collecting more and more fees and interest every time, until the borrower was ruined. Pawnshops played a similar game, but instead of relying on fees and interest, they used collateral. The family treasures the borrower gave them were worth so much more than the loan that they came out ahead either way (Baradaran 2015).

Not all nontraditional lenders were crooks. Many of them honestly believed that borrowers would eventually pay them back if they just kept renewing the loan. Most banks and thrifts, for example, issued short-term loans that weren't amortized – borrowers didn't have to pay off the principal in regular increments throughout the term of the loan – so they were left with a big “balloon payment” at the end that they usually couldn't afford without taking out a new loan. Like the pawnshops, though, the banks and thrifts typically gave loans worth much less than the value of the property. In the case of default, they figured, they could sell the property and still make a profit since the market kept going up (Snowden 2010). That's the trouble with high-risk loans. They're designed to ride the wave, not to weather the tsunami.

Loan failures were at the heart of the Great Depression. Bernanke (1983) famously showed that credit rationing happened as Stiglitz and Weiss had predicted and, crucially, that it had significant negative effects on the real economy. In their wisdom, the architects of the New Deal recognized that this market could not discipline itself. They outlawed nontraditional loans like adjustable-rate mortgages and they subsidized safer features like 30-year terms. They restricted banks from opening branches in multiple states to keep each bank dedicated to its local community. They combined savings banks and thrifts into federal “savings and loans,” and they subsidized them along with federal credit unions (Baradaran 2015). In the decades that followed, these new lenders multiplied and spread across the country. The 30-year, fixed-rate mortgage became the dominant product in a uniquely American housing system. Homeownership reached unprecedented heights. And the economy went through a longer stretch than ever before (or since) without a single major banking crisis (Orlando 2013).

Around the time rating agencies changed their business model and anti-looting forces lost their power, these lending protections too began to erode. Credit unions

merged and abandoned the community ownership model. Deregulation allowed banks and thrifts to offer risky new products, including adjustable-rate mortgages. Upper- and middle-income white residents moved out of the inner cities, and banks followed them, leaving concentrated pockets of deep poverty with no access to the credit they'd need to escape their misfortune. Banks closed branches in poorer communities and opened more in richer ones. Even postal savings banks closed their doors, ending a successful 56-year experiment.

One of the few bankers who fought back against this onslaught was Ron Grzywinski.

When almost all the banks moved out of the South Side of Chicago, Grzywinski moved in. Along with his colleagues Milton Davis, James Fletcher, and Mary Houghton, Grzywinski purchased the South Shore Bank and invested in community development without concern for immediate profit. It took 10 years for the bank to get out of the red and into the black with its low-income clients and their small bank accounts, but they stuck it out and eventually branched out into low-income communities across the country (Baradaran 2015).

Legislators tried to encourage more banks to act like South Shore. They passed the Community Reinvestment Act (CRA) in 1977 to rate banks on how well they were serving low-income communities, but they stopped short of subsidizing or otherwise providing these services through the government. Regulators could only use the ratings as leverage when approving mergers or other requests. Avery, Bostic, and Canner (2000) analyzed the largest survey ever conducted on CRA activity and found that this threat was effective. A majority of banks issued loans that they would not have otherwise lent. Encouragingly, “the vast majority” were profitable. This isn't surprising. Stiglitz and Weiss taught us that credit rationing shuts many creditworthy borrowers out of the market along with the risky ones. The CRA brought some of them back in. Unfortunately, they were a very, very small fraction of the banks' business.

And so, the void reappeared.

This is where looters thrive. They prey on desperation. “Rather than looking for business partners who will honor their contracts,” say Akerlof and Romer, “the looters look for partners who will sign contracts that appear to have high current value if fulfilled but that will not – and could not – be honored.” Many of these looters found their way into thrifts in the 1980s and found deals like Mike Milken's that wouldn't be honored in the end. Then, when they failed – with many of them explicitly shut down for fraud – they reopened under a new name as unregulated non-depository lenders issuing subprime mortgages. Two decades later, some of these failed thrift looters were the biggest subprime lenders in the biggest housing bubble in world history. Investigations have revealed how they “brainwashed” salesmen, forged documents, and targeted the most vulnerable, least financially savvy borrowers (Hudson 2010).

These nonbank lenders weren't covered by the CRA. The vast majority of subprime loans issued in the 2000s were outside the CRA's jurisdiction. So it's no surprise that

CRA loans have performed better than comparable non-CRA loans in the wake of the crash (Orlando 2011). Their displacement was at the heart of the bubble.

Some states tried to resist this trend. Illinois, for example, tested a new anti-predatory lending program that required risky borrowers in the City of Chicago to consult with financial counselors certified by the U.S. Department of Housing and Urban Development before agreeing to a loan. The experiment only lasted for a few months, but it had a significant effect. Agarwal, Amromin, Ben-David, Chomsisengphet, and Evanoff (2014) show that fewer risky loans were issued and fewer risky borrowers got loans – and as a result, the loans in these neighborhoods were significantly less likely to default. Similarly, Brown (2016) shows that first-time homebuyers in Tennessee were 42 percent less likely to experience foreclosure if they were required to attend homebuyer education classes. Unfortunately, we don't have many other experiments to learn from. Federal regulators stamped out most state regulations targeting predatory lending (Orlando 2013). One shining exception comes from the Federal Reserve Bank of Philadelphia. It conducted a five-year experiment with first-time homebuyers and found that a two-hour counseling session led to significantly higher credit scores and lower delinquency rates over time (Smith, Hochberg, and Greene 2014).

The design of these programs is crucial. We know from history that blunt instruments like usury laws can wind up pushing borrowers out of the regulated banking system and into riskier nontraditional lending – or simply leave them without access to credit at all. For many borrowers, nontraditional loans may even be beneficial if the terms aren't too onerous and the borrowers understand them. Acolin, Bostic, An, and Wachter (2017) show that nontraditional mortgages *did* increase the homeownership rate in most communities during the recent housing boom. Unfortunately, these mortgages also exacerbated the bust, but after the dust settled, they still were associated with an increase in homeowners overall. Clearly, there were many creditworthy borrowers who weren't getting loans in the traditional system. Imagine how much more beneficial this infusion of credit could have been if it had gone from reputable lenders to knowledgeable borrowers!

Since the crisis, regulators have restricted these loans. The Dodd-Frank Act created “qualified mortgage” standards, and the Consumer Financial Protection Bureau has been investigating various questionable practices. Still, nontraditional loans have not gone away. Earlier this year, a CNN headline reported, “Unpaid subprime car loans hit [a] 20-year high” (Egan 2016). A few months later, the *Wall Street Journal* and the *Washington Post* reported that homebuyers were increasingly sending mortgage payments directly to the seller, rather than an actual lender, an expensive and shady practice known as “contract for deed.” This practice was often used in place of mortgages in the Jim Crow era to prevent blacks from owning their homes (Badger 2016; Hong 2016). Meanwhile, nonbank lenders are making a comeback, taking 20 percent of the market away from commercial banks since the start of the recession (Grind 2016).

Cut off from the regulated banking system, borrowers are once again finding ways to fill the void.

This solution, like the others, is obvious when cast in this light. Credit rationing is real and pervasive. We cannot simply ban the products that caused the most problems in the past. We must also give borrowers access to safe loans, or unscrupulous lenders will find new and innovative ways to skirt the law so borrowers can take a gamble on a better life for themselves and their families.

Anti-predatory programs should not be blunt instruments. They should counsel first-time homebuyers to make sensible decisions, and they should be available throughout the nation. The Department of Housing and Urban Development should be fully funded to take the lead in advising the next generation of homeowners before they sign the deed.

Financial literacy should begin long before families find themselves faced with difficult choices. Many borrowers may be able to avoid payday lenders and other “fringe” banking if they know how to manage their money in the years prior. Many more might be able to find checking accounts that don't cost 10 percent of their income and build a valuable credit history to dig their way out of poverty if they have a stronger economic education. We should encourage our high schools to teach these skills. We should offer classes throughout low-income communities for parents to learn how to pass these lessons on to their children. Critics have argued that financial education is a waste of money – or worse, a distraction from the real problems (see, e.g., Willis 2011) – but history has shown that no amount of regulation can prevent every abuse or anticipate every crisis. A good, fair society must arm its citizens with the knowledge to protect themselves. Not every program has worked, but the ones that have, a few of which we've highlighted here, should inspire us to keep experimenting and educating.

Finally, we should create more lending outlets that serve the unmet needs of our population. We should charter more credit unions and savings banks. We should increase enforcement of the CRA, and we should subsidize banks that lend to creditworthy low-income borrowers. Absent government support, history has shown that community banks cannot achieve the scale necessary to maintain their support of communities in need, a lesson we learned when Ron Grzywinski's great experiment failed in the Great Recession (Yerak 2010). We should reopen postal savings banks, and we should lend to developers who build affordable housing. For too long, we have treated these neighborhoods as wards that need to be protected – or worse, lost causes that are better forgotten – when the best strategy would have been a *positive* one of empowerment and enterprise. Let us invest. Let us innovate. Let us be heroes.

13.5 CONCLUSION

Our favorite story about Jay Gould comes from a youthful trip to New York City – his first adventure, in fact, outside his childhood hometown. His uncle had given him an ornate box to take into the city. Inside the box was a mousetrap that he was

supposed to sell at the market. He and his buddy were walking down the street, when a mugger grabbed the box out of his hand and took off. The boys gave chase and caught up with the man, only to realize that he towered over them. They tried to run from the fight, but it was too late. Gould would have gotten away, but his finger got caught in a buttonhole on the man's shirt. The cops found them and took them to the courthouse, where the mugger told the judge that the box belonged to *him* – and Gould and his friend were trying to steal it from him! Gould said if it's really his box, could he tell the judge what's inside it? The mugger guessed wrong, of course, and Gould told the judge it was a mousetrap. When they opened it, the mugger was aghast that he had taken such a great risk for such a cheap reward. The judge sent the man to prison and remarked that surely this was the largest rat ever caught by a mousetrap in New York City (Renehan 2005).

The moral of the story is that looters are taking a dangerous risk, especially if they don't understand what they're trying to loot.

Borrowers, lenders, and investors periodically learn this lesson when a new wave of financial innovation washes onto our shores. Financial innovation is to economic growth as water is to physical growth: necessary, even catalytic, but dangerous if it we get too much too fast. In the latest cycle of innovations, rating agencies didn't know how to rate them, executives didn't know how to manage them, and borrowers didn't know how to use them. The products were untested. The infrastructure was unprepared. Yet we forged ahead as if nothing had changed.

We must learn to adapt better. We will never be able to anticipate every market move before it happens, but we can design public policies that guide the market toward a more sustainable path and correct swiftly when it deviates from the path. We can – and we should – discipline the market.

The chapters in this book are a welcome step in this direction. Matthew Desmond, for example, shows how markets fail to provide high-quality neighborhood amenities in low-income neighborhoods – and raises important questions about how public policy can address this failure. Patricia McCoy and Susan Wachter show how mortgage lenders have exacerbated, rather than tamed, boom-and-bust cycles – and offer solutions to temper their excesses. We hope that this chapter adds to their valuable work in starting a conversation about market failures and policy solutions.

Specifically, we have shown three ways in which markets did not discipline themselves in the run-up to the Great Recession. First, investors put their faith in risky securities and risky firms, and rating agencies blessed their investments as safe and sound by historical standards. Second, executives allowed lenders and traders to make large, risky bets, and boards of directors and shareholders did not question or stop them. Third, nontraditional lenders issued mortgages that weren't accurately priced and couldn't be repaid, and banks followed them over the cliff in the rush to maintain market share. None of these failures are consistent with the story of the

“invisible hand” that we tell in Econ 101, where markets coordinate themselves to an efficient equilibrium as if by magic.

Rather, markets fail, and a large literature in financial economics has taught us why. Asymmetric information, principal-agent conflict, looting, and credit rationing all plague our economy. When any of these forces are present, markets will not discipline themselves. When all of them are present at once, the result can be catastrophic.

For all the lessons we have learned from these failures, we still do not know how to deal with the risk of catastrophe. It happens so rarely – and each time in such a different guise – that it is nearly impossible for us to formulate an optimal measure of prevention or response. With each experience, however, we get a little closer. The latest boom-and-bust has pointed to the importance of removing the conflict of interest from rating agencies, giving executives a greater share in the downside risk of their companies, and making safe borrowing options available to all Americans with the requisite education to choose appropriately. Even with these precautions, though, we cannot know what the next wave will bring or what any of these parties should do with the new innovations when they come, let alone the catastrophic risk that they inevitably carry with them.

So we close with humility. John Kenneth Galbraith used to say that memory was a far stronger safeguard than law. Let us hope, then, that the memory of this crisis stays with us long after the next wave has come and gone, for our laws are never perfect, but our innovative spirit perseveres. That is why we have told this story: to keep the memories alive and to learn from them. Someday, someone else will write a new story, and they will pick up where we have left off, and they will judge whether we did indeed learn from the past – or whether we wound up holding a mousetrap that we mistook for a treasure.

REFERENCES

- Acolin, Arthur, Xudong An, Raphael W. Bostic, and Susan M. Wachter. 2017. “Homeownership and Nontraditional and Subprime Mortgages.” *Housing Policy Debate* 27: 393–418.
- Agarwal, Sumit, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, and Douglas D. Evanoff. 2014. “Predatory Lending and the Subprime Crisis.” *Journal of Financial Economics* 113(1): 29–52.
- Akerlof, George A. and Paul M. Romer. 1993. “Looting: The Economic Underworld of Bankruptcy for Profit.” *Brookings Papers on Economic Activity* 24(2): 1–74.
- Alcaly, Roger E. 1994. “The Golden Age of Junk.” *New York Review of Books*. May 26.
- Avery, Robert B., Raphael W. Bostic, and Glenn B. Canner. 2005. “Assessing the Necessity and Efficiency of the Community Reinvestment Act.” *Housing Policy Debate* 16(1): 143–72.
2000. “CRA Special Lending.” *Federal Reserve Bulletin* 86(November): 711–31.

- Badger, Emily. 2016. "Why a Housing Scheme Founded in Racism Is Making a Resurgence Today." *Washington Post*. May 13. www.washingtonpost.com/news/wonk/wp/2016/05/13/why-a-housing-scheme-founded-in-racism-is-making-a-resurgence-today/.
- Baradaran, Mehrsa. 2015. *How the Other Half Banks: Exclusion, Exploitation, and the Threat to Democracy*. Cambridge, MA: Harvard University Press.
- Beaver, William H., Catherine Shakespeare, and Mark T. Soliman. 2006. "Differential Properties in the Ratings of Certified Versus Non-certified Bond-Rating Agencies." *Journal of Accounting and Economics* 42(3): 303–34.
- Bebchuk, Lucian A. 2010. "How to Fix Bankers' Pay." *Daedalus* 139(4): 52–60.
- Bebchuk, Lucian A., Alma Cohen, and Holger Spamann. 2009. "The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000–2008." *Yale Journal on Regulation* 27(2): 257–82.
- Becht, Marco and J. Bradford DeLong. 2005. "Why Has There Been So Little Block Holding in America?" In *A History of Corporate Governance Around the World: Family Business Groups to Professional Managers*, Randall K. Morck, ed. Chicago: University of Chicago Press.
- Berman, Dennis K. 2008. "Where Was Lehman's Board?" *Wall Street Journal*. September 15. <http://blogs.wsj.com/deals/2008/09/15/where-was-lehmans-board/tab/article/>.
- Bernanke, Ben S. 1983. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review* 73(3): 257–76.
- Boyd, John H. and Hendrik Hakenes. 2014. "Looting and Risk Shifting in Banking Crises." *Journal of Economic Theory* 149: 43–64.
- Brown, Scott R. 2016. "The Influence of Homebuyer Education on Default and Foreclosure Risk: A Natural Experiment." *Journal of Policy Analysis and Management* 35(1): 145–72.
- Bruno, Valentina, Jess Cornaggia, and Kimberly J. Cornaggia. 2016. "Does Regulatory Certification Affect the Information Content of Credit Ratings?" *Management Science* 62(6): 1578–97.
- Coval, Joshua, Jakub W. Jurek, and Erik Stafford. 2009. "Economic Catastrophe Bonds." *American Economic Review* 99(3): 628–66.
- Dash, Eric and Julie Creswell. 2008. "Citigroup Saw No Red Flags Even as It Made Bolder Bets." *New York Times*. November 22. www.nytimes.com/2008/11/23/business/23citi.html.
- Egan, Matt. 2016. "Unpaid Subprime Car Loans Hit 20-Year High." CNN. March 15. <http://money.cnn.com/2016/03/15/investing/subprime-unpaid-auto-loans-oil-crash/>.
- Egan-Jones Rating Company. 2002. Letter to Jonathan G. Katz, Secretary of the United States Securities and Exchange Commission. www.sec.gov/news/extra/credrate/eganjones2.htm.
- Grind, Kirsten. 2016. "Private Lenders Remodel the Mortgage Market." *Wall Street Journal*. May 11. www.wsj.com/articles/private-lenders-remodel-the-mortgage-market-1462984898.

- Holmström, Bengt and Steven N. Kaplan. 2001. "Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s." *Journal of Economic Perspectives* 15(2): 121–44.
- Hudson, Michael W. 2010. *The Monster: How a Gang of Predatory Lenders and Wall Street Bankers Fleeced America – and Spawned a Global Crisis*. New York: Times Books.
- Jensen, Michael C. 1986. "Agency Cost of Free Cash Flow, Corporate Finance, and Takeovers." *American Economic Review* 76(2): 323–29.
- Jensen, Michael C. and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure." *Journal of Financial Economics* 3(4): 305–60.
- Jiang, John (Xuefeng), Mary Harris Stanford, and Yuan Xie. 2012. "Does It Matter Who Pays for Bond Ratings? Historical Evidence." *Journal of Financial Economics* 105(3): 607–21.
- Johnson, Richard. 2003. "An Examination of Rating Agencies' Actions Around the Investment-Grade Boundary." Federal Reserve Bank of Kansas City, Research Division, RWP 03–01. www.kansascityfed.org/PUBLICAT/RESWK/PAP/pdf/rwp03-01.pdf.
- Hill, Claire A. and Richard W. Painter. 2015. *Better Bankers, Better Banks: Promoting Good Business Through Contractual Commitment*. Chicago: University of Chicago Press.
- Hong, Nicole. 2016. "New York Banking Regulator Investigates 'Seller-Financed' Home Sales." *Wall Street Journal*. May 16. www.wsj.com/articles/new-york-banking-regulator-investigates-seller-financed-home-sales-1463418972.
- Knowlton, Brian and Michael M. Grynbaum. 2008. "Greenspan 'Shocked' That Free Markets Are Flawed." *New York Times*. October 23. www.nytimes.com/2008/10/23/business/worldbusiness/23iht-gspan.4.17206624.html.
- Lewis, Michael. 2010. *The Big Short: Inside the Doomsday Machine*. New York: W. W. Norton & Company.
- Madison, James H. 1974. "The Evolution of Commercial Credit Rating Agencies in Nineteenth-Century America." *Business History Review* 48(2): 164–86.
- Martin, Timothy W. 2016. "What Crisis? Big Ratings Firms Stronger Than Ever." *Wall Street Journal*. March 11. www.wsj.com/articles/what-crisis-big-ratings-firms-stronger-than-ever-1457655084.
- Mixon, Scott. 2008. "The Crisis of 1873: Perspectives from Multiple Asset Classes." *Journal of Economic History* 68(3): 722–57.
- Morrison, Alan D. and William J. Wilhelm, Jr. 2008. "The Demise of Investment Banking Partnerships: Theory and Evidence." *Journal of Finance* 58(1): 311–50.
- Myers, Stewart C. and Nicholas S. Majluf. 1984. "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have." *Journal of Financial Economics* 13(2): 187–221.
- Nocera, Joe. 2009. "Risk Management." *New York Times Magazine*. January 2. www.nytimes.com/2009/01/04/magazine/04risk-t.html.
- Orlando, Anthony W. 2013. *Letter to the One Percent*. Raleigh, NC: Lulu Press, Inc.

2011. "Don't Repeal the CRA. Expand It." www.anthonworlando.com/2011/10/14/dont-repeal-the-cra-expand-it/.
- Renehan, Jr., Edward J. 2005. *Dark Genius of Wall Street: The Misunderstood Life of Jay Gould, King of the Robber Barons*. New York: Basic Books.
- Shorter, Gary and Michael V. Seitzinger. 2009. "Overview of the Credit Rating Agencies and Their Regulation." Congressional Research Service.
- Smith, Marvin M., Daniel Hochberg, and William H. Greene. 2014. "The Effectiveness of Pre-purchase Homeownership Counseling and Financial Management Skills." Federal Reserve Bank of Philadelphia. www.philadelphiafed.org/community-development/homeownership-counseling-study.
- Snowden, Kenneth A. 2010. "The Anatomy of a Residential Mortgage Crisis: A Look Back to the 1930s." In *The Panic of 2008: Causes, Consequences and Implications for Reform*, Lawrence E. Mitchell and Arthur E. Wilmarth, Jr., eds. Northampton, MA: Edward Elgar.
- Stiglitz, Joseph E. and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." *American Economic Review* 71(3): 393–410.
- Sylla, Richard. 2001. "A Historical Primer on the Business of Credit Ratings." Prepared for conference, The World Bank.
- Voznyuk, Lesyk. 2015. "Genesis of the 'Big Three' Credit Rating Agencies." *Financial History* 112(Winter): 32–35.
- White, Lawrence J. 2010. "The Credit Rating Agencies." *Journal of Economic Perspectives* 24(2): 211–26.
- Willis, Lauren E. 2011. "The Financial Education Fallacy." *American Economic Review* 101(3): 429–34.
- Yerak, Becky. 2010. "Chicago's ShoreBank Fails, Is Bought by Investors." *Chicago Tribune*. August 20. http://articles.chicagotribune.com/2010-08-20/business/ct-biz-0821-shorebank-20100820_1_fdic-assets-david-vitale.