
ARTICLE

STRUCTURAL CORPORATE DEGRADATION DUE TO
TOO-BIG-TO-FAIL FINANCE

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Corporate governance incentives at too-big-to-fail financial firms deserve systematic examination. For industrial conglomerates that have grown too large to be efficient, internal and external corporate structural pressures push to resize the firm. External activists press the firm to restructure to raise its stock market value. Inside the firm, boards and managers see that the too-big firm can be more efficient and more profitable if restructured via spinoffs and sales. But a major corrective for industrial firm overexpansion fails to constrain large, too-big-to-fail financial firms when (1) the funding boost that the firm captures by being too-big-to-fail sufficiently lowers the firm's financing costs and (2) a resized firm or the spun-off entities would lose that funding benefit. Propositions (1) and (2) have both been true and, consequently, a major retardant to industrial firm overexpansion has gone missing for large financial firms. The effect resembles that of a corporate poison pill, but one that disrupts the actions of both outsiders and insiders.

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INTRODUCTION

Corporate governance controls help to keep firms competitive and efficient. They work imperfectly and at times do not work at all, but overall

they push large firms to perform better. Persistently poor results induce a firm's board of directors to assess the firm's internal organization to see if it needs restructuring. Shareholders often agitate for change; corporate funding costs rise and constrain managers from continuing down an unprofitable path; and, at the limit, activist shareholders agitate for the firm to be broken up into separate, more tightly organized parts.

But these corporate controls deteriorate in too-big-to-fail financial firms. The most powerful corporate governance control in recent decades has been the corporate takeover and breakup of a too-large industrial firm into its constituent parts, which induced American industrial conglomerates to boldly restructure in the 1980s. If financial firms today were subject to such pressure, then firms that become too big would face shareholder breakup efforts, some of which would succeed. In this Article, I first analyze the interaction between financial corporate structure and the breakup takeover—the strongest corporate governance tool, despite its ongoing rarity—to explain why the strongest tool in the corporate governance toolbox cannot work for too-big-to-fail firms. More tellingly, most day-to-day corporate pressures and controls for boards to resize, spin off, and restructure also cannot work well, or at all, in the too-big-to-fail financial firm.

The explanation—that too-big-to-fail finance is restructuring-proof—is not yet integral to the analytics of the too-big-to-fail problem. Its core explanation is as follows: The likelihood that big finance will be bailed out in a crisis lowers the financial firms' cost of funding. These lower financing costs redound to the benefit of the firms' shareholders. This much is well known. But then the implicit too-big-to-fail subsidy operates as a shadow poison pill, resembling the governance defense that managers and boards have used successfully for the past quarter-century to ward off unwanted takeovers in the industrial sector. The traditional poison pill dilutes only the offeror's stock, thereby discouraging offers to buy the target company. Hence, the conventional pill impedes outsiders, but not insiders. In contrast, the too-big-to-fail "pill" *also* impedes insiders—a controlling shareholder where there is one, the board of directors, and the CEO—from restructuring the firm, even if such a restructuring would be operationally wise.

An operationally successful restructuring of such a too-big-to-fail financial firm will increase the firm's (or its spun-off divisions') overall value to the economy, but it will *decrease* the private value of the firm's stock to the extent the restructuring strengthens the constituent firms enough—or makes them sufficiently small that they are no longer too-big-to-fail. If the constituent parts would no longer be too big, then, as long as the expected value of the subsidy lost exceeds that of the restructuring gains, stockholders

lack the incentive to restructure the firm and have reason to oppose even operationally efficient changes that would result in the loss of that subsidy. Corporate governance at the too-big-to-fail financial firm degrades. The benefited firm need not even be aware that the profitability of a line of business depends on the too-big-to-fail boost; it just finds that operational change in the subsidized environment is unprofitable.

This corporate degradation hurts the economy as a whole. Just as a monopolist will invest to protect its monopoly benefits up to the private profit the monopoly provides the firm, a too-big-to-fail firm will sacrifice its own efficiency—along with the efficiency of the economy's financial system—up to the cost of its subsidy advantage. The full size of the too-big-to-fail subsidy—estimated after the financial crisis to be in the tens of billions of dollars annually—can thereby be lost to the economy, allowing the too-big-to-fail firm to take on activities that could be handled more efficiently elsewhere in the economy.

In Part I, I describe the 2012–2013 controversy over JPMorgan Chase's London Whale and the bank's \$6 billion trading loss, which embarrassed the firm, derailed previously successful executives' careers, and led to congressional investigations and negative media attention. The managerial lapse induced two contrasting classes of responses: One sought more regulation because even America's strongest big bank could make a major mistake. The other dismissed the problem as a huge loss for shareholders and managers, but one whose size was well within both JPMorgan Chase's \$20 billion in annual earnings and its \$200 billion of bank capital. Similarly, respected commentators argued that although big finance has become too large to be efficient, market forces will eventually induce the too-big financial firms to resize.

In Part II, I analyze the conceptual impact of the too-big-to-fail subsidy on financial firms' cost of funding, which operates as a powerful corporate poison pill. The subsidy destroys takeover value for a shareholder who would buy up the firm's stock and break up a far-too-big banking conglomerate. Less dramatically, but more importantly, the potential loss of the too-big-to-fail subsidy also reduces the value of day-to-day corporate restructuring strategies that managers and boards might otherwise pursue. Managers at an orphaned subsidiary might, for example, seek financing to buy those operations out from the financial conglomerate, believing they can run the spun-off operation better than the far-off senior managers at the bank's headquarters. But the buyout's funding would not garner the too-big-to-fail subsidy that the entire financial firm gets. Hence, the divisional managers and their financial backers face higher financing costs and cannot buy out a

division even if the buyout would otherwise be profitable and operationally wise. The too-big-to-fail “pill” degrades both internal and external incentives to build better, stronger corporate structures. Importantly, the firm’s senior managers need not seek the too-big-to-fail subsidy—and may even deny its existence—but the subsidy will still drive their fundamental structural decisions, as they weigh the costs and benefits of restructuring.

In Part III, I examine too-big-to-fail data, which measures what the too-big firm saves on its borrowings due to lowered funding costs. Reconfiguring the existing data as a percentage of shareholder profits shows estimates that the financial crisis led to the too-big-to-fail subsidy increasing financial firms’ profits by about one-third beyond what they would otherwise have been. The overall picture is of a subsidy amounting then to the size of the takeover premium needed to motivate a takeover. If this level persists, operationally efficient internal restructurings to downsize or spin off will often not make economic sense to the firm, its managers, or its shareholders.

In Part IV, I examine related economic concepts emanating from anti-trust analysis of the costs of monopoly. Applying that thinking to financial firms shows how the extended costs of too-big-to-fail can put a protective umbrella over degraded organizational integrity, shielding it from pressures to fix it. Moreover, an oligopoly protective umbrella can impede restructuring apart from the too-big-to-fail umbrella for reasons similar to the too-big-to-fail analytic, if restructuring would cause the firm to lose those oligopoly profits. The main results of this Article can be reached without a too-big-to-fail subsidy, if there is an oligopolistic financial sector.

In Part V, we examine other, parallel degradation due to too-big-to-fail status, including excessive leverage, regulatory degradation, inability to raise new capital, and other social costs. While these risk-based regulatory problems arising from too-big-to-fail finance have been well examined, the corporate governance problems of boards, breakups, spinoffs, and the like have not.

In Part VI, I examine the public policy implications, opportunities, and difficulties, focusing on incentive effects and fixes. The ongoing policy efforts fall into two main categories: command-and-control instructions to increase financial firm capital and limit firms’ riskiest activities, and stronger failure resolution mechanisms that make failure an option for big financial firms. Each category—command-and-control and making failure an option—could reduce the too-big-to-fail problem. The structural degradation analytic further justifies those efforts.

The corporate governance incentive analytics here also suggest a further, largely undiscussed policy foray: policymakers can alter the internal incentives

of shareholders, boards, and managers, making their incentives better match the public interest, primarily by making risky debt more expensive for the financial firm. I outline how this could be achieved. American finance could be improved by using all three categories of policy tools. As of now, it uses only two.

In Part VII, I consider what big finance would look like without the too-big-to-fail subsidy. Firms with shareholder-centered corporate governance did worse in the financial crisis than firms with weak shareholder orientation, and the analytics here show why that was so and why, without the subsidy, they should have done better. The policy implication of the degradation conceptualized here is not to further unleash shareholders with distorted incentives inside big finance, but rather to reorient their incentives to reduce the distortions and thereby better align shareholders' incentives with the public's.

Lastly, I sketch out the dealmaking impact if the too-big firms' funding boost disappears—as industry proponents and some analysts say has already been, or will shortly be, achieved. Normal corporate processes would press to restructure and downsize the biggest and least efficient firms. Ending the subsidy, or even cutting back the big increase from the financial crisis, should unleash the usual market mechanisms that facilitate right-sizing of corporations. Board and managerial incentives would better match public goals. If better regulation slashes the large too-big-to-fail subsidy that we have had, then big finance should restructure on its own.

The change we would see could include dramatic, activist-driven breakups and spinoffs, but much of the corporate governance effort would be slow and internal: new ventures would need a higher hurdle rate to be justified, while some major old ventures would become uncompetitive and then be sold. This latter, internal process would not be a dramatic, nearly instant revolutionary restructuring, but a steady, multiyear evolutionary rebuilding of the biggest financial firms—a rebuilding that would make the American financial system safer, stronger, and better for the American economy.

I. THE LONDON WHALE AND JPMORGAN'S \$6 BILLION TRADING LOSS

A. *The Events and the Corporate Governance Failure*

The London Whale debacle is now well known in financial circles. JPMorgan Chase, America's largest bank, is reputed to be America's best-managed bank, with the widely respected Jamie Dimon as its chief executive

officer. Yet, despite its reputation, mismanaged trades—initiated by the London Whale—lost the bank \$6 billion. (In professional poker, and sometimes in financial markets, a “whale” is a poor player with a thick wallet.)

When the economy improved after the 2007–2009 financial crisis, JPMorgan concluded it was prudent to reduce its exposure to credit derivatives whose value depended on a weak economy. Because of illiquidity in that market, JPMorgan traders decided not to sell the positions they had already taken, but instead to buy new, opposite positions, although with different maturities.¹ A JPMorgan trader based in London—the Whale—made many of these trades.² However, as credit markets rallied in early 2012, the original positions lost even more value, and the new positions’ profits did not make up for those continued losses. Worse, the larger portfolio became too big, too complex, and too unwieldy to manage well. JPMorgan owned too much of this market, and when management finally decided to unwind the trades by selling many off, it found that there were no longer enough buyers. JPMorgan itself had been the primary buyer in many of the underlying markets, and the assets could not be sold at desirable prices.³

JPMorgan’s first public accounting pegged the loss at \$2 billion, about one-tenth of the bank’s annual profit. Questions immediately arose as to the quality of JPMorgan’s risk management team—previously reputed to be stellar—since they had allowed the bank to be cornered with such a large position. If JPMorgan could not manage these risks appropriately, how would less well-managed banks fare? As the story unfolded, JPMorgan’s losses mounted. By the time the bank had closed out its position, it had lost \$6 billion.

Congress and the media excoriated Dimon and JPMorgan’s senior management for failing to control the original trades, for failing to wind them down at lower loss levels, for being uninformed about the full extent of

¹ See *JPMorgan Chase Whale Trades: A Case History of Derivatives Risks and Abuses: Hearing Before the Permanent Subcomm. on Investigations of the S. Comm. on Homeland Sec. & Gov’t Affairs*, 113th Cong. 104 (2013) [hereinafter *JPM Whale Trades Hearing*] (statement of Ina R. Drew, Former Head, Chief Investment Office, JPMorgan Chase & Co.).

² Gregory Zuckerman & Katy Burne, ‘London Whale’ Rattles Debt Market, *WALL ST. J.*, Apr. 6, 2012, at A1.

³ See *JPM Whale Trades Hearing*, *supra* note 1, at 156 (report by the Majority and Minority Staff of the Permanent Subcomm. on Investigations of the S. Comm. on Homeland Sec. & Gov’t Affairs) (describing the severity of JPMorgan’s losses); Katy Burne, *Making Waves Against ‘Whale,’ WALL ST. J.*, Apr. 11, 2012, at C1 (“J.P. Morgan sold so much of the index swaps . . . that the cost of default protection on that basket of companies fell sharply [After JPMorgan stopped trading, t]he cost of [default protection] on the index rose”).

JPMorgan's vulnerability on the trades, and for misleading the public and regulators about the trades' size and its embedded loss.⁴

B. *The Conventional Corporate Governance Wisdom*

JPMorgan's senior management stumbled badly. The antibank critique is that the lapse shows how banks are still taking too many risks. At Senate hearings on the Whale and the loss, senators argued that the Whale debacle justified moving financial trading largely out of banks because future losses could be even larger—so large that they could lead to another bailout. As is now well known, big financial firm managers have reason to accept otherwise too-large risks in too-big-to-fail financial firms: If the risk pays off, shareholders gain and managers get big bonuses. If the risk turns out badly, then shareholders and other financiers of the firm are unhappy, but the government will bail out many of them. This makes the downside for a too-big-to-fail financial firm not as unpleasant as it would be for a typical industrial firm, which would have to file for bankruptcy when a major risk turns out badly.

But this risk-taking view has been met by a powerful rebuttal favoring a “hands-off” approach, arguing that the bank's shareholders, and not the public, bore the brunt of the loss.

1. A Loss Well Within Shareholders' Equity

Compare the size of the Whale's trading loss to the size of JPMorgan. The loss, albeit tremendous, amounted to less than one-third of JPMorgan's 2012 profits and only three percent of its \$200 billion of capital.⁵ It was well within shareholders' equity and, the bank's defenders assert, is a shareholder problem, not a public problem. “Why should the public be worried,” JPMorgan supporters asked, “about that loss in a year of otherwise extraordinary profit for the bank?”⁶

⁴ See *JPM Whale Trades Hearing*, *supra* note 1, at 165 (report by the Majority and Minority Staff of the Permanent Subcomm. on Investigations of the S. Comm. on Homeland Sec. & Gov't Affairs); Editorial, *Lessons from the London Whale*, N.Y. TIMES, Jan. 20, 2013, at SR10.

⁵ See JPMorgan Chase & Co., Annual Report (Form 10-K), at 62 (Feb. 28, 2013).

⁶ William Jaenike, Letter to the Editor, *JPMorgan's Trading Loss*, N.Y. TIMES, Mar 24, 2013, at BU5. JPMorgan's former CEO William B. Harrison said, “It was disappointing to all of us that we had that kind of loss, but the important thing is to put it into perspective, which the market didn't do very well A lot of people overreacted to it.” Dawn Kopecki, *Harrison Says Public Overreacted to JPMorgan's CIO Trading Loss*, BLOOMBERG (Sept. 5, 2012), <http://www.bloomberg.com/news/2012-09-05/harrison-says-public-overreacted-to-jpmorgan-s-cio-trading-loss.html>. Consider the view of a senior banking analyst: “The holding company made \$29.9 billion in operating income and just over \$20 billion in net income for 2011. . . . [T]he reported losses, in and of themselves, are not likely to have a dramatic impact on J.P. Morgan's long-term financial stability.” Gene

2. Shareholder- and Board-Based Governance Will Remedy

Serious losses can activate shareholder-based corporate governance in industrial firms. Shareholders agitate for boardroom change; boards often replace senior managers; and, in extreme cases, shareholders force the breakup of a too-big-to-manage firm into its constituent business lines.⁷

A big industrial firm that is far above its optimal size should attract such attention, and often enough does. Perhaps the same could become a reality for too-big financial firms. Indeed, Henry Kaufmann, long one of Wall Street's leading financial analysts, announced that the heyday of the large American financial conglomerate was over.⁸ Shareholder value in financial firms would be enhanced by spinoffs, breakups, and divisional buyouts. Since that kind of restructuring would enhance shareholder value, shareholders would make it happen.⁹ America's financial conglomerates would be restructured in the 2010s in the same way that America's overgrown industrial conglomerates were restructured in the 1980s. Other mainstream analytics have been similar.¹⁰

One could extend this corporate analysis. Internal forces can restructure the too-big conglomerate. Managers at financial divisions could buy out their division if it can be better managed when separated from the firm's core. Boards reviewing the firm's future strategy could conclude that far-off divisions cannot be managed well and should be spun off. Activist shareholders might undertake proxy fights to elect new directors to bring about operational changes. Such proxy fights often fail,¹¹ but firms often eventually implement policies similar to those sought by the shareholder activists. Ordinary corporate governance measures could therefore diminish potential financial losses of the size of JPMorgan's London Whale trading loss. Regulation was needed, in this view, only to handle the chance that the loss

Kirsch, *J.P. Morgan Chase: Putting Losses in Perspective*, WEISS RATINGS (May 11, 2012), <http://www.weissratings.com/news/articles/jp-morgan-chase-putting-losses-in-perspective>.

⁷ RONALD J. GILSON & BERNARD S. BLACK, *THE LAW AND FINANCE OF CORPORATE ACQUISITIONS* 357-62 (2d ed. 1995).

⁸ Henry Kaufman, *Big Banks Are Not the Future*, WALL ST. J., June 6, 2012, at A15 ("The halcyon days of large financial conglomerates are over.").

⁹ *Id.*

¹⁰ See Lionel Barber, *The Fall of the Universal Bank*, ECONOMIST: WORLD IN 2013, Nov. 8, 2012, at 142 ("The decline of the universal bank will pass unlamented. The . . . financial super-market has long been eclipsed by the destruction of shareholder value after the crash.").

¹¹ See Lucian A. Bebchuk, *The Myth of the Shareholder Franchise*, 93 VA. L. REV. 675, 677 (2007); Steven M. Davidoff, Andrew C.W. Lund & Robert Schonlau, *Do Outside Directors Face Labor Market Consequences? A Natural Experiment from the Financial Crisis*, HARV. BUS. L. REV. (forthcoming) (manuscript at 3), available at <http://ssrn.com/abstract=2200552>.

would exceed the value of the bank's equity, because only that kind of loss would put the public fisc at risk.

* * *

Overall, a plausible analytic for JPMorgan and the \$6 billion Whale loss—and one with which reasonable analysts agree—is that (1) the problem is one for shareholders and managers, not the public, and (2) the normal forces of corporate governance would press to right-size the big financial firms, if they are indeed operating at too big a scale. That powerful defense of JPMorgan was embedded in its CEO's comment that the loss was “[a] tempest in a teapot.”¹²

II. STRUCTURAL DEGRADATION DUE TO THE IMPACT OF TOO-BIG-TO-FAIL

We take this standard corporate incentive-for-efficiency story, deepen it, and then explore how too-big-to-fail pressures warp the incentives of shareholders, boards, and managers, thereby degrading corporate governance. Some financial firms may become both too-big-to-manage (an idea discussed in the literature¹³) and, because the normal corporate governance constraints turn off due to the too-big-to-fail subsidy (an idea that, although not in the literature, is our focus here), the firm is thereby rendered even more susceptible to both specific error—such as the failure of senior management to oversee the trading desk properly, resulting in the \$6 billion London Whale—and general error—such as the firm swelling beyond its optimal size and scope because the optimal size would lose the too-big-to-fail subsidy. This potential for systematic organizational degradation at too-big-to-fail firms is extensive, important, and not yet well analyzed.

Normal shareholder, managerial, and board incentives and pressures to right-size and restructure firms degrade and disappear in too-big-to-fail financial firms. Too-big-to-fail status lowers the firm's cost of capital, and that funding advantage would be lost to the firm by an operationally

¹² *JPM Whale Trades Hearing*, *supra* note 1, at 2 (statement of Sen. Carl Levin, Chairman, Permanent Subcomm. on Investigations of the S. Comm. on Homeland Sec. & Gov't Affairs).

¹³ *E.g.*, Fed. Reserve Bank of St. Louis, *The Big Banks: Too Complex to Manage?*, CENTRAL BANKER, Winter 2012/2013, at 8; Neil Irwin, *JPMorgan Is Close to a Record \$13 Billion Settlement. Is It Too Big to Manage?*, WASH. POST WONKBLOG (Oct. 20, 2013), <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/10/20/jpmorgan-is-close-to-a-record-13-billion-settlement-is-it-too-big-to-manage/>; Ben W. Heineman, Jr., *Too Big to Manage: JP Morgan and the Mega Banks*, HARV. BUS. REV. BLOG NETWORK (Oct. 3, 2013), <http://blogs.hbr.org/2013/10/too-big-to-manage-jp-morgan-and-the-mega-banks>.

sensible restructuring. The threat of losing that value acts as a poison pill does in an industrial firm: Operational value could be created if a shareholder activist succeeded, but due to the pill, the activist cannot capture that value for itself. Knowing that it cannot capture the value that it wants to create, the activist desists from activism. Improving the too-big-to-fail organization is not, here, in shareholders' interests. Worse than the pill, the subsidy also curtails internal incentives for boards, managers, or any controlling shareholders to right-size their financial firm to be operationally efficient. The private incentives induce affected firms to be less efficient than they would otherwise be.

A. *Too-Big-to-Fail as Poison Pill*

A simple poison pill works as follows: The corporate board issues preferred stock to its current shareholders. If a control-altering event occurs (such as a single stockholder accumulating more than 10% of a firm's common stock), then the terms of that preferred stock issue allow each old shareholder to redeem his or her preferred shares for, say, ten shares of new common stock for each old share of preferred stock. The new 10% shareholder-intruder, however, is barred by the terms of the old preferred stock from participating in the exchange for new stock. The pill dilutes the activist shareholder's common stock, poisoning its incentives to be active: it would have ten percent of the common stock and be ready for action operationally, but, anticipating that remaining stockholders would dilute her 10% holding, the activist shies away from buying up the target firm's stock. In other variations, the poison has the target making a large payment to a supplier, or losing a key supplier, if control shifts inside the firm.¹⁴

The too-big-to-fail subsidy works analogously. If the subsidy lowers the financial firm's financing costs, then the activist who is confident that it can fix the target firm's business must also swallow the "poison" of the target firm losing that funding subsidy. A restructuring would need to be big enough to recover this funding loss before change agents could profit from enhancing a financial firm's corporate efficiency.

¹⁴ See GILSON & BLACK, *supra* note 7, at 741-47. Structural impediments to takeover, such as lucrative contracts for the target firm that expire upon the change-of-control of the firm, are even more analogous to the too-big-to-fail subsidy: the structural impediment would visit the costs of the change-of-control on all shareholders, as does the loss of the too-big-to-fail funding advantage, whereas the pill visits its costs on the activist in the first instance. See generally Jennifer Arlen, *Regulating Post-Bid Embedded Defenses: Lessons from Oracle Versus PeopleSoft*, 12 HARV. NEGOT. L. REV. 71 (2007).

B. *Too-Big-to-Fail as Breakup Protection*

Consider the weakened incentive for internally generated spinoffs and breakups. Suppose a financial firm's board decides that one of its businesses does not fit well with the firm's overall strategic plans and that keeping it in the firm is holding down its stock price. It plans to sell it, or spin it off. The financial firm would then plan to retire the debt that it had originally used to finance the misfit.

But as long as decreased funding costs due to the too-big-to-fail subsidy make up for the shortfall resulting from degraded operations, the board and managers should find it profitable to hold onto the misfit. The board may explicitly realize that the subsidy and lowered cost of funding have this negative operational impact. Or they may find that when they seek to sell the misfit, the investment bankers come back to the board with low bids from firms that are not too-big-to-fail. The bids are low because the bidders lack access to the same cheap, subsidized funding that the too-big-to-fail firm enjoys. The board can conclude that the spinoff is a bad deal for them, without having consciously sought to obtain, retain, or even analyze the too-big-to-fail subsidy.

C. *Too-Big-to-Fail as Stymieing the Managerial Divisional Buyout*

Firms often divest divisions and subsidiaries that have come to fit poorly with the rest of the firm's business. Managers at an orphaned division commonly buy out their division. They borrow considerably, find some equity capital for the buyout, and buy up a division or a subsidiary that they are motivated to run well.¹⁵ The too-big-to-fail subsidy weakens both the buyers' and sellers' incentives for the divestiture or the buyout. The buyer's cost of funding is higher than that of the too-big-to-fail firm. The subsidiary's managers find their funding costs cannot support the buyout. They may believe that they will increase the division's profitability by 50% after the spinoff, but their funding costs would be 50% higher than those of the parent company. The parent company board will consider the managerial buyout, but they will ultimately find the price too low. This process could even occur without the parent firm's managers or board being aware of the

¹⁵ See WILLIAM J. CARNEY, *MERGERS AND ACQUISITIONS* 7 (2d ed. 2007) (asserting that divestitures are common when an acquisition fails and is undone); DAVID J. RAVENSCRAFT & F.M. SCHERER, *MERGERS, SELL-OFFS, AND ECONOMIC EFFICIENCY* 167-68, 171 (1987); Steven N. Kaplan & Michael S. Weisbach, *The Success of Acquisitions: Evidence from Divestitures*, 47 J. FIN. 107, 113, 133 (1992) (finding that 22% of divestitures in the sample studied were sold to management groups); Michael E. Porter, *From Competitive Advantage to Corporate Strategy*, HARV. BUS. REV., May-June 1987, at 43, 52.

subsidy. The managers or the board compare the funding costs of the buyout with the value of the division and find that the numbers do not match, attributing their cheaper funding to their own superior efficiency.

D. *The Required Takeover Premium*

Consider now the extreme corporate governance restructuring that occurs via a breakup takeover. Reducing the chance of a takeover is not the most important degradation due to subsidy—to the contrary, hostile takeovers are rare now even for industrial firms, financial regulation impedes takeover in the banking and other financial industries, and the most important incentive degradation occurs inside the financial firm rather than outside it. But examining the antitakeover incentives illustrates vividly the transactional possibilities foreclosed by the too-big-to-fail subsidy.

Historically, the premium needed to effectuate a takeover was an offer 50% above the pretakeover price of the target firm's stock.¹⁶ That needed premium is roughly comparable in size to the 33% or bigger subsidy derived from several postcrisis studies.¹⁷ As such, assuming that a bank's unsubsidized operations would earn \$2, its profits would be \$3 due to the subsidy. If the bank lost that subsidy in degraded operations—putting the profit level back to \$2—then a takeover activist would find a takeover unprofitable, even though it believed it could raise the firm's profitability (and presumably its stock value) by 50%—back to the pretakeover \$3.

Consider this antitakeover problem in greater detail. If a financial firm's profitability is \$2 per annum, and its stock price is \$20, then the takeover entrepreneur who believes it can make the firm worth \$30 by raising the firm's annual operating income to \$3 or breaking it up into parts worth \$30 in the aggregate, may offer up to a 50% premium over the ongoing price of \$20. A deal would be viable between the market price of \$20 per share and the takeover activist's assessment that the firm can be turned into a \$30-per-share firm.

But if, due to the subsidy, the financial firm's stock price is already trading at \$30 and earning \$3 per share annually, the takeover entrepreneur would realize that it could not profit from a takeover. Even if it could add \$1 per share to the overall annual operating earnings by restructuring the firm, the firm would only be worth \$30 per share—not \$40 per share—if the operationally sensible restructuring induced the bank to lose its too-big-to-fail status and the accompanying subsidy of \$1 per share.

¹⁶ GILSON & BLACK, *supra* note 7, at 600.

¹⁷ See *infra* Table 1.

The takeover activist, after running these numbers, would withdraw. Even if it were confident that the target financial firm could be put on a sounder operational foundation, it would desist from agitating for its takeover and breakup. Thus, the too-big-to-fail firm has become takeover-proof.

A large too-big-to-fail subsidy would similarly dilute, reduce, and quite plausibly eliminate the board's incentive to proceed with operationally profitable restructurings on behalf of shareholders. Even a controlling shareholder would likely desist, unlike an efficiency-minded controller of a large but not too-big-to-fail industrial firm.

* * *

Related channels of corporate governance degradation are in play, involving excess leverage, misshapen executive compensation, increased risk, and how the too-big-to-fail subsidy incentivizes lobbying for poor regulation.¹⁸ Before considering these channels, however, we first examine the data on too-big-to-fail financial institutions.

III. THE FINANCIAL IMPACT OF BEING TOO-BIG-TO-FAIL: DATA

The data on the too-big-to-fail subsidy comes primarily in two forms: First, rating agencies estimate the difference in quality between the big banks' stand-alone strength and their enhanced strength with the government backup. The ratings showed a large postcrisis gap between the two, with the gap narrowing more recently. Second, economists measured the subsidy either by comparing funding costs of large and small banks to estimate how much less expensive the big banks' debt financing costs are, or by comparing the cost of deposits above the insurance limit with the cost of insured deposits. (We examine in Part VII the corporate structural consequences of banker claims that the too-big-to-fail subsidy has been, or will soon be, eliminated.)

These numbers seem at some level small—eighty basis points per annum in some of the larger estimates, or less than a one-percent discount on the amount charged to the banks on their borrowings.¹⁹ But consider the size of the too-big-to-fail subsidy as a fraction of big firm profit. That is, we convert all existing estimates into the value to shareholders. The too-big-to-fail subsidy has amounted to a large fraction, sometimes half, of the big banks' shareholder profits in many studies, and 15% or so of profits in the

¹⁸ See *infra* Part V.

¹⁹ See *infra* Tables 1 & 2 and sources cited therein. (A basis point is 1/100 of one percent.)

lower estimates. Losing these sums—15% to 50% of profits—would be serious setbacks.

A. *The Data: Concept*

A straightforward example illustrates why small funding savings of, say, one percent per annum on a financial firm's borrowings could have a big impact on its profits and, hence, shareholder value.

Financial firms are heavily leveraged. Take one worth \$100, with 10% of its funding coming from stockholders' equity and 90% from debt.²⁰ Assume that equityholders expect a rate of return of 20% at this firm's level of risk. In other words, they want a return of \$2 each year.

The lenders estimate that while the chance of failure is only 1 in 100 annually, failure would be a total operational loss were there no government bailout. But because the lenders anticipate that the government will bail the firm out and pay them the \$90 lent if the firm fails, the lenders lower the interest rate they charge by 1% because the 1 in 100 chance of failure will not be costly to the lenders.²¹ The lenders' willingness to lower their charge to the firm thus reduces the firm's cost of capital by 0.9% (from 1% of 90), or 90 basis points. That small percentage of total value is nearly half (45%) of the \$2 of profit that the heavily leveraged equityholders seek. The subsidy is vital to shareholder profit, and losing it would be very serious.

B. *The Data*

Extensive evidence suggests that larger banks have had lower funding costs than smaller banks.²² But that does not in itself tell us whether the source of their funding advantage is efficiency, subsidy, or something else. Examine Figure 1, based on Moody's postcrisis ratings for the big banks. Moody's rates the quality of loans made to the banks. It separately rates the banks on their standalone credit quality and on their full credit quality, which adjusts the standalone value for the likelihood that the government will support the bank if it were to fail or otherwise be unable to pay back lenders.

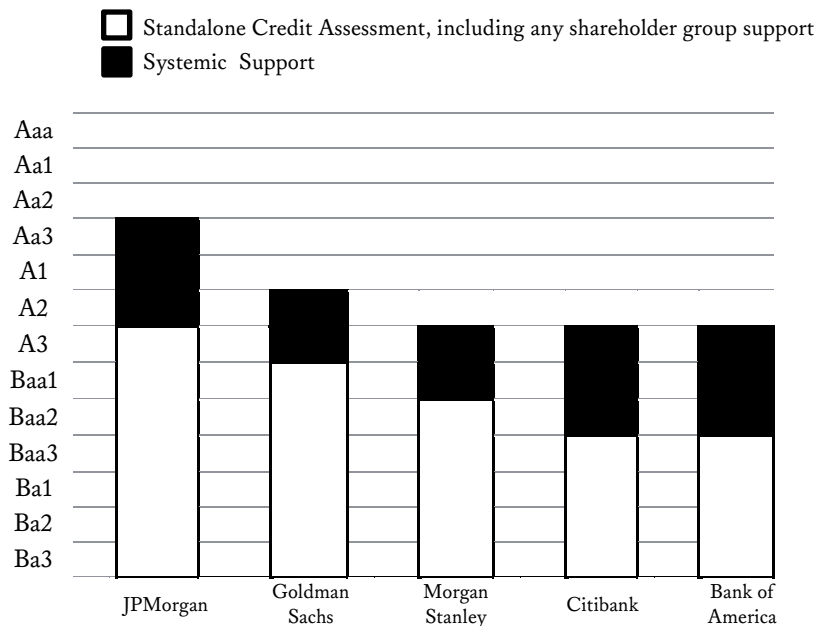
²⁰ Ignore here that insured deposits make up some of that debt.

²¹ Ignore that small depositors are always paid in a bank failure; that short-term lenders and large depositors have usually been paid; that others, like long-term bond market lenders, are often paid; and that some classes of firms, like large insurers and investment banks, are new to the too-big-to-fail arena.

²² Ata Can Bertay, Asli Demirgüç-Kunt & Harry Huizinga, *Do We Need Big Banks? Evidence on Performance, Strategy and Market Discipline*, 22 J. FIN. INTERMEDIATION 532, 544 (2013). But recent evidence shows that gap is narrowing.

As the graphic shows, during and after the financial crisis many large financial firms in the United States received a substantial credit quality upgrade due to the presence of the de facto government guarantee. Citibank, for example, was rated A₃ on an overall basis, or investment grade, while rated Baa₃ on a standalone basis. This standalone rating made it near junk-bond quality because there would be a substantial chance that the firm would default on payment during the life of the relevant bonds.²³ This gap, although now narrowing, has been common for the larger banks.

Figure 1: Moody's Bank Debt Ratings, with and without Government Backing²⁴



²³ MOODY'S INVESTORS SERVICE, KEY DRIVERS OF RATING ACTIONS ON FIRMS WITH GLOBAL CAPITAL MARKETS OPERATIONS 13 (June 21, 2012) [hereinafter KEY DRIVERS] (footnotes omitted). Moody's has recently been changing its mind, coming to believe that regulatory efforts will end too-big-to-fail bailouts. MOODY'S INVESTORS SERVICE, MOODY'S CONCLUDES REVIEW OF SYSTEMICALLY IMPORTANT US BANKS (Nov. 14, 2013) [hereinafter MOODY'S CONCLUDES REVIEW]. For the corporate governance consequences of the switch—if investors come to believe it to have happened—and the possibility that optimists are moving faster than the data warrants, see Part VII.

²⁴ KEY DRIVERS, *supra* note 23, at 7 exhibit 4. Perceptions of improved regulation have more recently narrowed the Moody's gap.

About a dozen recent academic and regulatory studies measured the too-big-to-fail subsidy in two ways. First, the studies measured the change in this subsidy's level after the financial crisis, and second, they examined the ongoing level of the subsidy. The studies, summarized in Tables 1 and 2 in the Appendix, have results in the same general range, with a mean increase from pre- to postcrisis amounting to one-third of 2009 profits (Table 1) and an ongoing support level of nearly one-half of the averaged 2006, 2009, and 2012 profits (Table 2), with its size spiking in 2009. Some studies converted the rating agencies' judgments in rating differences into a measure of annual subsidy of the firm's debt,²⁵ while others used credit default swaps on bank debt²⁶ or different banks' cost of funds.²⁷ Others measured the different rates on deposits above and below the formally guaranteed amount²⁸ or differences in bond pricing²⁹ or stock returns.³⁰ Although the studies' time periods, firms studied, and techniques used differed, their bottom line results were remarkably similar, with the size of the increase amounting to a major fraction of large financial firm profits.

Consider one prominent study in more detail, a 2011 study associated with the International Monetary Fund—"Quantifying Structural Subsidy Values for Systemically Important Financial Institutions," by Kenichi Ueda and Beatrice Weder di Mauro—which has typical results.³¹ Using rating agency results, the authors calculated the funding cost advantage from the

²⁵ See ZAN LI, SHISHENG QU & JING ZHANG, MOODY'S ANALYTICS, QUANTIFYING THE VALUE OF IMPLICIT GOVERNMENT GUARANTEES FOR LARGE FINANCIAL INSTITUTIONS 14 (2011); Bryan Kelly, Hanno Lustig & Stijn Van Nieuwerburgh, *Too-Systemic-to-Fail: What Option Markets Imply About Sector-wide Government Guarantees* (Chi. Booth, Research Paper No. 11-12, 2012), available at <http://ssrn.com/abstract=1762312>.

²⁶ See LI, QU & ZHANG, *supra* note 25, at 13; Frederic A. Schweikhard & Zoe Tsesmelidakis, The Impact of Government Interventions on CDS and Equity Markets 2 (Nov. 2012) (unpublished manuscript), available at <http://ssrn.com/abstract=1573377>.

²⁷ See Dean Baker & Travis McArthur, *The Value of the "Too Big to Fail" Big Bank Subsidy*, CENTER FOR ECON. & POLY RES. 1-2 (Sept. 2009), <http://www.cepr.net/documents/publications/too-big-to-fail-2009-09.pdf>.

²⁸ See Stefan Jacewitz & Jonathan Pogach, Deposit Rate Advantages at the Largest Banks 4-7 (Feb. 2014) (unpublished manuscript), available at <http://ssrn.com/abstract=2018474>.

²⁹ See Viral V. Acharya, Deniz Anginer & A. Joseph Warburton, The End of Market Discipline? Investor Expectations of Implicit State Guarantees 6-7 (Dec. 2013) (unpublished manuscript), available at <http://ssrn.com/abstract=1961656>.

³⁰ See Elijah Brewer III & Julapa Jagtiani, *How Much Did Banks Pay to Become Too-Big-to-Fail and to Become Systemically Important*, 43 J. FIN. SERV. RES. 1, 4 (2013); Priyank Gandhi & Hanno Lustig, *Size Anomalies in U.S. Bank Stock Returns*, J. FIN. (forthcoming) (manuscript at 2), available at http://www.afajof.org/details/journalArticle/5437471/Size-Anomalies-in-U_S_-Bank-Stock>Returns.html (same).

³¹ Kenichi Ueda & Beatrice Weder di Mauro, *Quantifying Structural Subsidy Values for Systemically Important Financial Institutions*, 37 J. BANKING & FIN. 3830 (2013).

better rating due to government backup. They estimated that the funding subsidy increased by twenty basis points (0.2% annually) during the financial crisis, presumably because lenders raised their estimate of the government's willingness to bail out a wide range of firms and because the likelihood of bank failure seemed higher than usual. Because financial firms use so much debt and so little equity to finance themselves (with debt ten or twenty times the size of their equity), saving funding costs of 0.2% annually on the debt can amount to 15-20% of the banks' profits.

Baker and McArthur, authors of another prominent work measuring the size of the too-big-to-fail subsidy, also focused on funding cost changes over time. During the precrisis years, from 2000 through 2007, larger banks with more than \$100 billion in assets had a funding cost advantage over smaller banks of 0.29%. This advantage widened during the 2007-2009 financial crisis to 0.78%, an increase of 49 basis points, presumably because the big banks were seen as likely to be bailed out, while smaller financial firms were not. This increase translated to an annual funding cost advantage for the 18 large banks of \$34 billion, an amount equivalent to half of the financial firms' combined 2009 profit.

Table 2 summarizes the measured baseline levels of the too-big-to-fail advantage of the big financial firms, reconfigured as a percentage of profits and averaged over their 2006, 2009, and 2012 profits. Overall, the data point to a substantial baseline advantage, amounting to a noticeable fraction of financial firm profits, with the size of the advantage increasing noticeably during the financial crisis. An IMF study with later, 2013 data had results with a similar bottom line.³²

Big banks surely have size-based efficiencies and big firms' bonds are more liquid than small firms' bonds.³³ It is possible that the big banks have

³² Int'l Monetary Fund, *How Big Is the Implicit Subsidy for Banks Considered Too Important to Fail?*, in GLOBAL FINANCIAL STABILITY REPORT 101, 104, 114 (Apr. 2014).

³³ See Joseph P. Hughes & Loretta J. Mester, *Who Said Large Banks Don't Experience Scale Economies? Evidence from a Risk-Return-Driven Cost Function*, 22 J. FIN. INTERMEDIATION 559, 578-80 (2013); GLOBAL MKTS. INST., GOLDMAN SACHS, MEASURING THE TBTF EFFECT ON BOND PRICING 3 (2013), available at <http://www.goldmansachs.com/our-thinking/public-policy/regulatory-reform/measuring-tbtf-doc.pdf>. For reviews of the evidence concluding that big finance is inefficient, see Richard Davies & Belinda Tracey, *Too Big to Be Efficient? The Impact of Implicit Subsidies on Estimates of Scale Economies for Banks*, 46 J. MONEY, CREDIT & BANKING 219 (Supp. 1 2014); Asli Demirgüç-Kunt & Harry Huizinga, *Are Banks Too Big to Fail or Too Big to Save? International Evidence from Equity Prices and CDS Spreads*, 37 J. BANKING & FIN. 875, 893 (2013); Robert DeYoung & Chao Jiang, *Economies of Scale and the Economic Role of Banks* (May 2013) (unpublished manuscript), available at http://www.vgsf.ac.at/fileadmin/user_upload/P/DeYoung_and_Jiang_May_22_2013.pdf; and Hulusi Inanoglu et al., *Analyzing Bank Efficiency: Are "Too-Big-to-Fail" Banks Efficient?* 15-16 (Jan. 7, 2012) (unpublished manuscript), available at http://michaeljacobsjr.com/InanogluJacobsLiuSickles_BankEfficiency_1-7-12.pdf. Cf. John H.

efficiencies from scale economies and also benefit from substantial too-big-to-fail distortions. Some probably enjoy oligopolistic profits. Each boost to profitability probably fluctuates over time.³⁴

A large fraction of the postcrisis funding advantage, however, seems likely to have come from the too-big-to-fail subsidy. The studies in Table 1 measure the increase in funding advantages for big finance after the financial crisis. Since it is highly unlikely that big finance became more efficient due to the crisis, the measured increase seems best attributable to the market seeing too-big-to-fail support as increasingly likely.³⁵ Several historical studies analogously attributed financial firm mergers to the desire to obtain the too-big-to-fail funding benefits.³⁶ A recent study with more finely tuned empirics finds a large part of the funding advantage due to subsidy effects, not efficiency.³⁷

* * *

Nevertheless, too-big-to-fail is a variable, not a constant. If big finance shrinks, becomes more stable and less interconnected, or becomes better regulated, the too-big-to-fail subsidy can decrease, as bank spokespeople and some analysts now argue has been occurring. Below, in Part VII, I address the sharp corporate governance consequences one should observe if the too-big-to-fail subsidy dramatically shrinks.³⁸

Boyd & Amanda Heitz, *The Social Costs and Benefits of Too-Big-to-Fail Banks: A "Bounding" Exercise 11-12* (Feb. 8, 2012) (unpublished manuscript), available at http://casee.asu.edu/upload/TBTF_AER_Final_New_Title.pdf.

³⁴ For an examination of the corporate consequences if the high too-big-to-fail subsidy disappears, see *infra* Part VII.

³⁵ Davies & Tracey, *supra* note 33, at 221-22.

³⁶ See Edward J. Kane, *Incentives for Banking Megamergers: What Motives Might Regulators Infer from Event-Study Evidence?*, 32 J. MONEY, CREDIT & BANKING 671, 673 (2000) ("[A]ny merger that strengthens market presumptions that a megabank acquirer is 'Too Big to Fail and Unwind' . . . lowers that entity's financing costs."). *But see* George J. Benston et al., *Motivations for Bank Mergers and Acquisitions: Enhancing the Deposit Insurance Put Option Versus Earnings Diversification*, 27 J. MONEY, CREDIT & BANKING 777, 787 (1995). *See generally* Michael C. Keeley, *Deposit Insurance, Risk, and Market Power in Banking*, 80 AM. ECON. REV. 1183, 1198 (1990).

³⁷ João Santos, *Evidence from the Bond Market on Banks' "Too-Big-to-Fail" Subsidy*, FED. RES. BANK N.Y. ECON. POL'Y REV. (forthcoming 2014), available at <http://ssrn.com/abstract=2419682>. Santos compares the gap between bond yields for big and small firms in banking, financial institutions outside of banking, and all firms. The banking gap is noticeably larger, evidencing that the bank bonds' funding strength is due in major part to their too-big-to-fail boost. (Santos measures the too-big-to-fail boost in several ways, with measures ranging up to a 92 basis-point boost. For the Table 2 measure, we used the lowest averaged measure that he reports, 41 basis points.)

³⁸ *See infra* Section VII.B.

Moreover, even if the too-big-to-fail subsidy is, and stays, measurably large, the subsidy's size does not tell us with certainty that the corporate governance distortions must also be large. Perhaps the degradation is small. After all, nonfinancial firms without a too-big-to-fail subsidy misjudge risk—the Exxon Valdez debacle, BP Petroleum's Gulf of Mexico blowout, and Union Carbide's Bhopal tragedy each had risk-mismanagement characteristics akin to the London Whale. For the analytic here to have importance, the corporate governance degradation must be empirically important, but hard measures of that degradation are few.³⁹

Finally, note that most studies focus on deposits and long-term debt rates to derive a too-big-to-fail subsidy. But for the biggest too-big-to-fail banks, much of their funding and operations are in non-deposit, short-term debt—the famous derivatives (usually bets on movements of interest rates, currencies, and other financial items) and repos (short-term, often overnight repurchase agreements). Derivatives and repo contracts are effectively prioritized over bonds if the bank fails.⁴⁰ Because small banks do not use these types of short-term debt, the fact that the big banks' long-term debt gets paid after their short-term debt means that, all else equal, their long-term debt is riskier. Accordingly, it should cost more than the smaller banks' long-term debt. Similarly, counterparties to too-big-to-fail firms should be more willing to do business with them than with firms that need to stand on their own. This preference will translate into better contracting terms, greater business volume, or both for the too-big-to-fail firms. This too-big-to-fail benefit may well be large and is not captured in traditional measures of the benefit, because it flows from better short-term financing and contracting opportunities into shareholder profit.

IV. THE EXTENDED SOCIAL COSTS

The too-big-to-fail bailouts at public expense during the 2007–2009 financial crisis were a source of public anger, inducing Congress to have “no more bailouts!” as an organizing rationale for the Dodd-Frank Act, Congress's

³⁹ Because the too-big-to-fail boost resembles the monopolist's profit boost, and monopoly degradation is better understood, *see infra* note 47 and Sections IV.A–B, one might expect the magnitude of the degradation to be similarly important. But analogues are not the same as measured costs. We do know that “banks with a higher probability of government support . . . have more trading assets on average” and take on more risk. Gara Afonso, João Santos & James Traina, *Do “Too-Big-to-Fail” Banks Take on More Risk?*, 20 FED. RES. BANK N.Y. ECON. POL'Y REV. (forthcoming 2014) (manuscript at 2, 9).

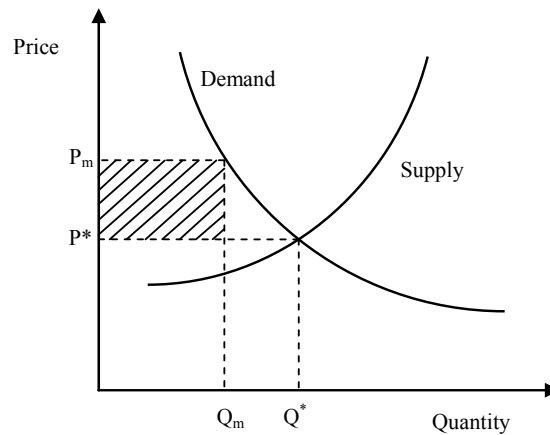
⁴⁰ *See* Mark J. Roe, *The Derivatives Market's Payment Priorities as Financial Crisis Accelerator*, 63 STAN. L. REV. 539, 581–82 (2011); Franklin R. Edwards & Edward R. Morrison, *Derivatives and the Bankruptcy Code: Why the Special Treatment?*, 22 YALE J. ON REG. 91, 114–16 (2005).

major reaction to the financial crisis.⁴¹ But, as we have argued thus far, the cost of too-big-to-fail finance is not just in bailouts, and not just in the more important financial disruption that major financial failure inflicts on the rest of the economy. In addition, the financial firm degrades organizationally. The costs are direct—the degraded financial firm contributes less to the economy—and indirect—because the structural degradation increases the chance that the firm will fail in a crisis. In this Part, we extend the analytics of these social costs and see how they resemble those of the monopolist. I do so for two reasons. The too-big-to-fail umbrella resembles a monopolistic or oligopolistic umbrella and oligopolistic organizational deterioration; the analogy thereby illustrates. And, since markets for some financial products are organized oligopolistically, market structure provides a wider umbrella to corporate governance corrective action, one I mention here but do not analyze further.⁴²

A. *The Monopolist's Rectangle*

The classic costs from monopoly come first from the monopolist raising its selling price above its own full costs. Consumers pay more and the monopolist gets richer.

Figure 2: The Social Costs of the Monopolist's Rectangle



⁴¹ Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010) (codified as amended in scattered sections of 7, 12, and 15 U.S.C.).

⁴² Cf. Mark J. Roe, *From Antitrust to Corporation Governance: The Corporation and the Law, 1959–1994*, in *THE AMERICAN CORPORATION TODAY* 102 (Carl Kaysen ed., 1996).

As the monopolist raises its price, some consumers who would have purchased at a lower, competitive price decide not to buy at the higher price. Only the high-value users continue to buy. The monopolist restricts production, selling only to high-value consumers and letting sales to ordinary consumers fall by the wayside. The loss from the restricted production is represented by the small triangular shape in the middle of Figure 2, often called the “deadweight costs” of monopoly.⁴³

That standard view was transformed in the 1970s, in ways relevant to too-big-to-fail corporate degradation.⁴⁴ The monopolist’s profit, represented by the rectangle in Figure 2, had long been seen until then as a simple transfer from consumers to monopolist.

But the value of this gain to the monopolist induces it to defend that gain. The monopolist protects its monopoly and that rectangle of profits from attack—from upstart competitors, from regulators and other lawmakers, or from technological change that could displace the monopolist’s business. Its investments in self-protection are social costs, however—deadweight damage to the economy as egregious as the lost production of the monopoly triangle. The monopolist will invest in this socially costly monopoly protection in an amount up to the value of that rectangle.

Worse, there is considerable evidence of organizational degradation in publicly owned firms with market power.⁴⁵ The cushion of monopoly profits coming into the firm allows boards and senior managers to dissipate some of that value and still provide the firm’s shareholders with a good return.

B. *The Subsidy as Analogous to the Monopolist’s Rectangle*

The too-big-to-fail problem is analogous. The monopoly cushion degrades the monopolist’s performance; the too-big-to-fail subsidy degrades the too-big-to-fail firm’s operational performance. Begin with Figure 3, which illustrates banks’ supply and demand curves for funding in a fully

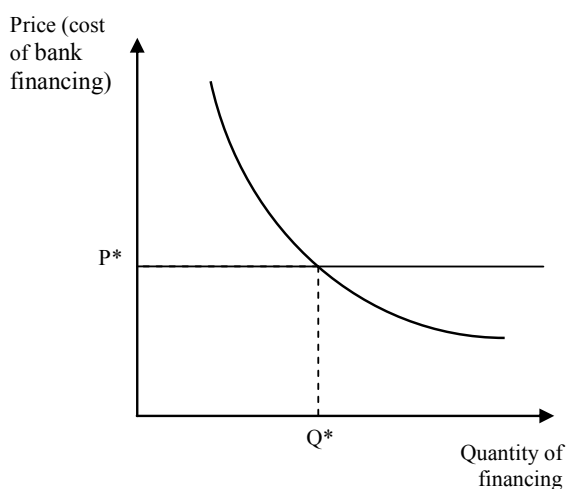
⁴³ Oligopoly has analogous “deadweight costs” if a small group of firms coordinates a price above their own costs. The too-big-to-fail financial sector more resembles the oligopoly context than the monopoly one. But the social costs of monopoly are easier to illustrate graphically than the oligopoly structure, and nothing is lost conceptually by using monopoly instead of oligopoly.

⁴⁴ See Richard A. Posner, *The Social Costs of Monopoly and Regulation*, 83 J. POL. ECON. 807, 810 (1975) (representing monopoly profits by the rectangle in Figure 2, *supra*); cf. Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies, and Theft*, 5 W. ECON. J. 224, 225-26 (1967) (“[T]he rectangle . . . measures the social cost of this waste.”).

⁴⁵ For the bank-based literature here, see generally Franklin R. Edwards, *Managerial Objectives in Regulated Industries: Expense-Preference Behavior in Banking*, 85 J. POL. ECON. 147 (1977); and Timothy H. Hannan & Ferdinand Mavinga, *Expense Preference and Managerial Control: The Case of the Banking Firm*, 11 BELL J. ECON. 671 (1980) (finding office expenses and employment levels rise in banks in concentrated markets).

competitive, nonsubsidized environment. (We introduce the subsidy in Figure 4.) The sector seeks funding for its projects, with the x-axis representing the quantity of funding sought and the y-axis representing its cost. The earlier projects sought are the highly profitable projects, so the sector is more willing to pay to finance them. Later projects are less profitable, so the sector will not pay as much. The demand curve slopes downward, as is typical. The supply curve is flat here, showing a single interest rate being charged to the firm. The point where the supply and demand curves meet, at the intersection of P^* and Q^* , represents the price that clears the market. Q^* could also be taken to represent the size of the sector: funding is demanded for operations that the sector can implement profitably.

Figure 3: Supply and Demand for Funding an Unsubsidized Too-Big-to-Fail Sector



Next, introduce the too-big-to-fail subsidy. Because financiers to the too-big-to-fail sector believe they are likely to be repaid even if the financial firm fails, they charge less interest than if the firm's failure would surely be visited upon the lender. Lenders are thus willing to lend more cheaply to the too-big-to-fail sector. This willingness is represented by the supply curve moving downward, as in Figure 4.

If the too-big-to-fail financial firms and their managements only pocketed the subsidy, production would stay at Q^* . The cost of the debt would be lower at P_s , yielding the firms savings in their cost of capital at the difference

between the competitive cost of funds, P^* , and the subsidized cost, P_s . If the financial firm did nothing further, it would enjoy subsidized extra profits represented by the rectangle in Figure 4, amounting in size to $(P^* - P_s) \times Q^*$. Eventually one of the financial firms would fail and be bailed out. The predicted cost to the government would be the sum of the rectangles through time, paid to the financial firm's creditors.

Figure 4: The Too-Big-to-Fail Sector's Rectangle of Potential Corporate Degradation

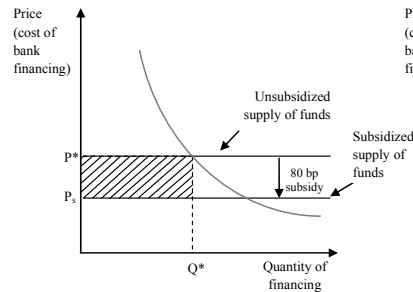
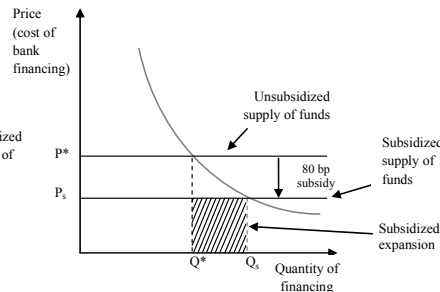


Figure 5: The Too-Big-to-Fail Sector's Economically Unwarranted Expansion



These then are the well-perceived costs of the system having too-big-to-fail firms.⁴⁶ Consider next the added corporate degradation.

The organizations degrade due to the presence of that rectangle. The firms' managers are not as careful, because the extra profits from the subsidy cushion them, and the normal corporate controls on major corporate degradation are gone: breakups and some takeovers, and indeed any

⁴⁶ See, e.g., OFFICE OF THE SPECIAL INSPECTOR GEN. FOR THE TROUBLED ASSET RELIEF PROGRAM, QUARTERLY REPORT TO CONGRESS 5 (Apr. 25, 2012), available at http://www.sigta.gov/Quarterly%20Reports/April_25_2012_Report_to_Congress.pdf ("A significant legacy of [the Troubled Asset Relief Program] is increased moral hazard and potentially disastrous consequences associated with institutions deemed 'too big to fail.'"); *Ensuring Ohio Taxpayers Don't Pay for Wall Street's Failure*, SHERROD BROWN, SENATOR FOR OHIO (Mar. 4, 2013), <http://www.brown.senate.gov/newsroom/newsletters/ensuring-ohio-taxpayers-dont-pay-for-wall-streets-failures> ("Wall Street megabanks . . . receive taxpayer-funded advantages today simply because of their 'too big to fail' status."); Richard W. Fisher, President, Fed. Reserve Bank of Dall., Remarks Before Columbia University's School of International and Public Affairs: Comments on Monetary Policy and 'Too Big To Fail' (Feb. 27, 2013), available at <http://www.dallasfed.org/news/speeches/fisher/2013/fs130227.cfm> ("[F]irms capture the financial upside of their actions but largely avoid payment—bankruptcy and closure—for actions gone wrong . . . Such firms enjoy implicit subsidies relative to their non-TBTF competitors.").

improvement that makes the firm unsinkable, would cause the firm to lose the subsidy, represented by the rectangle in Figure 4. The entire rectangle can potentially be lost to the economy.⁴⁷

The subsidy initially makes shareholders in the too-big-to-fail sector richer. But the too-big-to-fail sector can go down another path. First, big finance has reason to expand the scale and scope of its activities. With the new cost of funding to the sector at the lower P_S , the sector can take on new activities with the new, cheaper financing available to it. It can move its funding size and activity scale out to Q_S . These added activities, represented by the shaded area in Figure 5, would be more efficiently handled elsewhere in the economy. The too-big-to-fail sector takes them on because the sector obtains the subsidized, low-cost funding when they do so. As a result, the too-big-to-fail sector becomes bigger and more unwieldy.

C. The Degradation as Another Channel to Financial Crisis

Thus far we have examined how a too-big-to-fail boost degrades financial firm efficiency. Another cost emanates from the degradation of their efficiency, because financial firms at the hub of the economy then function worse than they need to. Failures of financial institutions can be costly to the economy, as we learned again during the 2007–2009 financial crisis, when financial institutions failed, shrunk, and withdrew from lending, thereby weakening the economy.

Moreover, because corporate governance degradation weakens the firm, it becomes more likely to fail. That weakness and failure induce further financial failure during a crisis, exacerbating and deepening the basic economic costs of a financial crisis, as Figure 6 illustrates.

⁴⁷ Competition inside the too-big-to-fail sector needs to be accounted for. We consider this competition in the next Part, where we see that the too-big-to-fail subsidy distorts the competitive arena in the sector.

Figure 6: The Too-Big-to-Fail Corporate Degradation Channels

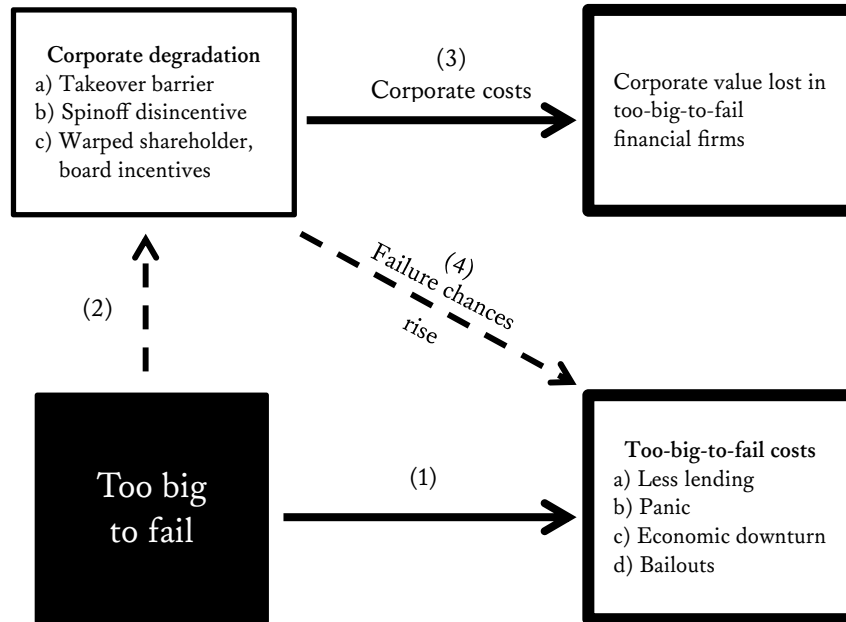


Figure 6 illustrates the multiple channels of too-big-to-fail costs. Arrow (1) and the right-hand box represent the standard problems: if a big financial firm collapses, the government will typically bail the firm out. But the too-big-to-fail problem also moves through a corporate governance channel, via arrow (2), to degrade the corporate quality of the subject financial firms. The degraded firms are costly for the economy, because they do not function as well as they could, leaving too many big financial firms at the upper right corner of Figure 6, weakened via arrow (3). And then, lastly, arrow (4) shows that the degraded financial firms have a greater chance of failing, due to the too-big-to-fail corporate degradation, raising the chance that the economy will suffer from too-big-to-fail costs at the bottom right of Figure 6.

V. FURTHER CORPORATE DEGRADATION

Related degradation channels outside the core corporate governance institutions of boards and shareholders have been observed before. The corporate governance degradation problem I have analyzed here widens several of these known channels. First, the subsidy perniciously induces affected firms to increase their overhanging risky debt, which distorts corporate strategy. Second, for too-big-to-fail finance, shareholder-oriented compensation incentivizes boards and managers to use more of the too-big-to-fail subsidy and to avoid capital structures that use less of it, further degrading

the financial firm's value to the economy.⁴⁸ Third, the subsidy distorts the competitive arena for the too-big-to-fail sector: in the industrial sector, competition can reverse corporate governance degradation; but in the financial sector, competition can also further debase corporate structure. Fourth, the too-big-to-fail firm distorts prosecutors' and regulators' actions, in ways that can further degrade corporate governance. Finally, the financial players' unwillingness to lose the too-big-to-fail subsidy impels them to create larger, more unwieldy firms—a result that is worse for the economy.

I expand on several of these channels to show how the corporate degradation analytic deepens these problems.

A. *The Subsidy as Debt Overhang*

Thus far we have seen how the too-big-to-fail subsidy destroys basic corporate governance incentives. It also distorts capital structure decisions. Capital structure choices can influence the firm's choice of investments and can enhance, or degrade, managerial decisionmaking.⁴⁹ Too much debt induces managers, if loyal to their shareholders, to accept excessive risks that the creditors pay for if the risks turn out badly, but that the shareholders profit from if they yield good results.⁵⁰

Moreover, a shareholder-oriented firm with a lot of risky debt may forgo profitable projects, because the benefits go disproportionately to the overhanging risky debt.⁵¹ Too little debt, on the other hand, could induce managers to forgo extra effort because there are no creditors to challenge them if the managers forgo a few dollars of extra operational income. Hence, in the normal science of capital structure, there's a tradeoff.

The too-big-to-fail subsidy distorts this tradeoff. Typically the government does not bail out stockholders of the too-big-to-fail firm—only

⁴⁸ See, e.g., Lucian A. Bebchuk & Holger Spamann, *Regulating Bankers' Pay*, 98 GEO. L.J. 247, 257-61 (2010) (discussing how banker compensation incentivizes executives toward greater risk); Sallie Krawcheck, *Four Ways to Fix Banks*, HARV. BUS. REV., June 2012, at 107, 109-10 (same); Frederick Tung, *Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation*, 105 NW. U. L. REV. 1205, 1227-28 (2011) (proposing "debt-like" compensation to decrease executive risk-taking); Patrick Bolton, Hamid Mehran & Joel Shapiro, *Executive Compensation and Risk Taking* 3-4 (Fed. Reserve Bank of N.Y., Staff Report No. 456, rev. Nov. 2011), available at www.newyorkfed.org/research/staff_reports/sr456.pdf (advocating linking executive compensation to credit default swap spreads to discourage risk-taking and encourage adequate capitalization).

⁴⁹ See Michael C. Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 AM. ECON. REV. 323, 324 (1986).

⁵⁰ See Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. FIN. ECON. 147, 149-55 (1977).

⁵¹ *Id.* at 149.

creditors.⁵² Hence, the difference in the cost of equity funding and debt funding is larger for the too-big-to-fail firm, pushing its board and shareholders to favor yet more debt in the firm. The firm will be overindebted, motivated to forgo solid opportunities for riskier ones.⁵³ The long-run corporate governance interest of the depositors' guarantor diverges from that of the shareholders.⁵⁴

Prior work has shown how leveraged firms incentivize stockholders to take higher risk because the risk is borne disproportionately by the firms' preexisting creditors, while stockholders disproportionately benefit from the upside of risk-taking. The concept in this Article is related. Even risk-preferring stockholders should want the firm to be well managed; they just want it to be riskier. But, as we have seen, most of the standard corporate mechanisms by which they could achieve that better management are less sensible for self-interested shareholders of the too-big-to-fail firm.

B. *Competitive Failure and Marketwide Degradation*

Competitive capital markets incentivize industrial firms to be more efficient than otherwise. For financial firms, the same process could be at work, but it is weaker.⁵⁵

In the presence of a major too-big-to-fail subsidy for debt, competition's impact on financial firms could be to degrade their efficiency. To corral the private benefit of the subsidy, firms that can get the subsidy have reason to compete to maximize it.⁵⁶ But maximizing this private benefit then insulates the firm from the useful corporate governance incentives at work in competitive environments lacking this private benefit. As long as the private benefit exceeds the expected value of the corporate governance incentives,

⁵² Bear Stearns was an exception, in that the banking authorities merged Bear into JPMorgan, with the Bear stockholders receiving some value.

⁵³ ANAT ADMATI & MARTIN HELLOWIG, *THE BANKERS' NEW CLOTHES* (2013). The excess leverage of the too-big-to-fail bank is an important corporate governance problem induced by the too-big-to-fail subsidy. In this Article, I instead examine the general corporate governance costs of structural distortion that the too-big-to-fail subsidy induces.

⁵⁴ See Peter O. Müllert, *Corporate Governance of Banks After the Financial Crisis: Theory, Evidence, Reforms* 19-20 (ECGI Law, Working Paper No. 151/2010, 2010), available at <http://ssrn.com/abstract=1448118> (explaining that depositors' interest is in the ability of the corporation to pay its debts).

⁵⁵ See Samuel G. Hanson, Anil K. Kashyap & Jeremy C. Stein, *A Macprudential Approach to Financial Regulation*, J. ECON. PERSP., Winter 2011, at 3, 23-25.

⁵⁶ Cf. Anat R. Admati, Peter M. DeMarzo, Martin F. Hellwig & Paul Pfleiderer, *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity Is Not Socially Expensive* 39 (Stanford Graduate Sch. of Bus., Research Paper No. 2065, 2013), available at <http://ssrn.com/abstract=1669704>.

competition incentivizes the firm to maximize the private benefits, not the overall benefits for the economy.

Worse, competition in the too-big-to-fail sector is not always on matters that are in the public interest. Too-big-to-fail institutions may shift their businesses from markets in which they compete primarily with other financial firms, such as the market for major loans, into markets where major competitors do not get the too-big-to-fail subsidy, such as derivatives trading in which their balance sheet strength and implicit support makes them more desirable trading partners than smaller hedge funds. The latter might fail, but the too-big-to-fail firms cannot.

Or, the big firms direct their competition toward innovative ways to obtain, expand, and use the too-big-to-fail subsidy, not to better service the economy. For example, credit default swaps, originally pioneered at JPMorgan, were one of the major innovations in big finance in recent decades. Their original purpose was to reduce regulatory requirements on bank loans.

The credit default swap innovation at JPMorgan had it turn to an AAA investment-grade firm for an obligation that, in the event of a default on the underlying loan, the bank and the AAA-rated firm would swap the bank's loan for the AAA firm's cash. In effect, the AAA firm guaranteed the loan. Regulators treated such swap-guaranteed loans as equivalent to the bank lending to an AAA-rated firm, so they did not require more capital to back up the loan. With the AAA backstop, it was thought that the loan could not contribute to the bank's failure. Many of these credit default swaps were written by AIG, the huge, once-investment-grade insurer whose failure, partly due to its overexposure in the credit default swap market, was a key event in the financial crisis. In effect, innovation maneuvered the financial system to be burdened with more too-big-to-fail low-cost financing than it would have had otherwise. This innovation was a competitive advantage to JPMorgan,⁵⁷ one that resulted from competition in the too-big-to-fail sector. But it was not a competitive result that benefited the American economy.

C. *Too-Big-to-Jail*

Managers and boards about to undertake a dangerous activity, as opposed to just making honest mistakes, rightly fear that government prosecutors

⁵⁷ See GILLIAN TETT, *FOOL'S GOLD* 64 (2009) (showing how JPMorgan developed credit default swaps to beat precrisis regulatory capital requirements). For the ongoing persistence of bank effort to beat the capital requirements and the resulting regulatory pushback, see Brooke Masters et al., *Basel Watchdog to Close Loophole Over Use of Pricey Credit Protection*, *FIN. TIMES*, Mar. 25, 2013, at 1.

may punish them with regulatory restriction or, at the extreme, criminal prosecution.⁵⁸ The individual manager's fear of prosecution could keep him or her well away from activity that could damage the firm.

But prosecutors are wary of putting too-big-to-fail firms or their managers on trial. "As Attorney General Eric Holder admitted to the Senate . . . , when banks are considered too big to fail it is 'difficult to prosecute them [I]f we do bring a criminal charge, it will have a negative impact on the national economy.'"⁵⁹ Another restraint on managers of the too-big-to-fail firm weakens.

D. *How Remaining Corporate Governance Pressures Are Weak or Further Degrade the Too-Big-to-Fail Financial Firm*

The too-big-to-fail de facto poison pill does not deter every potential corporate governance reform pressure. But these pressures are weaker than at industrial firms, and often only exacerbate the governance problems of large financial firms.

Shareholders, for example, may embarrass or replace the CEO or restructure the board, all without breaking up the firm. Some shareholders tried this at JPMorgan Chase following the London Whale fiasco.⁶⁰ But such activists cannot capture the full measure of improvements they induce—a normal deficiency in corporate governance—and, worse for the financial firm, activist shareholders (1) who improve the target firm would share gains not only with other shareholders and financial creditors, but also with the government and the overall economy, blunting activists' incentives even more than is usual, and (2) have incentives today to induce the financial firm to take *more* government-subsidized risks that degrade the firm and the overall economy, worsening the governance outcome.

Takeovers of too-big-to-fail firms can proceed nicely—but only if the resulting firm is too-big-to-fail, carrying the same or an enhanced subsidy.

⁵⁸ See Jonathan M. Karpoff, D. Scott Lee & Gerald S. Martin, *The Consequences to Managers for Financial Misrepresentation*, 88 J. FIN. ECON. 193, 202-04 (2008) (finding increased managerial turnover among executives at firms that were investigated); Jonathan M. Karpoff, D. Scott Lee & Gerald S. Martin, *The Cost to Firms of Cooking the Books*, 43 J. FIN. & QUANTITATIVE ANALYSIS 581, 606 (2008) (finding that legal penalties are dwarfed by subsequent losses in share value and firm reputation following the penalty).

⁵⁹ Richard W. Fisher & Harvey Rosenblum, *How to Shrink the 'Too-Big-to-Fail' Banks*, WALL ST. J., Mar. 11, 2013, at A17. That is, jailing the senior manager or bringing a criminal action against the firm itself would negatively affect the too-big-to-fail financial firm and thereby negatively affect the American economy.

⁶⁰ See Susanne Craig & Jessica Silver-Greenberg, *Small Firm Could Turn the Vote on Dimon*, N.Y. TIMES, May 8, 2013, at B1.

The takeover would not be a 1980s offer to break up the target, but one to build a bigger firm. The recent history of Bank of America taking over Merrill Lynch and of JPMorgan taking over Bear Stearns is consistent.

VI. WHAT CAN BE DONE: COMMAND-AND-CONTROL VERSUS INCENTIVE-BASED POLICIES

To say that we have analyzed an underexamined cost of too-big-to-fail finance does not mean that we can remedy the problem. But the analysis throws new light on policymaking paths. First, it further justifies existing policy initiatives to end too-big-to-fail problems. Second, it shows how the financial industry's incentives to resist these initiatives might be changed. Third, it points to new initiatives to better stabilize finance. Fourth, it reveals the corporate governance consequences we should expect from successful regulation that diminishes the too-big-to-fail subsidy.

The broadest and most effective policy would be to deny the large financial firms too-big-to-fail status, by regulators either making them indestructible or making their failure tolerable. The too-big-to-fail subsidy would diminish, funding costs for big finance would stabilize at standalone market rates, and the incentives toward corporate structural degradation would decline. Regulators have been making such efforts, and these efforts continue.

Current banking regulation is one of the barriers to bank restructuring, and regulators could be more open to a change in control at a financial firm.⁶¹ That is, banking rules now require regulatory approval of a change in control of the bank,⁶² and many analysts see these regulations as the primary barrier to financial changes in control,⁶³ because regulators are wary of control changes that could introduce more risk into the firm (or because they tend to protect industry incumbents). A new controlling shareholder would typically become a regulated bank holding company, thereby affecting

⁶¹ Cf. Peter Wallison & Kenneth Scott, *Questions About Brown-Vitter* (Shadow Fin. Regulatory Comm. Statement No. 341, 2013), available at http://www.aei.org/files/2013/05/13/-statement-no-341-questions-about-brownvitter_12514055289.pdf (recommending enhanced segment reporting to facilitate buyouts of bank holding company divisions).

⁶² Bank Holding Company Act of 1956, 12 U.S.C. § 1841(g) (2012); Change in Bank Control Act, 12 U.S.C. § 1817(j) (2012) (requiring notice to regulators sixty days prior to a person or entity taking control of a depository institution); Regulation Y of the Board of Governors of the Federal Reserve System, 12 C.F.R. §§ 225.2(e), 225.31(d), 225.41(c) (2013) (requiring registration or notice upon change in "control").

⁶³ See ADMATI & HELLWIG, *supra* note 53; Amar Bhidé, *The Hidden Costs and Underpinnings of Debt Market Liquidity* (Columbia Univ. Ctr. on Capitalism and Soc'y, Working Paper No. 79, 2013), available at <http://ssrn.com/abstract=2206996>.

and restricting the activist's other permitted business lines. (One policy possibility to explore would be an interim exemption, during which the offeror downsized the bank.)

The analytic from this Article suggests why shareholders have not been pushing regulators to ease the regulatory barrier in the same way that they have pushed the Securities and Exchange Commission for similar kinds of shareholder influence in industrial firms.⁶⁴ Regulatory barriers aside, profit-oriented shareholders have not had much incentive to restructure and downsize the too-big-to-fail financial firm because doing so would lose the subsidy. Indeed, inviting shareholders to seek restructuring, without any other change to shareholders' distorted incentives in financial institutions, is decidedly not a solution—shareholders' incentives still do not match the public's in reducing corporate degradation and financial risk. Unless the shareholders' incentives change, shareholder-induced restructurings alone are no solution. Better policy initiatives are needed to align private incentives with public goals.

A. *Severe Command-and-Control: Mimicking the Takeover and
Breakup Market*

The corporate governance analytic here resonates with three policy efforts. Two are mainstays of regulatory thinking, one is not.

One obvious mainstay is for the government to break up the big banks—a favorite among severe antibank critics from the left and the right.⁶⁵ The government would complete the corporate restructuring in big finance that the poison pill quality of the subsidy impedes.

But a government breakup policy is unwise. The government is poorly suited to formulate and implement a breakup plan well. Years of litigation and politicking could cost more than the cure. And big finance is heterogeneous: Some firms will be obvious candidates for breakup (for example, separating Bank of America from Merrill Lynch, or Citigroup overall), in that they would never have arrived at, nor could they survive at, their scale

⁶⁴ See, e.g., Submission from the Council of Institutional Investors to the U.S. Sec. & Exch. Comm'n on SEC Release Nos. 33-9086, 34-61161 (Aug. 3, 2010) (SEC File No. S7-10-09).

⁶⁵ Compare William Greider, *Bank-Buster Brown*, NATION, April 1, 2013, at 8 (explaining that Senator Sherrod Brown seeks the breakup of the largest U.S. financial service companies), with Fisher & Rosenblum, *supra* note 59; Boyd & Heitz, *supra* note 33, at 1 (indicating that "the potential benefits to economies of scale are unlikely to ever exceed the potential costs due to increased risk of financial crisis"); and James Pethokoukis, *Too Big to Fail Is Too Good to Resist*, NAT'L REV. ONLINE (Mar. 25, 2013), <http://www.nationalreview.com/articles/343804/too-big-fail-too-good-resist-james-pethokoukis> (noting that the Senate voted 99-0 against "too-big-to-fail" subsidies).

and scope without the too-big-to-fail subsidy. But once decisions become more nuanced, the government will be ill-suited to reconstruct the financial industry because some too-big-to-fail financial firms may be efficiently sized and the government could not precisely sort out the efficient from the inefficient.

Moreover, the private value of the constituent firms when broken apart would be less than their value in the financial conglomerate with the subsidy. The government officials who engineered the breakup would have destroyed private value and would struggle to show why that loss of financial firm value was socially worthwhile. That the lost subsidy was not a loss to the economy would be hard to explain.

B. *Mainstream Command-and-Control: More Equity, Restricted Activities*

One prime policy response to the financial crisis from regulators and analysts has been to require increased bank equity.⁶⁶ American regulators are pushing up bank capital and lowering debt.⁶⁷ If the once-subsidized bank were made to have enough equity such that it could not fail, then the too-big-to-fail subsidy would be eliminated and normal corporate governance pressures and incentives would be back in play.

Activity restrictions have also long been a mainstay of financial regulation. Restricting the big banks' riskiest activities appropriately would lower their probability of failure and, hence, reduce the too-big-to-fail subsidy.

The analysis here suggests why such efforts are important. But it also suggests why they may not succeed: not only will regulators have to grapple with setting the optimal debt-equity ratio, but the incentives inside the firms will be to defeat, elude, and override the equity increases, to get too-big-to-fail subsidies back into the firm, and to find ways around limits to risky activities if the rules are promulgated despite the opposition. Financial firms reacted to the Brown-Vitter 15% capital proposal quickly and negatively.⁶⁸

⁶⁶ See, e.g., ADMATI & HELLWIG, *supra* note 53; Hal S. Scott, *The Reduction of Systemic Risk in the United States Financial System*, 33 HARV. J.L. & PUB. POL'Y 671, 679-85 (2010); Michael R. Crittenden & Victoria McGrane, *Fed Officials Back Higher Capital*, WALL ST. J., Apr. 18, 2013, at C3.

⁶⁷ See Michael R. Crittenden, *Plan Reins in Biggest Banks: Proposal Requiring Extra Capital Would Force Firms to Be More Conservative or Shrink*, WALL ST. J., July 10, 2013, at A1.

⁶⁸ See DAVIS POLK & WARDWELL LLP, BROWN-VITTER BILL: COMMENTARY AND ANALYSIS (2013), available at http://www.davispolk.com/sites/default/files/files/Publication/4664ec91-6233-48ed-8645-00db44eeb9fe/Preview/PublicationAttachment/b9d7cae5-07e9-4ccb-8884-011abbfob823/043013_Brown_Vitter_Commentary_Analysis.pdf (criticizing the bill); Terminating Bailouts for Taxpayer Fairness Act of 2013, S. 798, 111th Cong. (declaring that the purpose of the act is "[t]o address equity capital requirements for financial institutions"); Jesse Eisinger, *In Brown-Vitter Bill, a Bank Overhaul with Possible Teeth*, N.Y. TIMES, May 2, 2013, at B4.

And, when regulators announced tougher capital rules in July 2013, the media reported that the firms were already finding ways to avoid the rule's impact.⁶⁹ If regulators could simultaneously realign financial firms' incentives—not easy, to be sure—they might do better with the regulation now on the table.

C. *Aligning Incentives: Taxing Financial Firms' Debt*

Lastly, we briefly examine a new potential policy effort, one emanating from the incentive and corporate governance degradation thus far analyzed.

Consider how we now tax banks: the tax structure subsidizes bank debt and punishes bank equity. This can be changed.

First off, and conventionally, equity is taxed unfavorably compared to debt: interest on the firm's debt is deductible from the tax bill, but dividend payments and returns on equity generally are not.

Although this is standard knowledge applicable to both financial and industrial firms,⁷⁰ the distortive impact is greater for financial firms. Because financial firms are more heavily leveraged than industrial firms, their debt-to-equity taxation imbalance is more severe. Debt amounts to more than 90% of the average financial firm's capital structure, while it comes to less than 50% for nonfinancial firms. And the government subsidizes debt *twice* for financial firms: they first obtain the standard tax deduction for interest, which, given their leveraged capital structure, is very high; they are then subsidized again with the too-big-to-fail subsidy.

Notice the regulatory contradiction and the distorted incentives. Regulators properly instruct financial firms that they must hold more equity. Then the government taxes profits on that equity, but reduces those taxes if the financial firm pays a return to its funds providers in the form of interest, incentivizing the firm to do the opposite of the get-more-equity regulatory command. And finally, via the too-big-to-fail subsidy, we further facilitate financial firms to use more debt and less equity. These debt-based incentives give financial firms strong reason to defeat regulators' equity requirements in multiple forums: first in lobbying, then in transactional workarounds.

Current equity-increasing regulation may not work well if the twin debt subsidies stay in place. Equity regulation is a command-and-control effort

⁶⁹ See Tom Braithwaite, Tracy Alloway & Dan McCrum, *US Banks to Shuffle Assets over Leverage Rules*, FIN. TIMES, July 10, 2013 (noting evasion methods such as shuffling assets between subsidiaries).

⁷⁰ Franco Modigliani & Merton H. Miller, *Corporate Income Taxes and the Cost of Capital: A Correction*, 53 AM. ECON. REV. 433, 434 (1963); RICHARD A. BREALEY, STEWART C. MYERS & FRANKLIN ALLEN, *PRINCIPLES OF CORPORATE FINANCE* 472-90 (9th ed. 2007).

that runs into a wall of the financial firms' high incentives to defeat the regulation. To make it work, we should point regulatory and tax policy in the same direction: instead of taxing the corporate financial entity based on its profitability, which discourages it from using more equity, the government should tax the financial firm on its level of debt, which would instead encourage it to decrease debt and increase equity.⁷¹

If tax policy no longer subsidized debt and taxed equity, large financial firms would have more reason to adopt systemically sound capital structures and to incentivize executives accordingly, and they would do so even without being hounded by the regulators to increase their capital levels.

* * *

This tax change would not be problem-free. As with any tax, the parties will game it—some financial operations will move into the financial firm if taxed less there, and vice versa. Tax avoidance would arise. Debts would be hidden; characterization of transactions as debt would be contested.

But by raising the tax on debt levels, financial firms would find debt more costly than before. JPMorgan Chase, for example, most recently paid about \$6 billion in annual income tax on its approximately \$20 billion of profit.⁷² That tax made equity less attractive to JPMorgan, its shareholders, its board, and its senior executives. A reverse tax structure of taxing debt, not equity, would leave shareholders, boards, and senior managers with less reason to use so much debt. Incentives would work in tandem with command-and-control rules. Regulation by instruction should therefore be buttressed with regulation of incentives.

VII. THE STRUCTURAL OUTLOOK FOR BIG FINANCE WITHOUT A TOO-BIG-TO-FAIL SUBSIDY

A. *Reducing the Systemic Cost of Shareholder-Oriented Governance*

One might mistakenly think that the thesis here grates against important findings that shareholder-oriented corporate governance was detrimental to financial stability during the financial crisis. But it does not.

⁷¹ Hilary J. Allen, *Let's Talk About Tax: Fixing Bank Incentives to Sabotage Stability*, 18 FORDHAM J. CORP. & FIN. L. 821 (2013); Mark Roe & Michael Tröge, *How to Use a Bank Tax to Make the Financial System Safer*, FIN. TIMES, Mar. 25, 2014, at 9.

⁷² JPMorgan Chase & Co., Annual Report, *supra* note 5.

The basis for questioning the value of shareholder-oriented financial firm governance is straightforward: as long as there is a strong too-big-to-fail subsidy, shareholder interests will find it profitable to take heavy risk, because a significant fraction of the downside is borne by the government or by the overall economy, not by the firm and its shareholders. Financial firms that were more shareholder-oriented,⁷³ firms that had managers compensated more with equity than with debt-like obligations,⁷⁴ and banks in countries that favored shareholder governance all did worse in the financial crisis than their opposites.

All this is true. But these are reasons why the incentives-based corporate governance analytic is needed. Shareholder-oriented corporate governance today degrades financial firms because the too-big-to-fail subsidy distorts corporate governance incentives. If we reduced or eliminated that distortion, then shareholder corporate governance could work better than it does now. Today, shareholder-oriented American financial firms have strong private incentives to maintain thin equity layers that offload risk to the authorities and to the financial system. And, in doing so, the result is to build unwieldy, misshapen corporate structures. What we should want is to straighten out those incentives by taking away the too-big-to-fail subsidy, or—if we cannot eliminate the subsidy directly—to find a way to offset it, so that incentives inside the big firms change for the better.

B. *The Instability of the Too-Big-to-Fail Subsidy*

The size of a too-big-to-fail subsidy is constantly in flux. Regulation gets better or worse. Financial transactions change. The economy improves or degrades, making failure more or less likely. Bank defenders contend that the subsidy has disappeared—or at least is disappearing—or that the big increase in the too-big-to-fail subsidy detected during and after the financial crisis will subside as the economy stabilizes, as financiers learn from mistakes,

⁷³ See Andrea Beltratti & René M. Stulz, *The Credit Crisis Around the Globe: Why Did Some Banks Perform Better?* 105 J. FIN. ECON. 1 (2012); Daniel Ferreira, David Kershaw, Tom Kirchmaier & Edmund Schuster, *Shareholder Empowerment and Bank Bailouts* (ECGI Fin., Working Paper No. 345/2013, 2013), available at <http://ssrn.com/abstract=2170392> (explaining that insulation from shareholders correlated with better bank performance during the economic crisis); Christophe Moussu & Arthur Petit-Romec, *ROE in Banks: Myth and Reality* (May 2013) (unpublished manuscript), available at <http://ssrn.com/abstract=2374068> (discussing how bankers' return-on-equity correlated with the "excessive risk-taking" that had a role in the crisis).

⁷⁴ See Rüdiger Fahlenbrach & René M. Stulz, *Bank CEO Incentives and the Credit Crisis*, 99 J. FIN. ECON. 11 (2011) (exploring the connection between shareholder-focused CEO incentives and the credit crisis); Sugato Bhattacharyya & Amiyatosh K. Purnanandam, *Risk-Taking by Banks: What Did We Know and When Did We Know It?* (Nov. 18, 2011) (unpublished manuscript), available at <http://ssrn.com/abstract=1619472>.

and as regulators reconstruct the rules. This possibility of a declining subsidy leads to two reactions: one of cautious skepticism, which I outline next, and another of the transactional consequences, which are quite substantial, if and when the subsidy disappears.

First, some skepticism. Big picture pressures can too quickly induce a policy consensus that the too-big-to-fail problem has been resolved. The interests of the regulated in minimizing the too-big-to-fail problem are obvious and need not be detailed. And regulators also have reason to move on. They are working to implement new legislation, promulgate new regulation, or bring new vigor in applying longstanding principles. To acknowledge that the too-big-to-fail problem today is—six years after the start of the financial crisis—not yet substantially under control would be to admit that their actions were insufficient, poorly constructed, or poorly executed. Moreover, a regulatory system can only be on high alert for so long.⁷⁵

A strong economy makes financial failure less likely than a weak economy. Even if policies and firms' operational risks stay constant, too-big-to-fail benefits rise and fall with the economy because in a healthy economy, unlike in a weak economy, firms are less likely to fail. Policymakers and opinion-makers may readily confuse an improved economy—and it usually does improve after a crisis—for a permanent fix to, rather than a real but temporary respite from, the too-big-to-fail problem. The data suggest a big boost in the subsidy during the crisis,⁷⁶ which may be declining,⁷⁷ but the data also point to lower but longstanding, substantial subsidy levels outside of the crisis.⁷⁸

Pre-Dodd-Frank regulatory opinion shows how easy it is to consider the financial mission accomplished. Failures, like that of Continental Illinois and Long-Term Capital Management, induced regulators to reassess failure possibilities that had seemed remote and unlikely.⁷⁹ Reforms ensued. But

⁷⁵ Anjan V. Thakor, *The Financial Crisis of 2007–09: Why Did It Happen and What Did We Learn?* (Jan. 7, 2014) (unpublished manuscript), available at <http://ssrn.com/abstract=2372449>.

⁷⁶ See *infra* Table 1.

⁷⁷ MOODY'S CONCLUDES REVIEW, *supra* note 23. *But cf.* Peter Eavis, *Moody's Threatens to Cut Credit Ratings of Banks*, N.Y. TIMES, Aug. 23, 2013, at B3 ("Paul Volcker, a former chairman of the Federal Reserve, expressed skepticism about Dodd-Frank's wind-down approach. 'No one in the market believes it,' he said.")

⁷⁸ *Cf.* Jesse Hamilton, *Bernanke Says Too-Big-to-Fail Banks May Face New Capital Demands*, BLOOMBERG (July 18, 2013), <http://www.bloomberg.com/news/2013-07-18/bernanke-says-too-big-to-fail-banks-may-face-new-capital-demands.html>.

⁷⁹ PRESIDENT'S WORKING GRP. ON FIN. MKTS., HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT (Apr. 1999); Frederic S. Mishkin, *How Big a Problem Is Too Big to Fail?*, 44 J. ECON. LITERATURE 988, 991-92 (2006) (skeptically

consider this analytic, just before the financial crisis broke in 2007, from a former Federal Reserve Board governor in a prominent essay: “The evidence does not support a worsening of the too-big-to-fail problem . . . [but rather a] substantial improvement on this score.”⁸⁰ New legislation and better banking regulation had induced “a sea-change in the industry,” resulting in more bank capital and better bank risk management as the Basel Accords took effect.⁸¹ Moreover, market yields showed no excessively large too-big-to-fail bounce in long-term bank bonds, as there once had been,⁸² and relative yields between large (too-big-to-fail) banks and small banks narrowed or disappeared. This view was unexceptional at the time among the financial cognoscenti,⁸³ including regulators.⁸⁴ Yet it was a view expressed as late as 2006—just before the financial crisis and the failures of AIG, Bear Stearns, and Lehman Brothers.

* * *

Nonetheless, the too-big-to-fail feature of American finance is a variable, not a constant, with its likelihood and its extent rising and falling, expanding and contracting, from one geographic region and financial sector to another, and from small institutions to large ones and, perhaps, back again.

Thus, for those who are skeptical about the continuing importance of the too-big-to-fail subsidy after Dodd-Frank, this Article analyzes what the corporate governance of the big banks would have looked like if too-big-to-fail

reviewing GARY H. STERN & RON J. FELDMAN, *TOO BIG TO FAIL: THE HAZARDS OF BANK BAILOUTS* (2004).

⁸⁰ *Id.* at 996.

⁸¹ *Id.* at 997 (noting that by 2004, the largest banks more than doubled their capital ratios and maintained at least as much capital as smaller banks, possibly reflecting a perception that large banks were less likely to be bailed out). The 1998 Basel Accord standardized bank capital requirements internationally and has been praised for increasing focus on risk. *Id.* at 996.

⁸² *Id.* at 996-98 (noting that bond yields, which reflect a bank’s actual riskiness, and narrowing rate differences suggest that the too-big-to-fail problem “is not as bad as it once was”).

⁸³ A well-respected British banking regulator opined then that “reducing the possibility of the disruptive failure of a [large and complex financial institution] is a central preoccupation of public policy. The good news is that the likelihood of such an eventuality is remote.” Andrew Crockett, *Dealing with Stress at Large and Complex Financial Institutions*, in *SYSTEMIC FINANCIAL CRISES* 17, 18 (Douglas D. Evanoff & George G. Kaufman eds., 2005).

⁸⁴ Larry D. Wall, *Too Big to Fail After FDICIA*, *FED. RES. BANK ATLANTA ECON. REV.*, no. 1, 2010, at 1, 10 (“The net effect of FDICIA should be to reduce interbank risk substantially. The prompt corrective action provisions and the increase in market discipline . . . constrain bank risk taking . . . [T]hese factors should almost eliminate the risk that one bank’s failure would cause insolvency at other banks.” (emphasis added)).

had not been cured. For optimists, the analysis provides added reason to be thankful that the problem is under control.

C. *The Dealmaking Impact of Successful Regulation*

We have considered here the corporate governance impact of the too-big-to-fail subsidy in causing misshapen, too-large organizations that lack basic incentives to restructure. The subsidy acts like a traditional poison pill, deterring outsiders and insiders from improving the organization's structure. We have also seen that the too-big-to-fail subsidy has been large and increased sharply during the financial crisis.

Industry players have begun to proclaim that the regulators have already succeeded and, even if not, they will in due course. Some regulators are signing on. "Treasury Secretary Jack Lew is arguing that the battle against too-big-to-fail financial institutions is largely won."⁸⁵ The ratings agencies are also coming around to that view.⁸⁶ But the most recent academic and regulatory data, although showing soundness improving, indicate that too-big-to-fail is still real.⁸⁷ And the IMF's recent comprehensive measure of the too-big-to-fail subsidy in the United States concludes that the subsidy had narrowed from its financial crisis high, but was even in 2013 still at about 15 basis points for bank debt, making "the expected value of government guarantees

⁸⁵ Neil Irwin, *Did Dodd-Frank End Too Big to Fail?*, WASH. POST WONKBLOG (Dec. 6, 2013), <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/12/06/did-dodd-frank-end-too-big-to-fail-it-depends-what-you-mean-by-end/>; see also Michael R. Crittenden, *Treasury's Lew: Dodd-Frank Law Ended 'Too Big to Fail,'* WALL ST. J. (July 17, 2013), <http://online.wsj.com/article/BT-CO-20130717-705169.html>. For skepticism, see Jesse Eisinger, *Soothing Words on 'Too Big to Fail,' but with Little Meaning*, N.Y. TIMES, Dec. 12, 2013, at B5; and Simon Johnson, *Celebrations of Too Big to Fail's Demise Are Premature*, BLOOMBERG (Dec. 8, 2013), <http://www.bloomberg.com/news/print/2013-12-08/celebrations-of-too-big-to-fail-s-demise-are-premature.html>. For regulatory skepticism, see the FDIC's vice chair's view: "Hoenig said the authority . . . in the Dodd-Frank Act to dismantle a large bank may be effective only in an 'idiosyncratic' situation and not a wider breakdown. In the latter case, lawmakers may be pressured to weigh a bailout . . ." Jesse Hamilton, *FDIC's Hoenig Says Another Crisis May Resurrect Bailout Specter*, BLOOMBERG (June 26, 2013), <http://www.bloomberg.com/news/2013-06-26/fdic-s-hoenig-says-another-crisis-may-resurrect-bailout-specter.html>.

⁸⁶ See Eavis, *supra* note 77 (stating that there is a belief "that the government is now more likely to let large banks fail in a crisis").

⁸⁷ See Alexander Schäfer, Isabel Schnabel & Beatrice Weder di Mauro, *Financial Sector Reform After the Crisis: Has Anything Happened?* (CEPR, Discussion Paper Series No. 9502, May 24, 2013), available at <http://ssrn.com/abstract=2274044>, whose event studies around the time the Volcker Rule (which limited bank derivatives trading) moved forward showed lowered expectations of a bailout. But, they say, one can "compare our [new] results [with prior results, including] Ueda and Weder di Mauro[, *supra* note 31, which concluded] the value of the subsidy as of 2009 was as much as 60 to 80 basis points funding costs differential. Measured against this benchmark, we would conclude that none of the national reforms has been enough to fully eliminate the distortion." *Id.* at 23.

for a distressed [major bank somewhat] higher than [our estimate of] its precrisis level.”⁸⁸ Optimists figuratively draw a trend-line—the too-big-to-fail problem is diminishing and will be fully under control soon. The pessimists (realists?) see the current improvements as likely to be the postcrisis high-water mark, with safety degradation likely to begin as the crisis-induced alert mind-set becomes less intense.

But what are the structural implications if the optimists and industry defenders are right?

If the too-big-to-fail subsidy disappears, then corporate restructurings in big finance that were once not viable should become profitable. Pressures to reverse the increase in the biggest financial firms’ size should rise.

Misshapen financial firms’ distortions will become more obvious, and their costs will no longer be largely or fully offset by the subsidy. As that happens, internal incentives of boards and senior managers will change, and activists would be able to enter the arena to push to restructure the distorted financial firms.⁸⁹ If the too-big-to-fail subsidy is seen to have sharply declined, we should see more divestitures and breakups.

While the financial industry and some regulators are increasingly happy to announce that the too-big-to-fail problem has been beaten—just as several had announced before the financial crisis—the dealmaking, activist environment is not yet consistent. Although some restructuring has occurred,⁹⁰ the mega-banks have not yet been heavily involved, and even shareholder activism is minor: “Although the 2012 and 2013 proxy seasons saw increased . . . shareholder activism across a range of industries, that trend has not yet made its way to the U.S. banking industry.”⁹¹ If the too-big-to-fail subsidy is gone—or if it goes soon—the dealmaking environment in the financial sector should change.

⁸⁸ Int’l Monetary Fund, *supra* note 32, at 104, 114.

⁸⁹ Large financial firms do sometimes divest. *See, e.g.*, Peter Lattman, *JPMorgan to Spin Out Its Private Equity Unit*, N.Y. TIMES DEALBOOK (June 14, 2013), <http://dealbook.nytimes.com/2013/06/14/jpmorgan-to-spin-out-its-private-equity-unit>; Steven Marlin, *Citigroup Sells Travelers Unit to MetLife for \$11.5 Billion*, BANK SYSTEMS & TECH. (Jan. 31, 2005), <http://www.banktech.com/citigroup-sells-travelers-unit-to-metlif/59300242>.

⁹⁰ *See, e.g.*, Robert Barba, *Divestitures on Rise in M&A as Banks Decide Less Is More*, AM. BANKER (Sept. 23, 2013), http://www.americanbanker.com/issues/178_184/divestitures-on-rise-in-m-and-a-as-banks-decide-less-is-more-1062352-1.html; Lattman, *supra* note 89; Marlin, *supra* note 89.

⁹¹ William Sweet, *Shareholder Activism in the US Banking Industry*, HARVARD L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Dec. 3, 2013), <https://blogs.law.harvard.edu/corpgov/2013/12/03/shareholder-activism-in-the-us-banking-industry>.

CONCLUSION

JPMorgan Chase's \$6 billion trading loss highlighted organizational fragility at the country's too-big-to-fail banks and helped us understand corporate governance degradation in big finance.

Defenders of the bank, its CEO, and its senior managers saw JPMorgan's loss as massive and regrettable, but well within the bank's earnings, its huge equity capital, and its more-than-trillion-dollar asset base. Hence, the problem, they claimed, was one for the bank's shareholders, its managers, and its board—not one for extended regulatory concern. Public funds were never at risk.

But the proper analysis of JPMorgan's London Whale trades differs. Shareholder-based corporate governance will not work when there is a large too-big-to-fail subsidy. Shareholder activists who would break up a less-than-well-run bank, or divisional heads who would seek to buy out an orphaned division, would find themselves handicapped in the breakup or buyout. Not only would they have to make the efficiencies and restructuring work—which is hard enough—but they would lose the too-big-to-fail subsidy. The broken-up or spun-off entity would no longer be too-big-to-fail and its cost of funding would rise. Activist shareholders would have to overcome a high hurdle, one akin to a corporate transactor's poison pill.

Firms grow too large for multiple reasons. Managerial error in projecting economies of scale that turn out to be evanescent is one of the most benign. Random variation is another. Managerial empire-building is also common, and a third. The push from the too-big-to-fail subsidy is a powerful fourth. Whatever the reason for the excessive growth, normal corporate structural pushback is absent or degraded in the too-big-to-fail financial firm. Boards that might second-guess expansion have less reason to doubt its profitability when that expansion is financed with the boost from a too-big-to-fail subsidy. They need not even be aware of the subsidy; they only need to notice its effects—that funding costs are lower—and attribute their good fortune to their own perspicacity.

Measures of the too-big-to-fail subsidy are typically cast as discounts on the banks' borrowing rate, with the discount less than 1% per annum. This number may seem small. But that small number can amount to a noticeable fraction of shareholder profits—about one-third in multiple postcrisis studies. That is not a small number. Losing one-third of the profit of the financial firm would be a serious setback. Since the sharpest tools for corporate governance must cut through this large profit loss before reaching corporate operations, the sharpest tools for corporate governance are blunted or broken in the large, too-big-to-fail financial firm.

This destruction of the sharpest tools of corporate governance burdens the economy, revealing a major cost of too-big-to-fail banking: the degradation of financial firm efficiency even without an actual bailout. The core financial firms are run less well due to the subsidy and are more likely to fail.

The analytics here are an added rationale for the current regulatory efforts to increase bank capital, restrict risky activities, and make financial firm failure possible. The analytics also point to how to make the current regulatory forays more effective. Instead of relying overwhelmingly on command-and-control regulation that financial firms have large incentives to resist, reverse, and sidestep, policymakers should now also focus on the internal corporate governance organizational incentives. They can, and they should, make the financial firm's debt more expensive for its managers, board, and shareholders, while making equity less expensive. Command-and-control orders to increase financial capital and reduce risky activities are properly the first regulatory responses, but regulatory styles have diminishing marginal returns just like other economic activities. The corporate governance analysis here shows how and why another policy channel based on organizational incentives could be opened. It is not on the current policy agenda, but it needs to get there.

Regardless of whether we can cure the problem, I have analyzed here in depth how the too-big-to-fail subsidy degrades the standard, core corporate structural tools—from the sharpest tool of the takeover, to the incentives for spinoffs, to the incentives for well-directed shareholder structural initiatives. The corporate governance tools that help to right-size, stabilize, and make efficient industrial firms, crude and imperfect though they might be, all weaken or disappear in large-scale American finance.

APPENDIX

Table 1: Too-Big-to-Fail Capital Cost Saving Changes During the Financial Crisis, Recalibrated as a Portion of Profits

Study	Implied Equity Subsidy	Baseline Result	Sample	Baseline Data	Postcrisis Period	Pre-crisis Period
Dean Baker & Travis McArthur, The Value of the "Too Big to Fail" Big Bank Subsidy	26%	9 to 49 bps increase in funding costs	Institutions with greater than \$100 billion in assets in March 2009	Average quarterly cost of funds	Q4, 2008 to Q2, 2009	High case: Q1, 2001 to Q4, 2007; Low case: Q4, 2001 to Q2, 2002
Kenichi Ueda & Beatrice Weder di Mauro, Quantifying Structural Subsidy Values for Systemically Important Financial Institutions	18%	20 bps increase from end of 2007 to end of 2009	All banks with Fitch support ratings (including international)	Ratings support	End of 2009	End of 2007
Frederic A. Schweikhard & Zoe Tsemelidakis, The Impact of Government Interventions on CDS and Equity Markets	53%	60 bps increase in abnormal CDS spread	Financial institutions with CDS	Credit default swap (CDS) data	2007 to 2010	Pre-crisis
Zan Li, Shisheng Qu & Jing Zhang, Quantifying the Value of Implicit Government Guarantees for Large Financial Institutions (Moody's Report)	29%	33 bps increase in difference between CDS spreads of large and small banks	Top 20 banks by assets in 2007, compared to small banks	CDS and Moody's Expected Default Frequency / fair-value CDS spreads	Postcrisis	2001 to 2010
Viral V. Acharya, Deniz Anginer & A. Joseph Warburton, The End of Market Discipline? Investor Expectations of Implicit State Guarantees	41%	56 bps increase in funding cost advantage	Top 10% (by size) of SIC codes of 60-64 with U.S.-issued bonds	Bond pricing data from three separate databases	1990 to 2010	2007 to 2009
Average Range Change	33.3%					

In Table 1, we take the measured funding benefit increase from before to after the financial crisis in each study and convert that benefit to a percentage of profits for Baker & McArthur's sample of 18 large financial institutions. (Citations to Baker & McArthur and the other cited items can be found in Section III.B's footnotes.) So as not to rely on the results of any single, potentially atypical, year, profits for 2006, 2009, and 2012 are used. The calculations assume the 18 institutions to have a capital structure that has 10% equity and 90% debt. For calculating the extent of the subsidy to debt, we reduced this first debt number by the approximate level of insured deposits in the large bank liability structure (about 25%). The result both overestimates and underestimates the subsidy. It overestimates it because we apply it to all debt of the entity, not just the debt whose subsidy effect is being measured. (Not all debt may be perceived as equally likely to be government-protected as the debt studied.) The result also underestimates the subsidy, because the too-big-to-fail subsidy will boost off-balance sheet items and trading activity that do not appear on the financial institutions' balance sheets. We use bank holding company assets, liabilities, and profits for uniformity and availability.

Different averaging measures will lead to different results: (1) one can average the equity subsidy for each bank, which gives great weight in the overall average to a bank with small profits in one year, because the equity subsidy can amount to several multiples of low profits; (2) one can sum the profits for the 18 institutions in a particular year and divide this by the total equity subsidy for all 18 banks in that year, thereby reducing the potential for one low-profit institution to skew the results upward (and thereby can include banks with losses, while method (1) cannot meaningfully include observations of banks with losses); (3) one can check that the results are similar for the six largest financial institutions that usually are viewed as too-big-to-fail; and (4) one can use methods (1)–(3), but with a different year's profits. The table presents method (2), using 2006, 2009, and 2012 profit levels. In the unpublished appendix, we calculated the results for methods (1), (3), and (4) (using 2012 profits). The results were approximately the same size.

Table 2: Measured levels of too-big-to-fail funding cost savings recalibrated as a portion of profits

Study	Implied Equity Subsidy	Baseline Result	Sample	Baseline Data	Time Period
Dean Baker & Travis McArthur, The Value of the "Too Big to Fail" Big Bank Subsidy	75%	78 bps difference in funding costs between small and large banks	Institutions with greater than \$100 billion in assets, compared to those with less	Average quarterly cost of funds, provided by the FDIC	Q4, 2008 to Q2, 2009
Kenichi Ueda & Beatrice Weder di Mauro, Quantifying Structural Subsidy Values for Systemically Important Financial Institutions	77%	80 bps postcrisis funding advantage for large banks	All banks with Fitch support ratings (including international)	Credit ratings (overall, and with and without support from government of parent banks)	End of 2009
Viral V. Acharya, Deniz Anginer & A. Joseph Warburton, The End of Market Discipline? Investor Expectations of Implicit State Guarantees	23%	Funding advantage averages 28 bps, peaking at 120 bps in 2009	Top 10% (by size) of SIC codes of 60-64 with U.S.-issued bonds	Bond pricing data from three separate databases	1990 to 2010
Priyank Gandhi & Hanno Lustig, Size Anomalies in U.S. Bank Stock Returns	37%	Subsidy for large banks averaging 3.1% of market capitalization	U.S. incorporated commercial banks, nondepository credit institutions, and investment banks	Differences in risk-adjusted returns in bank stocks	1970 to 2009
Elijah Brewer III & Jalupa Jagtiani, How Much Did Banks Pay to Become Too-Big-to-Fail and to Become Systemically Important?	36%	36% premium on acquisitions by acquiring firms	8 merger deals that brought organizations to over \$100 billion in assets	Premerger prices and purchase prices, and asset sizes of target and acquiring firms	1991 to 2004

Stefan Jacewitz & Jonathan Pogach, Deposit Rate Advantages at the Largest Banks	38%	39 bps lower risk premium paid by larger banks	Largest U.S. banks (\$100 billion in assets) compared to all other banks	Deposit rates offered at the branch level	Q1, 2005 to Q3, 2010
João Santos, Evidence from the Bond Market on Banks' "Too-Big-to-Fail" Subsidy	40%	41 bps average funding advantage over bonds of all types	U.S. banks, nonbanks, and nonfinancial corporations	Bond pricing between large and small banks, compared to nonbanks and nonfinancial corporations	1985 to 2009
International Monetary Fund's 2014 Global Financial Stability Report	14%	15 bps postcrisis funding advantage for largest U.S. banks	U.S. systemically important banks as defined by the Financial Stability Board	(1) Difference between fair value and observed CDS spreads, and (2) estimated rating uplift from government	2013
Average	43%				

In Table 2, we take the measured funding benefit in each study and convert that funding benefit to a percentage of profits. We used the same method as for Table 1, aggregating studies that estimated the pre- to postcrisis increase in the too-big-to-fail funding subsidy.