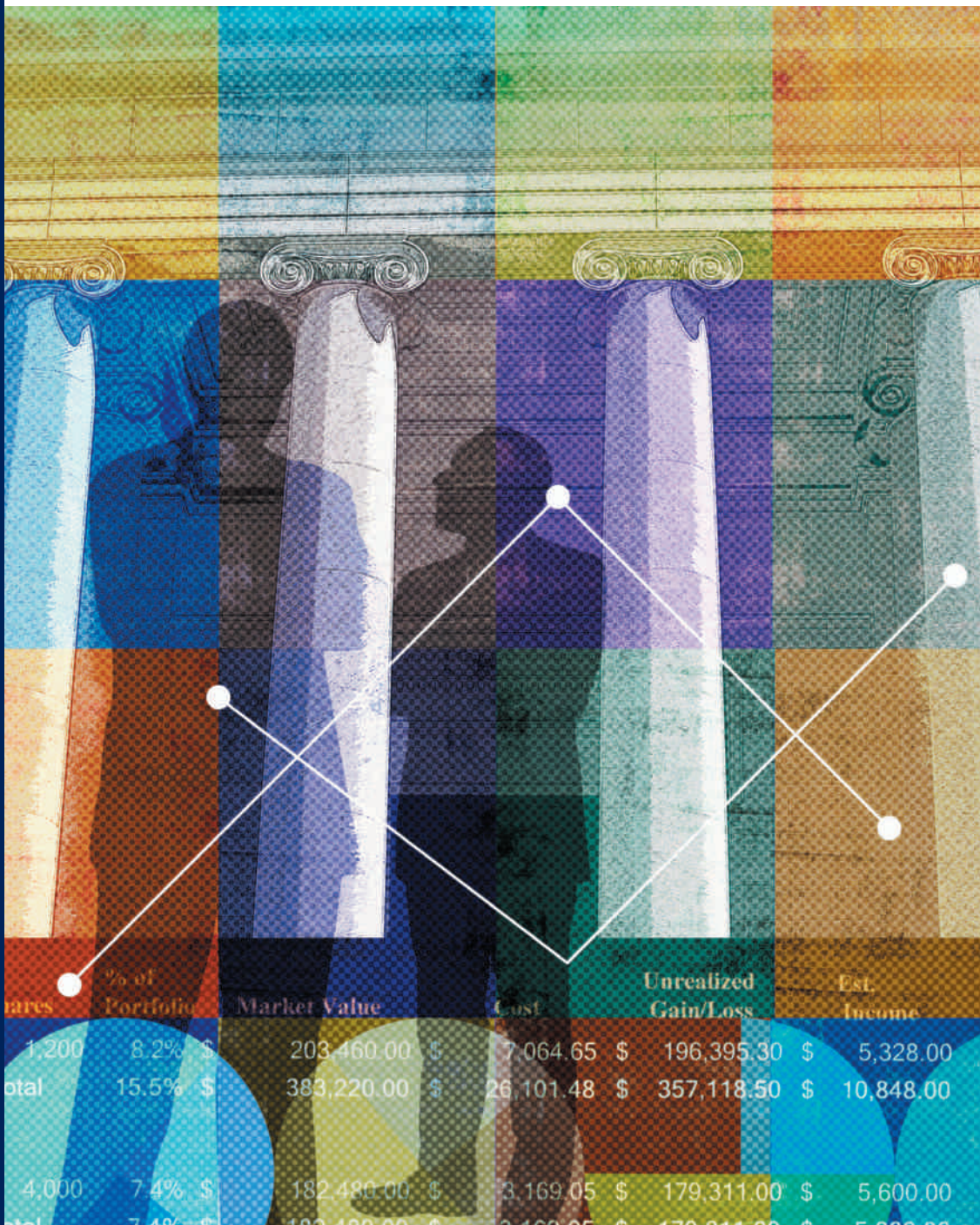
QUXIAN ZHANG

Financing and Regulatory Frictions in Mergers and Acquisitions



Financing and Regulatory Frictions in Mergers and Acquisitions

Financing and Regulatory Frictions in Mergers and Acquisitions

Fricties in Financiering en Regelgeving bij Fusies en Overnames

Thesis

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For my mother

Acknowledgments

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Eden Zhang
张曲弦
Melbourne
August 2017

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Chapter 1

Introduction

1.1 Research Questions

The research agenda involves examining how financing frictions and regulatory frictions impact investment decisions, specifically in areas of mergers and acquisitions (M&As). M&As are the most economically important and notable corporate investment. This thesis looks into the interplay of M&A activities, bankruptcy costs, and the regulatory/political environment. Specifically, it addresses three research questions: (i) why financially distressed firms are acquisitive; (ii) how political connections of bidders affect the acquisition process of failed banks; and (iii) how political connections of non-financial acquirers influence the outcomes of acquisitions.

1.2 Outline of the Thesis

Chapter 2 of this thesis examines how firms make investment decisions, acquisitions versus internal investment, amid financial distress. Distressed firms have been involved in an economically significant amount of total M&A transaction volume in the light of covenant-lite debt and low interest rates. This chapter examines whether and why financial distress drives firms to make acquisitions. On the one hand, diversification benefits in acquisitions are particularly valuable for firms in financial distress (*diversification hypothesis*). On the other hand, economic distress justifies acquisition decisions by firms that have exhausted internal growth opportunities to capture external growth opportunities and revive growth via acquisitions (*growth opportunity hypothesis*). It is difficult to empirically distinguish financial distress from economic distress. Exploiting a novel natural experiment setting, the analysis identifies a causal link between financial distress and acquisition activities. While conventional wisdom implies that relief from financial distress boosts corporate in-

vestment, including acquisitions, distressed firms surprisingly reduce cash spending when faced an exogenous reduction in the probability of bankruptcy. Consistently, the evidence based on bank loans show distressed firms get more focused with a shift in use-of-funds from external acquisitions to inward investment. Overall, the evidence strongly supports the diversification hypothesis that financial distress can motivate firms to diversify financial risk via acquisitions.

The third chapter focuses on the political economy of acquisitions of distressed banks during the recent financial crisis. Unlike in corporate bankruptcy, where the creditors take full control of default firms, the Federal Deposit Insurance Corporation (FDIC) is the sole controller of the bank resolution process and has discretionary power to relocate failed bank assets to certain acquiring banks. Based on hand-collected bidding information of 430 private auctions held by the FDIC for the sale of distressed banks, this chapter presents an interesting finding that lobbying banks are significantly more likely to win the auctions. The chapter further tests whether the underlying mechanism is regulatory capture whereby the FDIC sells failed banks to lobbying banks, which results in additional costs to public deposit insurance funds, or the information channel whereby lobbying mitigates information asymmetry between regulators and bidding banks and reduces resolution costs. In general, the empirical evidence is more in line with the regulatory capture hypothesis.

The fourth chapter looks into how regulatory frictions impact general M&A activities. By documenting in detail the U.S. antitrust review process for mergers and acquisitions, this chapter reveals that regulatory uncertainty is a significant source of deal completion risk and significantly affects shareholder wealth of both bidding firms and target firms. There is a positive link between corporate lobbying efforts and deal outcomes, which highlights the role of political connections in corporate investment. The evidence suggests that firms mitigate regulatory frictions in investment activities through lobbying efforts. The results highlight the investment channel through which political connections add to firm value.

1.3 Declaration of Contribution

Chapter 2 is based on a single-authored paper, Zhang (2017), "Why do distressed firms acquire?" (available at https://ssrn.com/abstract=2786721). I completed the paper independently, including research question formulation, data collection, empirical analysis, and writing.

Chapter 3 is based on a co-authored paper by Igan, Lambert, Wagner, and Zhang (2017), "Winning Connections? Resolution of Failed Banks and Lobbying" (available at https://ssrn.com/abstract=2980742). I actively participated in research question formulation and research design, independently collected data, and performed all empirical analysis.

Chapter 4 is based on a co-authored paper by Fidrmuc, Roosenboom, and Zhang (2017), "Lobbying in mergers and acquisitions" (available at https://ssrn.com/abstract=2484669). I formulated the research question, designed empirical analysis, independently collected data, performed all empirical analysis, and actively participated in writing.

Chapter 2

Why Do Distressed Firms Acquire?*

2.1 Introduction

In contrast to the intuition that financial distress inhibits mergers and acquisitions (M&As), distressed firms contribute an economically significant proportion of aggregate takeover activities. Between 2010 and 2014, large U.S. public firms earned over $1.4 trillion in the total value of acquisitions from distressed firms, over 18% of which came from distressed firms.[1] The market capitalization of these distressed firms only amounted to 9% of the aggregate market capitalization. The question of why distressed firms acquire so much is intriguing. While distressed acquirers may be able to revive growth via external investment, acquired assets tend to be complementary to their core businesses, which suggests that diversification through M&As could play a role. One recent acquisition that involved a deeply distressed firm making a diversifying acquisition was SoftBank's acquisition of ARM Holdings. In July 2016, SoftBank, a multinational telecommunications and Internet service company with approximately $200 billion in total assets but only $20 billion in equity, announced

*This chapter is based on Zhang (2017), "Why do distressed firms acquire?" (available at https://ssrn.com/abstract=2786721). I am grateful to Nihat Aktas, Aurore Burietz, Sudipto Dasgupta, Eric de Bodt, Abe de Jong, Thomas Lambert, Meziane Lasfer, Hang Li, Qinghao Mao, David Mauer, Xiaoran Ni, Buhui Qiu, Anjana Rajamani, Peter Roosenboom, Frederik Schlingemann, Peter Swan, Wolf Wagner, Teng Wang, David Yermack, participants at seminars at Aarhus University, BI Norwegian Business School, Erasmus University, Glasgow University, SKEMA Paris, Tinbergen Institute, University of Lille 2, University of Southern Denmark, Vrije Universiteit Amsterdam, WU Vienna University of Economics and Business, and participants at 2016 Australasian Finance and Banking Conference, 2016 Corporate Finance Day (Antwerp), 2016 EUROFIDAI Paris December Finance Meeting, and 2017 EFA Annual Meeting (Mannheim) for valuable suggestions and comments. All errors are mine.

[1] I aggregate the deal value for acquisitions announced between 2010 and 2014 covered by SDC Platinum. I require that the shares acquired or sought in the acquisitions are above 50% and the acquirers are non-financial and non-utility firms in Compustat/CRSP with total assets over $100 million and non-missing estimated Merton's distance-to-default. Firms with distance-to-default in the bottom tercile are highly distressed. In total, these distressed firms made acquisitions worth $252 million.

an all-cash acquisition of the British chip design company, ARM Holdings.[2] This $32 billion deal was the largest acquisition ever in Asia and Europe, and received worldwide attention due to SoftBank's poor financial status and the fact that the company was new to the semiconductor industry. Nevertheless, SoftBank conducted asset sales and arranged a $10 billion syndicated loan to finance the acquisition. SoftBank's CEO regarded the acquisition as a "paradigm shift", while the 11% drop in stock price suggested that the company's investors did not agree.[3] Such anecdotal evidence motivates us to further investigate the acquisitions made by distressed firms. This study focuses on what drives distressed firms to engage in such acquisitions.

Previous literature has offered various theories and evidence on acquisitions *of* distressed assets,[4] while the research on acquisitions *by* distressed firms is scant. Depending on the nature of the distress, firms may benefit from acquisitions in different ways. On the one hand, prior research has suggested that acquisitions may have diversification benefits for financially distressed firms (*diversification hypothesis*). For example, diversifying acquisitions smooth cash flows(Levy and Sarnat, 1970, Billett et al., 2004, Duchin, 2010) and consequently result in a decrease in asset volatility and bankruptcy risk (Lewellen, 1971, Rubinstein, 1973, Higgins and Schall, 1975). Moreover, diversifying acquisitions can increase the optimal leverage ratio (Leland, 2007) and allow distressed firms to finance positive NPV projects that they are unable to finance as stand-alones in the presence of agency costs (Fluck and Lynch, 1999). Such diversification benefits of acquisitions are valuable for distressed firms (Hubbard and Palia, 2002).[5] The empirical evidence in line with such a rationale shows

[2]The numbers are from SoftBank's 2015 annual report. At the end of the 2015 fiscal year, SoftBank had total assets of 21.03 trillion yen and a book equity of 2.6 trillion yen.

[3]SoftBank was in apparent financial distress, with an Altman's Z-score of less than 1.2 and a recent credit rating downgrade from BBB to a non-investment grade BB+. When SoftBank conducted a series of high-profile asset sales prior to the announcement of the deal, investors speculated that SoftBank would use the $20 billion proceeds to bolster its financial status or increase the stake in one of its existing investments. There was speculation that SoftBank would use the proceeds from selling its most valuable assets—Alibaba shares—to purchase more shares of Yahoo Japan. See https://www.bloomberg.com/news/articles/2016-06-02/softbank-s-proceeds-from-alibaba-stake-to-reach-8-9-billion. For more details, see the news coverage on the deal (http://www.wsj.com/articles/softbank-agrees-to-buy-arm-holdings-for-more-than-32-billion-1468808434), and SoftBank's press release (http://www.softbank.jp/en/corp/news/press/sb/2016/20160906_01/).

[4]Studies on acquiring distressed assets includes Hotchkiss and Mooradian (1998), Rhodes-Kropf and Viswanathan (2002), Clark and Ofek (1994), Meier and Servaes (2015), Billett et al. (2004), among others.

[5]Diversifying acquisitions can increase debt capacity and reduce the probability of default (Le-

that underperforming acquirers are more likely to acquire an unrelated target rather than a same-industry target (Gormley and Matsa, 2011, Bruyland et al., 2016, Park, 2003). However, no empirical evidence exists that diversification of financial risk drives distressed firms to acquire. On the other hand, firms make acquisitions when they have exhausted their internal growth opportunities (*growth opportunity hypothesis*). The management literature describes acquisition activities in distress as a type of "turnaround" strategy.[6] Such arguments are especially relevant to economically distressed firms. Financial research also shows that a lack of investment opportunities within firms are correlated with acquisitions (McCardle and Viswanathan, 1994; and Moeller et al., 2004); however, empirical evidence is inconclusive on whether capturing growth opportunities drives acquisitions in financial distress.[7]

There are two major challenges thus far in testing these two hypotheses empirically. First, it is difficult to isolate financially distressed firms from economically distressed firms. A large fraction of firms exhibiting financial distress are also economically distressed (Andrade and Kaplan, 2002). The two types of distress may exacerbate each other, adding to the difficulties in identifying the potential benefits of acquisitions for distressed firms. Second, firms may become distressed due to a series of reckless acquisition activities (reverse causality). Since acquisitions are large investments, acquiring firms normally take on additional debt to finance the cash payment of acquisitions. Higher leverage ratios are more likely to max out firms' debt capacity and induce financial distress.

Dealing with the empirical difficulties in a natural experiment setting, this study analyzes the patterns of acquisitions by distressed firms and investigates whether financial risk drives distressed firms to acquire. The identification strategy is to evaluate the change in acquisition activities versus internal capital expenditures for

land, 2007, Lewellen, 1971). Thus, the increase in leverage ratio due to debt financing for acquisitions does not necessarily add to the default risk. In contrast, if a firm uses riskless assets (e.g. cash) to pay down its debt, the leverage ratio decreases while the asset volatility increases (Duchin, 2010). As debt repayment using cash may not decrease default risk, the net benefits of spending cash on acquisitions may outweigh those of paying down debt.

[6]See Iyer and Miller (2008), Pearce and Robbins (1993), Schwartz (1984), Trahms et al. (2013), and Grinyer et al. (1990).

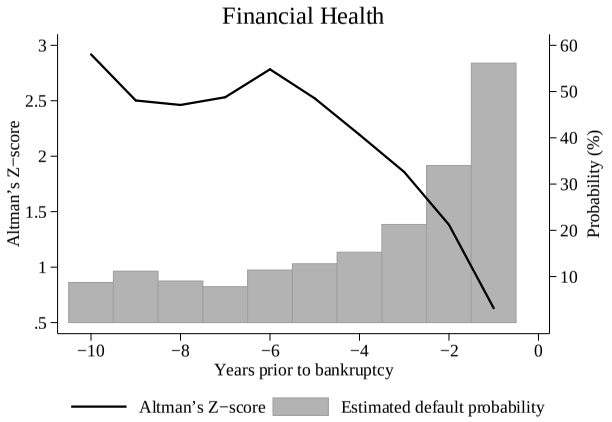
[7]See Trahms et al. (2013) for a review of management and organizational research on turnaround strategies and diversifying acquisitions.

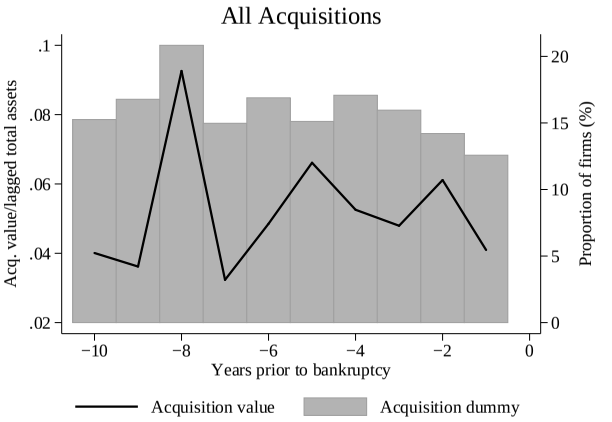
distressed firms upon an exogenous reduction in bankruptcy risk. In 2012, the IRS substantially changed the tax treatment for creditors during debt restructuring. This debt restructuring change (hereafter DRC) reduces restructuring costs for syndicated loans and increases creditors' willingness to renegotiate. Campello et al. (2016) find that the DRC reduces distressed firms' bankruptcy probability of distressed firms with a high pre-existing syndicated-loan ratio by 13% and improves access to syndicated loan credit for all distressed firms.[8] Since the change in tax treatment applies only to creditors and does not impact firms' growth opportunity sets, it serves as a clean shock to borrowers' bankruptcy risk. I use this natural experiment to identify the causal link between financial risk and corporate investment—and in particular, acquisitions. The diversification hypothesis suggests that firms decrease acquisition activities upon an exogenous reduction in bankruptcy probability due to the drop in the value of diversification. Although the shock does not affect firms' growth opportunity sets, it does improve their access to credit and financial health. The growth opportunity hypothesis implies that distressed firms remain the same, or may even increase acquisition activities due to improved access to credit and debt capacity.

In this paper, I first explore acquisition intensities for bankrupt firms in the years prior to their Chapter 11 filings. Surprisingly, firms do not exhibit a monotonically decreasing pattern in acquisition activities as they approach bankruptcy. On average, the value of acquisitions made by distressed firms is about 5% of their total assets. This ratio stays relatively constant from the sixth year to the third year before filing for bankruptcy—even increasing two years before bankruptcy. The value of diversifying acquisitions exhibits an increasing pattern, growing from 2.5% to 3.5% of total assets, as distressed firms move closer to bankruptcy. The evidence does not support the traditional view that financial distress inhibits firms from engaging in acquisitions; rather, it confirms the observation based on anecdotal evidence that distressed firms frequently engage in takeover activities.

Next, I investigate whether bankruptcy risk drives acquisitions in distress. The primary challenge to examine the motivation for distressed firms' acquisitions is the

[8]See Section 2.2 of this paper and Campello et al. (2016).





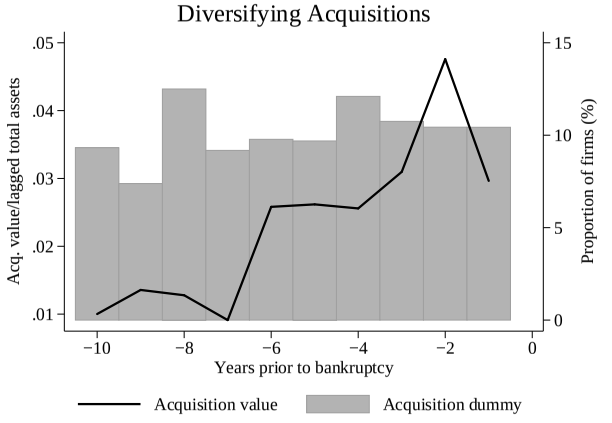


Figure 2.1. Acquisitions before bankruptcy.

This figure presents acquisition spending and financial health of distressed firms during the years before bankruptcy. The bankruptcy sample covers all Chapter 11 bankruptcy of non-financial and non-utility Compustat firms with total assets over $100 million (in 1990 dollars). Bankruptcy cases of firms that have emerged from a previous bankruptcy are excluded. Year -1 is the fiscal year in which the firm filed its last 10-K before its Chapter 11 filing. *Estimated default probability* is based on estimated distance-to-default. *Acquisition value* is the total deal value of all completed deals announced by during the year, standardized by total assets at the beginning of the year. Acquisitions are with shares acquired over 50% and deal value over 1% of start-of-period total assets. Diversifying acquisitions are deals in which acquirers and targets do not share the same three-digit primary SIC code. *Acquisition value* is an indicator that takes the value of one if a firm announces at least one qualifying acquisition during the fiscal year. All variables are winsorized at the 1-99% levels. (Data source: UCLA-LoPucki Bankruptcy Research Database, Compustat, and SDC)

possibility of limited growth opportunities within such firms, as well as demands to diversify bankruptcy risk. I employ a triple-difference (difference-in-difference-in-difference) approach using the DRC as an exogenous 13% reduction in the probability of bankruptcy for distressed firms with a high syndicated-loan ratio in the balanced sheets. A reduction of bankruptcy risk results in a drop of 41%, or two percentage points relative to total assets, in cash expenditure on acquisitions for distressed firms upon the shock. I consistently observe a similar drop in actual acquisitions announced around the shock by 40% (2.4 percentage points), of which the major part is due to the significant drop in diversifying acquisitions by 63% (2 percentage points). Focusing on the 12-month periods around the DRC, I show that the reduction in diversifying acquisitions is even larger, 2.6 percentage points of total assets, or 81% to the pre-DRC average. Also, distressed firms borrow significantly less for acquisitions because of the reduction in bankruptcy risk. Newly obtained credit for acquisition-related purposes for distressed firms with a high syndicated-loan ratio decreases by two percentage points of total assets, similar to the changes in cash expenditure on acquisitions and announced acquisition value.

Finally, I explore the effects of acquisitions on distressed firms' financial health. Monthly estimations of asset volatility and estimated default probability of distressed acquirers around acquisition announcements suggest that diversifying acquisitions indeed attenuate firm risk and provide financial benefits compared with horizontal acquisitions. Asset volatility tends to drop after distressed firms announce a diversifying acquisition. Consequently, such diversification benefits slow the deterioration of distressed firms' financial health. Moreover, I find that, together with the reduction in acquisition activities, the treatment group increases future firm risk, proxied by option-implied volatility. These additional results are again in line with the diversification hypothesis, rather than the risk-shifting hypothesis, which posits that distressed firms acquire unrelated targets as a gambling investment strategy to take excessive risk at the cost of debt holders.

This study makes several contributions. First, it adds to the general literature of M&As by documenting the acquisition patterns of distressed firms and investigating

motivations for such acquisitions. Contrary to the conventional wisdom that firms in distress are unlikely to acquire,[9] I find an increasing pattern of diversifying acquisitions made by firms prior to bankruptcy. The evidence implies that diversification benefits may have a positive effect on acquisition decisions for distressed firms. This finding extends the literature of diversifying acquisitions, which has mainly focused on the conglomerate waves between the 1960s and 1990s. The causal evidence that bankruptcy risk drives diversifying acquisitions adds to the evidence of financial synergy or the co-insurance effect of acquisitions. In particular, Gormley and Matsa (2011) show that firms, especially financially vulnerable firms, react to an increase in firms' business risk by diversifying acquisitions. However, they do not distinguish risk associated with operating performance versus financial distress.[10] In addition to Gormley and Matsa (2011), I establish that diversification of financial risk dominates the motivation to seek external growth opportunities. My finding also highlights a diversification motivation in investment decisions for distressed acquirers, which extends the studies on acquisitions of distressed targets (Hubbard and Palia, 2002, Billett et al., 2004).

Second, the current paper contributes to the existing literature on how financial distress affects investment policies. Previous research documents the effects of financial distress costs on investment decisions in the presence of market frictions (see Myers, 2003). For example, financial distress could positively relate to investment risk (*risk shifting*; Jensen and Meckling, 1976) or negatively relate to investment levels (*debt overhang*; Myers, 1977). Benefits of leverage are also present, including preventing empire-building activities (*free cash flow problems*; Jensen, 1986) and derailing inefficient investment (*discipline effect*; Chava and Roberts, 2008). The current study highlights another important effect of financial distress on corporate investment: the pressure to meet debt obligations incentivizes distressed firms to seek diversifying investments, in particular, through acquisitions. It also implies that fi-

[9] For example, Kaplan (1989) finds that dramatic increases in leverage are associated with sharply reduced investment; increasing debt is considered to be an effective way to curtail empire-building acquisitions (Jensen, 1986).

[10] Gormley and Matsa (2011) identify the shock to business risk using the discovery of a chemical's carcinogenicity for firms in the relevant industry. Such a shock affects both economic and financial distress of firms.

nancial distress can drive corporate investments from internal organic growth toward outward expansion.

The rest of the paper is organized as follows. Section 2.2 explains the data sources and empirical design. Section 2.3 describes the acquisition intensities and characteristics undertaken by distressed firms. Section 2.4 presents empirical analyses on why distressed firms make acquisitions. Section 2.5 discusses alternative hypotheses. Section 2.6 concludes.

2.2 Data and Empirical Methodology

This section provides a description of the empirical design. After a description of my sample selection and data sources, I then introduce the exogenous shock for the causal tests of motivations for distressed firms' acquisitions and explain the identification strategy. Finally, I describe the sample used in the main analyses.

2.2.1 Data

This study uses data from several sources. The firm sample starts with all large firms that overlap in Compustat and CRSP from 2010 to 2015, excluding financial and utility firms.[11] I consider a firm "large" if it has start-of-period total assets worth more than $100 million.[12] Firm fundamental information is from Compustat and stock price data from CRSP.

I collect all completed mergers and acquisitions from SDC Platinum between 2010 and 2014 with positive deal value, shares sought or shares acquired larger than 50%, and transaction types recorded as M&As or tender offers. I match the six-digit CUSIPs of acquirers, their immediate parent firms, and their ultimate parent firms, to the first six digits in CUSIPs of securities in CRSP. I drop deals that are worth less than 1% of firms' total assets.

In the analyses utilizing the natural experiment, I focus on the sample of large firms between 2010 and 2014 that overlap in Compustat and CRSP. I match firm-

[11] I exclude financial industry (SIC header 6) and regulated industry companies (SIC headers 48 and 49).

[12] I adjust the dollar value of total assets to 2012 dollars by the Consumer Price Index and require that the adjusted value of total assets for an individual firm is always above $100 million.

year sample to LPC-Dealscan using the linking table provided by Chava and Roberts (2008).[13] Loans with missing facility amounts or missing maturities are excluded. I further drop loans that are canceled, rumored, or suspended. Since the exogenous shock (DRC) in later analyses applies to the U.S. market, I only retain completed syndicated loans that originate in the U.S., with facility amounts above $100 million to evaluate the usage of syndicated loans prior to the DRC.

I obtain bankruptcy data from the UCLA-LoPucki Bankruptcy Research Database. The database includes all Chapter 7 and Chapter 11 filings by Compustat firms over $100 million at the time of bankruptcy. I drop Chapter 7 filings and bankrupt firms emerging from previous bankruptcy cases.

2.2.2 Empirical Strategy

2.2.2.1 A natural experiment in corporate bankruptcy risk

The challenge in showing the causal relationships between the diversification or growth opportunity motivation and acquisition activities of distressed firms is that financially distressed firms tend to not only bear a high bankruptcy risk, but also lack internal growth opportunities. Moreover, corporate financial health is endogenous to investment activities, resulting in a reverse causality bias. An ideal setting to disentangle the two potential motivations is to have a clean exogenous shock that only affects one of the possible motivations and then to evaluate the consequent change in acquisition activities. In this study, I rely on a tax change that only affects the bankruptcy risk of certain distressed firms to test whether such firms adjust acquisition activities as a result of the shock.

On September 12, 2012, the U.S. Treasury announced the new rules, IRS Regulation T.D. 9599, that have significantly changed the income tax treatment of creditors during debt restructuring ("DRC").[14] During corporate restructuring, the IRS treats

[13] I thank Chava and Roberts (2008) for making the linking table available online. Since the linking table is current until August 2012, many unmatched loans may exist for firms that start utilizing loan syndication in recent years. Thus, I also do robustness checks with only firms that can be matched with the linking table during my sample period in order not to underestimate syndicated loan usage systematically after the exogenous shock in September 2012.

[14] See Campello et al. (2016) for a more detailed description of the tax treatments. I benefit from their excellent analysis of the event.

significant modification on old debt issues as taxable exchanges for new debt issues if the restructuring process occurs outside of Chapter 11 court.[15] Debt holders must report to the IRS for any capital income incurred. The tax base is the excess of the value of the new debt over the "issue price" of the old debt. The specific tax treatment depends on the classification of the debt as publicly traded debt or privately traded debt. In particular, these two types of debt are treated differently in determining the value of the new debt after the restructuring process. Even though an over-$1 trillion, actively traded, syndicated loan market had existed, the IRS did not consider syndicated loans as publicly traded debt until the DRC in 2012.

Before the DRC, syndicated loans were classified as private debt. In such a case, if a creditor of a syndicated loan is not the original lender, the creditor, upon out-of-court debt restructuring, has to pay tax for the difference between the par value of the new debt and the initial purchase price. The par value is usually the principal amount while the corresponding purchase price for the distressed debt is always far below the principal amount. Since the restructuring process frequently involves modification of the maturity dates and yields but rarely the principal amount, the creditor who has purchased the loan from a secondary market owes tax on a phantom gain—that is, the difference between the principal amount and the market purchase price of the distressed debt. It hinders the creditor from restructuring the debt since such costs can be avoided if the creditor pushes the borrower to bankruptcy court.

After the shock on September 12, 2012, IRS treats debt over $100 million with "indicative quotes" as publicly traded debt. In this case, the aforementioned creditor is to pay tax for the excess of the fair market value and the market price at which the creditor has purchased the loan. The adjusted tax treatment ensures that the creditor owes capital income tax only on the capital gain from restructuring the debt.

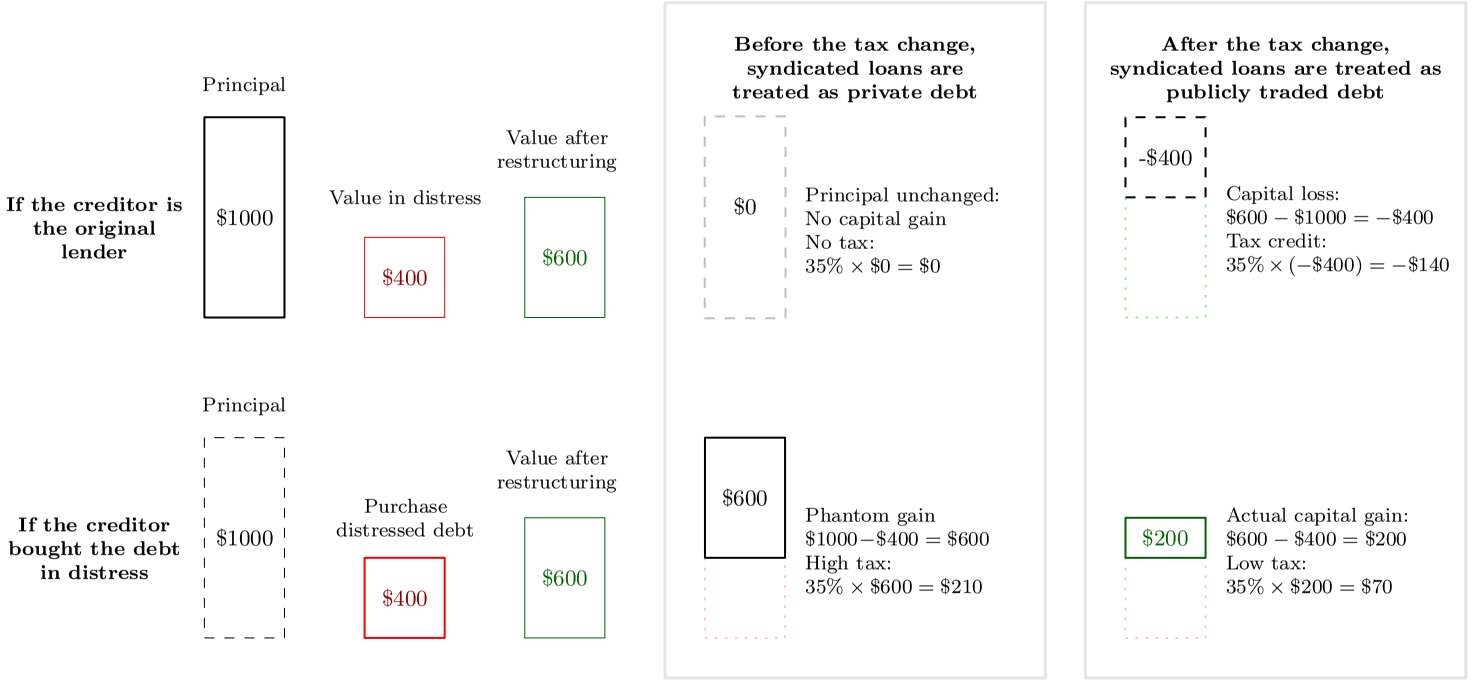
The DRC reclassified syndicated loans from private debt into publicly traded debt. Figure 2.2 presents an illustration of tax treatment. In a simple case in which a syndicated loan with a principal amount of $1000 becomes distressed, its value drops

[15] The taxable income, which is called cancellation of debt income, can be fully exempted if the debt is discharged under Chapter 7 or 11 of the Bankruptcy Code (Mandarino, 2010, Scarborough and Caracristi, 2012).

to \$400 in distress, and the lender can opt for restructuring the distressed borrower out of court. Before the DRC, the original lender does not incur any tax since the principal amount stays unchanged regardless of whether she agrees to renegotiate or liquidate it under bankruptcy proceedings. The lender can claim a tax credit for her capital loss if she sells it to other investors who are willing to restructure the borrower out of bankruptcy court. Suppose that the distressed loan is sold to a new creditor at the market value of \$400 and the creditor successfully enhances the value of the distressed loan to \$600 by renegotiating with the borrower. The actual capital gain is, therefore, the added proportion in the value of the distressed loan, (\$600 − \$400 = \$200). However, under the former tax treatment, the creditor's taxable income upon restructuring is based on the principal amount of the "new" loan, \$1000, and as such, she is liable for a high tax due to the phantom gain (\$1000 − \$400 = \$600). With a marginal tax rate of 35%, the tax (\$200) is even higher than the actual capital gain. On the other hand, the creditor does not have to pay any tax if she pushes the borrower to Chapter 11 and restructures the loan after the borrower files for bankruptcy. The tax change, DRC, fixes the phantom gain problem by treating syndicated loans as publicly traded debt in debt restructuring. After the DRC, the creditor only needs to pay a reasonable tax of \$70; therefore, the most direct consequence of the DRC is a potential tax reduction for debt holders regarding renegotiating syndicated loans out of court. Syndicated-loan holders are more incentivized to renegotiate the debt rather than go directly to bankruptcy court after the DRC. Campello et al. (2016) show that, with the passage of the DRC, markets anticipate more out-of-court renegotiations instead of bankruptcies. Specifically, credit-default-swap (CDS) spreads dropped by 53 basis points, or 19%, in the week the DRC was changed in cases of distressed firms with high syndicated-loan ratio. The authors also estimate that bankruptcy probability decreases by 13% and that over \$100 billion is saved in potential tax for debt holders. Since the DRC is a direct shock on the debt holders, it is a clean exogenous shock on the bankruptcy risk for distressed firms to the extent of their syndicated-loan usage. In addition to the effect of reducing bankruptcy probabilities for distressed firms with high usage of syndicated loans, Campello et al. (2016) point out an indirect effect of the DRC: it

Figure 2.2. An illustration of how the DRC impacts the tax treatment in debt restructuring

This figure describes how the taxes are calculated for creditors after restructuring a distressed syndicated loan. The hypothetical principal amount of the debt is $1000 and stays unchanged after restructuring. The hypothetical marginal tax rate for the creditor is 35%.



also enhances access to credit for distressed firms. In particular, distressed firms are 8% more likely to obtain a new syndicated loan and receive a 28-basis-point drop in loan markups after the DRC.

2.2.2.2 Tests of the diversification hypothesis versus the growth opportunity hypothesis

The main research question of this study is whether diversification benefits drives distressed firms to engage in external investment, such as acquisitions. In particular, I want to capture causal changes in investment activities when a change occurs in a firm's bankruptcy risk. When the bankruptcy probability drops, the need for a distressed firm to diversify should decrease. The DRC event serves as an instrument for such change. In particular, the DRC quasi-experiment is an exogenous reduction in corporate bankruptcy risk for a treatment group within distressed firms. The diversification hypothesis—i.e., diversification of bankruptcy risk is a driver for acquisition in distress—predicts a reduction in acquisition activities when the risk of bankruptcy decreases. Consequently, such a change in acquisition strategies should result in an increase in firm risks due to these refocusing actions. Since the DRC does not affect firm fundamentals directly and positively influences access to the syndicated-loan market for distressed firms, the growth opportunity hypothesis predicts that distressed firms utilize the improved access to credit and increase acquisition activities as a result of the DRC.

Such a predication provides motivation to compare various measurements of investment, especially acquisitions, for distressed firms with a high usage of syndicated loans at the time of the DRC to distressed firms with low usage. Here I use the ratio of syndicated loans relative to book value of assets (*syndicated-loan ratio*) as the measure of syndicated-loan usage. The parallel-trends assumption is key when determining the consistency of the DRC as an instrument. Economically, I need to ensure that, in the absence of treatment with the DRC, the average change in the investment variables would have been the same for both the treatment and control groups. However, there is a concern that firms with a higher syndicated-loan ratio have better relationships with banks and are therefore more likely to be able to make

acquisitions. To address such potential inconsistency, I include non-distressed firms and compare firms across the same levels of syndicated-loan ratio. Thus, the setup of the treatment group involves a two-way division of the firm sample. I split the sample by the syndicated-loan ratio and the degree of financial distress. The treatment group is the sample of highly distressed firms with high a syndicated-loan ratio. Therefore, I implement the comparison of acquisition intensities for the treatment group versus the control groups via a triple-difference model for firm i in time t:

$$\begin{aligned}\text{Acquisition}_{it} =&\alpha + \beta_1 \text{HighSynd}_i + \beta_2 \text{Distressed}_i + \beta_3 \text{HighSynd}_i \times \text{Distressed}_i \\ &+ \beta_4 \text{PostDRC}_t + \beta_5 \text{HighSynd}_i \times \text{PostDRC}_t \\ &+ \beta_6 \text{Distressed}_i \times \text{PostDRC}_t \\ &+ \beta_7 \text{HighSynd}_i \times \text{Distressed}_i \times \text{PostDRC}_t \\ &+ \gamma X_{it-1} + \eta_i + \nu_t + \varepsilon_{it}.\end{aligned} \tag{2.1}$$

In the above model, Distressed_i is an indicator that equals one if firm i has a high degree of financial distress at the time of the DRC, and 0 otherwise. The main analyses use *distance-to-default*, based on Merton (1974). I calculate distance-to-default following and Vassalou and Xing (2004) and Bharath and Shumway (2008). Distressed_i equals one when distance-to-default for firm i is in the upper tercile at the end of the month prior to the DRC. Results are robust to using Altman's Z-score as the distress measure, where Distressed_i equals one if firm i has a Z-score below 1.9 prior to the DRC.

HighSynd_i is an indicator that equals one if firm i is in the top half of syndicated-loan usage at the time of the DRC. I measure the usage of syndicated loans by *syndicated-loan ratio*. The ratio is calculated by dividing the total facility amount of syndicated loans for firm i outstanding at the time of the DRC by the total assets of firm i prior to the DRC. A qualifying syndicated loan has a start date before the DRC month, an end date after the DRC month, and a facility amount over \$100 million. PostDRC_t is an indicator that equals one if time t is after the DRC. Time t can be a fiscal year or a window of 12 months depending on the frequency of each

dependent variable. X_{it-1} is a vector of usual control variables. Appendix A.1 lists detailed definitions for all variables. η_i is an industry fixed effect based on the four-digit SIC. ν_t, a time fixed effect, takes away any fluctuations in aggregated merger waves and absorbs the term, PostDRC. ε_{it} is a random error term that is potentially correlated within firm observations and heteroskedastic (Petersen, 2008). I calculate the heteroskedasticity-consistent standard errors and cluster standard errors at the firm level.

To improve the precision of the treatment effect estimation, I replace industry fixed effects with firm fixed effects, ϕ_i. Equation (2.1) turns into a general triple-difference model:

$$\begin{aligned}\text{Acquisition}_{it} =&\alpha + \beta_4 \text{PostDRC}_t + \beta_5 \text{HighSynd}_i \times \text{PostDRC}_t \\ &+ \beta_6 \text{Distressed}_i \times \text{PostDRC}_t \\ &+ \beta_7 \text{HighSynd}_i \times \text{Distressed}_i \times \text{PostDRC}_t \\ &+ \gamma X_{it-1} + \phi_i + \nu_t + \varepsilon_{it}.\end{aligned} \tag{2.2}$$

The coefficient of interests in both Equation (2.1) and (2.2) is β_7. A significantly negative β_7 indicates that investment activities decrease sharply following a reduction in bankruptcy probabilities for highly distressed firms with high syndicated-loan usage. In a regression with a dependent variable measuring acquisitions, such a negative β_7 would support the diversification motivation that bankruptcy risk is a driver for distressed firms to make acquisitions.

2.2.2.3 Acquisition intensities

To measure corporate investment activities—primarily acquisitions—I construct measures of intensities for acquisitions and internal investment from three different sources:

I first examine the use of funds on various types of investment, including *acquisition expenditures*, capital expenditures (*CapEx*) and research and development spending (*R&D*). I extract information from Compustat and calculate annual acquisition expenditures, CapEx, and R&D, standardized by start-of-period total assets.

Acquisition expenditures are the cash spending in acquisitions net of cash acquired in the targets, which normally expands the scope of operations (Graham et al., 2002). Corporate CapEx is usually funds spent on physical assets such as property, plants, and equipment. It normally maintains the scope of firm operations.

In addition to total annual spending on investment activities, I investigate actual acquisition activities announced around the shock. Information on specific deals allows me to identify and focus on diversifying acquisitions. Since small deals could be trivial, only economically important deals larger than %1 of total assets are considered. I calculate the total value of diversifying acquisitions standardized by start-of-period total assets (*diversifying-acquisition value*) and the number of diversifying acquisitions announced (*#diversifying acquisition*) to evaluate the magnitude of diversifying acquisition activities.

After measuring investment activities based on the cash expenditure on investment activities, as well as the value of different types of takeover deals, I look into what firms claim to do with newly obtained credit. I collect the primary purposes of syndicated loans, provided by LPC-Dealscan, and categorize them into acquisitions, CapEx, debt repayment, equity payout, operating liquidity, and so forth. Specifically, I classify loans for "acquisition line," "LBO," "mergers," or "takeovers" for acquisition-related purposes, and loans for "capital expenditures," "corporate purposes," or "project finance" for CapEx-related purposes. Similar to those of acquisition activities, I calculate total loan sizes (*loan ratio*) and newly obtained loan sizes (*new-loan ratio*), standardized by start-of-period total assets, as well as the indicators of borrowing new loans (*new-loan dummy*), for different purposes.

To reflect the effect of the DRC on firms' future riskiness, I calculate a measure of asset risk based on option-implied volatilities. I include all near-the-money stock options with positive open interests, positive best bid price, and non-missing expiration dates. I further delete options with bid-ask spreads of more than 50% of the average of the bid and ask prices. I calculate option-implied volatilities either utilizing the last observation for each option in a period or weighting daily option observations by volumes, following Bali and Hovakimian (2009) and Xing et al. (2010).

2.2.2.4 Control variables

M&As are the most economically significant firm investments. Thus, the control variables are common factors that affect investment decisions, including firm size, leverage, liquidity, return on assets (ROA), cash flow, tangibility, market-to-book ratio, and credit-rating fixed effects. I also include term premium, the difference between the interest rates on ten-year Treasury bonds and two-year Treasury notes to control for interest rate uncertainties. Interest rate uncertainties are shown to have a sizable effect on the timing of investment (Chen, 1991, Ingersoll and Ross, 1992). All control variables are lagged one year, except for cash flow and term premium, which are contemporaneous with investment. See Appendix A.1 for details of variable definitions.

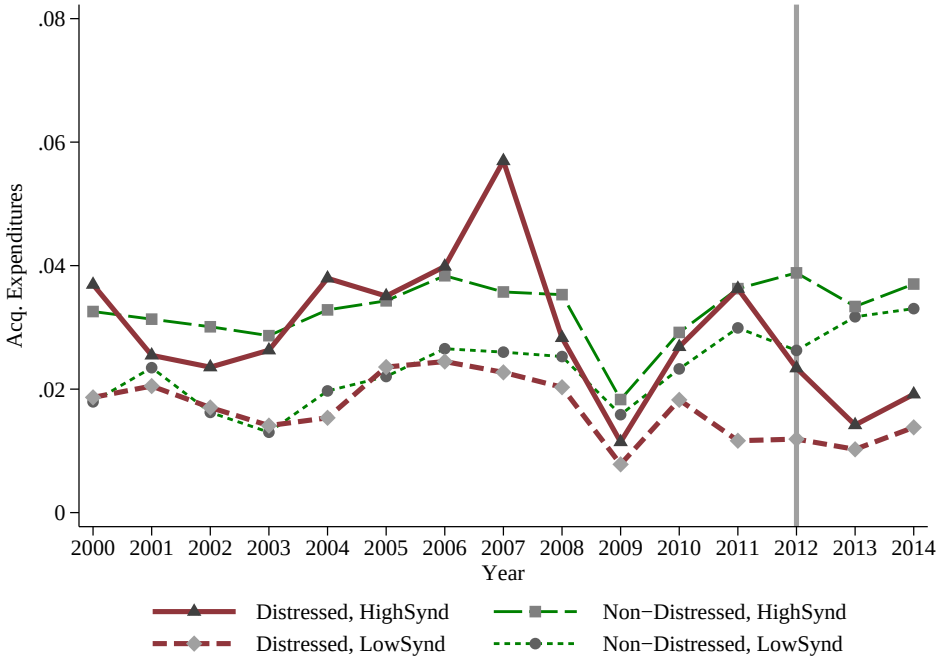
2.2.3 Validity of the Natural Experiment

To obtain a consistent treatment-effect estimator, I need to ensure that any trends in acquisitions for the treatment group, the distressed firms with high syndicated-loan ratios (*HighSynd*), and control groups prior to the DRC are the same (see Roberts and Whited, 2013). In Figure 2.3, I plot the average acquisition expenditures for the treatment and control groups. Note that firms with a low distance-to-default prior to the DRC were not necessarily distressed in the years before the DRC shock; likewise, firms with a high syndicated-loan ratio prior to the DRC were not necessarily with a high usage of syndicated loans before. Nevertheless, the average acquisition expenditure of the treatment group (distressed and HighSynd) generally co-moves with the three control groups until 2011, especially in non-distressed and HighSynd firms, except for an outlier in 2007. There is a sharp drop in acquisition expenditures for treatment group in 2012, which persist into 2013. No pre-shock trends exist that could explain the sudden drop in 2012.

I further check whether the two dimensions along which I split my samples are independent. One might speculate that excessive usage of syndicated loans drive firms to become distressed, a negative correlation between syndicated-loan ratio and distance-to-default. However, this speculation is not empirically supported: the cor-

Figure 2.3. Parallel trends

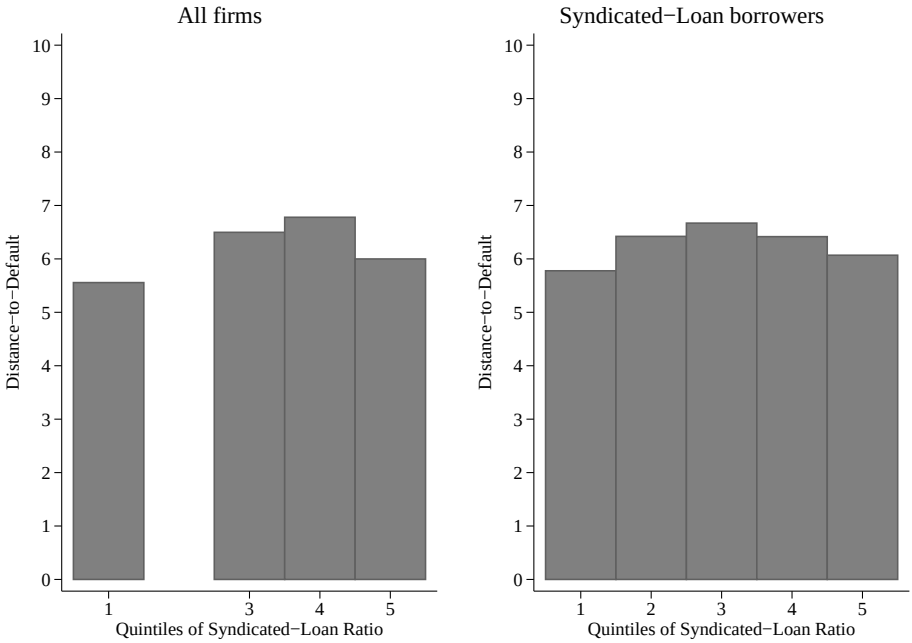
This figure calculates the average acquisition expenditures between 2000 and 2014 for the four groups of firms in the main sample. The black solid vertical line indicating the year of the DRC. The gray shade indicate the post-DRC period. All variables are winsorized at the 1-99% levels.



relation between syndicated-loan ratio and distance-to-default is 0.006 and statistically insignificant in the full sample of big firms prior to the DRC. Figure 2.4 depicts the average distance-to-default across quintiles of syndicated-loan ratio in August 2012. The graph on the left depicts the full sample of non-financial and non-utility firms over $100 million. Since many firms do not have syndicated loans outstanding, the lowest two quintiles consist of firms with zero syndicated-loan ratios and collapse into one group. The graph on the right excludes firms that do not have any syndicated loans outstanding between 2010 and 2014. Both graphs fail to show a monotonic relationship between syndicated-loan ratio and distance-to-default. Therefore, the checks on the parallel trend assumption suggest that the triple-difference test is appropriate.

Figure 2.4. The relationship between Distance-to-Default and Syndicated-Loan Ratio

This figure presents average distance-to-default across quintiles of syndicated-loan ratios. distance-to-default is adjusted to firm size. The syndicated-loan ratio is the total amount of syndicated loans outstanding at the end of August 2012 over total assets. Syndicated loans with the amount less than $100 million, syndicated outside of the U.S., or with status as "canceled", "suspended", or "rumored" are excluded. In the graph on the left, the sample include all non-financial and non-utility firm between 2010 and 2014, with total assets at the beginning of the year over $100 million (in 2012 dollars). Due to the large number of zero syndicated-loan ratios observations, the second lowest quintile of syndicated-loan ratios collapse with the lowest quintile. In the graph on the right, the sample excludes firms that have no active syndicated loan outstanding during the sample period (2010-2014). All variables are winsorized at the 1-99% levels.



2.3 Acquisitions by Distressed Firms

This section describes patterns and characteristics of acquisitions made by distressed firms. First, I summarize the acquisition activities for bankrupt firms in the years prior to their Chapter 11 filings. I then compare acquisition characteristics by distressed acquirers to those by non-distressed acquirers. Finally, I compare acquisition activities of treatment firms and control firms prior to the DRC.

2.3.1 Acquisitions before Bankruptcy

I first look into the time-series pattern of distressed firms' acquisitions. Since financial health and investment activities are highly endogenous and correlated, I utilize a very different sample in which the financial distress changes monotonically over time—that is, firms that actually go into Chapter 11 bankruptcy later. This ad hoc distressed firm sample that is based on the UCLA-LoPucki Bankruptcy Research Database consists of large non-financial/utility firms with total assets over $100 million at the last year before Chapter 11 filings between 1990 and 2014, excluding those firms emerging from a previous Chapter 11 bankruptcy. In total, there are 418 unique firms. The number of firms drops sharply to less than 200 in the period more than six years before bankruptcy (year ≤ -6). Figure 2.1 shows financial distress and acquisition activities during the ten-year period prior to Chapter 11 filings (year 0). The estimations tend to be more volatile for years earlier than six years prior to bankruptcy due to the drop in the number of observations. The first graph checks the financial distress measures. The *estimated default probability*, the cumulative normal distribution probability of ($-$*distance-to-default*), increases exponentially as bankruptcy approaches. Compared to the measure of distressed dummy later in the analysis, these firms are on average distressed from year -4. Consistently, the classical financial distress measure, Altman's Z-score, drops monotonically from year -6 and reaches about 0.5 in the last year before bankruptcy. This graph confirms that firms' financial health deteriorates rapidly as bankruptcy approaches.

The second graph and third graph measures acquisition activities during the years before Chapter 11 bankruptcy. I only consider completed deals announced in the

fiscal year, with shares acquired over 50% and deal value over 1% of start-of-period total assets. Around 15% of firms engage in at least one acquisition until year −3, and at least 12% make acquisitions during the last two years before bankruptcy. The *acquisition value*—the aggregated acquisition value announced in a year, scaled by start-of-period total assets—is also quite stable, except for a sharp drop in the last year prior to bankruptcy. The third graph for diversifying acquisitions only considers diversifying acquisitions in which the acquirer and the target have different three-digit SIC codes, and shows an increasing trend of diversifying acquisitions when firms become more distressed and closer to bankruptcy. Over 10% of firms make at least one large diversifying acquisition starting from the fourth year prior to bankruptcy. With the exception of the drop in the last year, the *diversifying-acquisition value* also demonstrates an increasing pattern: rising from about 2.5% relative to total assets in year −6 to about 3.5% in year −2.

To sum up, the figure on acquisitions by large firms that become subsequently bankrupt shows that firms do not decrease acquisition activities, or even make more diversifying acquisitions, while approaching closer to bankruptcy, which is consistent with both the diversification hypothesis and the growth opportunities hypothesis. This descriptive analysis suffers from endogenous biases. For instance, it could be the increasing diversifying growth that eventually drives these firms into bankruptcy. Therefore, I use the triple-difference tests around the SRC in Section 2.4 to distinguish the two hypotheses and address to the reverse-causality bias.

2.3.2 Acquisition Expenditures and Value

Table 2.1 reports descriptive statistics for firm-year observations in the sample for the main results in Section 2.4. The sample contains all Compustat/CRSP firms with start-of-period total assets over $100 million in 2012 dollars, but excludes financial and utility firms. Sample firms further require a non-missing distance-to-default estimation in August 2012. The sample eventually consists of 5505 firm-year observations.

On average, firms spend more on CapEx than on acquisition expenditures. In regard to cash expenditures, firms spend 3.4% relative to total assets on acquisitions,

although over half of the sample firms do not have a positive acquisition expenditure. CapEx is higher than acquisition expenditure, with a mean of 6.1% and median 3.7%. R&D expenditures are similar to acquisition expenditures, with a mean of 2.8%. The aggregate acquisition deal value, acquisition value, is 2.8% relative to total assets, similar to acquisition expenditures. Over half of the acquisition value is from diversifying acquisitions in which the acquirer and the target have different three-digit SIC codes. Relative to total assets, the diversifying-acquisition value amounts to 1.6%.

Sample firms on average hold 31.4% syndicated loans. Loans for acquisition-related purposes amounts to 5.2% relative to total assets, or 16.6% of total loan size outstanding (5.2%/31.4%). Newly borrowed loans for acquisitions (new-acquisition-loan ratio) amounts to 1.7% relative to total assets, about a third of the average acquisition-loan ratio. Loans for CapEx-related purposes amounts to more than three times of that for acquisition-related purposes, for both the CapEx-loan ratio and the new-CapEx-loan ratio. Only 3.6% of sample firms borrow new syndicated loans for acquisitions, while 24.3% of firms borrow for CapEx.

I further split the sample into four subsamples, following the triple-difference setting. Table 2.2 describes the cross-sectional acquisition intensities in subsamples prior to the DRC, as well as t-test results for comparison. I sort unique firms along distance-to-default and syndicated-loan ratio prior to the DRC.

The treatment group, distressed firms with high syndicated-loan ratio have, on average, acquisition expenditures of 5.9%. Diversifying-acquisition value is 3.2%, almost doubling the main sample average (1.6%). These numbers are slightly higher than those of non-distressed firms also with high syndicated-loan ratios. When firms ex ante have a high syndicated-loan ratio, distressed firms do not acquire less than non-distressed firms. However, conditional on low syndicated-loan ratio, distressed firms acquire significantly less in both acquisition expenditures and acquisition value. All the acquisitions intensity measures for distressed firms are only up to half of those of non-distressed firms with the condition that firms have conditional on that firms have a low syndicated-loan ratio. Comparison across firms' financial health suggests

Table 2.1. Summary statistics: main sample

The table describes the sample firms' characteristics in the main analyses. The panel data consists of Compustat/CRSP firms with start-of-period total assets over $100 million (adjusted according to the CPI to 2012 dollars) between 2010 and 2014. Financial firms and utility firms are excluded. Firm size, leverage, liquidity, market-to-book, ROA, tangibility, distance-to-default, estimated default probability, and Altman's Z-score are measured at the beginning of the year, while others are measured at the end of year. See Appendix A.1 for details of variable definitions. All variables are winsorized at the 1-99% levels.

	N	Mean	Std. Dev.	P25	Median	P75
Acquisition expenditures	5172	0.034	(0.091)	0.000	0.000	0.019
CapEx	5493	0.061	(0.072)	0.020	0.037	0.071
R&D	5502	0.028	(0.055)	0.000	0.000	0.028
Acquisition dummy	5502	0.178	(0.383)	0.000	0.000	0.000
Acquisition value	5502	0.029	(0.100)	0.000	0.000	0.000
Diversifying-acquisition value	5502	0.016	(0.066)	0.000	0.000	0.000
#Diversifying acquisition	5502	0.142	(0.406)	0.000	0.000	0.000
Syndicated-loan ratio	5502	0.240	(0.420)	0.000	0.050	0.330
Syndicated-loan ratio (all loans)	5502	0.314	(0.620)	0.000	0.148	0.413
Acquisition-loan ratio	5502	0.052	(0.187)	0.000	0.000	0.000
CapEx-loan ratio	5502	0.182	(0.379)	0.000	0.042	0.240
New-acquisition-loan ratio	5502	0.017	(0.127)	0.000	0.000	0.000
New-CapEx-loan ratio	5502	0.060	(0.205)	0.000	0.000	0.000
New-acquisition-loan dummy	5502	0.036	(0.187)	0.000	0.000	0.000
New-CapEx-loan dummy	5502	0.243	(0.429)	0.000	0.000	0.000
Firm size	5502	7.569	(1.728)	6.180	7.427	8.676
Leverage	5482	0.260	(0.206)	0.096	0.226	0.381
Liquidity	5502	0.149	(0.149)	0.044	0.103	0.204
Market-to-book	5499	1.786	(1.086)	1.095	1.460	2.086
ROA	5331	0.045	(0.102)	0.020	0.059	0.094
Cash flow	5500	0.071	(0.111)	0.042	0.085	0.125
Tangibility	5502	0.313	(0.253)	0.107	0.223	0.480
Term premium	5502	1.992	(0.492)	1.570	1.720	2.560
Distance-to-default	5030	6.935	(5.950)	2.318	5.648	10.404
Estimated default probability	5030	0.081	(0.213)	0.000	0.000	0.010
Altman's Z-Score	5105	3.355	(3.142)	1.547	2.816	4.411

Table 2.2. Acquisitions Prior to the Debt Restructuring Change (DRC)

The table describes pre-DRC acquisition activities for sample firms in the main analyses. The sample in this table is a cross-sectional data prior to the DRC. The observations are at the firm level, consisting of Compustat/CRSP firms with start-of-period total assets over $100 million (adjusted according to the CPI to 2012 dollars) at the end of the most recent fiscal year prior to September 2012. Financial firms and utility firms are excluded. The data is sorted into four groups based on firm financial distress and syndicated-loan ratios. Distressed indicates that the firm's distance-to-default in August 2012 is in the bottom tercile, while non-distressed firms are in the top tercile. Firms in the middle tercile are omitted. The *high syndicated-loan ratio* sample includes firms with pre-existing syndicated-loan ratios in August 2012 above median, while *low syndicated-loan ratio* firms are below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. The *acquisition expenditures* variable is the cash spending on acquisitions scaled by start-of-period total assets. *(Diversifying-) acquisition value* is the total (diversifying-) acquisition value announced in the year scaled by start-of-year total assets. Diversifying acquisitions include deals when the acquirer and target do not share the same three-digit SIC code. Only completed deals announced during the year prior to August 2012 with deal values over 1% of start-of-period total assets are considered. Other variables are defined in Appendix A.1. *t*-statistics are based on *t*-tests with unequal variance. All variables are winsorized at the 1-99% levels.

		High syndicated-loan ratio			Low syndicated-loan ratio			High syndicated − Low syndicated	
	Variable	N	Mean	Std. dev.	N	Mean	Std. dev.	Mean diff.	*t*-stat
Distressed (bottom tercile)	Acquisition expenditures	241	0.059	(0.130)	285	0.016	(0.059)	0.043***	(4.79)
	Acquisition value	248	0.06	(0.166)	305	0.015	(0.073)	0.045***	(3.95)
	Diversifying-acquisition value	248	0.032	(0.108)	305	0.007	(0.046)	0.025***	(3.42)
Non-distressed (upper tercile)	Acquisition expenditures	298	0.046	(0.090)	245	0.033	(0.072)	0.013	(1.86)
	Acquisition value	324	0.042	(0.114)	255	0.029	(0.081)	0.013	(1.64)
	Diversifying-acquisition value	324	0.029	(0.078)	255	0.013	(0.047)	0.015***	(2.92)
Distressed − Non-distressed			Mean Diff.	*t*-stat		Mean diff.	*t*-stat		
	Acquisition expenditures		0.013	(1.34)		-0.017***	(-3.01)		
	Acquisition value		0.018	(1.46)		-0.014**	(-2.07)		
	Diversifying-acquisition value		0.003	(0.37)		-0.007	(-1.68)		

that when firms have a high usage of syndicated loans, financial distress does not restrict firms acquisition intensities.

Given a certain level of financial distress, firms with a high syndicated-loan ratio tend to acquire more than those with low syndicated-loan ratios. For distressed firms, this gap is up to 4.5% for general acquisition activities. Distressed firms with low syndicated-loan ratios only spend around 1.6% (0.7%) relative to total assets on (diversifying) acquisitions, which is 4.3% (2.5%) significantly less than then treatment group. For non-distressed firms, the difference persists but it is of less economic and statistical significance.

The previous observations on the cross-sectional comparison is consistent with financial theories that access to credit restricts investment expenditures for financially unhealthy firms (see, for instance, Whited, 1992). It also suggests that when distressed firms have good access to the credit market, their acquisition intensities could be as much as non-distressed firms'.

2.3.3 Acquisition Characteristics

What types of acquisitions do distressed acquirers make? I directly compare the characteristics of acquisitions by distressed firms to those by non-distressed firms. I sort full sample firms between 2010 and 2014 by their start-of-period distance-to-default. Distressed acquirers have distance-to-default in the bottom tercile, while non-distressed acquirers in the upper tercile. Table 2.6 describes the average acquisition characteristics of deals by the two groups of firms, as well as t-test results comparing the two. Distressed firms on average announce less acquisitions than non-distressed firms—the number of deals by distressed acquirers is only 42.0% (368/877) of that by non-distressed acquirers. An average deal announced by distressed firms is of $527 million, 30% significantly less than that announced by non-distressed firms. Distressed firms also pay significantly less in cash—54.2% compared to 64.6% of non-distressed acquirers.

The percentages of diversifying acquisitions are similar for distressed firms and non-distressed firms, 47.3% and 49.7%, respectively. To better capture the degree of diversification for the acquisitions, I evaluate the closeness between industries of the

Table 2.3. Acquisition characteristics

The table compares characteristics for acquisitions made by distressed and non-distressed acquirers announced between 2010 and 2014. The acquisition sample consists of all completed takeovers with deal value of over 1% of start-of-year total assets of distressed or non-distressed acquirers. Neither the acquirer nor the target are financial firms or utility firms. The acquirers are included in the firm sample described in Table 2.1. *Distressed acquirers* have start-of-period distance-to-default in the bottom tercile, while *non-distressed acquirers* are in the upper tercile. The last two columns report the t-test with unequal variance the average mean difference between acquisitions with distressed versus non-distressed acquirers. *Deal value* is the deal value in $ million. *Cash payment* is the percentage points of cash payments. *Diversifying-acquisition dummy* is an indicator that takes the value of one if the acquirer and the target do not share the same three-digit primary SIC. *Industry cash-flow/market-to-book/Tobin's q correlations* are calculated following Duchin (2010). *Acquirer CAR*s are the three-day announcement abnormal return based on the market model. *Public-target dummy* is an indicator that takes the value of one if the target is also a publicly listed firm. All variables are winsorized at the 1-99% levels.

	Distressed acquirer		Non-distressed acquirer		Distressed − Non-distressed	
	N	Mean	N	Mean	Mean diff.	t-stat.
Deal value ($ million)	368	527.270	877	745.077	-217.807**	(-2.391)
Cash payment (%)	368	54.194	877	64.630	-10.436***	(-3.764)
Diversifying-acquisition dummy	368	0.473	877	0.497	-0.024	(-0.783)
Industry cash-flow correlation	325	0.582	810	0.625	-0.043	(-1.271)
Industry market-to-book correlation	325	0.699	810	0.748	-0.049*	(-1.891)
Industry Tobin's q correlation	325	0.728	810	0.781	-0.054**	(-2.267)
Acquirer CAR	324	0.020	839	0.006	0.013***	(2.933)
Acquirer CAR (public target)	24	0.004	88	0.003	0.000	(0.033)
Public-target dummy	368	0.092	877	0.138	-0.046**	(-2.225)

acquirer and the target and distinguish the diversification benefits associated with cash flow risk and with investment opportunities (market-to-book and Tobin's q), respectively. I calculate the correlations of industry average cash flow, market-to-book, and Tobin's q over the previous 10 years between three-digit primary SIC industries of the acquirer and the target, following Duchin (2010).[16] As the correlation lowers, the more the acquisitions diversify. The average industry market-to-book and Tobin's q correlations of acquisitions by distressed firms are significantly lower than those by non-distressed firms. Such a cross-sectional comparison on acquisition characteristics indicates that distressed acquirers engage in deals with more diversification benefits. Specifically, distressed firms are significantly more likely to make acquisitions that diversify investment opportunities than non-distressed firms.

The announcement return (2 percentage points) of distressed acquirers is significantly higher than that of non-distressed acquirers, which does not necessarily mean that the stock markets recognize the benefits of diversification and positively react to deal announcements by distressed acquirers. Another explanation may be that private targets are usually associated with higher acquirer returns. The majority (90.8%) of targets by distressed acquirers is private. The acquirer returns that are conditional on public targets are not significantly different between distressed and non-distressed acquirers, which is in line with the latter explanation.

2.4 Motivations for Acquisitions

2.4.1 Acquisition Expenditures and Corporate Investment: Main Results

Figure 2.1 reveals that distressed firms actively make acquisitions. The increasing pattern in diversifying acquisitions suggests that diversification could drive distressed firms to acquire. However, it is also possible that distressed firms make acquisitions in other industries because of the scarcity of growth opportunities within their original industries (McCardle and Viswanathan, 1994). Moreover, the descriptive evidence does not rule out reverse causality bias that distress or bankruptcy is caused by exces-

[16] I exclude multi-segment firms, small firms with total assets less than \$10 million, irregular observations with sales growth, or asset growth larger than 150%, as well as industries with fewer than 3 years of valid data.

sive acquisitions. To understand why distressed firms engage in acquisitions, I conduct causal tests based on an exogenous reduction in bankruptcy probabilities. The exogenous shock—i.e., the announcement of the DRC—reduces bankruptcy probabilities because it enhances creditors' willingness to renegotiate default debt instead of pushing it to Chapter 11 bankruptcy. Therefore, it neither affects the growth opportunities within and outside firms nor directly alters any operating activities. The DRC cleanly separates the diversification motivation from the growth opportunities motivation. The diversification hypothesis implies that distressed firms have less incentive to diversify when their bankruptcy risk decreases. Conversely, the growth opportunities hypothesis suggests no change or positive increase in acquisitions, as a reduction in bankruptcy risk does not affect the growth opportunity set, but does increase the debt capacity of treated firms to allow for more acquisitions. The DRC serves as a positive shock in bankruptcy risk for distressed firms. The degree of such firms' exposure to the shock depends on the proportion of affected syndicated loans in their balance sheets at the time of the DRC. Thus, the diversification hypothesis predicts that a distressed firm spends less on acquisitions after the DRC if it receives a larger reduction in bankruptcy probability from the DRC.

I focus on the period of 2010-2014 in my sample to study the effects of the DRC (in 2012) on acquisition activities. All sample firms have start-of-period total assets over $100 million during the period from 2010 to 2014. I evaluate the changes in acquisition expenditure in a triple-difference setting in Table 2.4, following Equations (2.1) and (2.2). The treated group is the intersection of distressed firms and firms with high syndicated-loan ratios—distressed and HighSynd firms. The data is a panel data, and therefore, industry fixed effects and year fixed effects are included. PostDRC equals one if the firm-year observation is in or after 2012. All variables are winsorized at the 1-99% level. In column 1, I estimate the level changes for the treatment group of acquisition expenditures, without any control variables. The coefficient of the triple interaction term HighSynd $\times$ Distressed $\times$ PostDRC is negative and significant. It shows that acquisition expenditure for the treatment group, highly distressed firms with high syndicated-loan ratio, drops significantly by 1.9 percentage

points. The estimated triple-difference effect is consistently around two percentage points and negatively significant, when more controls and fixed effects are included. Column 3 shows the results of the regression with the full set of controls. Column 4, as in equation (2.2), presents the estimation of the reduction in acquisition expenditures due to the exogenous reduction in bankruptcy risk up to 2.4 percentage points. The magnitude of such a drop is substantial, which is 40.7% of the average acquisition expenditure for the treated group (0.059).

In order to check whether the decline in acquisitions is due to the decrease in the demand to diversify or simply a general pattern in all investment activities, I conduct the same regressions using CapEx and R&D costs as the dependent variables in columns 5 and 6. In contrast to the effects on acquisition expenditures, treated distressed firms tend to insignificantly increase capital expenditures or R&D spending. The finding shows that the DRC only negatively affects acquisition expenditure rather than all types of investment. Since acquisitions are more likely to substantially expand the scope of the firm than internal investment, the results suggest that treated firms become more focused on internal investment by reducing diversifying investment.

All in all, the triple-difference analyses of acquisition expenditure confirm the trend of acquisitions made by distressed firms in recent years and strongly support the diversification hypothesis.

2.4.2 Acquisition Expenditures and Corporate Investment: Robustness

In this subsection, I show that the main results are robust to using a standard difference-in-difference setting, keeping syndicated-loan borrowers only, and including mid-distressed firms, besides using Altman's Z-score.

Although concern about using triple-difference estimations is that the result is driven by certain control groups with irregular trends, the parallel assumption check in Figure 2.3 does not suggest this is the case. Nonetheless, I run standard difference-in-difference regressions in Panel A of Table 2.5. I compare distressed firms across levels of syndicated-loan ratio in columns 1, 2, 5, and 7, while HighSynd firms between distressed and non-distressed in columns 3, 4, 6, and 8. In columns 1 to 4, the depen-

Table 2.4. Triple-Difference Regression Analyses of Acquisition Expenditures, Capital Expenditures, and R&D around the DRC

This table presents triple-difference OLS regression results of acquisition and other investment expenditures between 2010 and 2014. This panel data include all firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years. Firms in financial and utility industries are excluded. *Distressed* dummy takes the value of one if the firm's distance-to-default in August 2012 is in the bottom tercile, and zero for non-distressed firms in the top tercile. Firms in the middle tercile are omitted. *HighSynd* dummy takes the value of one for firms with pre-existing syndicated-loan ratios in August 2012 above median, and zero for firms below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. *PostDRC* takes the value of one if the fiscal year is 2012 or later and is absorbed by year fixed effects. *Acquisition expenditures* measure the cash spending on acquisitions. *CapEx* is capital expenditures. *R&D* is expenditures on research, development, and advertising. Control variables include start-of-period firm characteristics (firm size, leverage, liquidity, market-to-book, ROA, tangibility), firm cash flow in the current year, and term premium at the end of year. Credit-rating fixed effects control for 23 level of firms' long-term credit ratings from Standard & Poor's (including a fixed effect for unrated firms). Industry fixed effects are at the four-digit SIC level. Please see Table A.1 for further information on variable definitions. *t*-statistics are based on robust standard errors clustered at the firm level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels.

	Acquisition expenditures				CapEx	R&D
	(1)	(2)	(3)	(4)	(5)	(6)
Distressed	-0.003	-0.005	0.014**		0.036***	-0.008*
	(-0.61)	(-1.02)	(2.24)		(5.93)	(-1.84)
HighSynd	0.017***	0.024***	0.030***		-0.005	-0.007**
	(2.87)	(3.96)	(4.69)		(-1.35)	(-1.98)
Distressed×HighSynd	0.009	0.005	0.004		-0.017**	0.007
	(1.01)	(0.59)	(0.37)		(-2.55)	(1.40)
Distressed×PostDRC	-0.011*	-0.011*	-0.006	0.003	-0.008*	0.003
	(-1.89)	(-1.79)	(-1.00)	(0.41)	(-1.79)	(1.29)
HighSynd×PostDRC	-0.000	0.001	-0.002	-0.002	0.003	-0.003
	(-0.02)	(0.14)	(-0.28)	(-0.26)	(1.15)	(-1.43)
Distressed×HighSynd×PostDRC	-0.019*	-0.020*	-0.022**	-0.024**	0.006	0.003
	(-1.76)	(-1.85)	(-1.96)	(-2.19)	(1.03)	(1.12)
Firm size			-0.003*	-0.068***	0.000	-0.001
			(-1.71)	(-6.49)	(0.13)	(-1.01)
Leverage			-0.029***	-0.130***	-0.049***	-0.019***
			(-3.19)	(-5.92)	(-5.58)	(-3.30)
Liquidity			0.006***	0.018***	0.003**	0.002
			(3.19)	(5.00)	(2.05)	(1.63)
Market-to-book			0.003	0.009**	0.011***	0.014***
			(1.31)	(2.23)	(6.31)	(9.56)
ROA			0.082***	0.053**	0.019	-0.067***
			(4.92)	(2.54)	(1.50)	(-6.41)
Cash flow			-0.035***	-0.085***	0.060***	-0.066***
			(-2.80)	(-3.80)	(4.78)	(-6.90)
Tangibility			-0.047***	0.035	0.129***	-0.021***
			(-3.65)	(0.89)	(9.83)	(-2.65)
Term premium			-0.003	-0.001	0.002	0.002
			(-0.35)	(-0.08)	(0.95)	(1.47)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	No	Yes	Yes	No	Yes	Yes
Credit-rating fixed effects	No	Yes	Yes	No	Yes	Yes
Firm fixed effects	No	No	No	Yes	No	No
Observations	5172	5172	4991	4991	5307	5314
Adjusted R^2	0.065	0.071	0.092	0.105	0.471	0.631

Figure 2.5. Drop in acquisition expenditures upon the reduction in bankruptcy risk due to the DRC in 2012.

This figure presents the average acquisition spending by non-financial and non-utility firms between 2010 and 2014, sorted into four groups by their exposure to the DRC's impact on bankruptcy risk. Sample firms have total assets over $100 million in 2012 dollars at the beginning of the year. The value on y-axis is *acquisition expenditures*, adjusted to firm size. Distressed firms are in the bottom tercile of distance-to-default measured in August 2012, and non-distressed firms are in the upper tercile. *HighSynd* firms have above-median pre-DRC syndicated-loan ratios, while *LowSynd* indicates the lower half. Syndicated-loan ratio is the ratio of the total amount of all qualifying loan outstanding in August 2012 and total assets in the most recent fiscal year end prior to September 2012. Syndicated loans with the amount less than $100 million, syndicated outside of the U.S., or with status as "canceled", "suspended", or "rumored" are excluded. All variables are winsorized at the 1-99% levels.

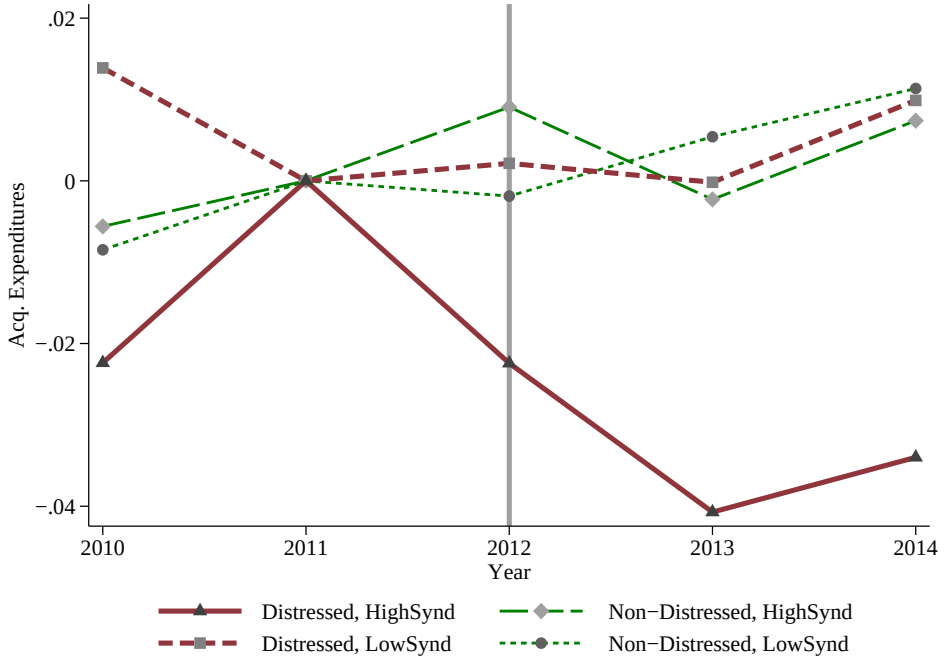


Table 2.5. Robustness Tests of Acquisition Expenditures Around the DRC Announcement

This table presents robustness results for acquisition and other investment expenditures between 2010 and 2014. *Distressed* dummy takes the value of one if firms' distance-to-default in August 2012 is in the bottom tercile, and zero for non-distressed firms in the top tercile. Firms in the middle tercile are omitted. *HighSynd* dummy takes the value of one for firms with pre-existing syndicated-loan ratios in August 2012 above median, and zero for firms below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. *PostDRC* takes the value of one if the fiscal year is 2012 or later and is absorbed by year fixed effects. Panel A reports the results of difference-in-difference OLS regressions within subsamples of the panel data of non-financial and non-utility firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years between 2010 and 2014. Columns 1, 2, 5, and 7 only include observations in the distressed subsample. In columns 3, 4, 6, and 8 only include observations in the HighSynd subsample. The dependent variables are *acquisition expenditures*—the cash spending on acquisitions—in columns 1 to 4, *CapEx* in columns 5 and 6, and *R&D* in columns 7 and 8, respectively. Panel B shows the results of triple-difference OLS regressions of acquisition expenditures within subsamples of the panel data of non-financial and non-utility firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years between 2010 and 2014. Columns 1 and 2 include only firms that have at least one syndicated loan outstanding between 2010 and 2014. Columns 3 and 4 also include firms in the middle tercile of distance-to-default. Control variables include start-of-period firm characteristics (firm size, leverage, liquidity, market-to-book, ROA, tangibility), firm cash flow in the current year, and term premium at the end of year. Credit-rating fixed effects control for 23 level of firms' long-term credit ratings from Standard & Poor's (including a fixed effect for unrated firms). Industry fixed effects are at the four-digit SIC level. Please see Table A.1 for further information on variable definitions. *t*-statistics are based on robust standard errors clustered at the firm level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels.

Panel A. Difference-in-difference

	Acquisition expenditures				CapEx		R&D	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HighSynd	0.027***				-0.014*		0.005	
	(3.36)				(-1.91)		(1.40)	
HighSynd×PostDRC	-0.024***	-0.023***			0.007		0.000	
	(-2.78)	(-2.90)			(1.30)		(0.04)	
Distressed			0.010			0.018***		-0.007**
			(0.81)			(2.82)		(-1.99)
Distressed×PostDRC			-0.024**	-0.020*		-0.003		0.003***
			(-2.53)	(-1.87)		(-0.85)		(2.78)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credit-rating fixed effects	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	No	No	No	No
Observations	2462	2462	2478	2478	2577	2645	2582	2649
Adjusted R^2	0.101	0.147	0.139	0.197	0.450	0.591	0.629	0.661

Table 2.5. Robustness Tests of Acquisition Expenditures Around the DRC Announcement (continued)

Panel B. Alternative samples

	Only active syndicated -loan borrowers		Full sample, including "gray-zone" firms	
	(1)	(2)	(3)	(4)
Distressed	-0.020		-0.001	
	(-1.27)		(-0.09)	
HighSynd	0.007		0.027***	
	(0.93)		(6.02)	
Distressed×HighSynd	0.016		0.002	
	(1.48)		(0.29)	
Distressed×PostDRC	0.024	0.020	0.014	0.015
	(1.40)	(1.16)	(1.03)	(1.13)
HighSynd×PostDRC	0.003	0.006	-0.003	-0.004
	(0.36)	(0.74)	(-0.62)	(-0.75)
Distressed×HighSynd×PostDRC	-0.025**	-0.022*	-0.019*	-0.021**
	(-2.02)	(-1.78)	(-1.95)	(-2.19)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Credit-rating fixed effects	Yes	No	Yes	No
Industry fixed effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes
Observations	3885	3885	7610	7610
Adjusted R^2	0.112	0.186	0.090	0.140

dent variables are acquisition expenditures. The different-in-difference estimations are consistently around -2.3 percentage points, almost identical to the triple-difference estimations. Column 1 implies that distressed firms with high syndicated-loan ratios spend 2.7 percentage points more than those with low syndicated-loan ratios; however, the gap diminishes after the DRC when the treated distressed firms reduce acquisitions expenditures by a comparable 2.4 percentage points. Column 2 suggests that within HighSynd firms, distressed firms acquire as much as non-distressed firms, but cut acquisitions expenditures by 2.4 percentage points upon the DRC. CapEx and R&D do not decrease even under the difference-in-difference setting. In the HighSynd subsample, distressed firms increase R&D significantly due to the DRC. The standard difference-in-difference regression results show that the main results are robust to compare along either dimension, the pre-existing syndicated-loan ratio or distant-to-default.

Since almost half of the sample includes firms with zero syndicated-loan ratios (mostly due to no matches within the LPC Dealscan dataset), I run the regressions in the subsample of those matched to Dealscan to address to the matching inaccuracy concerns. In columns 1 and 2 in Table 2.5, Panel B, I only keep firms that have any syndicated loans outstanding between 2010 and 2014 and run the regression of acquisitions expenditures on the full set of independent variables and controls. The estimations of the treatment effect are very close to those in the main sample.

Because firms in the middle tercile (gray zone) of pre-DRC distant-to-default are dropped in the main analysis, thus, resulting in a loss of a third of the full sample, a potential concern is that the results are sensitive to this filtering. In columns 3 and 4 in Table 2.5, Panel B, I add back these mid-distressed firms. The drops in acquisitions expenditures are still estimated around two percentage points, although slightly less than those without gray-zone firms.

2.4.3 Diversifying Acquisitions

Table 2.6 reports the results when measuring acquisition intensity based on announced deals. In columns 1 and 2, the dependent variable is aggregated value of all completed acquisitions announced in the year, scaled by start-of-period total assets

Table 2.6. Triple-Difference Regression Analyses of Acquisition Activities around the DRC Announcement

This table presents triple-difference regression results of the aggregated acquisition activities around the DRC. *Distressed* dummy takes the value of one if firms' distance-to-default in August 2012 is in the bottom tercile, and zero for non-distressed firms in the top tercile. Firms in the middle tercile are omitted. *HighSynd* dummy takes the value of one for firms with pre-existing syndicated-loan ratios in August 2012 above median, and zero for firms below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. In columns 1 to 4, the panel data include all firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years between 2010 and 2014. *PostDRC* takes the value of one if the year is 2012 or later and is absorbed by year fixed effects. In columns 5 to 8, the panel data include sample firms in the 12-month periods prior and after the DRC. Every firm has two observations, one each for the 12-month period before and the 12-month period after the DRC announcement (September 2012 is excluded), respectively. *PostDRC* takes the value of one indicating the period is after the DRC and is absorbed by time fixed effects. The dependent variable in columns 1 and 2 is *acquisition value*, which is the aggregated acquisition value announced in the period scaled by start-of-period total assets. The dependent variable in columns 3 and 6 is *diversifying-acquisition value*, which is the aggregated acquisition value announced in the period scaled by start-of-period total assets. The dependent variable in column 7 is *#diversifying acquisition*, the number of acquisitions announced in the period. Estimations are based on OLS regressions for columns 1 to 6 and on a Poisson regression for column 7. The acquisition sample only consists of completed acquisitions with shares acquired over 50% and deal value over 1% of start-of-period total assets. Diversifying acquisitions include deals in which the acquirer and the target do not share the same three-digit SIC code. Control variables include start-of-period firm characteristics (firm size, leverage, liquidity, market-to-book, ROA, tangibility), firm cash flow in the current year, and term premium at the end of year. Credit-rating fixed effects control for 23 level of firms' long-term credit ratings from Standard & Poor's (including a fixed effect for unrated firms). Industry fixed effects are at the four-digit SIC level. Please see Table A.1 for further information on variable definitions. *t*-statistics are based on robust standard errors clustered at the firm level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels.

continued on next page

Table 2.6. Triple-Difference Regression Analyses of Acquisition Activities around the DRC Announcement (continued)

	Full sample				12-month windows		
	All acq.		Div.-acq. value		Div.-acq. value		#Div. acq.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Distressed	0.003		0.002		-0.007		-0.739**
	(0.54)		(0.39)		(-0.97)		(-2.24)
HighSynd	0.021***		0.014***		0.008		0.179
	(3.04)		(2.88)		(0.98)		(0.76)
Distressed×HighSynd	0.007		0.004		0.012		0.892**
	(0.71)		(0.55)		(1.17)		(2.23)
Distressed×PostDRC	-0.006	-0.008	-0.001	0.001	0.006	0.006	-0.060
	(-0.96)	(-1.11)	(-0.15)	(0.21)	(0.87)	(0.86)	(-0.15)
HighSynd×PostDRC	-0.007	-0.007	-0.002	-0.000	0.008	0.007	0.094
	(-0.97)	(-0.96)	(-0.38)	(-0.04)	(0.90)	(0.81)	(0.34)
Distressed×HighSynd×PostDRC	-0.018	-0.024**	-0.014*	-0.020**	-0.027**	-0.026**	-0.887*
	(-1.58)	(-2.13)	(-1.85)	(-2.58)	(-2.23)	(-2.14)	(-1.69)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year/Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credit-rating fixed effects	Yes	No	Yes	No	Yes	No	Yes
Industry fixed effects	Yes	No	Yes	Yes	Yes	No	Yes
Firm fixed effects	No	Yes	No	Yes	No	Yes	No
Adjusted/Pseudo R^2	0.050	0.095	0.065	0.055	0.064	0.024	0.271
Observations	5314	5314	5314	5314	2290	2290	2290

(*acquisition value*).[17] In column 1, the drop in acquisition value is 1.8 percentage points, significant only at the 15% level. In column 2, the generalized triple-difference model provides a more precise estimation of the drop, 2.4 percentage points, which is again consistent with previous estimations. Even though the majority of the targets by distressed acquirers are private, I can make use of the industry information to identify diversifying acquisitions based on the primary three-digit SIC codes. Diversifying-acquisition value measures aggregated value of all completed and diversifying acquisitions announced in the year, scaled by start-of-period total assets. Column 4 estimates a drop in diversifying-acquisitions value of two percentage points. Economically, this is a substantial drop of 62.5%, given that the pre-DRC treatment group average diversifying-acquisition value is 3.2 percentage points.

In addition to panel regressions using annual data, I also analyze the actual diversifying acquisitions announced in shorter periods around the shock DRC. The SDC acquisition data provides more timely measurements of major acquisition activities. I focus on 12-months periods before and after the DRC, and exclude the month of September in 2012 when the DRC was announced. I summarize the acquisitions made by firms during the two 12-month windows before and after the DRC, and construct a two-period panel data following Campello et al. (2016). I only keep two observations for each firm, while the two observations are based on the two 12-month windows around the DRC, respectively. The two-period panel data includes fewer observations than the five-year panel data in Section 2.4.1. I regress the aggregate diversifying-acquisition value following Equation (2.1). The diversification hypothesis predicts that treated firms reduce more acquisition activities compared with control groups, which is supported by the negative coefficients of the triple-difference term HighSynd × Distressed × PostDRC.

Columns 5 to 7 in Table 2.6 report the results of triple-difference regressions using two-period diversifying acquisition data. Column 1 reports the standard triple-difference regression result of diversifying-acquisition value, while column 2 represents

[17] The differences between acquisition value and acquisition expenditures include: acquisition value capture the aggregate deal value while acquisition expenditures value the cash expenditure; acquisition value excludes small deals; acquisition value measures acquisition intensity according to the deal commencement dates while acquisition expenditures based on deal effective and payment dates.

the generalized triple-difference regression result. Both regressions generate significantly negative coefficients around -2.6 percentage points for the triple-difference terms. The economic magnitude is substantial, up to 81.3% of pre-DRC distressed acquisition value. The decline in diversifying acquisition activities is not only by the value, but it is also by the number of new deals. The dependent variable of the Poisson regression in column 7 is the number of new diversifying acquisitions announced in each 12-month period. The treated distressed firms reduce the number of diversifying acquisition by 58.8% ($e^{-0.887} = 41.2\%$), due to the DRC. Therefore, the results based on the actual acquisitions in 12-month windows around the DRC confirms the supporting evidence for the diversification hypothesis in Section 2.4.1.

To sum up, the results based on SDC deal information are in line with the diversification hypothesis that distressed firms refocus by reducing acquisition activities upon a reduction in bankruptcy risk.

2.4.4 Use of Proceeds

In addition to studying the actual acquisitions around the DRC, I look into the use of newly obtained funds. In particular, I look into the use of loans proceeds around the DRC as another dimension to verify the drop in acquisition activities. I categorize syndicated loans into different types of investment activities, according to their primary purposes provided by Dealscan. Acquisition-related investment purposes include acquisition line, mergers, takeovers, and so forth, while CapEx-related investment purposes are capital expenditure, corporate purposes, and project finance. In contrast to acquisition-related investment, CapEx-related investments are spent internally and more likely to refocus firm operations rather than diversifying firm scope. Non-investment purposes are debt repayment, equity payout, operating liquidity, and so forth. I aggregate the loans obtained in each of the 12-month periods and conduct triple-difference regressions.

Results of the use of proceeds are shown in Table 2.7. Splitting the investment activities into acquisition-related and CapEx-related activities, I observe a shift in borrowing patterns. Columns 1 to 3 report the effect of the DRC on the new-loan ratios obtained in each period scaled by start-of-period total assets. The net

Table 2.7. Triple-Difference Regression Analyses of Use-of-Proceeds around the DRC Announcement

This table presents triple-difference OLS regression results of the syndicated-loan borrowing patterns for acquisition-related purposes and for CapEx-related purposes around the DRC. The panel data include all non-financial and non-utility firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years between 2010 and 2014. *Distressed* dummy takes the value of one if the firm's distance-to-default in August 2012 is in the bottom tercile, and zero for non-distressed firms in the top tercile. Firms in the middle tercile are omitted. *HighSynd* dummy takes the value of one for firms with pre-existing syndicated-loan ratios in August 2012 above median, and zero for firms below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. *PostDRC* takes the value of one if the year is 2012 or later and is absorbed by year fixed effects. In columns 1 to 3, the dependent variable is *new-acquisition(CapEx)-loan ratio*, the ratio of the total facility amount of new syndicated loans for acquisition(CapEx)-related purposes started in the given period over start-of-period total assets. In columns 4 and 5, the dependent variable is *acquisition(CapEx)-loan ratio*, the ratio of the total facility amount of all syndicated loans for acquisition(CapEx)-related purposes started outstanding at the end of the given period over start-of-period total assets. In columns 6 to 7, the dependent variable is *new-acquisition(CapEx)-loan dummy*, an indicator that takes the value of one if the firm starts any new syndicated loans for acquisition(CapEx)-related purposes in the given period, and zero otherwise. Only completed acquisitions with shares acquired over 50% and deal value over 1% of start-of-period total assets. Diversifying acquisitions include deals in which the acquirer and the target do not share the same three-digit SIC code. Control variables include start-of-period firm characteristics (firm size, leverage, liquidity, market-to-book, ROA, tangibility), firm cash flow in the current year, and term premium at the end of year. Credit-rating fixed effects control for 23 level of firms' long-term credit ratings from Standard & Poor' s (including a fixed effect for unrated firms). Industry fixed effects are at the four-digit SIC level. Please see Table A.1 for further information on variable definitions. *t*-statistics are based on robust standard errors clustered at the firm level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels.

continued on next page

Table 2.7. Triple-Difference Regression Analyses of Use-of-Proceeds around the DRC Announcement (continued)

	New-loan ratio			Loan ratio		Loan dummy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Acquisition		Capex	Acq.	Capex	Acq.	Capex
Distressed	0.004		-0.004	0.003	-0.022	-0.005	-0.007
	(1.35)		(-0.70)	(0.31)	(-1.39)	(-0.90)	(-0.30)
HighSynd	0.019***		0.049***	0.037***	0.096***	0.030**	0.187***
	(3.75)		(6.38)	(3.27)	(5.31)	(2.67)	(7.22)
Distressed×HighSynd	0.005		0.032***	0.060***	0.121***	0.022*	0.036
	(0.66)		(2.82)	(3.01)	(4.19)	(1.86)	(0.98)
Distressed×PostDRC	-0.000	0.001	-0.008	-0.020***	-0.027**	-0.000	-0.034
	(-0.07)	(0.21)	(-1.47)	(-3.07)	(-2.28)	(-0.03)	(-1.59)
HighSynd×PostDRC	0.001	0.001	-0.003	-0.002	0.069***	0.012	-0.047
	(0.26)	(0.17)	(-0.37)	(-0.19)	(4.92)	(1.12)	(-1.64)
Distressed×HighSynd×PostDRC	-0.019**	-0.020**	-0.015	-0.034**	0.003	-0.033**	0.028
	(-2.28)	(-2.39)	(-1.07)	(-1.98)	(0.10)	(-2.05)	(0.65)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credit-rating fixed effects	Yes	No	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	No	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No	No
Adjusted R^2	0.030	0.051	0.148	0.226	0.413	0.034	0.164
Observations	5314	5314	5314	5314	5314	5314	5314

effect of an exogenous reduction in bankruptcy probabilities is that the treatment group borrows significantly less by two percentage points for acquisition activities. In comparison, borrowing for CapEx does not change significantly. Looking at the value of all outstanding loans relative to firm size (loan ratio) in columns 4 and 5, I observe that total loan outstanding for acquisitions drops by 3.4 percentage points while borrowing for CapEx increases insignificantly. Columns 6 and 7 further confirm that the likelihood of borrowing for acquisition-related purposes drops by 3.3 percentage points, while borrowing for CapEx increases insignificantly by 2.8 percentage points.

Therefore, triple-difference regressions on the use of proceeds provide more support for the diversification hypothesis.

2.5 Discussion on Alternative Hypotheses

2.5.1 Risk Shifting

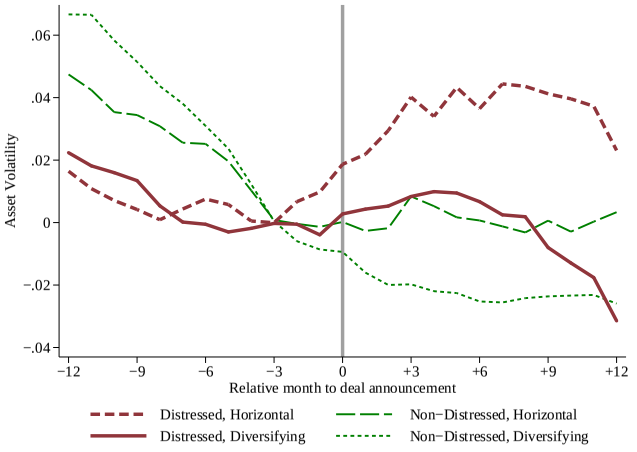
Financial distress can positively relate to investment risk because of agency costs (*risk shifting*; Jensen and Meckling, 1976). Since an acquisition is a type of corporate investment, it is possible that a reduction in acquisition resulting from the DRC is due to a reduction of investment in riskier assets when the DRC has relieved financial distress by reducing bankruptcy risk. Acquisitions involve dealing with incorporating business outside of a firm's scope. Even though external investment like acquisitions can diversify the scope of operations, it can also be a gambling strategy shifting firm operations to an unfamiliar business environment. The alternative hypothesis based on a risk-shifting argument may explain the causal results from the triple-difference analyses on acquisitions.

I directly check the assumption that the acquisitions that distressed firms make add to firm risk. I use monthly estimations of asset volatility and estimated default probability generated with the distance-to-default variable. Figure 2.6 plots the monthly estimation of asset volatility and estimated default probability around deal announcement months. I split deals into diversifying acquisitions and horizontal acquisitions based on three-digit SICs and firms according to their distance-to-default

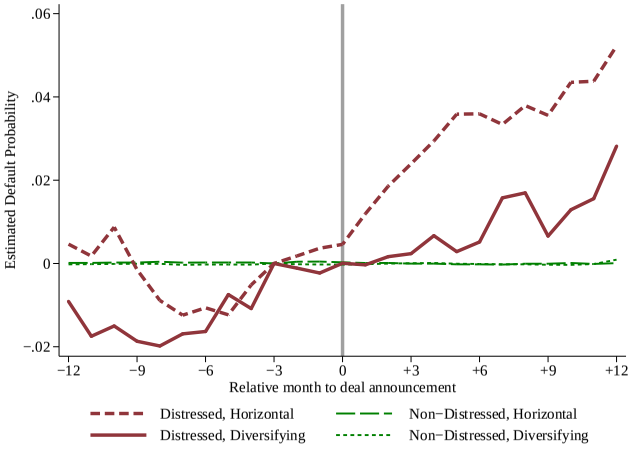
Figure 2.6. Change in financial health around distressed firms' acquisition announcements.

The figure demonstrates the change in asset volatility and Estimated Default Probability around firms announcing acquisitions. The acquisition sample includes all completed deals announced between 2010 and 2014 and made by sample firms. Acquisitions with no actively traded acquirer stocks or the relative deal size is below 5% are dropped. *Asset volatility* and *expected default probability* are monthly estimations based on Merton's model, following Vassalou and Xing (2004) and Bharath and Shumway (2008), adjusted to firm size and leverage, and normalized to 0 in the third month before deal announcement. Acquisitions are sorted into four groups by acquirers' distance-to-default and diversifying-acquisition dummy. Sample firms have total assets over $100 million in 2012 dollars at the beginning of the year. Distress acquirers are in the bottom tercile of distance-to-default, while non-distressed acquirers in the upper tercile. A deal is horizontal (diversifying) if the acquirer and the target (do not) share the same three-digit primary SIC code. All variables are winsorized at the 1-99% levels.

Panel A. Asset volatility around acquisition announcements



Panel B. Estimated default probability around acquisition announcements



in the month prior to announcement. Asset volatility increases when distressed firms make acquisitions, but drop in the long term. Since distressed firms tend to make diversifying acquisitions, the evidence that such diversifying acquisitions reduce asset volatility is not in line with the risk shifting hypothesis.

Moreover, I also check whether firm risk changes due to changes in acquisitions upon the DRC. Since risk variables such as asset volatility and distance-to-default based on Merton's Model, measure current firm risk, the DRC directly impacts these measures and do not fully capture the changes in firm risk due to changes in acquisitions. A more appropriate measure is to capture firm future risk. Christensen and Prabhala (1998) argue that volatility implied by options forecast future volatility. Thus, I proxy for firm future risk by option-implied volatility, following Bali and Hovakimian (2009) and Xing et al. (2010). I average the implied volatilities of all call options for each firm-year observation by either focusing on their last observations or weighting by trading volumes.[18] I also calculate the implied volatilities based on put options, as well as on the arithmetic average of call- and put-option-implied volatilities. Table 2.8 reports the results of triple-difference regressions with the option-implied volatility as the dependent variable using the five-year panel data as in Table 2.4. I control for firm characteristics and industry and year fixed effects. In columns 1 to 3, the dependent variables are based on the last observations of each eligible option. Firm risk proxied by option-implied volatility based on call options increases significantly by around 0.02, or 5.6%. Increases of the same magnitude are not significant if I use average or put-option based option-implied volatility as dependent variables. The results are quantitatively and qualitatively similar if I use trading volumes as weights to calculate the option-implied volatility in columns 4 to 6. However, the risk-shifting argument should predict a reduction in firm risk together with a reduction in acquisitions if the acquisitions made by distressed firms are indeed riskier. I observe a marginally significant increase in firm risk for the treated firms after the DRC, which is inconsistent with the alternative hypothesis. Hence, the results on the riskiness of firms are also more in line with the diversification hypothesis—that is, distressed firms become riskier by reducing diversifying acqui-

[18] See Appendix A.1 for more details.

sitions upon a reduction of bankruptcy risk and by refocusing firm scope through internal investment.

2.5.2 Access to Credit

The results of triple-different regressions capture the change of acquisition activities for distressed firms upon the introduction of the DRC. Although the most direct and immediate effect of the DRC on the treated distressed firms is the reduction in bankruptcy probability, Campello et al. (2016) also find that the DRC enhances the access to syndicated-loan credit for all distressed firms. Treated distressed firms are likely to benefit less from the enhancement of access to credit by the DRC since they have already made high usage of the syndicated loan market and may have maxed out their debt capacity on syndicated loans. Thus, another possible explanation may exist for the results in Section 2.4—all distressed firms increase investment including acquisition activities because of increased financial flexibility, but distressed firms with a lower pre-existing usage of syndicated loans increase investment significantly more than the treated group.

The access-to-credit hypothesis is in line with the significant and negative coefficients for the triple-interaction term HighSynd $\times$ distressed $\times$ PostDRC when the dependent variable measures acquisition activities. However, the access-to-credit hypothesis should also predict a qualitatively similar coefficient of the triple-difference term when the dependent variable measures internal investment. The overall CapEx or R&D spending does not change significantly upon the DRC for the treatment group in Table 2.4. Moreover, in Table 2.7, the newly obtained credit for internal investment does not change significantly. These results do not support the access-to-credit hypothesis.

2.6 Conclusion

This paper explores acquisition activities made by financially distressed firms and investigates motivations for such acquisitions. Distressed firms tend to be active in acquisition activities, especially diversifying acquisitions. The diversifying acquisitions tend to decrease financial risk for distressed firms. To identify the motivation

Table 2.8. Option-Implied Volatilities around the (DRC Announcement

This table presents triple-difference OLS regression results of the option-implied volatility around the DRC. The panel data include all non-financial and non-utility firms with total assets over $100 million (in 2012 dollars) at the beginning of fiscal years between 2010 and 2014. *Distressed* dummy takes the value of one if the firm's distance-to-default in August 2012 is in the bottom tercile, and zero for non-distressed firms in the top tercile. Firms in the middle tercile are omitted. *HighSynd* dummy takes the value of one for firms with pre-existing syndicated-loan ratios in August 2012 above median, and zero for firms below median. Loan facilities over $100 million syndicated in the U.S. starting before September 2012 and ending after September 2012 are considered when calculating pre-existing syndicated-loan ratios. *PostDRC* takes the value of one if the year is 2012 or later and is absorbed by year fixed effects. Dependent variables are *option implied volatility* calculated as the average volatility implied by all near-the-money options of each firm at the end of fiscal years. Implied volatility of each option is based on the last observations in columns 1 to 3, or based on all observations weighted by trading volumes in columns 4 to 6. Please see Table A.1 for further information on variable definitions. Control variables include start-of-period firm characteristics (firm size, leverage, market-to-book, ROA, tangibility), firm cash flow in the current year, and term premium at the end of year. Industry fixed effects are based on Fama-French 12-industry classification. Variables are defined in Table A.1. *t*-statistics are based on robust standard errors clustered at the firm level. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels.

	Last observations			Volume-weighted		
	(1) Average	(2) Call	(3) Put	(4) Average	(5) Call	(6) Put
Distressed	0.018**	0.018**	0.020**	0.020**	0.021**	0.021**
	(1.99)	(2.03)	(2.11)	(2.12)	(2.16)	(2.17)
HighSynd	-0.003	-0.003	-0.004	-0.003	-0.002	-0.003
	(-0.49)	(-0.42)	(-0.52)	(-0.39)	(-0.29)	(-0.46)
Distressed×HighSynd	0.004	0.000	0.005	0.002	0.000	0.004
	(0.25)	(0.02)	(0.29)	(0.15)	(0.00)	(0.22)
Distressed×PostDRC	-0.005	-0.005	-0.004	-0.006	-0.007	-0.005
	(-0.85)	(-1.00)	(-0.77)	(-1.05)	(-1.16)	(-0.90)
HighSynd×PostDRC	-0.007	-0.008	-0.006	-0.008	-0.010*	-0.006
	(-1.43)	(-1.54)	(-1.18)	(-1.55)	(-1.85)	(-1.07)
Distressed×HighSynd×PostDRC	0.019	0.024*	0.016	0.021	0.027*	0.016
	(1.44)	(1.82)	(1.17)	(1.49)	(1.84)	(1.10)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,784	4,766	4,737	4,784	4,766	4,737
Adjusted R^2	0.46	0.46	0.46	0.46	0.45	0.45

behind such activities, I test the diversification hypothesis versus the growth opportunity hypothesis utilizing a triple-difference framework based on a 2012 debt restructuring change (DRC) for syndicated loan creditors. This DRC exogenously reduces firms' bankruptcy probabilities to the extent of their usage of syndicated loans. I observe a net decrease of around 41% in acquisition activities for treated distressed firms from three different sources: total annual cash outflows from acquisitions, major acquisitions announced around the DRC shock, and the claimed use of proceeds when firms obtain new credit. However, upon the shock, I do not observe any significant change in internal investments such as capital expenditures or R&D spending. The results support the diversification hypothesis that a reduction in the need to diversify financial risk results in a decrease in acquisitions and refocusing the business scope, rather than the growth opportunity hypothesis that predicts an increase in external investment under enhanced financial health.

To summarize, distressed firms are actively engaged in acquisition activities, and they acquire in order to diversify bankruptcy risk. The results strongly support the diversification hypothesis and suggest that financial distress may distort corporate investment style toward external expansion.

Chapter 3

Winning Connections? Lobbying and the Resolution of Failed Banks*

3.1 Introduction

Discretion is valuable to ensure regulatory objectives. Regulatory discretion leads to better response to a given circumstance by allowing regulators to act on the basis of more precise, private information. Yet discretion may also bring about decisions that reflect regulators' personal objectives rather than the general public interest (Laffont and Tirole, 1993). The latter consideration is particularly salient following periods of turmoil—when time-consistency problems make deviation from rules more likely—and, thus, underlies the debate on the optimal design of regulatory agencies and mechanisms.

The role of the Federal Deposit Insurance Corporation (FDIC) during the wave of bank failures that occurred in the Great Recession is an important case in point.[1] The FDIC as receiver is empowered to act independently, without the interference from other agencies or courts, and to exercise its own discretion in ensuring expe-

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[1]From 2007 to 2014 (the sample period for the analysis conducted in this paper), the FDIC has been involved in more than 500 distressed bank cases. About 90 percent of these cases were handled using a purchase and assumption transaction. The resolution of failed banks imposed significant costs for the FDIC insurance fund, for which the balance came down from $52 billion in 2007 to a low of negative $20.9 billion in the third quarter of 2009 (see "Condition of the FDIC Deposit Insurance Fund: FDIC Rapidly Recapitalizing" by American Bankers Association, March 2016, available at https://www.aba.com/Tools/Economic/Documents/DepositInsuranceFund.pdf.

ditious and orderly resolution of failed banks (FDIC, 2014, chap. 3, 5). Discretion allows the FDIC to achieve its main objectives; that is, maintaining confidence and stability in the banking system. However, discretion also raises concerns about the transparency, including fairness, of the sale of failed banks, and can thus be seen as a lacuna, hindering the resolution process (see Morrison (2010) for an extensive discussion about this view; and see Section 3.2.1 for details on information disclosure requirements during the FDIC resolution process).

In this paper we study whether discretion may compromise, or enhance, the efficiency of the resolution process, using the perspective of lobbying. Lobbying reflects the two sides of discretion. On the one hand, banks can lobby to provide the FDIC with useful private information, thus making the resolution process more efficient. On the other hand, it may also distort regulatory decisions through capture. We collect detailed information on failed-bank auctions conducted by the FDIC over the period between 2007 and 2014. Our analysis provides clear evidence that bidders engaged in lobbying activities are in a better position to win an auction. According to our preferred estimates, bidders lobbying banking regulators and, in particular, the FDIC at the time of the failure increase their probability of winning an auction by 26.4 percentage points. In addition, we find that the amount spent on lobbying banking regulators has a positive impact on the probability of winning: a one-standard-deviation increase in lobbying expenditures targeted on regulators leads to an increase in the probability that a bidder wins an auction by 6.6 percentage points. These results hold after controlling for bidders' characteristics, such as size, asset composition, capitalization, geographical distance, and quarter and failed-bank fixed effects.

We also use an instrumental variable approach to mitigate endogeneity concerns. The instrument is the general lobbying activities of the bidder; that is, those that are not specifically directed toward relevant banking regulators. Given that a bank's decision to lobby entails high upfront costs, once the bank pays them, the marginal cost of additional lobbying activity declines (Kerr et al., 2014, Drutman, 2015). In other words, the intuition—which has been shown to have support in the data—is

that a bank already engaged in the lobbying process is better positioned to punctually lobby on a specific issue area. Lobbying to regulators and political bodies that are unrelated to bankruptcy and banking are in turn unlikely to interfere with decisions undertaken by banking regulators and, in particular, the FDIC. Our instrument thus satisfies the exclusion restriction by construction. Moreover, we study how the effectiveness of lobbying depends on the type of lobbying employed. While all our proxies for lobbying affect the probability of winning, it is the usage of revolving-door lobbyists and of lobbying contact with the FDIC that have the largest effects on auction outcomes. Although we control for failed-bank fixed effects, a concern is that the competitive structure of the auction market affects lobbying. To accommodate this possibility, we run our regressions in various subsamples split based on the number of bidders involved, and do not find any evidence that changes our conclusion.

The fact that the allocation of failed banks to bidding banks is influenced by lobbying does not necessarily imply that lobbying has any economic consequences. In a next step, we study whether lobbying affects the costs associated with bank failure as well as post-acquisition performance. First, to assess the economic magnitude of the cost (or gain) accrued to the seller (i.e., FDIC) associated with bidder lobbying on failed-bank auctions, we compare the actual resolution costs to what the FDIC would have incurred if another bid had been chosen, and gauge whether lobbying affects this differential. We show that this differential is significantly reduced, and is also more likely to be negative, when acquirers lobby, meaning that lobbying acquirers seem to pay less than other bidders. Economically, the cost imposed on the Deposit Insurance Fund (DIF)—and, hence, to society—due to lobbying is substantial: the average effect estimated is equal to 16.4 percent of the total resolution losses. In level terms, this means that the transfer from the DIF to lobbying bidders amounts to $7.4 billion. Second, we study the acquirer's efficiency following the investment in a failed institution. To do so, we examine how efficiency metrics vary around acquisitions and if this relates to the lobbying activities of the eventual acquirer. In a difference-in-differences setting, we show evidence consistent with the expectation that acquisition of a failed bank improves efficiency as measured by return on assets and cost-to-asset

ratio. However, we find that lobbying acquirers deliver inferior efficiency outcomes relative to their non-lobbying counterparts. The effect documented is economically meaningful. For example, a one-standard-deviation increase in lobbying expenditures is associated with a roughly 30-percent decline in return on assets, relative to the sample mean.

Our analysis speaks to the channel through which lobbying affects regulatory outcomes. Two channels can be distinguished: lobbying is conducted to obtain favorable treatment (rent-seeking channel) or to reveal information to regulators (informational channel). Distinguishing between these channels has proven difficult, as discussed by Facchini et al. (2011) and Igan and Mishra (2014), among others. Nonetheless, our results do suggest that auction winners have to pay a lower price in order to win. This, first, increases the cost to the DIF. It may also prevent the bidder with the highest private valuation to win the auction, resulting in a mis-allocation of failed banks. This is in line with the rent-seeking explanation, albeit by itself is not sufficient to rule out the information-based lobbying. This is because regulators may allocate banks at lower prices to bidders who have conveyed private information that convince the regulators that these bidders are in a more favorable position to acquire the failed bank. However, the fact that lobbying banks under-perform other acquirers ex-post appears inconsistent with the efficiency-improving role of bank lobbying. Instead, this is consistent with agency-type inefficiencies in the allocation of failed banks predicted by rent-seeking theories á la Shleifer and Vishny (1994). Overall, our empirical analysis suggests that, in the context of bank resolution, regulatory discretion may lead to undesirable effects by opening the door for outside influences through lobbying.

The political-economic considerations of our study may have important policy implications, especially regarding perceptions on the credibility of the resolution framework in place and the associated financial stability implications. If market participants believe that the political environment, legal framework, and operational complexities interfere with whether a regulator will take the best decisions—that is, based purely on economic considerations—for a bank in distress, they may adjust

their beliefs on the regulator's commitment or ability to comply by a pre-determined resolution framework. Temptation to interfere with the resolution process may arise due to the inherent time-consistency problem in dealing with too-big-to-fail institutions or when faced with the too-many-to-fail question, or it may simply reflect information that become available to the resolution authority in real time. No matter the source, doubts on commitment or ability to comply may lead to distortions by, for instance, giving lobbying banks a funding advantage and altering the competitive landscape. It may then be tempting to instead tie the hands of the resolution authority and minimize room for discretion, which may have its own implications for efficiency and informed decision making under time pressure.[2]

Our paper is related to several strands of literature. First, it is part of the literature on the resolution of failed banks, which mostly focused on the savings and loan (S&L) crisis of the 1980s. James and Wier (1987) study how FDIC auction procedure and competition affect the sale price of failed bank assets, and report evidence of wealth transfers to winning bidders. Our findings are also in line with the presence of wealth transfers and goes further to suggest that the magnitude of these transfers is partly determined by bidders' lobbying activities. In related work, Giliberto and Varaiya (2012) find that winning bids tend to increase with the number of competitors, consistent with the winner's curse hypothesis. James (1991) adds to these findings by showing that losses—measured as the difference between the book value of assets and the recovery value net of direct expenses related to the failure—are substantial, averaging 30 percent of the failed bank assets. We observe losses in similar magnitude in our sample.

Another set of studies followed the 2008–09 financial crisis. Granja (2013) finds that regulators incur lower resolution costs when disclosure requirements with which the failed bank complies by are more comprehensive, implying that such requirements help mitigate information asymmetries inherent to the auction process. Cole and

[2]This issue is part of an ongoing debate on bank resolution frameworks (Philippon and Salord, 2017, see). Under the Dodd-Frank Act of 2010, significant changes have been made to broaden the resolution powers granted to the FDIC when faced with the failure of a systemically important financial institution. The Act, at the same time, eliminated the option of open bank transactions—which was used by the FDIC in 2008 in the cases of Citigroup and Bank of America—and made the FDIC's ability to provide debt guarantees subject to a congressional resolution of support.

White (2017) look into the timing of FDIC receivership and empirically estimate the costs of forbearance to be almost 40 percent of the FDIC's estimated costs of closure.[3] Closer to our line of inquiry, the work by Granja et al. (2017) document that the wedge between potential acquirers' willingness to pay—as captured by their proximity with the failed bank in terms of location and lines of business—and ability to pay—as proxied by their capitalization—distorts the allocation of failed banks. The authors conclude that frictions in failed bank sales are non-negligible. To our knowledge, ours is the first paper to document that political influence and, in particular, bidder lobbying activities represent an important source of mis-allocation of failed banks in the Great Recession and its aftermath.[4]

Our work also contributes to the literature on the political economy of the financial crisis.[5] Mian et al. (2013) show that both special and constituent interests influenced public policy supporting subprime mortgage lending in the years prior to the crisis—a theme extensively discussed by McCarty et al. (2013). Igan and Mishra (2014) show that politically-targeted activities of the financial industry swayed legislators' position toward deregulation during the pre-crisis period between 1999 and 2006. Mian et al. (2010) find that special interest campaign contributions from the financial services industry is positively associated to votes in favor of the Emergency Economic Stabilization Act of 2008, a bill which transfers wealth from taxpayers to the financial services industry (Veronesi and Zingales, 2010). A few studies focus, like we do, on bank lobbying activities. These studies provide evidence that lobbying banks were more likely to be bailed out (Duchin and Sosyura, 2012) and that they were less likely to be imposed enforcement actions by regulators (Lambert, 2017),

[3]Kroszner and Strahan (1996) investigate the role of politics and the incentives of regulators to intervene in failing banks' operations, and provide compelling evidence that regulators deferred the realization of costs in failing S&L associations (Kane, 1989, see also). Also in the United States, Liu and Ngo (2014) show that political concerns play a significant role in the timing of bank failures over the period 1976-2010. Brown and Dinc (2005) find consistent evidence from a sample of large banks in 21 emerging countries, while Imai (2009) examines the case of Japan in 1999-2002. Our paper adopts a different perspective and provides evidence of political economy factors being at play in the resolution of failed banks.

[4]Therefore, our work is also related to the corporate finance literature on bankruptcy auctions. A partial list in this literature includes: Strömberg (2002), Thorburn (2000), and Eckbo and Thorburn (2008).

[5]Lambert and Volpin (2017) survey the recent literature on the political economy of finance, including a discussion on the financial crisis.

even though they took on more excessive risks in the run-up to the financial crisis (Igan et al., 2012).[6] The results presented here show that lobbying might have had a bearing on the faith of not only saved banks but also those that failed. In that sense, our analyses also relates to the literature on the optimal resolution of bank failures (Acharya and Yorulmazer, 2008, 2007, Walther and White, 2016).

The rest of the paper is organized as follows. Section 3.2 gives information on the institutional background and the data used in the analysis. Section 3.3 presents the results of the empirical analysis on bidder lobbying and the probability of winning an FDIC-run auction. Section 3.4 discusses empirically to what extent the allocation of failed banks during the Great Recession can be interpreted as a sign of mis-allocation. Section 3.5 concludes.

3.2 Institutional Background and Data

3.2.1 An Overview of the FDIC Resolution and Receivership Process

The FDIC, together with the other federal agencies—the Federal Reserve (Fed) and the Office of the Comptroller of the Currency (OCC)—and state regulators, supervises banks, but has also the authority to resolve failing or failed institutions.[7] When a bank is about to fail, the FDIC initiates its resolution process, which formally begins when it receives a notification (the failing bank letter) from the institution's primary regulator. The main reasons for a failure are critical under-capitalization, insolvency, deposit run, implication in a severe case of fraud. Upon receiving the notification, the FDIC contacts the management of the failing institution and arranges for specialists to go to the bank to compile information in preparation for the closing. During this on-site visit, the specialists prepare an information package for potential bidders, perform an asset valuation review[8] (subsequently used to set a

[6] This evidence is consistent with other studies that show that banks paying higher fees are subject to more lenient regulation and, in the long run, have more loans defaulting (Kisin and Manela, 2014) and that banks are less likely to fail in the year leading up to a gubernatorial election (Liu and Ngo, 2014).

[7] Note that the regulatory overhaul following the 2008-09 financial crisis, enshrined in the Dodd-Frank Act of 2010, eliminated one of the regulators at the federal level, namely, the Office of Thrift Supervision (OTS). We have banks supervised by the OTS in our sample, given that the data set covers failures between 2007 and 2014.

[8] The FDIC may hire contractors to complete this work.

reservation value on the sale), estimate the amount of uninsured deposits, determine the resolution method, and plan for the closing and receivership (FDIC, 2014, chap. 3).

Using the information collected on site, the FDIC chooses the most appropriate resolution method to be offered. During the recent crisis, and for most of the FDIC's history, the purchase and assumption (P&A) transaction has been the preferred resolution method—i.e., in more than 90 percent of cases in our sample period. In a P&A transaction, a healthy financial institution agrees to purchase some or all of the assets of the failing depository institution and assumes some or all of the liabilities, including all insured deposits. This is performed through a process that resembles a first-price sealed bid auction. Other methods, including deposit payoffs and purchase and assumption of the insured deposits only (PIs), are usually considered by the FDIC when the auction does not attract any interested bidder or when bids revealed to be below its reservation value.

After gathering the necessary information and determining the resolution method, the FDIC starts to confidentially market the failing institution to a group of approved potential bidders.[9] This initial contact does not contain any identifiable information regarding the distressed institution. Then, a virtual data room—access to which is conditional on signing a confidentiality agreement—is set up to provide potential bidders with details of the failing institution (loan review, schedules representing the value of the items on the balance sheet, operational information, legal documents, bidding procedure). If feasible, prospective bidders are also given the opportunity to review these information as part of their on-site due diligence. The FDIC is not required to reveal whom it invites for the bidding.

After having completed due diligence, bidders submit their bids to the FDIC, generally one to two weeks before the scheduled closing. The bidders can place one or more sealed bids for the failed bank. A bid consists of, at least, two pricing terms:

[9]The eligibility criteria include: (1) be a financial institution or in the process of applying for a bank charter; (2) be well-capitalized; (3) possess a CAMELS rating of 1 or 2; (4) have a satisfactory anti-money-laundering record; (5) have a satisfactory Community Reinvestment Act (CRA) rating; (6) be sufficiently large (i.e., twice the size of the failed institution if located in the same state, even larger otherwise). See also Section B.1.

the first is the franchise value for the deposits (the premium) and the second is the amount for the assets. An additional element that may compose a bid is the terms of a potential loss-sharing agreement between the FDIC and the bidder over the subsequent losses on the assets transferred in the resolution process.[10] The FDIC uses its proprietary least-cost test model to evaluate submitted bids and then selects the one, given the reservation value set by the FDIC, that is the least-costly for the DIF, as mandated by the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). The FDIC is, however, not required to disclose the specifics of these tests and, primarily based on systemic considerations, has recourse to legal exemptions through which it may choose a bid without the least-cost test, thus taking into account unobserved, complex considerations (IMF, 2015).[11]

Once the FDIC board of directors approves the resolution transaction, the final step is the closing of the bank, and the appointing of the FDIC as receiver. Immediately after closure, the FDIC informs the public of the institution's closing, and announces the winning bidder together with an estimate of the cost of resolving the failed institution. The FDIC as receiver is responsible for settling the affairs of the failed institution, which comprises transferring to the acquirer the assets purchased and deposits assumed, and to the extent possible, satisfying the creditor claims against the receivership. An insured depository institution is generally placed in receivership within 90 days, not including the settlement time frames which can take much longer (Hynes and Walt, 2010). Despite the expedient and orderly resolution of the vast majority of failed banks, the FDIC took a loss on most failures since the beginning of the crisis; the cumulated loss so far adds up to $75 billion.

To fulfill this mission as receiver, Congress has entrusted the FDIC with complete responsibility and has also conferred protections and plenary power over the process. The FDIC is not subject to the direction or supervision of any other executive agency,

[10] Under a loss-sharing agreement, the FDIC agrees to absorb a portion of the loss on a specified pool of assets (i.e., commercial assets and residential mortgages), which maximizes asset recoveries and minimizes losses by preventing the FDIC of having to keep or take back large amounts of assets that it would then attempt to sell piecemeal under unfavorable market conditions (for details, see FDIC (1998, chap. 7) and FDIC (2014, chap. 4)).

[11] Title XI of the Dodd-Frank Act curtailed the systemic risk exception authority of the FDIC. This authority can now only be used for insured depository institutions placed into receivership and wound down and not used for open bank assistance.

state, or court in the operation of the receivership, which allows the FDIC to use its discretion in determining the most effective resolution of failed institutions. The most significant of these powers fall into the following categories (FDIC, 2014, chap. 5): (1) determining whether to allow or disallow claims; (2) repudiating contracts that are deemed to be burdensome; (3) placing litigation on hold; (4) avoiding fraudulent conveyances; and (5) using special defenses. The latter point (5), for instance, protects the FDIC by prohibiting courts from issuing injunctions or similar equitable relief to restrain the receiver from completing its resolution or liquidation activities.

3.2.2 Bank Lobbying Activities in the United States

Lobbying is pervasive in the American democratic process (Drutman, 2015) and, in particular, constitutes the bulk of politically-targeted spending aimed at influencing policies and regulatory decisions (Kerr et al., 2014). Lobbyists attempt to sway the influence of regulators and politicians on specific issues, using a combination of contacts, expertise, persuasion and public relations skills. Banking interests are particularly well represented by lobbyists, whether external or in-house. In 2009, at the height of the crisis, commercial banks alone spent approximately $50 million in hiring lobbyists, which is five times the money they spent on campaign contributions over the same year. In 2009, again, lobbyists specifically targeted the FDIC 120 times, and about 800 times between 2007 and 2014.[12]

Legally, a *lobbying contact* is defined as "any oral or written communication (including an electronic communication) to a covered executive branch official or a covered legislative branch official that is made on behalf of a client with regard to (i) the formulation, modification, or adoption of Federal legislation (including legislative proposals); (ii) the formulation, modification, or adoption of a Federal rule, regulation, Executive order, or any other program, policy, or position of the United States Government; (iii) the administration or execution of a Federal program or policy (including the negotiation, award, or administration of a Federal contract, grant, loan, permit, or license); or (iv) the nomination or confirmation of a person for a position subject to confirmation by the Senate (LDA [2 U.S.C. 1602])". In our analyses, the

[12]Sourced from www.opensecrets.org (last accessed: May 2017).

definition under (iii) is the type of activity we are interested in.

The Lobbying Disclosure Act of 1995 (LDA), by bringing a certain level of accountability to federal lobbying practices, imposes lobbyists to register and report periodically information on their activities to the Senate Office of Public Records (SOPR). The information that external and in-house lobbyists have to disclose includes the amount of money they receive by their clients as well as the issues and the officials (at the agency level) targeted. Another feature of the disclosed information is that the identity of lobbyists hired by a particular firm to lobby a particular agency on a particular issue is known. Hence, it is possible to categorize different lobbyists based on their previous work experience. In the literature, a commonly used concept has been that of the "revolving door" whereby former members of Congress, staffers, and public-sector employees leave their posts to become lobbyists.[13]

The information disclosed under the LDA includes the amount spent on lobbying as well as the issues and the officials (at the agency level) targeted. This helps determine the economic motivation behind the lobbying effort and the branch of the government targeted. In other words, one can observe which bank hired lobbyists to contact which agency, allowing analysis of a bank auction in relation to lobbying to the federal bank supervisors by the involved banks.

3.2.3 Sample Composition, Data Sources and Key Variables

Our empirical analysis combines data on each government-assisted deal from SNL Financial and publicly available information released by the FDIC on these deals.[14] We obtain from these sources information on the identities of failed banks and acquirers, bidding information, P&A terms, estimated costs of resolution, and, if available, the identities of other bidders.[15] The shaded area of Figure 3.1 shows the time dis-

[13]Bertrand et al. (2014) document the importance of the connections built through the revolving door in determining what issues a lobbyist is hired to work on. Blanes i Vidal et al. (2012) show that lobbyists who worked for legislators in the past generate more revenue.

[14]FDIC data are retrieved from http://www.fdic.gov/bank/individual/failed/banklist.html (last accessed: April 2016).

[15]The FDIC discloses on its website the identities and bidding information of all bidders. Note, however, that we can only obtain the identities of acquirers (winning bidders) and cover bidders (second place). For the remaining bidders, the FDIC provides a list of bidder names without linking to specific bidding information. Nonetheless, we compile the sample of actual bidders including all the bidders disclosed by the FDIC. We match the names of bidder banks with the FDIC institution

tribution of all failed banks in our sample, while Table 3.1 presents the construction of the auction sample. From 2007 to 2014, our period of interest, the FDIC acted as the receiver for 522 commercial and savings banks and chose the P&A transaction as the resolution method in 470 of cases. We drop from our analysis 39 cases without auction disclosures occurring prior to May 2009 as well as the P&A transaction of Home National Bank, which involved two acquirers.[16] We exclude assistance transactions (13 cases), direct payoffs (26), and PIs (13), because there are no auction data available.[17] We end up with a sample composed of 430 P&A transactions, accounting for $278.3 billion of aggregate total assets. Table 3.1 also reports that 65.8 percent of the FDIC-run auctions attract bids from at least two eligible institutions, out of which 43.1 percent records four or more bidders.

We obtain financial characteristics of both failed and bidding banks from the Quarterly Report on Condition and Income (or Call Report) filings. These Call Reports provide detailed information on the size, capital structure, and asset composition for each commercial and savings bank, while SNL Financial further provides demographic characteristics and an estimation of banks' CAMELS rating.[18] Moreover, we compute various measures of bidders' proximity to failed banks using information from the Summary of Deposits database provided by the FDIC.

We use lobbying disclosure filings to identify banks that are engaged in lobbying. The LDA requires lobbyists to register and report information on their activities to the Senate Office of Public Records (SOPR). The version of the data used comes

directory to identify each bidder with a FDIC certification number. For each bidder, we identify several potential matches in the institution directory using fuzzy matching algorithms based on spelling and phonetic distances. Then we go over each matched pair based on bank names, cities, and states to confirm the automated match. For bidder names without a match, we use manual searches to identify a match.

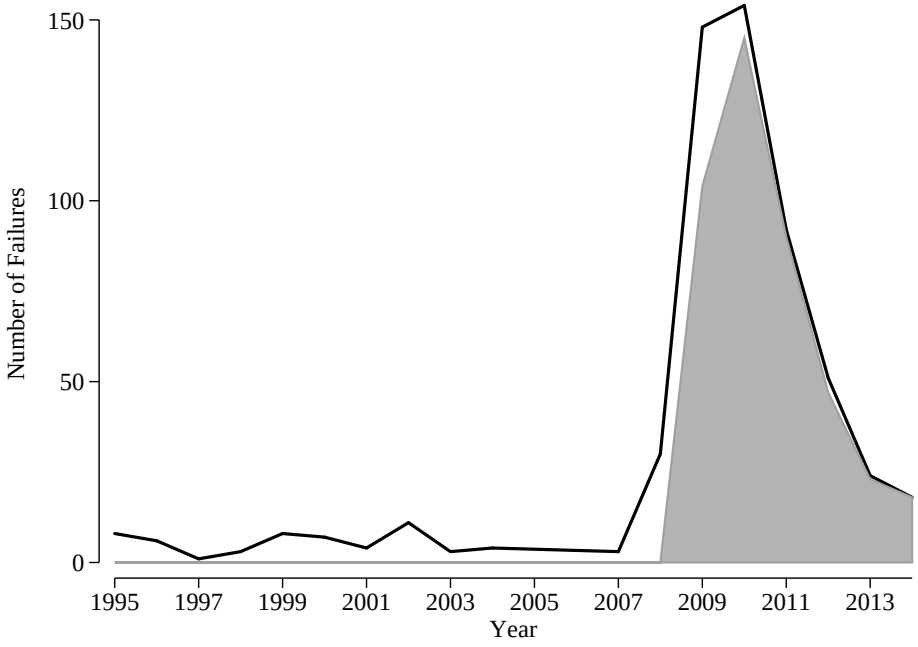
[16]Before that date little was known about other bidders and their bidding prices. From November 2009, the FDIC, in compliance with the Freedom of Information Act (FOIA), began to disclose all the bids in auctions subsequent to May 2009. The information disclosed by the FDIC increased due to the change in the FDIC's internal policy under public pressure. Before the change, one needed to file a FOIA request to obtain such information.

[17]There is also an economic reason to exclude these transactions because the FDIC tends to choose these as a resolution option because there is no potential acquirers.

[18]CAMELS—officially, Uniform Financial Institutions Rating System (UFIRS)—is an abbreviation for the supervisory rating system U.S. regulators have developed to assess a bank's condition, based on its Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity to market risk. Ratings are not released to the public but general information on the system is available (https://www.fdic.gov/regulations/laws/rules/5000-900.html).

Figure 3.1. Number of bank failures

This figure plots the time series of all bank failures between 1995 and 2014. Data is obtained from the FDIC website: www.fdic.gov/bank/individual/failed/banklist.html. The solid line presents the number of bank failures in each year, excluding assistance transactions. The shaded area presents the sample used in the main analysis.



from the Center for Responsive Politics (CRP).[19] We merge CRP data with the SNL Financial database using a name-matching procedure (i.e., an algorithm that finds common words) enabling us to generate a list of potential matches between the names in CRP and SNL Financial. We then manually check whether the pairs of name strings are actual matches with current and historical bank names via eyeballing, web searches, and additional information provided in disclosure filings. We also assign the lobbying activities from the parent institution, if any, to an individual bank because individual banks may benefit from the lobbying done by their parent without necessarily lobbying on their own. The main lobbying variables used in the analysis (see Appendix B.1 for definitions) are constructed with the following information: the name of the registrant (i.e. the lobbying firm) and the name of the

Table 3.1. Auction sample construction

This table presents the construction of the auction sample used in the analysis. The main sample starts with all failed banks in the U.S. between 2007 and 2014, excluding assistance transactions and the outlier Washington Mutual Bank. Assistance transactions via either open bank assistance or providing assistance to the acquirer are rarely used after 1992. Such methods were only used in 5 failed banks belonging to Citigroup on November 23, 2008, and 8 failed banks belonging to Bank of America on January 16, 2009. Payoffs are failed bank resolutions where there is no acquirer and the FDIC pays off all insured deposits. PIs are the acquisitions of only insured deposits of failed banks. The disclosure of failed-bank auctions started from May 2009. In July 9, 2010, RCB Bank and Enterprise Bank & Trust together purchased Home National Bank. Enterprise Bank & Trust took over a collection of loans while RCB Bank assumed the rest of assets, including all deposits. The aggregate value of total deposits and total assets (in $ million) are from the last Call Reports of the failed institutions. Aggregated Resolution Cost (in $ million) is the amount disbursed from the Deposit Insurance Fund to cover obligations to insured depositors and the amount estimated (by the FDIC) to be ultimately recovered from the failed bank resolutions.

	Sample	#obs.	Aggregated Deposits	Aggregated Assets	Aggregated Resolution Cost
	All failed banks, excluding assistance transactions (2007-2014)	509	315,774	384,831	75,045
−	Payoffs (no acquirer)	−26	13,888	15,901	4,467
−	PIs (acquiring insured deposits only)	−13	27,673	40,341	15,284
−	No auction disclosures	−39	37,517	49,682	10,226
−	Two acquirers	−1	514	585	67
	P&As with auction disclosures	**430**	236,167	278,306	44,992
	1 bidder	147	59,017	66,082	15,939
	2 bidders	81	59,076	73,229	10,805
	3 bidders	79	40,514	47,809	8,294
	4 bidders	58	37,688	45,206	5,457
	>4 bidders	65	39,872	45,979	4,497

client (in case of in-house lobbying the bank is the registrant and client); the annual amount the client pays, which is calculated by the CRP by summing the information in quarterly reports; and the name of agencies lobbied. First, we construct a variable that captures the bidder lobbying status during the current year of the bank failure date. More specifically, this is an indicator variable that takes the value of 1 if the bank lobbies the Treasury or any of the following relevant banking regulators: FDIC, Fed, OCC, and OTS. Second, we construct a variable that reflects the intensity with which a bank lobbies. This variable is the log-dollar amount of lobbying expenditures directed specifically toward the Treasury and the aforementioned banking regulators. Third, we create several other lobbying variables using additional information from the lobbying disclosure filings that are presented and discussed in Section 3.3.3.

3.2.4 Descriptive Statistics

In Table 3.2 we present descriptive statistics of the main variables used in our analysis for failed banks (Panel A) and their bidders (Panel B). The vast majority of failed banks in our sample are state chartered (73 percent).[20] At the time of the failure, the median failed bank's total assets are $203.5 million, with a high standard deviation of $1.4 billion. Bank failures impose substantial costs on the FDIC: the median cost of a sold failed bank in our sample is 23.5 percent of total assets of the failed bank, with a significant dispersion (standard deviation of 12.5 percent). Similar insights apply for the net discount, as defined by the difference between the asset discount and the deposit premium of the winning bid (standardized by total assets of the failed bank). In levels, the average cost of resolution amounts to $92.9 million, with a median of $41.2 million and a standard deviation of $153.1 million. The resolution of bank failures in our sample led to DIF costs of approximately $45 billion.

Comparing the characteristics of failed banks with bidding banks reveals inter-

[19] See the CRP website (http://www.opensecrets.org.) for more details.

[20] From the 430 P&A transactions in Table 3.1, 265 (untabulated) concerns state-chartered banks supervised by the Fed. State non-member banks and savings institutions (chartered and supervised by the FDIC) account for 63 of the transactions. Federally chartered banks (supervised by the OCC) are observed in 63 cases, while thrifts make up the remainder with 39 P&A transactions at the time the OTS still existed.

esting patterns. Bidding banks are, as expected, much larger than sold failed banks. The average bidding bank's assets are $8.8 billion with a standard deviation of $3.3 billion, while the average failed bank's assets amount to $605.3 million (standard deviation of $1.4 billion). Bidding banks are also well capitalized (average Tier 1 capital ratio of 15.8) and have no significant regulatory concerns (an average estimated CAMELS rating of 1.6). Bidding banks are located relatively close to failed banks with an average distance of 225 kilometers away from each other. Failed banks show on average a higher proportion of residential real estate loans (approximately 55 percent of their asset portfolio), though the bulk of lending from all banks in our sample tilts to real estate.

Many bidders are engaged in lobbying in 2007-2014 (18 percent of all bidders) as well as at the time of a target bank failure (12 percent). The proportion of lobbying banks in our sample is thus quite high given the high entry barriers to beginning to lobby (Kerr et al., 2014, Bertrand et al., 2014). The average lobbying expenditures (on any issues) in our sample are $86,720, with a significant dispersion (standard deviation of $338,800). Focusing on lobbying bidders only, they spent on average approximately $710,000 (i.e., $42.56 \div 0.06$ in Panel B) on lobbying expenditures targeted at regulators during the year of the failure, again with a significant dispersion.

In Table 3.3 we compare characteristics of auction winners (i.e., acquirers) with auction losers. We note that acquirers tend to be located closer to failed banks relative to other bidders, consistent with Granja et al. (2017). However, winners and losers do not appear to differ on many other characteristics but their lobbying activities. Acquiring banks tend to lobby significantly more than other bidders. The winner lobbying status is on average 5 percentage points higher than the one of losers. Acquirer's average lobbying expenditures targeted at banking regulators are almost doubling that of a loser ($e^{0.66} = 1.93$). Interestingly, winners also tend on average to satisfy less the FDIC eligibility criteria (see the five proxies we used in Appendix B.1) than losers. Figure 3.2 shows the lobbying activities by all bidding banks surrounding the bank failure date: auction winners (solid line) are consistently engaged in more lobbying activities than losers (dashed line). In Figure 3.3, we present the histogram

Table 3.2. Summary statistics

This table presents descriptive statistics of the main samples used in the analysis. Panel A describes the sample of failed banks. Panel B describes the bidding banks participating in the auctions of failed banks. The variable Resolution Cost in Panel A is expressed as both the dollar amount (in $ million) and percentage of Total Assets of the failed bank at the time of the failure. Lobbying expenditures are in three forms: (1) indicators that take the value 1 if lobbying expenditures is positive in the year of failures; (2) dollar amount (in $ thousands) of lobbying expenditures in the year of failures; and (3) log-transformation of the dollar amount in (2). All the other variables are in the quarter prior to the failure dates. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels.

Panel A. Failed Banks

Variable	# obs.	Mean	St.dev.	25th perc.	Median	75th perc.
			Resolution Cost			
Resolution Cost ($ million)	430	92.86	153.06	19.58	41.15	90.98
Resolution Cost (%)	430	24.17	12.54	14.83	23.5	33.05
Net Discount (%)	430	11.72	9.08	5.78	10.54	16.39
Net Discount Differential (%)	287	-1.68	8.13	-4.65	-1.7	0.01
Acquirer Net Discount >Cover Bids	287	0.26	0.44	0	0	1
			Financial Characteristics			
Total Assets ($million)	430	605.26	1421.05	98.64	203.48	453.35
Liquidity Ratio	374	22.24	8.77	15.21	21.22	27.03
CRE Loans (%)	411	10.62	8.58	4.6	8.35	14.35
C&I Loans (%)	411	25.59	17.5	12.76	23.3	32.28
Residential Loans (%)	411	54.66	24.25	42.88	60.02	70.88
Tier 1 Capital Ratio (%)	399	1.15	3.47	0.14	1.48	2.63
NPL Ratio (%)	374	25.74	11.5	17.66	24.13	32.42
OREO Ratio (%)	411	5.34	4.85	1.81	4.12	7.35
Core Deposit (%)	374	80.57	19.27	68.87	87.39	95.97
State Bank	411	0.73	0.44	0	1	1
Estimated CAMELS Rating	411	4.97	0.16	5	5	5
			Acquirer Lobbying Expenditures			
Lobbying Regulators >0	430	0.1	0.3	0	0	0
Lobbying Regulators ($000)	430	52.01	219.23	0	0	0
Lobbying Regulators (log)	430	1.23	3.77	0	0	0
Active Lobbying	430	0.2	0.4	0	0	0
Lobbying >0	430	0.16	0.36	0	0	0
Lobbying ($000)	430	123.05	368.12	0	0	0
Lobbying (log)	430	2	4.71	0	0	0

continued on next page

Table 3.2. Summary statistics (continued)

Panel B. Bidding Banks

Variable	# obs.	Mean	St.dev.	25th perc.	Median	75th perc.
			Financial Characteristics			
Total Assets ($million)	1135	8840.63	33379.3	520.68	1466.58	3788.68
Liquidity Ratio	1051	25.12	11.32	17.06	23.1	31.73
CRE Loans (%)	1135	14.23	9.1	7.47	12.26	18.88
C&I Loans (%)	1135	24.99	15.54	14.68	22.51	30.99
Residential Loans (%)	1135	45.67	21.57	32.68	47.88	62.14
Tier 1 Capital Ratio	1088	15.78	6.96	11.83	13.88	17.09
NPL Ratio	1051	6.18	5.3	2.51	4.87	8.11
OREO Ratio	1135	1.04	1.13	0.21	0.65	1.43
Core Deposits (%)	1051	86.3	10.76	81.94	89.4	94.19
State Bank	1135	0.73	0.45	0	1	1
Estimated CAMELS Rating	1118	1.6	0.62	1	1.5	1.5
			Proximity to Failed Banks			
Eligible Bidder	1051	0.61	0.49	0	1	1
Distance	1134	5.42	1.34	4.4	5.48	6.52
Distance CRE Loans (%)	1083	23.16	19.23	8.39	17.72	33.45
Distance C&I Loans (%)	1083	8.9	8.14	2.83	6.54	12.43
Distance Residential Loans (%)	1083	14.87	13.63	5.18	11.54	19.75
			Lobbying Expenditures			
Lobbying Regulators >0	1156	0.06	0.25	0	0	0
Lobbying Regulators ($000)	1156	42.56	220.01	0	0	0
Lobbying Regulators (log)	1156	0.83	3.17	0	0	0
Active Lobbying	1156	0.18	0.39	0	0	0
Lobbying >0	1156	0.12	0.32	0	0	0
Lobbying ($000)	1156	86.72	338.77	0	0	0
Lobbying (log)	1156	1.46	4.05	0	0	0

of failed banks' total assets and further highlight the frequencies with which failed banks are acquired by banks engaged in lobbying. Moreover, we can observe that the distribution is skewed to the right (darker shaded bars), indicating that lobbying banks tend to acquire the largest failed banks. The solid line in Figure 3.3 shows this even more clearly by displaying the proportion of failed banks eventually acquired by a lobbying institution in a corresponding size range. In summary, these differences in means reported in Table 3.3 and the graphical illustrations in Figure 3.2 suggest that failed banks are likely to be sold to banks engaged in lobbying activities. We formalize these insights with the regression analyses to follow.

3.3 Empirical Results on the Allocation of Failed Banks and Bidder Lobbying

3.3.1 Baseline Results

To evaluate the effect of lobbying on the probability that a bidder wins a FDIC-run auction, we use $\Phi(\cdot)$ denoting a probit and estimate the specification

$$\Pr(\text{win}_{ijt} = 1) = \Phi(\alpha + \beta l_{jt} + \Gamma_j X_{jt} + \Gamma_{ij} X_{ijt} + \mu_i + \mu_t + \varepsilon_{ijt}), \tag{3.1}$$

in which win_{ijt} is a dummy variable equal to 1 if a bidder j acquired failed bank i at time t, and 0 if not. α is a constant term. l_{jt} is a measure of bidder j's lobbying activities, usually either taking the value of 1 when the bidder directs its lobbying toward a banking regulator or calculated as the log of 1 plus the lobbying expenditures on banking regulators, measured in thousand dollars. X_{jt} is a vector of control variables that always includes the following financial characteristics of bidder j in the quarter prior to the failure date t: Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans, C&I Loans, and Residential Loans. X_{ijt} is another vector of variables of proximity between a failed bank i and a bidder j, which always includes the variable Distance, calculated as the log value of average distance of the branch network of the bidding bank j from the branch network of the failed bank i, and Change in HHI, calculated as the average increase in local deposit

Table 3.3. Winning and losing bidders

This table presents the results of t-test with unequal variances of the mean difference between auction winners and losers. All variables on financial characteristics are in the quarter prior to the failure dates. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	Winner		Loser		Winner − Loser	
	#obs.	Mean	#obs.	Mean	Difference	t-stat.
Financial Characteristics						
Size	418	14.28	715	14.27	0.01	-0.09
Liquidity Ratio	389	25.64	661	24.82	0.81	-1.13
CRE Loans (%)	418	14.98	715	13.79	1.19**	-2.19
C&I Loans (%)	418	24.62	715	25.19	-0.57	(-0.61)
Residential Loans (%)	418	45.83	715	45.69	0.14	-0.11
Tier 1 Capital Ratio	406	15.96	680	15.68	0.28	-0.61
NPL Ratio	389	6.14	661	6.22	-0.09	(-0.24)
OREO Ratio	418	0.97	715	1.07	-0.1	(-1.39)
Core Deposits (%)	389	84.52	661	87.38	-2.85***	(-3.98)
State Bank	418	0.7	715	0.75	-0.04	(-1.61)
Estimated CAMELS Rating	411	1.61	705	1.59	0.02	-0.56
Proximity to Failed Banks						
Eligible Bidder	397	0.55	653	0.65	-0.10***	(-3.20)
Distance	414	5.25	719	5.51	-0.27***	(-3.24)
Distance CRE Loans (%)	400	24.01	681	22.53	1.34	-1.09
Distance C&I Loans (%)	400	8.89	681	8.84	-0.02	(-0.03)
Distance Residential Loans (%)	400	15.29	681	14.52	0.65	-0.75
Change in HHI	430	2.1	722	1.56	0.55	-0.91
Lobbying Expenditures						
Lobbying Regulators >0	430	0.1	726	0.04	0.05***	-3.3
Lobbying Regulators (log)	430	1.23	726	0.57	0.66***	-3.18
Active Lobbying	430	0.2	726	0.15	0.05**	-2.1
Lobbying >0	430	0.16	726	0.09	0.06***	-3.09
Lobby (log)	430	2	726	1.11	0.89***	-3.4

market concentration across failed bank branch locations.[21] μ_i and μ_t represent a full set of failed bank and quarter fixed effects. The failed bank fixed effects μ_i ensure that our results are not driven by the characteristics of the bank being sold and its auction process, while quarter fixed effects μ_t control for any macro movements. The coefficient of interest is β, which measures the effect of lobbying on the probability that a bidder wins a FDIC-run auction. ε_{ijt} is the error term.[22] Throughout the main text, we report standard errors clustered at the level of the state where the failed bank's headquarters is located. In unreported results, we have bootstrapped standard errors obtained using 1,000 draws with replacement, and confirm that our

Figure 3.2. Bidding bank lobbying activities around bank failures

The figures show the time series of lobbying activities targeted at banking regulators by all bidding banks in the main analysis during the years around failure dates. Year 0 in the x-axis identifies the calendar year of each bank failure. The figure at the top shows the percentage of bidding banks engage in lobbying targeted at banking regulators, while the figure at the bottom shows the average lobbying expenditures (in $ thousand) on banking regulators. Winner (solid lines) in the auction of a failed bank is the bidding bank that wins the auction and becomes the acquirer of the failed bank. Loser (dashed lines) in the auction is the bidding bank that does not win.

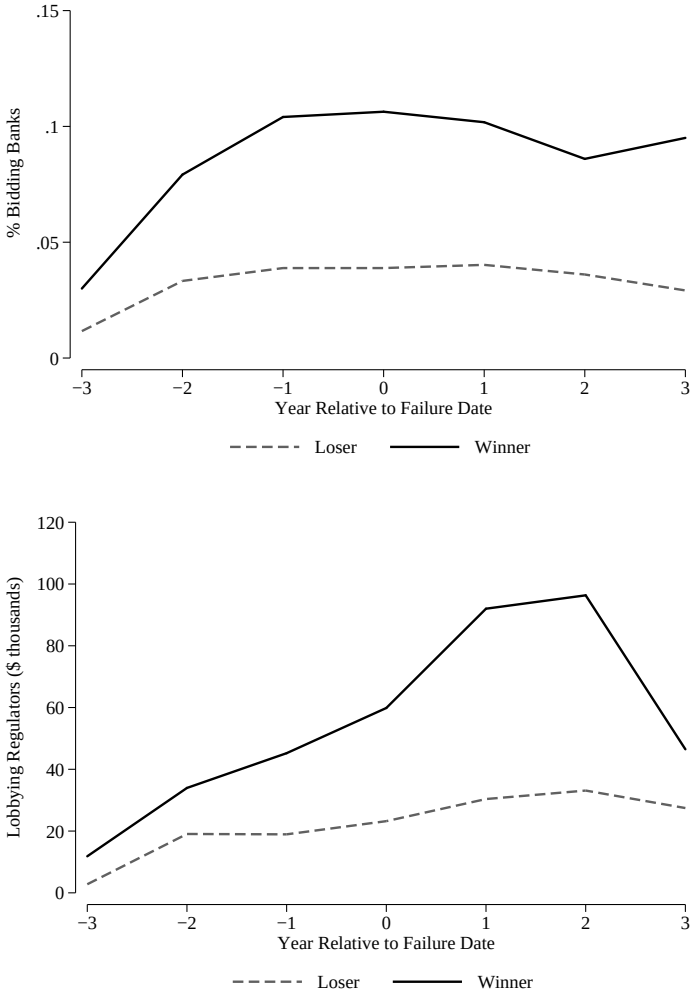
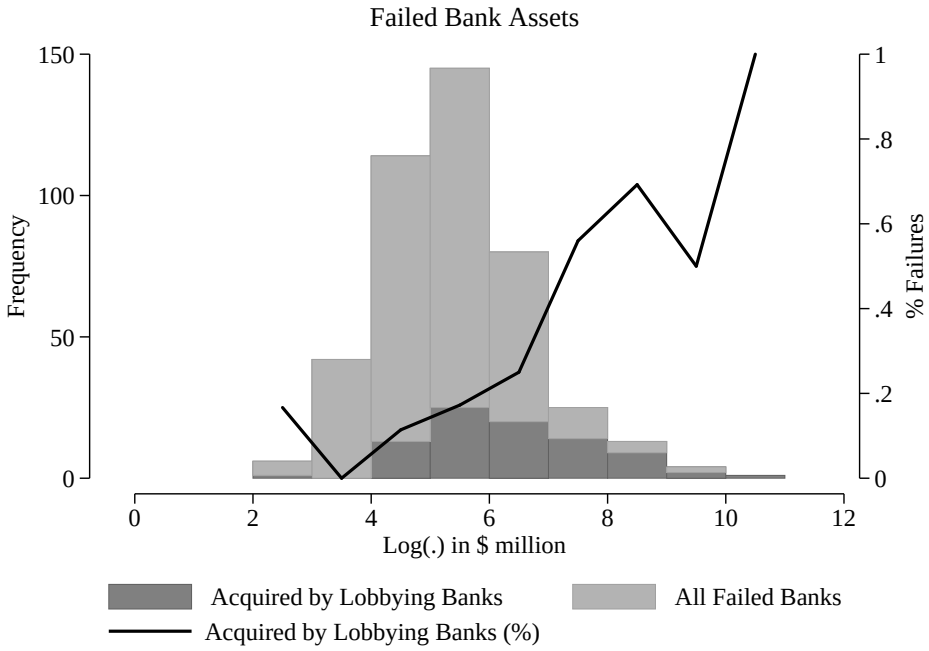


Figure 3.3. Histogram of failed bank assets

The figure shows the histogram of total assets of failed banks. The light shaded bars present the frequencies of bank failures in a corresponding size range (in log-transformation of $ million). The darker shaded bars show the frequencies of bank failures taken over by a lobbying acquirer in a corresponding size range. The solid line depicts the proportion of bank failures with a lobbying acquirer in a corresponding size range.



results are robust.

Table 3.4 shows our basic regressions, estimates of Equation 3.1. The results across columns 1-4 confirm the intuition from Figure 3.2 that lobbying is positively associated with the probability of acquiring a failed bank. Column 1 is the most parsimonious specification regressing the probability of winning an auction on our lobbying dummy variable and both quarter and state fixed effects, meaning that all auctions (even with only one bidder) are considered. The probit estimate of β yields a marginal effect of 0.1858 (s.e.= 0.0648), statistically significant at the 1-percent level. In column 2, we estimate the same specification as in column 1 but we replace state fixed effects by failed bank fixed effects μ_i, which allow for within auction differences in lobbying status of bidders to the failed bank.[23] The inclusion of μ_i implies that auctions with only one bidder are dropped. The average marginal effect estimate on lobbying status is 0.3425 (s.e.=0.0648), statistically significant at the 1-percent level.

Column 3 is our standard specification, which adds controls for financial characteristics of bidders, their distance to the failed bank, and change in market concentration. The result on lobbying is statistically and economically meaningful. The estimate, 0.2640 (s.e.=0.0680), implies that targeted lobbying on regulators increases the probability of winning the auction by 26.4 percentage points. Column 4 mirrors the specification in column 3 but turns to estimating the effect of lobbying expenditures. The coefficient estimation on lobbying expenditures is 0.0208 (s.e.=0.0051), again statistically significant at the 1-percent level. In economic terms, a one standard deviation increase in targeted lobbying expenditures on regulators (3.17) leads to an increase in the probability that a bidder wins the auction by 6.6 percentage points.[24]

[21] All our results presented in the next sections are robust to the inclusion of other variables in X_{jt} (Core Deposits, State Bank, Estimated CAMELS Rating) and X_{ijt} (Eligible Bidder, Distance X Loans), respectively. We do not report them in the paper for brevity reasons.

[22] As a robustness check, we also run conditional fixed-effect logit regressions $\Phi(\cdots|\mu_i)$ in which bidder-failed bank pairs are grouped by the failed bank i and the likelihood is calculated relative to each group (μ_i denotes the fixed effect for failed bank i). The results obtained are very similar and, thus, not reported for brevity reasons.

[23] Quarter fixed effects are absorbed when we insert failed bank fixed effects.

[24] It is worthwhile emphasizing that we address self-selection bias in Table A.2 in the appendix by performing a Heckman-probit analysis. Bidders may indeed self-select to bid upon the invitation from the FDIC to join an auction, raising concerns that our results do not apply to a representative eligible bidder. Based on the eligibility criteria reported in Appendix B.2, we extend the bidder

The evidence from control variables in columns 3 and 4 shows that winning bidders are relatively larger and less liquidity-constrained than losers. By contrast, the coefficient on capitalization (as measured by Tier 1 Capital Ratio) is not statistically distinguishable from zero, suggesting that actual bidders do not differ much in their ability to pay for the failed bank (Granja et al., 2017, see). The coefficient estimate on geographical distance indicates that bidders that are located farther from a failed bank have a lower probability of acquiring it.

Overall, these results suggest that the odds for a bidder of winning an FDIC-run auction are positively associated with the bidder's lobbying status and expenditures. Next we address potential endogeneity concerns by devising an instrumental variable (IV) strategy.

3.3.2 Instrumental Variable Results

One potential concern with the results above is that the variable of interest l_{jt} is correlated with the error term ε_{ijt}, leading to inconsistent and biased estimates of β. Bidder-specific omitted factors might drive both lobbying activities and the auction process, affecting both l_{jt} and $\Pr(\text{win}_{ijt} = 1)$. For example, lobbying activities of bidders could simply proxy for their ability and expertise in acquiring and integrating other institutions, increasing their probability of winning. Arguably, lobbying might also be the result of the bidder's expectation and willingness to win the auction, rather than its driver. These challenges are not unique to our data, but are likely concerns with any data where lobbying and auction outcomes are simultaneously observed.

We address these concerns in Table 3.5 by exploiting variation in bidder lobbying activities that is exogenous to the auction process of the failed bank. Kerr et al. (2014) demonstrate that firms' lobbying decision engenders high upfront costs, which creates

sample to all eligible bidders for each failed-bank auction. We then employ the Heckman-probit method, for which both the dependent variable (win_{ijt}) and participation variable (bid_{ijt}) are binary. The specifications mirror the ones of Table 4, while the specifications on bidding probability further add bidder fixed effects. From the regression output in Appendix B.1, it can be seen that the estimations of lobbying on the probability of winning are qualitative similar than in Table 3.4. At the same time, we do not find that lobbying significantly affects banks' propensity to participate into an auction. The Wald tests also fail to reject the null, suggesting that our probit estimations reported in Table 3.4 are appropriate.

Table 3.4. Auction winning likelihood and bidder lobbying: baseline results

This table reports the results of probit regressions. Estimations are the average marginal effects on the likelihood of winning an auction. Control variables include financial characteristics of bidders in the quarter prior to failure dates —Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), C&I Loans (%), and Residential Loans (%)—and proximity measures—Distance and Change in HHI. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
	Pr(Win)			
Lobbying Regulators >0	0.1858***	0.3425***	0.2640***	
	(0.0648)	(0.0648)	(0.0680)	
Lobbying Regulators				0.0208***
				(0.0051)
Size			0.0529**	0.0524**
			(0.0220)	(0.0218)
Liquidity Ratio			0.0042**	0.0041**
			(0.0020)	(0.0020)
Tier 1 Capital Ratio			0.0057	0.0058
			(0.0051)	(0.0052)
NPL Ratio			-0.0080	-0.0079
			(0.0090)	(0.0090)
OREO Ratio			-0.0030	-0.0034
			(0.0470)	(0.0470)
CRE Loans (%)			0.0030	0.0031
			(0.0034)	(0.0034)
C&I Loans (%)			-0.0017	-0.0018
			(0.0027)	(0.0027)
Residential Loans (%)			-0.0001	-0.0001
			(0.0023)	(0.0023)
Distance			-0.0725***	-0.0718***
			(0.0156)	(0.0156)
Change in HHI			-0.0016	-0.0016
			(0.0021)	(0.0021)
Quarter Fixed Effects	Yes	Yes	No	No
Failed Bank State Fixed Effects	Yes	No	No	No
Failed Bank Fixed Effects	No	Yes	Yes	Yes
Pseudo R^2	0.06	0.075	0.103	0.103
Auctions	422	283	234	234
Observations	1148	1009	803	803

an option value associated with continuing to lobby over time.[25] Once firms get into the lobbying process, they tend to stay in because they would prefer not to incur these upfront (sunk) costs to set up a lobbying operation again in the near future. The propensity of a bank j to lobby in general (i.e., on any issue area and regulatory bodies) highly conditions the lobbying done on failed bank acquisitions in a specific point in time. We exploit bidder lobbying activities (i.e., status or expenditures) not directed toward relevant banking regulators in the context of FDIC-run auctions to instrument for targeted lobbying activities at the relevant regulators. This instrument likely thus satisfies the exclusion restriction by construction. Furthermore, there are few reasons to believe that lobbying on regulators and political bodies that are unrelated to bankruptcy and finance would directly interfere with the decisions of banking regulators and, in particular, the FDIC.

We construct an instrument, derived from the above intuition, measuring lobbying on any political or regulatory bodies other than the Treasury, FDIC, Fed, OCC, OTS, for each bidder in our sample. The instrument is—depending on the instrumented variable used—either equal to 1 if the bidder j lobbies on any non-banking regulators at time t and 0 otherwise, or is the log of 1 plus the lobbying expenditures directed toward any non-banking regulators at time t, measured in thousand dollars. We also include the same set of control variables (Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans, C&I Loans, Residential Loans, Distance, Change in HHI) and fixed effects (μ_i and μ_t) in the first stage and again cluster the standard errors at the level of the state of the failed bank's headquarters. Non-regulator lobbying is, as expected, positively associated with lobbying on banking regulators in both models of Table 3.5. The first-stage estimates are statistically significant at the 1-percent level.

The second-stage results show that our inferences from Table 3.4 remain the same. In Model (1) we estimate Equation 3.1 while instrumenting our dummy variable of banking regulator lobbying with a dummy variable of non-banking regulator

[25] These upfront costs include, for instance, searching for and hiring the right lobbyists and, once hired, educating them about the firm's interests and agenda, learning about the complexity of the political process and exploring how best to attempt to affect it, etc.

lobbying and the same control variables and fixed effects as before. The IV-probit estimate of the marginal effect of our lobbying dummy variable is in line with the probit estimate of Table 3.4, though it results in a slight fall in the coefficient to 0.2183 (s.e.=0.0949).[26] Economically, this implies that targeted lobbying on regulators increases the probability of winning by 21.8 percentage points. In Model (2) we instrument instead lobbying expenditures on banking regulators using the corresponding instrument in log-dollar value. Again, the IV-probit estimate mirrors the baseline estimate from Table 3.4, and gives a smaller estimate of 0.0175 (s.e.=0.0078). Comparing this estimate with the corresponding probit estimate in Table 3.4 column 4 shows that it is about 15 percent smaller. The small sample size may also affect the validity of our inferences here. We accordingly adopt a bootstrap procedure (unreported), which is particularly useful in our case since our auction sample, though rather small, represents very closely the (distribution of the) population. Inferences drawn using bootstrapped standard errors show that IV coefficients on both lobbying variables are statistically stronger.

We also report at the bottom of Table 3.5 the Wald statistic and p-value for the test of the null hypothesis of no endogeneity; that is, testing whether the correlation parameter ρ is equal to zero. We fail to reject the null in both models (test statistics are insignificant), suggesting that probit regressions from Table 3.4 are appropriate.

3.3.3 Alternative Lobbying Measures

In Table 3.6 we examine various alternative channels through which lobbying may generate an advantage to win an auction conducted by the FDIC in 2007-2014. Throughout the table we use our standard specification of column 3 in Table 3.4, and sequentially add different lobbying measures.

First, lobbyists differ in terms of network that they can deploy to reach out regulators. An important characteristic in this respect is the lobbyist's past employment experience at any of the relevant banking regulators or membership at financial subcommittees of the Congress. In column 1 we investigate the relevance of this characteristic, best known as the "revolving-door" status of lobbyists. The coefficient

[26] The estimation result is qualitatively similar if a bivariate probit model is used.

Table 3.5. Auction winning likelihood and bidder lobbying: instrumental variable results

This table reports the results of IV-probit regressions. 1st Stage columns show OLS estimations and 2nd Stage columns report the average marginal effects on the likelihood of winning an auction. Instrumental variables are an indicator (Lobbying Non-Regulators > 0) and the log-transformation (Lobbying Non-Regulator) of lobbying expenditures targeted at non-banking regulators in the year of the failure. Control variables include financial characteristics of bidders in the quarter prior to failure dates—Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), CRE Loans (%), and Residential Loans (%)—and proximity measures—Distance and Change in HHI. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)		(2)	
	2nd Stage	1st Stage	2nd Stage	1st Stage
	Pr(Win)	Lobbying Regulators >0	Pr(Win)	Lobbying Regulators
Lobbying Regulators >0	0.2183**			
	(0.0949)			
Lobbying Non-Regulators >0		0.5459***		
		(0.1032)		
Lobbying Regulators			0.0175**	
			(0.0078)	
Lobbying Non-Regulators				0.6460***
				(0.1108)
Size	0.0504**	0.0086	0.0502**	0.0541
	(0.0218)	(0.0089)	(0.0213)	(0.0891)
Liquidity Ratio	0.0042**	0.0003	0.0041**	0.0105
	(0.0020)	(0.0009)	(0.0020)	(0.0114)
Tier 1 Capital Ratio	0.0057	0.0010	0.0058	0.0157
	(0.0052)	(0.0018)	(0.0053)	(0.0248)
NPL Ratio	-0.0080	0.0012	-0.0079	-0.0036
	(0.0090)	(0.0036)	(0.0090)	(0.0460)
OREO Ratio	-0.0027	0.0023	-0.0029	0.0648
	(0.0472)	(0.0098)	(0.0472)	(0.1245)
CRE Loans (%)	0.0031	0.0007	0.0031	0.0091
	(0.0034)	(0.0010)	(0.0034)	(0.0119)
C&I Loans (%)	-0.0017	0.0006	-0.0018	0.0093
	(0.0027)	(0.0009)	(0.0027)	(0.0110)
Residential Loans (%)	0.0000	0.0004	0.0000	0.0103
	(0.0023)	(0.0006)	(0.0023)	(0.0077)
Distance	-0.0727***	-0.0164*	-0.0722***	-0.2452**
	(0.0157)	(0.0097)	(0.0155)	(0.1184)
Change in HHI	-0.0015	-0.0007	-0.0015	-0.0075
	(0.0021)	(0.0008)	(0.0020)	(0.0112)
Failed Bank Fixed Effects	Yes	Yes	Yes	Yes
Wald χ^2	0.4161		0.2319	
Wald p-value	0.5189		0.6301	
Auctions	234		234	
Observations	803		803	

estimate is 0.5850 (s.e.=0.0767), statistically significant at the 1-percent level. The economic effect is considerable: Revolving-door lobbyists increase the probability of winning by more than 50 percentage points. In column 2 we include instead a dummy variable equal to 1 if (0 if not) the bidder directs its lobbying toward banking regulators in combination with the help of a revolving-door lobbyists. Unsurprisingly, the effect is economically stronger (β=0.7047; s.e.=0.1432) than in regression model estimated in column 1, suggesting that lobbyists influence more easily the decisions of regulators for which they used to work with.

Second, thus far we have investigated bidders' lobbying at the time of the failure without considering their past lobbying activities. In columns 3 and 4, we evaluate the impact of lobbying performed during the eight quarters prior to the failure date employing, similarly as before, a 0–1 indicator and a dollar-value variable, respectively. The coefficient estimates are statistically significant at the 1-percent level, and of slightly larger magnitude than their counterparts in Table 3.4.

Third, since the FDIC has complete control over the receivership process, one could argue that the FDIC is the regulatory authority that really matters when it comes to influencing the auction outcome. In columns 5 and 6, we respectively use a 0–1 indicator and a dollar-value variable capturing the lobbying directed specifically toward the FDIC. The results reveal to be consistent in terms of order of magnitude and statistical significance. For instance, the estimate in column 5, 0.2477 (s.e.=0.0618), means that lobbying targeted at the FDIC increases the probability of winning a failed-bank auction by 24.8 percentage points. This indicates that most of the effect of lobbying shows up when the bidder establishes a lobbying contact directly with FDIC agents.

3.3.4 Auction Competition

A simple look at Table 3.1 reveals that competition between bidders varies across auctions, with auctions gathering as little as one bidder to auctions involving a dozen of bidders. Although our standard specification includes failed bank fixed effects which control for auction-specific factors such as competition, we conclude the analysis of this section by further examining whether the competitive process of an

Table 3.6. Auction winning likelihood and bidder lobbying: alternative lobbying measures

This table reports the results of probit regressions. Estimations are the average marginal effects on the likelihood of winning an auction. Lobbying through Revolving-Door Lobbyists > 0 is an indicator that takes the value of 1 if the bidding bank hires any revolving-door lobbyists in the year of the failure. Revolving-door lobbyists are those who have previously served in any of the relevant banking regulators or in a financial subcommittee of Congress. Lobbying Regulators through Revolving-Door Lobbyists > 0 is an indicator that takes the value of 1 if the bidding bank hires revolving-door lobbyists to lobby banking regulators. Lobbying Regulators Before > 0 is an indicator that takes the value of 1 if the bidding bank lobbies banking regulators during a period of eight quarters prior to the failure date. Lobbying Regulators Before is the log 1 plus lobbying expenditures targeted at banking regulators during a period of eight quarters prior to the failure date. Lobbying FDIC > 0 is an indicator that takes the value of 1 if the bidding bank lobbies the FDIC in the year of failure. Lobbying FDIC is the log of 1 plus lobbying expenditures targeted at the FDIC in the year of failure. Control variables include financial characteristics of bidders in the quarter prior to failure dates—Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), CRE Loans (%), and Residential Loans (%)—and proximity measures—Distance and Change in HHI. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1^{st} and 99^{th} levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Pr(Win)					
Lobbying through Revolving-Door Lobbyists >0	0.5850***					
	(0.0767)					
Lobbying Regulators through Revolving-Door Lobbyists >0		0.7047***				
		(0.1432)				
Lobbying Regulators Before >0			0.3085***			
			(0.0703)			
Lobbying Regulators Before				0.0235***		
				(0.0053)		
Lobbying FDIC >0					0.2477***	
					(0.0618)	
Lobbying FDIC						0.0198***
						(0.0051)
Failed Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.121	0.121	0.107	0.108	0.098	0.098
Auctions	234	234	234	234	234	234
Observations	803	803	803	803	803	803

auction drives the probability of winning of lobbying bidders. Table 3.7 presents the results, and shows that the effect of lobbying continues to hold regardless auction competition.

Specifically, in column 1 we split the sample between auctions according to the number of bidders involved; that is, two bidders and more than two bidders. Our independent variables of interest are the interaction terms between our lobbying dummy variable and a dummy variable taking the value of 1 if the number of bidders participating in the auction is two (or strictly above two). Both interactions terms enter positively and statistically significantly in the regression model (i.e. our standard specification).[27] The coefficient estimate is larger for the interaction considering only two bidders: 0.6799 versus 0.1786. In column 2 we split the sample differently. We analyze auctions including two bidders, three bidders, and four bidders, and strictly more than four bidders, respectively. Again, the results are consistent. Note, however, that the interaction term with the dummy variable of more than four bidders turns out to be statistically insignificant at conventional levels, possibly due to the resulting lack of statistical power. In columns 3 and 4, we replicate this strategy by interacting instead our log-$-value lobbying variable. The result obtained provides similar insights than in columns 1 and 2. All in all, our results here indicate that the effect of lobbying persists whatever the competition between bidders, with a more pronounced effect (though unsurprisingly) the lower the competition is.

3.4 Assessing the (Mis)allocation of Failed Banks due to Lobbying

3.4.1 Acquirers' Bids and Resolution Costs

As we documented previously, selling failed banks leads to important costs for the FIDC that may greatly vary across bank resolutions. In this section, we explore whether selling failed banks to lobbying acquirers affects FDIC losses. A simple cut in the data reported in Figure 3.4 suggests that this is the case. It shows the distribution

[27] We follow Ai and Norton (2003) estimating the average marginal effects and standard errors. Because their recommended Stata command does not deal with multiple interactions, we use the more flexible "margins" command (Berger and Bouwman, 2013, see also).

of resolution costs contrasted with the size of sold failed banks in our sample that we split according to the lobbying status of the acquirer. The median resolution cost of failed banks sold to acquirers engaged in lobbying amounts to $96.4 million (approximately 21 percent of the median failed-bank size), which is much higher than for failed banks sold to non-lobbying acquirers (median of $36.4 million, about 20 percent of the median failed-bank size).

Next we compare the resolution cost resulting from an actual transaction to what the FDIC would have incurred if another bid would have been chosen, and gauge whether lobbying affects this differential. The submitted bids to the FDIC have two parts: (1) the discount the bidder requires for acquiring the failed bank's assets; and (2) the premium the bidder is prepared to pay for assuming the deposits. The difference between the two parts represents the net discount offered by the bidder on the failed bank's assets and liabilities. A higher (positive) net discount means a higher net payment from the FDIC to the acquirer.[28] Here we study the relationship between bidder lobbying and the difference in net discount between the acquirer and the bidder whom the FDIC viewed as the second best (i.e. the cover bidder). We perform OLS regressions of the following specification:

$$\text{cost}_{its} = \alpha + \beta l_{it} + \Gamma X_{its} + \mu_t + \mu_s + \varepsilon_{its}, \tag{3.2}$$

in which i denotes a sold failed bank, t a quarter and s a state. The dependent variable, cost_{its}, is the difference in net discount between the acquirer and the cover bidder, standardized by total assets of the failed bank. The net discount differential gives an indication of the incremental loss (gain) for the DIF that should have been realized if the FDIC Board had selected the cover bid. In addition, using the net discount differential further mitigates concerns about unobserved failed bank characteristics potentially correlate with the resolution process. l_{it} is a measure capturing the lobbying (i.e. status and expenditures) of both the acquirer and the cover bidder. X_{its} controls for failed bank's characteristics including the variables Size, Liquidity

[28] As an example, suppose that the acquirer views the failed bank's assets with a book value of $100 as being worth $75, but assumes responsibility for $100 in deposits for which he is prepared to pay $10, then the payment from the FDIC to the acquirer will be of $15 (i.e. the net discount).

Table 3.7. Auction winning likelihood and bidder lobbying: robustness to auction competition

This table reports the results of probit regressions. Estimations are the average marginal effects of Lobbying Regulators (dummy or log-dollar value) on the likelihood of winning an auction in different subsamples. Independent variables are the interaction terms of the indicator (Lobbying Regulators > 0) in columns 1 and 2, or Lobbying Regulators in columns 4 and 5, with another dummy variable indicating whether the observation is within a certain subsample. In columns 1 and 3, the sample is split in two parts, whether the auction involves two bidders or strictly more than two bidders. In column 2 and 4, the sample is split in four parts, whether the auction involves two bidders, three bidders, four bidders, or strictly more than four bidders. We correct estimation and standard errors of marginal effects following Ai and Norton (2003). Control variables (unreported) include financial characteristics of bidders in the quarter prior to failure dates—Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), C&I Loans (%), and Residential Loans (%)—and proximity measures—Distance and Change in HHI. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
	Lobbying Regulators >0		Lobbying Regulators	
	Pr(Win)			
Number of Bidders = 2	0.6799**		0.0544**	
	(0.2919)		(0.0222)	
Number of Bidders >2	0.1786**		0.0142***	
	(0.0714)		(0.0051)	
Number of Bidders = 2		0.6819**		0.0546**
		(0.2916)		(0.0222)
Number of Bidders = 3		0.2748**		0.0205**
		(0.1363)		(0.0102)
Number of Bidders = 4		0.2968**		0.0269***
		(0.1341)		(0.0083)
Number of Bidders >4		0.0941		0.0075
		(0.1295)		(0.0097)
Failed Bank Fixed Effects	Yes	Yes	Yes	Yes
Bidder Controls	Yes	Yes	Yes	Yes
Pseudo R^2	0.108	0.108	0.109	0.110
Auctions	234	234	234	234
Observations	803	803	803	803

Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans, C&I Loans, and Residential Loans. Moreover, X_{its} contains bid characteristics of both acquirer and cover bidder, namely a dummy variable taking the value of 1 if (0 if not) the deal is for all loans and deposits of the failed bank, other dummy variables taking the value of 1 if (0 if not) the transaction includes a loss-sharing agreement between the FDIC and the acquirer. X_{its} also controls for the number of bids in each P&A transaction. μ_t captures the quarter when the failed bank was sold, ensuring that the estimate is not driven by aggregate trends. We also include state fixed effects, μ_s, to account for any differences between states (e.g. economic conditions, regulatory forbearance). We cluster standard errors at the level of the failed bank's state headquarters.

Columns 1 to 4 of Table 3.8 present the results of estimating Equation 3.2. Across columns the coefficients on our lobbying variables suggest that acquirer lobbying increases the losses incurred by the FDIC. The magnitudes are large. In column 1, the independent variable of interest is the difference between the lobbying status (i.e. a 0-1 indicator) of the acquirer and the cover bidder. The coefficient estimate is 2.4037 (s.e.=1.0872) and statistically significant at the 5-percent level, indicating that when the acquirer has an advantage in terms of lobbying over the cover bidder it amplifies the loss for the DIF. In column 2, we estimate the effect of both acquirer and cover bidder lobbying separately, in lieu of their net effect. The coefficient estimate on acquirer lobbying status, 2.6498 (s.e.=1.2721), implies that the transfer to lobbying acquirers is estimated at \$7.4 billion for the DIF, or 16.4 percent of the total resolution losses of \$44.99 billion.[29] Importantly, the coefficient estimate on cover bidder lobbying status is negative and insignificant. Columns 3 and 4 display consistent results when we consider the log-\$-value variables of lobbying. In terms of money spent on lobbying toward regulators (using coefficient estimates of column 4), a one standard deviation increase in lobbying expenditures (3.17) leads to an increase in the transfer from the DIF to lobbying acquirers of \$1.7 billion, which is equal to 3.8 percent of the total resolution losses.

Next, we analyze cases where the net discount submitted by the cover bidder

[29] Using estimate of β from column 2, 2.6498 percentage points of \$278,306 million of aggregated assets yield approximately \$7,374.6 million (= 16.4% of the aggregated resolution cost in Table 3.1).

Table 3.8. Comparing bids

This table reports the results of regressions of the difference in net discount between the acquirer and the cover bidder. In columns 1-4, the dependent variable of the OLS regression is Net Discount Differential (%). In columns 5-8, the dependent variable of the probit regression is Acquirer Net Discount > Cover Bid. The independent variable of interest in columns 1 and 5 is Diff. Lobbying Regulators>0, the difference of two indicator variables—Acquirer Lobbying Regulator > 0 and Cover Bidder Lobbying Regulator > 0. The independent variable of interest in columns 3 and 7 is Diff. Lobbying Regulators the difference of two continuous variables—Acquirer Lobbying Regulator and Cover Bidder Lobbying Regulator. The independent variable of interest in columns 2 and 6 is Lobbying Regulator > 0 for the acquirer and cover bidder, respectively. The independent variable of interest in columns 4 and 8 is Lobbying Regulators (log-dollar value) for the acquirer and cover bidder, respectively. Bid characteristic controls include two dummies—All Bank & All Deposits and Loss-Sharing Agreement—for both the winning bids and cover bids. Failed bank control variables include failed bank characteristics at the time of failure—Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), C&I Loans (%),and Residential Loans (%). Number of Bidders Fixed Effects are a set of dummy variables indicating the total number of bidders participating in the auction is two, three, etc. See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1^{st} and 99^{th} levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

continued on next page

Table 3.8. Comparing Bids (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Net Discount Differential (%)				Pr(Acquirer Net Discount >Cover Bid)			
Diff. Lobbying Regulators >0	2.4037**				0.3160***			
	(1.0872)				(0.0656)			
Lobbying Regulators >0		2.6498**				0.3220***		
		(1.2721)				(0.0668)		
Cover Bidder Lobbying Regulators >0		-1.6356				-0.1788		
		(1.3889)				(0.1184)		
Diff. Lobbying Regulators			0.1776**				0.0227***	
			(0.0821)				(0.0047)	
Lobbying Regulators				0.1933*				0.0234***
				(0.0964)				(0.0049)
Cover Bidder Lobbying Regulators				-0.1305				-0.0133
				(0.1095)				(0.0093)
All Bank & All Deposits	10.2785***	10.2831***	10.2518***	10.2533***	0.6186***	0.6144***	0.6133***	0.6091***
	(1.9643)	(1.9901)	(1.9667)	(1.9860)	(0.1698)	(0.1704)	(0.1664)	(0.1677)
Loss Sharing Agreement	-13.2692***	-13.2376***	-13.2347***	-13.2126***	-0.4944***	-0.4893***	-0.4934***	-0.4886***
	(1.5820)	(1.5722)	(1.5819)	(1.5731)	(0.0611)	(0.0599)	(0.0597)	(0.0581)
Cover Bid All Bank & All Deposits	-10.1296***	-10.1353***	-10.1088***	-10.1097***	-0.4382***	-0.4341***	-0.4338***	-0.4296***
	(1.8398)	(1.8539)	(1.8446)	(1.8542)	(0.1605)	(0.1612)	(0.1585)	(0.1596)
Cover Bid Loss Sharing Agreement	13.4584***	13.3919***	13.4500***	13.3946***	0.4924***	0.4866***	0.4918***	0.4858***
	(2.1734)	(2.1414)	(2.1676)	(2.1346)	(0.1227)	(0.1212)	(0.1198)	(0.1180)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Failed Bank State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Failed Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Bidders Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted / Pseudo R^2	0.452	0.449	0.451	0.448	0.535	0.535	0.529	0.530
Observations	247	247	247	247	202	202	202	202

on the failed bank's assets and liabilities is lower than the one eventually offered by the winning bidder. In such cases the FDIC accepts higher resolution costs by allocating the bank to the winner. We construct a dummy variable that takes the value of 1 if the acquisition price is lower than the cover price in terms of net discount, and 0 otherwise. We again control for bid characteristics such as the cover of some assets by loss-sharing agreements. The results presented in columns 5 to 8 show that the coefficient estimates on acquirer lobbying variables are always positive and statistically significant at the 1-percent level. Lobbying thus increases the likelihood that the FDIC selects a winning bid with a higher net discount.

To sum up, the results in this section are as follows: (1) lobbying increases the net discount differential, suggesting that lobbying acquirers pay on average relatively less than other-auction bidders; and (2) lobbying significantly increases the likelihood of winning with a greater net discount than the cover bidder, suggesting that lobbying acquirers tend to pay less than the cover bidder. Lobbying thus results in a significant drain for the FDIC insurance fund. Importantly, these findings also show that the FDIC makes more use of its discretion when bidders lobby. We now move on to studying outcomes following the investment in a failed bank to further establish whether the documented effect of lobbying can be interpreted as a sign of mis-allocation.

3.4.2 Post-Acquisition Efficiency

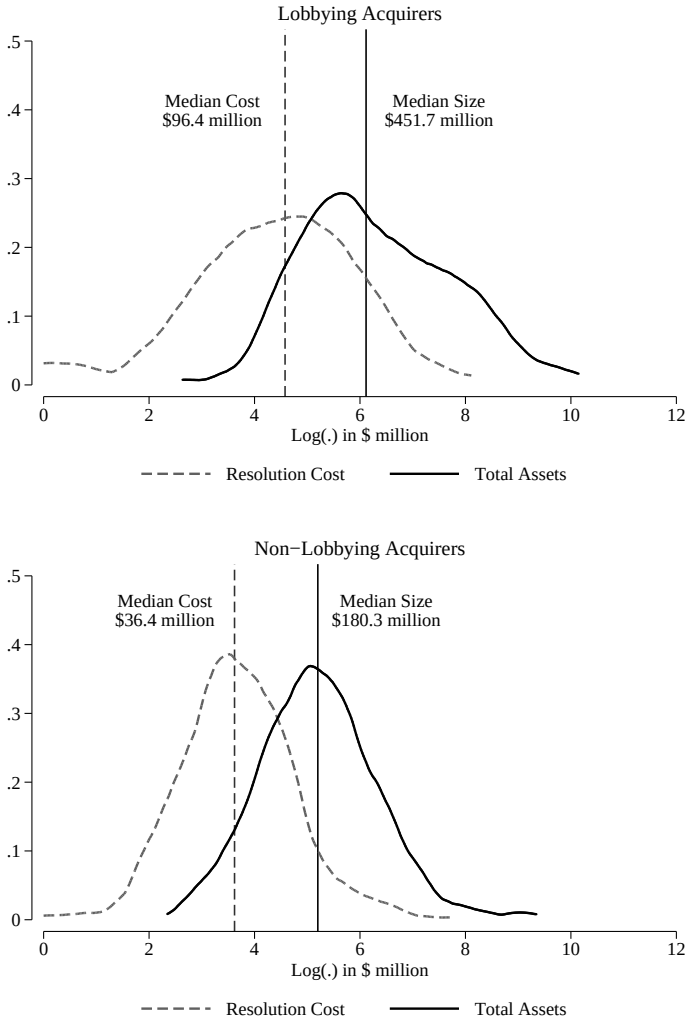
In this section, we formally examine whether the acquisition of failed banks by lobbying institutions leads to observable efficiency improvements. For that purpose, we construct a panel data set at the joint-bank (acquirer and failed bank combined) and quarter levels spanning the 2003-2015 interval and perform fixed-effects regressions of the specification

$$\text{efficiency}_{j't} = \alpha + \beta_1 \text{post acquisition}_{j't} + \beta_2 (l_{j'} \times \text{post acquisition}_{j't}) + \Gamma X_{j't} + \mu_{j'} + \mu_t + \varepsilon_{j't}. \tag{3.3}$$

Here $\text{efficiency}_{j't}$ is a measure of efficiency of the joint-bank j' at time t. Specif-

Figure 3.4. Kernel density of failed bank assets and resolution costs

The figure shows the kernel density functions of total assets of failed banks, split by active lobbying acquirer. Solid lines represent the distributions of failed bank total assets in log value, and dashed lines for resolution costs to the FDIC. Vertical lines indicate the median values in $ million. The figure at the top depicts the failed banks acquired by banks that have positive lobbying expenditures during the sample period (2007-2014), while the figure at the bottom for failed banks acquired by banks that do not lobby during the sample period.



ically, we employ return on assets (ROA) and the cost-to-asset ratio (ATC) as two complementary measures of efficiency that have been used in prior works (e.g. Cornett and Tehranian, 1992; and Granja et al., 2015, in a context similar than ours). The dummy variable post acquisition$_{j't}$ takes the value of 1 on the quarter after the failure and the subsequent quarters, and 0 otherwise.[30] The interaction between $l_{j'}$ and after$_{j't}$ captures how bidder lobbying (i.e. status and expenditures) modifies the average effect of a failed bank's acquisition on the outcome variable efficiency$_{j't}$. To isolate the effect of β_2, the coefficient of interest, we control for a host of joint-bank characteristics ($X_{j't}$) including Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans, C&I Loans, and Residential Loans. We further add joint-bank and quarter fixed effects, $\mu_{j'}$ and μ_t, to remove the effect of fixed joint-bank characteristics potentially correlated with lobbying or the acquisition itself on efficiency outcomes and to eliminate any common trends in both lobbying and acquisition potentially correlated with efficiency outcomes. The inclusion of $\mu_{j'}$ in our specification thus absorbs the lobbying variable itself and only the interaction effect between the acquisition dummy and lobbying variable is identified. Standard errors are robust to heteroscedasticity and clustered at the joint-bank level. Since acquirers take different time span to finalize the integration of failed bank acquisitions, we drop observations during the four quarters starting from the failure date.

Table 3.9 reports the results of assessing whether efficiency changes around the acquisition vary according to the lobbying activities of the eventual acquirer of failed banks. We measure the combined efficiency of an acquirer and the failed bank before the acquisition by weighting their individual efficiency measures, and then compare them after the transaction. Columns 1-4 first show that there are in general efficiency improvements after failed bank acquisitions: the post-acquisition dummy variable enters positively and significantly in regression models of columns 1 and 2, which suggests that acquiring failed banks enhances operating performance as measured by ROA. Similarly, in columns 3 and 4 total expenses relative to total assets (ATC) decrease on average after the acquisition of a failed bank. The coefficient on the

[30] Because the time needed to finalize the integration of the failed bank may vary from one acquirer to the other, we drop observations during the four quarters starting from the failure date.

post-acquisition dummy variable, though insignificant, is negative.

When acquisitions involve a lobbying bank, they are associated with a relatively lower ROA and a higher ATC, suggesting efficiency deterioration compared to an average acquirer. First, the coefficient estimate of the interaction term in column 1 is -0.1771 (s.e.=0.0272), statistically significant at the 1-percent level. This means that ROA at lobbying banks decreases by about 18 basis points relative to a sample mean of 0.15 percent. The results are also economically meaningfully when we study the lobbying expenditures (column 2): A one standard deviation change in lobbying expenditures is associated with a drop in ROA by around 30 percent relative to the mean. Second, we focus on our cost measure (ATC) and find results in line with the ones on ROA. As can be observed from the remaining two columns of Table 3.9, we find that the takeovers of a failed institution by lobbying banks lead to significant increases in ATC, which corroborates the fact that post-takeover efficiency appears to deteriorate at lobbying banks.

3.4.3 Are Lobbying Bidders Engaged in Rent Seeking? A Discussion

Our empirical analyses reveal that lobbying by bidders affects the outcomes of FDIC-run actions along two dimensions: lobbying bidders are more likely to win auctions and they have to pay relatively less in order to win. The implied negative relationship between price paid and likelihood of winning seems puzzling as it is at odds with standard economic theory. We have also shown that the operating performance of lobbying banks post-acquisition falls relative to the total sample of acquiring banks. This is also surprising to the extent that lobbying banks may hence ultimately not benefit from their ability to acquire more easily. In this section, we discuss what may plausibly explain our findings.

One channel through which lobbying may affect acquisitions is rent-seeking à la Shleifer and Vishny (1994):[31] Lobbying allows bidders receiving a more favorable treatment by the FDIC. This view can account for our finding that lobbying increases the likelihood of winning while simultaneously reducing the acquisition price

[31] See Khwaja and Mian (2011) who discuss and review recent advances in the study of rent seeking in the financial sector.

for bidders. Rent-seeking has the likely consequence that it distorts the efficient allocation of failed banks, as the regulatory agency is no longer solely guided by economic principles in its decisions. For example, while a failed bank should be allocated to the bidder that is best able to acquire and integrate the failing bank (and hence can offer the highest valuation), lobbying may lead to other banks being favored in the auction process. Our results on the post-acquisition efficiency are consistent with this: lobbying banks do not seem to be matched with failing banks in situations where they are able to improve the performance.

An alternative channel depicts the lobbying process as one of information transmission (Grossman and Helpman, 2001, see). The informational view posits that lobbying resolves the information asymmetry inherent to the resolution process. The bidder's ability to acquire and integrate a failed institution might be private to the bidder, but lobbyists have the ability to convey it to the regulator. By gaining access to new information, the FDIC can in principle make superior decisions, selecting better matches for failing banks. This channel can also explain our main finding that lobbying banks have a higher likelihood of winning the auction: everything else being equal, the FDIC should prefer bidders for which informational asymmetries are less pronounced. The information-based explanation is also consistent with the fact that lobbying bidders are able to pay less, as the resolution of informational problems should increase the FDIC's willingness to allocate failed banks to lobbying banks. However, our last empirical finding, the lower operating performance of lobbying acquirers, does not fit with the case of better information dissemination since we would expect lobbying banks to only be allocated failed banks when they are good acquirers.

Our analysis further informs us about the reason for why banks may lobby. Two explanations can be brought forward. One is that lobbying is an efficient investment in regulatory capital. Banks make these investments in order to benefit from favorable treatment, allowing them to improve their overall return to shareholders (Acemoglu et al., 2016, Borisov et al., 2016). Our auction results can be explained by this, as lobbying acquirers benefit from a lower price they have to pay. The results on the

Table 3.9. Post-acquisition efficiency and bidder lobbying

This table presents the results from fixed-effects panel regression models. The dimension of the constructed panel is at the joint-bank and quarter levels. Both dependent and independent variables are the weighted average of the acquirer and the failed bank by total assets in the quarters prior to failure dates and then those of acquirers in the quarters after failure dates. All quarters between 2003 and 2015 are included, except for the four quarters starting from the failure quarters. Post-Acquisition is an indicator that takes the value of 1 for the quarters after the failure date. Lobbying Regulators > 0 and Lobbying Regulators are measured in the year of the failure, are absorbed by Joint Bank Fixed Effects, except for the interaction terms. Joint-bank controls include Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), C&I Loans (%), and Residential Loans (%). See Appendix B.1 for more details about variable definitions. All variables are winsorized at the 1st and 99th levels. Robust standard errors are presented in the parentheses and clustered at the joint-bank level. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
	ROA		ATC	
(Lobbying Regulators >0) × Post-Acquisition	-0.1771***		0.0473*	
	(0.0272)		(0.0266)	
Lobbying Regulators × Post-Acquisition		-0.0142***		0.0038*
		(0.0021)		(0.0021)
Post-Acquisition	0.0760***	0.0761***	-0.0107	-0.0108
	(0.0258)	(0.0258)	(0.0197)	(0.0197)
Size	0.1677***	0.1680***	-0.0990***	-0.0991***
	(0.0195)	(0.0196)	(0.0171)	(0.0171)
Liquidity Ratio	-0.0058***	-0.0058***	-0.0017**	-0.0017**
	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Tier 1 Capital Ratio	0.0200***	0.0200***	-0.0016	-0.0016
	(0.0027)	(0.0027)	(0.0015)	(0.0015)
NPL Ratio	-0.0183***	-0.0183***	0.0046***	0.0046***
	(0.0022)	(0.0022)	(0.0017)	(0.0017)
OREO Ratio	-0.0163*	-0.0164*	0.0071	0.0072
	(0.0094)	(0.0094)	(0.0065)	(0.0065)
CRE Loans (%)	-0.0023***	-0.0024***	0.0017*	0.0017*
	(0.0007)	(0.0007)	(0.0009)	(0.0009)
C&I Loans (%)	-0.0011	-0.0011	0.0022*	0.0022*
	(0.0014)	(0.0014)	(0.0013)	(0.0013)
Residential Loans (%)	-0.0015	-0.0015	0.0071***	0.0071***
	(0.0013)	(0.0013)	(0.0019)	(0.0019)
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Joint-Bank Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.343	0.343	0.615	0.615
Auctions	400	400	400	400
Observations	12935	12935	12935	12935

lower efficiency of acquiring firms, however, seem to be at odds with this explanation as acquiring firms will not benefit from a higher likelihood of winning auctions if this leads to inferior performance going forward.

The second explanation is that lobbying is the result of agency problems within the firm. Aggarwal et al. (2012) highlight the common agency issues prevalent in rent-seeking situations characterizing corporate political contributions in the United States. The authors find that firms with high political contributions experience lower long-term stock returns, and have operating characteristics consistent with the existence of a free cash flow problem. In particular, firms that make political contributions tend to engage in more *and* worse acquisitions than firms that do not. In the context of the financial crisis, like ours, Duchin and Sosyura (2012) show that politically connected institutions are more likely to access to government investment funds. They also find that these investments in politically connected institutions under-perform those in unconnected institutions, consistent with Shleifer-Vishny predictions on agency-type inefficiencies from political connections.

In our specific context, agency problems may take the form of empire-building managers, who realize that lobbying allows them expand more easily through acquisitions. This is consistent with our finding that lobbying simultaneously raises the likelihood of being able to acquire another bank while at the same time lowering the performance of acquisitions. In this view, lobbying has a double cost: it distorts the efficient allocation of failed banks (a social cost) and amplifies agency problems at acquiring banks (a firm-level cost).

3.5 Conclusion

In this paper, focus has been on the political economy of the allocation of failed banks in the Great Recession and its aftermath. Studying the universe of P&A transactions between 2007 and 2014, we find strong evidence that bidders engaged in lobbying activities are in better position to win a FDIC-run auction. Further empirical evidence suggests that rent seeking for favorable treatment accounts for this finding. In particular, we show that eventual acquirers with lobbying activities deliver inferior outcomes in terms of post-acquisition efficiency, consistent with rent-

seeking theories (Shleifer and Vishny, 1994). We also assess the economic magnitude of the cost associated with the lobbying on failed-bank auctions and find that the cost imposed to the DIF, thus to society, is meaningful; that is, the average effect estimated is equal to 16.4 percent of the total resolution losses. Of course, having shown that lobbying creates distortions at the bank level does not imply any welfare consequences, as there may also be benefits for financial stability and employment. Understanding and quantifying further the welfare consequences of lobbying remains a fruitful area of future research.

Chapter 4

Lobbying in Mergers and Acquisitions*

4.1 Introduction

Regulatory uncertainty when completing mergers and acquisitions captures the attention of both practitioners and academics. In 2011, AT&T proposed to acquire T-Mobile USA in a $39 billion deal.[1] The proposed merged company would take a 43% share in the wireless market, which raised concerns with the Antitrust Division in the Department of Justice (DOJ). The DOJ eventually blocked the deal and AT&T stock price dropped by 4% on the DOJ announcement. In addition, AT&T had to pay a reverse breakup fee of around $4.2 billion (almost 10% of its market value) to the target. This case illustrates the substantial regulatory risks (the deal failed) and direct costs (such as the termination fee, but also filing costs, costs of lawyers, etc.) in large M&A transactions.[2] Merging firms in successful deals avoid paying termination fees but may need to offer asset divestitures or restrictive agreements to address the antitrust concerns of the government. These negotiated concessions are also costly because they reduce projected deal synergies. Still, regulatory frictions also imply indirect costs associated with increased interim uncertainty (Bhagwat et al., 2016).[3] The regulatory costs and risks associated with the antitrust review

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[1] http://money.cnn.com/2011/09/01/technology/att_tmobile_lawsuit/

[2] According to the 2011 Hart-Scott-Rodino (HSR) Annual Report reported by the Federal Trade Commission and the Department of Justice (http://www.ftc.gov/os/2012/06/2011hsrreport.pdf) as much as 40% of all large merger deals with deal value larger than $1 billion in 2011 were reviewed in detail and over 15% received a Second Request.

[3] "Companies in a number of recent mergers have been waiting upward of a year or longer for a final verdict, and some deals have fallen apart because of government concerns. . . . As time passes, merging firms can become increasingly worried about completing a deal. They have to ensure

process may motivate merger firms to directly influence regulatory decision makers through lobbying or other political activities.

In this paper, we investigate whether firms actively engage in lobbying around merger announcements to mitigate regulatory frictions of antitrust merger reviews. To start with, we document in detail the US antitrust review process and the diverse set of possible antitrust review outcomes. Our empirical analysis has four parts. First, we test whether regulatory uncertainty is an important source of deal-completion risks and costs. We do this by conducting an event study around the revelation of antitrust review outcomes and testing whether less favorable antitrust review outcomes increase the probability of withdrawals and time needed to complete. Second, we investigate whether firms actively mitigate regulatory uncertainty through adjusting lobbying before and after their merger announcements. Lobbying is the main channel through which firms influence regulators and legislators. Corporate lobbying also has the advantage of being regularly reported on a quarterly basis and of being the largest part of corporate political activities (Kerr et al., 2014). Therefore, we explore the relationship between lobbying expenditures and the probability of the different antitrust review outcomes. Third, we analyze value consequences of lobbying associated with M&A announcements. Finally, to test for possible conflicts between lobbying and regulatory antitrust goals, we explore the effect of lobbying on the change in market power from before to after the merger.

We collect detailed information about the antitrust regulatory process for all merger transactions above $100 million during the period from 2008 to 2014.[4] We end up with a set of 370 large merger deals. Typically, both the acquirer and the target submit their HSR premerger filings shortly after the deal public announcement and wait the statutory 30 days for the review outcome.[5] Favorable antitrust review outcomes of Early Termination and Natural Expiration cover 138 and 139 deals

financing remains in place, and that can cost money. They can begin to lose employees nervous about the future, as well as customers." See "'U.S. Antitrust Reviews of Mergers Get Longer," WSJ, June 7, 2015.

[4]Merging firms need to clear antitrust review if their deal value is above a certain threshold that is determined yearly based on GNP growth rate. We opt for a cut-off value of $100 million so that it is low enough and still all transactions in our dataset are subject to the regulatory process.

[5]HSR premerger filing refers to the Premerger Notification and Report form, pursuant to the Hart-Scott-Rodino Antitrust Improvements Act of 1976.

in our sample, respectively. For both outcomes, 6% of deals are later withdrawn and abandoned. The issuance of a Second Request, in contrast, means that a full-scale investigation into the antitrust nature of the deal is initiated and the relevant antitrust agency requests extensive additional information. Second Requests are issued for 62 deals in our sample and the fraction of withdrawn deals for this outcome is 19%. Within the group of 62 deals with Second Requests, 24 deals are Challenged and a complaint is filed against the merging parties, while 38 deals manage to stay Unchallenged and get clearance to complete without a filed complaint. Still, these Unchallenged Second Requests spend significant resources and time to comply with the extra information request. In contrast to Ferris et al. (2016), we show that these unchallenged deals are associated with a high failure rate.

Sometimes, firms choose to strategically withdraw the HSR premerger filing and refile it again to start another waiting period. This way merger firms provide additional time for the antitrust agency to review their case without immediately triggering an adverse Second Request. To capture this strategic behavior of merging firms, we create a special outcome category of "Pull and Refile" for deals that employ the strategy of pulling their HSR filing and eventually receive favorable Early Termination or Natural Expiration. The special category of Pull and Refile includes 31 deals and 6% of them are withdrawn.

The antitrust review process is associated with substantial costs and risks even for deals receiving Early Termination or Natural Expiration but the costs and risks get substantially more severe for Second Requests. In a Challenged outcome the regulatory agencies question the source of the potential benefits from the merger – this category of mergers is considered as anticompetitive. Nevertheless, Unchallenged Second Requests also face high regulatory costs. Second Requests take on average 237 days from announcement to completion, while it takes only 98 days to complete the favorable outcomes of Early Termination and Natural Expiration. Second Requests are also more likely to withdraw. The antitrust review process is also closely followed by the stock market. Receiving a Second Request is associated with –2.8% and –2.6% abnormal return for the acquirer and the target, respectively, while Early

Terminations and Natural Expirations exhibit insignificant announcement abnormal returns. This is an economically sizable market adjustment that reflects increased costs and risks of complying with Second Requests. Previous studies documents a negative effect of regulatory enforcements on the probability of future mergers in the same industry (Clougherty and Seldeslachts, 2012, Seldeslachts et al., 2009). Our evidence evaluates the regulatory costs directly through the effect of receiving a Second Request.

As a next step, we explore acquirer lobbying activities before and after merger announcements and their association with the antitrust review outcomes. Our data suggest that firms lobby in order to actively manage antitrust review risks and costs. Firms increase their lobbying intensity four quarters before the merger public announcement. An increase in pre-announcement lobbying expenditures is associated with more favorable antitrust review outcomes. A one-standard-deviation increase in the pre-announcement acquirer lobbying ratio decreases the probability of receiving a Second Request by 7.6%, which is economically large given that the unconditional probability of a Second Request equals 16.8%. However, higher post-announcement lobbying is then associated with increased probability of adverse review outcomes, especially for firms with lower pre-announcement lobbying. This suggests that Second Requests do require more intensive lobbying either to influence the antitrust agencies in getting the deal approved or to supply the antitrust agencies with with additional information such that they can arrive at a more informed decision. Pull & Refile is a special category with a favorable outcome but intensive post-announcement lobbying. Indeed, a positive correlation between post-announcement lobbying and the Pull & Refile category confirms that pulling the HSR filing is coordinated with lobbying and, therefore, a deliberate action with the objective of avoiding a Second Request.

The next part of our analysis explores the value implications of lobbying. We show that the market recognizes the value of lobbying: acquirer and combined-firm deal-announcement abnormal returns are significantly higher for firms with higher pre-announcement lobbying. A one-standard-deviation increase in lobbying expenditures reported over one year before the deal public announcement increases the acquirer and

combined-firm abnormal return by 1.1% and 2.3%, respectively. However, lobbying positively impacts acquirer returns only when it is likely to be used for the benefit of shareholders (in firms with strong corporate governance) and not to pursue empire building behavior (in firms with weak corporate governance).

Finally, we relate the pre- and post-announcement lobbying to realized changes in acquirer market power from before to after the merger to explore the merger antitrust effects. We do not find any support for a link between acquirer lobbying and increased market power. The evidence does not show that antitrust agencies abuse their powers and bend to lobbying advances by opportunistic acquiring firms. We believe our result tilts support to the information-sharing rather than regulatory-capture hypothesis. According to the *information-sharing hypothesis*, lobbying mitigates information asymmetry between regulators and firms. Lobbying firms obtain extra information about potential regulatory risks and adjust their deals in line with compliance. Lobbying firms also supply information to the agencies to help them to make more efficient decisions. The *regulatory-capture hypothesis* suggests that firms achieve more favorable review outcomes directly influencing the antitrust agencies. Through lobbying and political connections, merging firms influence the antitrust agencies towards a more favorable outcome that may be associated with higher profits for the merging firms but decreased competition in the wider market.

We address potential endogeneity bias using the instrumental-variable approach. Our biggest concern is that lobbying is driven by omitted (unobservable) variables. Our results are robust to using past lobbying expenditures as an instrument. To ensure no direct influence of the instrument on the review outcomes, we only consider lobbying expenditures three years prior to deal announcement. We also check that our results are robust to using alternative lobbying measures.

This paper contributes to the literature in three ways. First, it contributes to the literature on the impact of regulatory uncertainty, inherent to regulatory processes, on individual firms and their M&A activities. Regulatory uncertainty is documented, for example, in Aktas et al. (2009) who show negative value consequences of European regulator interventions in announced business combinations. In the US, antitrust

agencies are subject to the influence of the Congress or interested parties.[6]. Also, Croci et al. (2017) show that that firms contributing to political action committees or involved in lobbying are less likely to be acquired and their takeover process is lengthier. They also argue that correlations between politicians' future careers, campaign finance and takeover activities of firms linked to the politicians imply that future career concerns may motivate politicians to interfere in M&A activities.[7]

We add to this line of literature by showing that the antitrust review process is a major source of the deal-failure probability and also causes deal delays. Based on hand-collected data concerning the antitrust review process compiled from various sources, we document granular levels of antitrust review outcomes and show in detail the real effects of regulatory frictions. In particular, we show that the antitrust review delays all deals with potential antitrust concerns (adverse outcomes) even if they are not officially challenged. Also, even though all adverse-outcome deals are less likely to complete than deals with favorable review outcomes, the deal-failure probability is higher for unchallenged deals that are under full investigation by the antitrust agencies than for challenged deals. We also measure the direct impact on shareholder wealth around the revelation of antitrust review outcomes and find that the value loss for adverse outcomes is up to a half of synergy gains. Given our results that regulatory uncertainty in M&As exhibits substantial economic consequences, we also contribute to the recent research on interim uncertainty (for instance, Bhagwat et al., 2016).

Second, we contribute to the growing literature concerning the impact of political economy on corporate finance that generally shows a positive link between corporate political connections and firm value.[8] Recently, Akey (2015) shows a positive causal relationship between firm political donations to winning candidates and firm value,

[6]For instance, see Coate and Higgins (1990), Weingast and Moran (1983), Falaschetti (2008)

[7]We mainly focus on the impact of the regulatory process on individual deals and firms. Research on general consequences for merger waves and economic surplus include Eckbo (1992), Eckbo and Wier (1985), Seldeslachts et al. (2009).

[8]See, for example, Goldman et al. (2008), Cooper et al. (2010), Amore and Bennedsen (2013), Akey (2015), Borisov et al. (2016). See also similar evidence based on one-time events (Acemoglu et al., 2016, Jayachandran, 2006, Alexander et al., 2009) and based on countries with weaker institutions (Claessens et al., 2008, Fisman, 2001, Johnson and Mitton, 2003, Khwaja and Mian, 2005, Faccio, 2006)

which suggests that corporate political donations are effective in influencing policy decisions and represent an investment in valuable political capital. A stream of papers attempts to identify channels through which political connections may enhance firm value. For example, politically connected firms manage to secure more government contracts, and their financial gains from the contracts are economically large (Tahoun, 2014, Goldman et al., 2013). Also, politically connected firms are more likely to receive government assistance or funding in the period of distress (Faccio et al., 2007, Duchin and Sosyura, 2012, Adelino and Dinc, 2014) or have better access to bank credit in countries with weaker institutions (Dinc, 2005, Khwaja and Mian, 2005, Claessens et al., 2008).[9] Complementing this line of research, we explore the effect of lobbying on firm value through corporate investment activities. Focusing on mergers and acquisitions, which are the largest and most value-consequential corporate investments with high regulatory risks and costs, we are able to show that firms strategically adjust their lobbying around these large corporate investments to mitigate regulatory uncertainty and, as a result, increase firm value.

Ferris et al. (2016) is the closest paper to our analysis as they document higher merger-announcement abnormal returns for politically connected firms. Our analysis focuses on the antitrust review process in detail and explores lobbying activity around merger events, which may be complementary to political connections through board seats. Also, we measure the direct impact on shareholder wealth of regulatory review outcomes and relate lobbying to subsequent market power changes to evaluate society-wide effects of lobbying in M&As.

This stream of literature also points to the potential costs of political connections to firm value. For example, firms actively engaging in political activities tend to suffer weaker corporate governance (Aggarwal et al., 2012). Political connections may also allow firms to engage in unethical practices and misconduct (Ramanna, 2008, Ramanna and Roychowdhury, 2010, Yu and Yu, 2011, Correia, 2014, Borisov et al., 2016). Links to government may alter firm strategy towards government

[9]Moreover,Alexander et al. (2009) show lobbying firms receive sizable tax benefits in the tax holiday created by the American Jobs Creation Act of 2004 and Gao and Huang (2016) find that lobbying hedge funds benefit from trading on political insider information.

objectives and destroy shareholder wealth (Leuz and Oberholzer-Gee, 2006). We add to this literature by showing that lobbying increases acquirer returns only for firms with stronger corporate governance.

Finally, the current paper contributes to the literature on political risk in investment activities. Related to our paper, Seldeslachts et al. (2009) show that regulatory risks discourage future merger activities. Karolyi and Taboada (2015) find that banks direct their merger activities to countries with lower regulatory frictions.[10] Adding to the previous evidence, we show that acquiring firms use lobbying in a strategic way to lower regulatory costs and risks associated with the antitrust review process in takeovers. Given that mergers are large and easily-identifiable investments, we show that firms actively manage political risk in investment activities.

The paper is organized as follows. Section 4.2 briefly introduces the institutional background of the antitrust merger review process. Section 4.3 describes our data and provides basic summary statistics concerning the antitrust-process outcomes and lobbying activities around merger announcements. Section 4.4 shows our results. Section 4.5 concludes.

4.2 Regulatory Background

The antitrust agencies (DOJ and FTC) make a predictive analysis of the consequences of ongoing mergers. According to US laws, the agencies' objective is to "identify and challenge competitively harmful mergers while avoiding unnecessary interference with mergers that are either competitively beneficial or neutral" (the US Department of Justice and the Federal Trade Commission, 2010, p.1). The antitrust review is designed to protect consumers and ensure that mergers do not result in higher prices, fewer choices or reduced rates of innovation. Except for the cases of clear-cut anticompetitive mergers, such as monopoly or near-monopoly, the agencies trade-off adverse effects of increased market power against efficiency enhancements in merged firms. Nevertheless, methodologies and processes that the agencies employ may be very detailed. A change in market concentration of a regional market may

[10] In similar vein, firms avoid paying tax by holding cash offshore, relocate headquarters to low-tax countries through invert mergers, or flow investment to states or countries with lower disclosures requirement(Zucman, 2014, Karolyi and Taboada, 2015, Lin et al., 2012).

lead to the agencies detaining a national-wide merger.

In addition to antitrust clearance, merging firms sometimes need to get approval from industry specific agencies. For example, mergers involving a telecommunications company often require the permission of transferring communication licenses from the Federal Communications Commission (FCC). Sometimes, firms also need to get approvals from foreign antitrust agencies if the parties do business in other countries. Nevertheless, the US antitrust review is the most widespread and applies to almost all the economically significant deals involving US targets.

Merging firms need to clear antitrust review if their deal value is above a certain threshold. The size threshold is adjusted yearly based on the GNP growth rate and ranges between $50 million and $100 million. In 2014, for example, the threshold was $75.9 million. Both the bidder and the target are required to submit an HSR premerger filing.[11] The submission of the HSR premerger filings is usually done after the public merger announcement and starts a statutory waiting period of 30 days.[12] The merging firms cannot consummate their deal before the expiration of this waiting period. The information in the HSR premerger filing is not public, but merger firms often voluntarily disclose the status and timings of their filings, especially when the target has a public listing. After receiving HSR filings from both merging parties, the antitrust agencies (FTC or DOJ) may request additional information from the merging companies (such as lists of customers and suppliers).[13] The agencies may also reach out to third parties, such as rivals, customers, and suppliers, for their opinions on the transaction.

The first stage of the antitrust review process results in one of the following three outcomes: (i) the waiting period is terminated before the 30-day waiting period (Early Termination); (ii) the 30-day waiting period expires naturally (Natural

[11]The Premerger Notification and Report form, pursuant to the Hart-Scott-Rodino Antitrust Improvements Act of 1976, requires information including the identity of the involved parties, financial statements, valuation, filings submitted to SEC, and information of operation and production. The required information submission is only minimum and does not contain any advanced analysis on product markets or competitions.

[12]The waiting period is 15 days for cash tender offers or bankruptcy sales.

[13]In most cases, the antitrust agencies involved are the Federal Trade Commission (FTC) or the Antitrust Division of the Department of Justice (DOJ). The requests for additional information occurs during the waiting period either in a "voluntary access letter" or in phone calls and emails. Firms can also invite the agency to presentations to address the antitrust concerns.

Expiration); and (iii) a full-scale investigation is initiated and the antitrust agency issues a request to the merging firms for additional information (Second Request). Early Termination and Natural Expiration imply that merger firms have cleared the antitrust review and are free to complete the deal. The issuance of a Second Request resets the waiting period. Once the firms certify substantial compliance with the Second Request, the agency starts a new 30-day waiting period to review the newly-submitted information (10 days for cash tender offers or bankruptcy sales).[14]

A positive outcome of the review after Second Request is confirmed in an antitrust clearance and the deal is then allowed to complete. However, if the agency finds an M&A transaction to be anti-competitive, the transaction is "Challenged." The DOJ files a complaint against the merging parties in a federal court to block the transaction. The FTC proceeds with an administrative complaint in front of an Administrative Law Judge while seeking a preliminary injunction from a federal court to stop the deal from consummation.

Remedy negotiation for Challenged deals is a lengthy, often multi-month process that requires extensive discussions, provision of information and negotiation concerning the remedy agreement.[15] If it works out, firms sign a "consent order" (issued by the FTC) or a "consent decree" (with DOJ, issued by a federal court). If a settlement has been reached, a proposed consent decree can be filed simultaneously with the antitrust complaint. Alternatively, firms may decide to abandon the transaction or choose to litigate against the agency's decision in federal court or before an administrative law judge.

[14]The actual time between the issuance of a Second Request and the expiration date of the new waiting period is usually much longer than 30 days since it takes significant time and effort to fulfill the information requirements.

[15]To address the agency's antitrust concerns, the merger parties may consider to offer asset or business divestitures or to execute restriction agreements. Note that negotiations with agencies can take place at any stage, even before receiving Second Request. For example, in the Ahold/Delhaize merger, the merging parties proposed to sell 80+ supermarkets in the US. Our sample contains five mergers with a consent agreement without triggering Second Requests. We do not consider them as being officially Challenged.

4.3 Data

To explore the effect of lobbying in M&A transactions, we investigate a sample of economically significant US mergers. Our merger sample comes from the SDC M&A database and meets the following requirements: (i) the deal value is at least $100 million and the percentage of shares sought in the deal is at least 50%; (ii) the announcement date is between January 1, 2008 and December 31, 2014; (iii) the acquirer and the target are publicly-traded US companies that can be matched to CRSP stock information at the time of the announcement and to Compustat, with at least one year accounting information before the merger announcement; (iv) both the acquirer and the target are not operating in the financial industry;[16] (v) the deal is not a leveraged buyout, spin-off, recapitalization, self-tender, exchange offer, repurchase, acquisition of remaining interest, or a privatization. We focus on domestic US M&A deals so that all firms in our sample face the same regulatory framework. The sample period starts in 2008 due to the availability of quarterly lobby data. In total, we end up with 432 deals that meet all the above requirements, but we are not able to find any information concerning the antitrust review process for 62 deals. Industry and year distributions of the final sample of 370 deals are reported in Appendix C.3.

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[16] M&As in financial industry need approvals from financial supervisory agencies, such as the Federal Reserve.

repurchase, acquisition of remaining interest, or a privatization. We focus on domestic US M&A deals so that all firms in our sample face the same regulatory framework. The sample period starts in 2008 due to the availability of quarterly lobby data. We exclude financial merger deals because the regulations in the financial industry are tighter and the antitrust merger reviews for these deals are more complex than in other industries.[17] In total, we end up with 432 deals that meet all the above requirements, but we are not able to find any information concerning the antitrust review process for 62 deals. Industry and year distributions of the final sample of 370 deals are reported in Table C.1 in the Internet appendix.

Panel A of Table 4.1 reports summary statistics for usual deal and acquirer characteristics. All variables are defined in Appendix C.1. The average transaction value is \$3 billion, which is significantly larger than an average transaction value of \$1.5 billion in Malmendier et al. (2016) representing a recent wide M&A sample, but comparable to large deals in Barraclough et al. (2013). Relatively, the transaction value is 28% of the acquirer's market value. The average takeover premium is 42% relative to target stock price 8 weeks before the public deal announcement, which is comparable to the literature. All cash deals represent 57% of our sample, which is more than for an average deal in Malmendier et al. (2016). Using Hoberg and Phillips (2016) to define industry peers, 55% of target firms operate in the same product market as the acquirer. The pairwise similarity reflecting the closeness of target's and acquirer's product markets is 0.045, which is markedly smaller to the average pairwise similarity of 0.114 reported in Hoberg and Phillips (2010) for a general takeover sample. This suggests that large deals that do have to clear antitrust review are biased towards deals that are less closely related in their product market. This might be also because the merging firms are larger and more diversified. Deal hostility and bidding competition after the public announcement are low, but representative of general takeover population. Termination fees that the target firm agrees to pay are not so common in our data set: the mean value is only 1% of the deal value and median is zero. In contrast, reverse termination fee promised by acquirers

[17] M&As in financial industry are not only subject to the investigations of the antitrust agencies, but also need approvals from their own supervisory agencies, such as the Federal Reserve.

is high (3% of deal value on average), suggesting that target companies are aware of the high regulatory risks and demand compensation.

Around the public deal announcement, target stock prices adjust by 31%, while the acquirer market reaction is virtually zero. Combined abnormal announcement effect is 4%. The expected completion probability is 95%. The acquirer statistics show that acquirers in our sample are large firms with a relatively small market-to-book ratio of 1.9. 38% of our acquirers have not announced any large deal within the previous three years, while 70% have not announced any large deal concerning a public target. The acquirer deal rank shows that our acquirers announce, on average, seven large deals (excluding the current one) over the past three years, but the median is only 1. Public large deals are less common – the average indicates only one additional deal (excluding the current one) in the previous three years.

4.3.1 The Antitrust Review Process

In order to get a detailed picture of the antitrust review process, we collect information concerning individual submissions of HSR premerger filings, public announcements of antitrust review outcomes or announcements certifying substantial compliance with a Second Request. We search through related SEC filings as well as press releases on Factiva looking for keywords such as "antitrust", "second request", "early termination", "challenge" and "HSR". Most firms disclose information concerning at least one date related to their antitrust review because it concerns material information regarding the completion and timing of merger transactions. Appendix C.2 provides an illustration of our data collection using SEC filings and press releases concerning the antitrust review process. Out of 432 mergers, we find at least one date related to antitrust review for 370 mergers. In the 62 mergers without any specific dates, there are nine mergers where the merging firms explicitly mention they are not required to submit HSR premerger fillings, and two mergers where the antitrust approvals have been cleared before deal announcements.[18]

We identify Challenged deals by manually collecting merger information from the

[18]The exemptions include the acquisition of raw lands, or foreign assets, of which the sales in the US are no more than $50 million.

Hart-Scott-Rodino Annual Congress Report from 2008 to 2015, and the antitrust-case filings on the DOJ and FTC websites.[19] In congress reports, the antitrust agencies describe every officially challenged deal during the corresponding year. In total, we are able to identify 24 Challenged deals.

Panel A in Figure 4.1 shows an overview of the antitrust review process with the median days taken in each step of the process across different outcomes to illustrate differing complexities. On average, firms file the HSR premerger filing 13 days after the public announcement date.[20] In 46 deals, merging firms strategically pull the HSR premerger filing just before the expiration of the 30-day waiting period and refile it again to start a new 30-day waiting period. In most cases, firms explicitly state (in their SEC filings) that they do this to provide extra time to the antitrust agencies to review their case. This suggests that merging firms intentionally avoid Second Requests.

After submitting their HSR premerger filings, most firms clear the antitrust review without any additional request for information. In the first group, 156 deals receive an Early Termination in 12 days after they submit their HSR premerger filings and then 147 deals complete in a further 60-day period. The remaining 9 deals are withdrawn in 78 days. The second set of 152 deals clears the antitrust review as the compulsory 30-day waiting period expires. This outcome is referred to as Natural Expiration. 143 deals are then completed in 31 days, and 9 deals are withdrawn in 49 days.

The third group of 62 deals receives a Second Request. After the expiration of the 30-day waiting period, these deals are requested to provide additional detailed information. Out of these 62 deals, only 24 deals are officially Challenged as anticompetitive and an official complaint against the merging parties is filed with a relevant court. Only 3 of the 24 Challenged deals withdraw in 101 days and 21 manage to complete their deal within 96 days from the Second Request outcome. The completed Challenged Second Requests usually pledge to divest some assets to address

[19] We consult http://www.justice.gov/atr/cases/index.html and http://www.ftc.gov/enforcement/cases-proceedings for DOJ and FTC, respectively.

[20] We have three mergers that file the HSR premerger filing before the public announcement, but only one deal has the review outcome revealed before the deal announcement.

Table 4.1. Descriptive statistics

This table reports the mean, standard deviation, 25^{th}, 50^{th} and 75^{th} percentiles for four groups of variables concerning the deal and acquirer characteristics (Panel A), antitrust-review outcomes (Panel B), lobbying expenditures (Panel C) and product-market industry characteristics (Panel D). All variables are defined in Appendix C.1 and winsorized at the 1^{th} and 99^{th} percentiles.

Variable	# obs.	Mean	St.dev.	25^{th} perc.	Median	75^{th} perc.
Panel A: deal and acquirer characteristics						
Deal value ($million)	370	3,024.500	5,952.113	387.961	1,172.092	3,055.269
Deal value (log)	370	7.079	1.323	5.961	7.067	8.025
Relative size	370	0.281	0.362	0.036	0.157	0.397
Takeover premium	361	0.423	0.383	0.218	0.340	0.518
All cash	370	0.568	0.496	0.000	1.000	1.000
Horizontal merger	370	0.568	0.496	0.000	1.000	1.000
Pairwise similarity	370	0.046	0.066	0.000	0.015	0.082
Tender offer	370	0.343	0.475	0.000	0.000	1.000
Hostile	370	0.043	0.204	0.000	0.000	0.000
Bidding contest	370	0.070	0.256	0.000	0.000	0.000
Entrenched acquirer	370	0.319	0.467	0.000	0.000	1.000
Termination fee	370	0.013	0.023	0.000	0.000	0.023
Reverse termination fee	370	0.028	0.012	0.024	0.031	0.036
Acquirer announcement AR	370	0.005	0.075	-0.027	0.001	0.034
Target announcement AR	370	0.314	0.291	0.133	0.264	0.410
Combined announcement AR	370	0.043	0.075	-0.003	0.027	0.079
Expected completion probability	361	0.949	0.552	0.893	0.968	1.000
Market cap ($million)	370	28,200.121	49,849.600	2,030.557	6,642.716	26,271.348
Acquirer market-to-book	370	1.858	0.813	1.284	1.639	2.247
Acquirer leverage	366	0.205	0.195	0.064	0.139	0.286
Acquirer tangibility	370	0.235	0.216	0.072	0.150	0.351
Acquirer liquidity	370	0.301	0.184	0.166	0.269	0.404
Panel B: antitrust-review outcomes						
Early Termination	370	0.373	0.484	0.000	0.000	1.000
Natural Expiration	370	0.376	0.485	0.000	0.000	1.000
Pull & Refile	370	0.084	0.277	0.000	0.000	0.000
Second Request	370	0.168	0.374	0.000	0.000	0.000
Challenged Second Request	370	0.065	0.247	0.000	0.000	0.000
Unchallenged Second Request	370	0.103	0.304	0.000	0.000	0.000
Withdrawn	370	0.081	0.273	0.000	0.000	0.000
# days to complete	370	122.562	92.657	56.000	93.000	158.000
Acquirer outcome AR	367	-0.008	0.063	-0.036	-0.005	0.026
Target outcome AR	367	-0.008	0.064	-0.037	-0.008	0.026
Combined outcome AR	367	-0.007	0.054	-0.032	-0.005	0.022

continued on next page

Table 4.1. Descriptive statistics (continued)

continued from previous page

Variable	# obs.	Mean	St.dev.	25^{th} perc.	Median	75^{th} perc.
Panel C: lobbying data						
Active lobbier	370	0.795	0.405	1.000	1.000	1.000
No previous lobbying	370	0.341	0.475	0.000	0.000	1.000
Lobbying dollars $(-4,-1)$ ($000s)	370	2,923.081	6,107.520	0.000	220.000	2,750.000
Lobbying dollars $(0,+3)$ ($000s)	370	3,027.607	6,029.503	0.000	240.000	3,020.000
Lobbying ratio $(-4,-1)$ (b.p.)	370	1.512	3.793	0.000	0.302	1.213
Lobbying ratio $(0,+3)$ (b.p.)	370	1.637	3.945	0.000	0.289	1.286
Lobbying dummy $(-4,-1)$	370	0.641	0.480	0.000	1.000	1.000
Lobbying dummy $(0,+3)$	370	0.665	0.473	0.000	1.000	1.000
Disclosed lobbying ratio (b.p.)	370	1.527	3.655	0.000	0.315	1.238
Politicians' ownership dollars ($000s)	370	19.111	89.919	0.000	0.000	0.000
Politicians' ownership dummy	370	0.141	0.348	0.000	0.000	0.000
PAC contribution dollars ($000s)	370	6.842	14.093	0.000	0.000	6.000
PAC contribution ratio (b.p.)	370	0.003	0.009	0.000	0.000	0.003
PAC contribution dummy	370	0.373	0.484	0.000	0.000	1.000
Target lobbying dummy $(-4,-1)$	370	0.273	0.446	0.000	0.000	1.000
Target lobbying dummy $(0,+3)$	370	0.241	0.428	0.000	0.000	0.000
Panel D: product-market conditions						
Acquirer HHI	370	0.247	0.263	0.095	0.142	0.261
Target HHI	370	0.226	0.223	0.095	0.146	0.265
Expected ΔHHI	370	0.001	0.005	0.000	0.000	0.000
ΔHHI	338	0.002	0.215	-0.032	0.000	0.031
Acquirer market share	370	0.162	0.284	0.008	0.035	0.160
Target market share	370	0.069	0.208	0.001	0.004	0.026
Δmarket share	338	0.007	0.204	-0.006	0.000	0.010
Acquirer similarity	343	4.297	4.703	1.561	2.446	4.502
Target similarity	356	5.661	6.936	1.557	2.761	6.037
Δsimilarity	306	0.235	1.434	-0.283	-0.000	0.395
Acquirer fluidity	337	7.610	3.821	5.199	6.870	9.364
Target fluidity	347	8.289	4.037	5.264	7.468	10.492
Δfluidity	293	-0.551	2.340	-1.910	-0.518	0.862

their antitrust issues. The remaining 38 Second Requests are Unchallenged: 29 deals manage to provide all relevant additional information and complete in 150 days, while 9 deals withdraw in 135 days. We see that even though these Unchallenged deals do not get an official complaint, it takes them roughly three-times as long to complete (or withdraw) than deals with Natural Expiration or Early Termination. This extra time is costly.

Panel B in Figure 4.1 focuses on the process of gathering extra information after a Second Request. This process very often happens behind closed doors and not much information is released to the public domain. Therefore, we were able to collect some information only on a subset of 19 deals with Second Requests (31% of all Second Requests) – 10 Challenged and 9 Unchallenged deals. On average, these firms announce a substantial compliance with their Second Request in 55 days from the initial outcome day. Subsequently, 14 deals are completed in 149 days (8 Challenged and 6 Unchallenged), while 5 deals are withdrawn after 65 days. These time statistics are perhaps not representative of all Second Requests, but suggest that compliance with a Second Request is costly not only for Challenged deals that are, for example, analyzed in Ferris et al. (2016), but also for Unchallenged Second Requests. The collected SEC filings describe the process of compliance as very time-consuming and involving disclosure of proprietary information.[21] Gotts and American Bar Association Antitrust Law Section (2006, p. 154) describes that a Second Request "consists of both document requests and interrogatories… It is the company's responsibility to gather the necessary information and to prepare a narrative response. Gathering the information and documents called for by a Second Request can be time-consuming and expensive for the parties. Business people often react initially that it would be impossible to comply."

In summary, Figure 4.1 shows that most of the large deals in our sample manage to get a favorable outcome of Early Termination (42%) or Natural Expiration (41%). Only around 17% of deals receive a Second Request and only 39% of Second Requests

[21] For example, Avis Budget Group described in its SEC filings for the acquisition of Dollar Thrifty, that it "submitted over a million pages of documents and vast quantities of data in response to the FTC's Second Request."

Figure 4.1. Antitrust-review process

This figure shows two flow charts of the antitrust-review process with the median number of days spent between the individual nods. Panel A show the full process for 370 deals from their deal public announcement until completion or withdrawal. Panel B shows the process from receiving a Second Request until completion or withdrawal, but only for a limited sample of 19 deals with available data.

Panel A. Panel A: the full flow chart

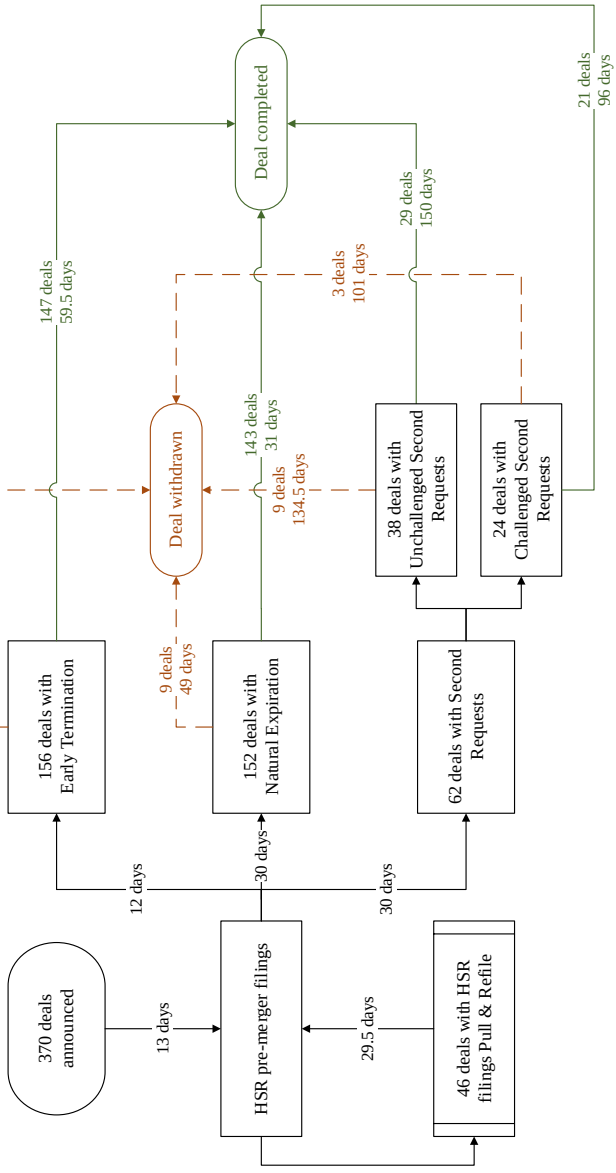
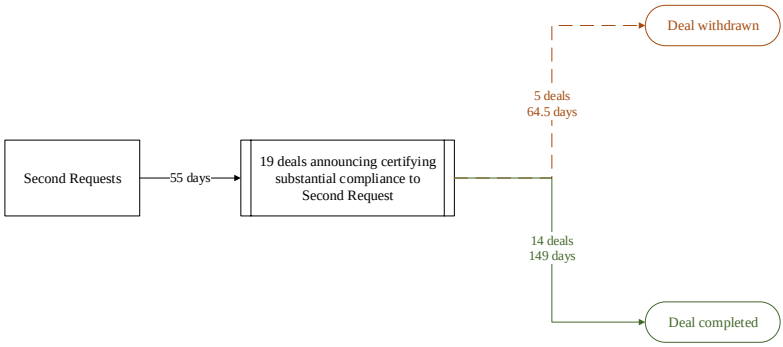


Figure 4.1. Antitrust-review process (continued)

Panel B. Panel B: extra data for Second Request



are Challenged. Also, on average 8% of acquirers withdraw their offer; they abandon and do not complete their announced deal. Withdrawals happen across all three main review outcomes, but are more common for Second Requests (19%) relatively to Early Terminations and Natural Expirations (6% each). Later in the analysis, we refer to this group of three review outcomes – Early Termination, Natural Expiration and Second Request – as the first-stage review outcomes.

To complete the picture, we note that 18 of Early Terminations and 13 of Natural Expirations end up with these outcomes because of a strategic Pull & Refile of their original HSR premerger filings. This means that they choose to get extra 30 days in the waiting period to get a favorable outcome. Because of the strategic nature of this move and its potential correlation with lobbying, we treat this group of 31 Pull & Refile deals as an extra category in our lobbying-spending analysis below.[22] We also keep track of Challenged and Unchallenged Second Requests as it is possible that their lobbying patterns are different. Altogether, we form a *granular set of review outcomes* – Early Termination, Natural Expiration, Pull & Refile, Unchallenged and Challenged Second Requests – that reflects in-depth features of the US antitrust

[22]Note that the remaining 15 deals that strategically refile their HSR premerger documents end up with a Second Request. As they fall equally across Challenged and Unchallenged deals and do not seem to differ from the rest of Second Requests, we decide to pool them with the other Second Requests.

review process.

Panel B of Table 4.1 summarizes the antitrust review outcome frequencies. As mentioned above, we see that across all antitrust review outcomes, we have 8% of withdrawn deals. The frequencies for Early Terminations and Natural Expirations (37% and 38%, respectively) reflect that we report Pull & Refile as a separate outcome category with a frequency of 8% (31 deals). 17% of deals receive a Second Request, but only 7% (24 deals) are Challenged. The remaining category of 38 deals (10% of the sample) represents Unchallenged Second Requests, but only 8% (29 deals) complete, while 2% (9 deals) withdraw their offer, perhaps because the antitrust review process is becoming too costly.

On average, it takes 123 calendar days from the public announcement to deal completion or withdrawal, while Malmendier et al. (2016) report only 109 days for an average sample without antitrust issues.[23] At the bottom of Panel B, we report the 12-day abnormal returns for the window of $(-10, +1)$ around the review outcome revelation date. Even though we conjecture that the antitrust review process is costly, the market does not react significantly to the review outcome revelation for all outcomes together. None of the abnormal returns for acquirers, targets, and combined firms are significant.

4.3.2 Lobbying Data

The main aim of our paper is to explore effects of corporate political connections in the context of M&As that represent large corporate investment decisions. We focus on corporate lobbying because it constitutes a primary channel for influencing politicians and regulators and the total lobbying expenditures far exceed corporate contributions to political action committees (PACs) (Ansolabehere et al., 2003, Kerr et al., 2014, Chen et al., 2015). Moreover, lobbying expenditures are reported quarterly and allow, therefore, for a timely analysis.

Our lobbying data come from the Senate Office of Public Records (SOPR) and the Center for Responsive Politics (CRP).[24] CRP uses publicly-available lobbying

[23] We have to adjust their number because it is reported in trading rather than calendar days.

[24] https://www.opensecrets.org/. We focus on corporate lobbying. For more information on general lobbyist level statistics and the lobbying industry, see Bertrand et al. (2014).

disclosure data filed by lobbyists from the SOPR, but standardizes company names and identifies ultimate parent firms for individual lobbying clients. The database of lobbying disclosures contains lobbying-income reports of individual lobbyists from 1999 until the present, but before 2008 the individual reports are only on a semi-annual basis. Since approval of the Honest Leadership and Open Government Act in 2007, the reports are on a quarterly basis. We match the lobbying client names with firm names.[25]

As supplementary to lobbying data, we also collect information of PAC contributions by merging firms and the stock holding in merging firms by politicians serving in the antitrust subcommittees in congressional Judiciary Committees from CRP. Unlike lobbying data, PAC contributions are reported on a bi-annual basis (corresponding to election cycles) and politician wealth disclosure on a yearly basis.

In our merger-related analysis, we want to allocate lobbying expenditures around the deal-announcement date and, therefore, quarterly data reported as of 2008 fit our analysis better. We manually match the names of lobbying clients to Compustat company names. Following Adelino and Dinc (2014), we assume that the lobbying expenditure is zero for firms that do not have a matching lobbying client in the lobbying data.

Panel C of Table 4.1 shows summary statistics for acquirer quarterly lobbying expenditures. For a start, we see that 80% of all acquirers have lobbied at least once over the period from 2007 until 2015.[26] Still, 34% of acquirers do not have any lobbying experience for at least 12 quarters (3 years) before quarter -5 relatively to the current deal announcement. Note that this does not mean that their lobbying is zero starting with quarter -4. On average, acquirers spend around \$3 million over the four quarters before and again after the deal announcement. This means that they spend on average \$750 thousand on lobbying per quarter. When we scale

[25] CRP often identifies the acquirer as the parent of the target even for filings before the acquisition. We check our matching results with the original filing records, location information of lobbying clients from SOPR, and historical location and names of firms to make sure that we correctly match lobbying filings to firms. For lobbying filings filed under the target name one year post deal-completion dates, we allocate the lobbying expenditures to the acquirer assuming that the target firm has operated as a subsidiary of the acquirer.

[26] We combine the semi-annual lobbying data before 2008 together with the quarterly data after 2008 to measure the lobbying growth and lobbying experience.

the lobbying dollars by the acquirer market capitalization (lobbying ratio), we see that acquirers do not spend a large fraction of their value on lobbying: on average 1.5 and 1.6 basis points of their market capitalization before and after the deal announcement, respectively. The lobbying dummy variables indicate that 64% and 67% of acquirers spend a positive amount on lobbying during the year before and after the deal announcement, respectively.

Lobbying spending in our sample is larger relatively to other studies in the literature: only 12% of firms in Chen et al. (2015) spend on lobbying in 2005 and Adelino and Dinc (2014) report average lobbying expenditures of $437 thousand in the first quarter of 2009 in their full sample. The differences may reflect that our acquirers are larger firms. We also classify lobbying expenditures that directly targets government agencies with possible influence over the merger process: the Senate, House of Representatives, Department of Justice and Federal Trade Commission and label it as related lobbying. Appendix C.4 lists the related and unrelated agencies and shows their frequency of being a lobbying target. Panel C in Table 4.1 shows that related lobbying expenditure is larger and more frequent than unrelated lobbying, which is to a large extent driven by lobbying for the Senate and House of Representatives that cover a wide range of issues and topics.

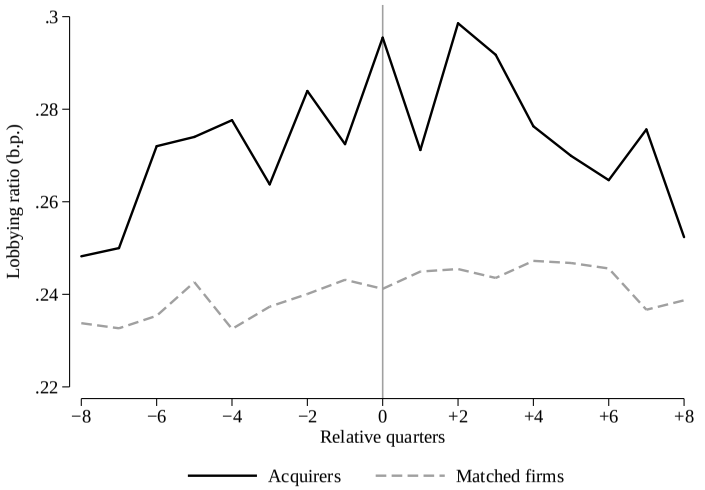
Figure 4.2 shows a clear time pattern for the acquirer lobbying ratio eight quarters before and after the deal announcement date. In order to reflect on acquirers' lobbying activities in a context of lobbying activities of other firms in the market, we also report the lobbying time-series for peer firms and adjust both the acquirer and peer lobbying ratios for firm characteristics.[27] Panel A shows that acquirers increase their lobbying expenditures over the eight quarters before the deal announcement and then keep them high after the announcement, while their peers do not. Moreover, Panel B shows that acquirers' lobbying is significantly larger relatively to their peers' lobbying, especially closely around deal announcements. This development suggests a strong link between lobbying expenditures and firms' takeover activities

[27] We match each acquirer firm with its 3-digit SIC peers and consider only those peers that are in the lowest quartile of absolute deviations ($|X_{acq} - X_{peer}|$) by both market capitalization and market-to-book ratio ($X = \{MarketCap, MBRatio\}$). We control for total assets, market-to-book ratio, leverage, ratio of tangible assets and cash ratio.

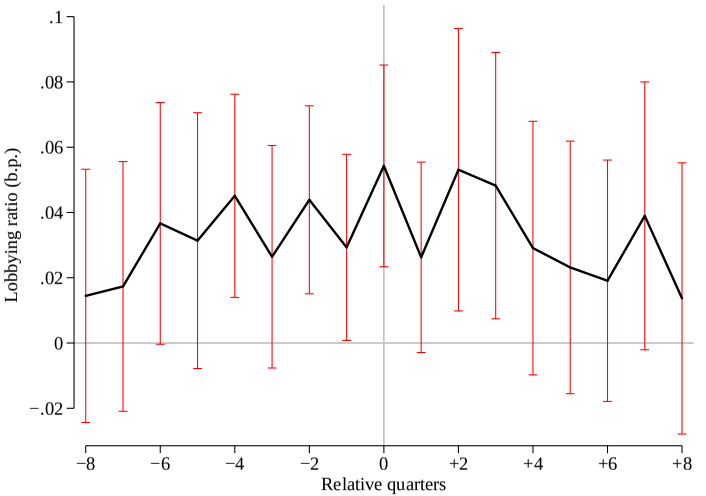
Figure 4.2. Lobbying spending around the deal announcement

This graph shows the acquirer quarterly lobbying ratio in basis points eight quarters before and after the deal announcement date. Zero on the horizontal axis is the merger announcement quarter. Panel A shows the average lobbying ratios for acquirers in the analysis and for their matched peers. Matched peers are firms in the same 3-digit SIC codes with market capitalization and book-to-market ratio in the closest quartile to the acquirers. Panel B plots the difference in the average lobbying ratio between acquirers and their matched peers, with red lines indicating the 90% confidence intervals.

Panel A. Panel A: average lobbying ratio



Panel B. Panel B: difference between acquirers and matched peers



for the year before and after the deal announcement.

In order to provide a full picture of lobbying around merger announcements and control for possible coordinated actions by firms to build political networks (Akey, 2015), we also report summary statistics for PAC (Political Action Committees) contributions and ownership by politicians. Both are reported only on a yearly basis. The average PAC campaign contributions are only \$7 thousand and only 37% of our acquirers do this type of lobbying. Ownership by congressmen on the antitrust subcommittees is very skewed – only 14% of acquirers do have any politicians as owners and the value of their stake is only \$19 thousand. Similar to Chen et al. (2015), we see that these extra lobbying activities are less important relatively to direct lobbying expenditures that can be fine-tuned more specifically around the antitrust review dates. The last set of statistics in Panel C of Table 4.1 refers to target lobbying variables. Target firms lobby less and less frequently compared to the acquiring firms.

4.3.3 Industry Data

Finally, we explore the acquirer and target product-market conditions around the antitrust review. We opt for the text-based industry classification (Hoberg and Phillips, 2010, Hoberg et al., 2014, Hoberg and Phillips, 2016) that is flexible and detailed.[28]

We use the expected change in sales-based HHI (ΔHHI) in the target industry to capture the expected reduction in horizontal competition (the value is set to zero for non-horizontal mergers), target HHI measuring the existing product market concentration, and target market share to capture how much market power that the acquirer can gain by acquiring the target. Moreover, target similarity measures product homogeneity of close peers and target fluidity captures potential rather than existing competition (Boone et al., 2016). Therefore, a horizontal merger with higher ΔHHI, higher target HHI, low target similarity, and low target fluidity is associated with more anticompetitive concerns for the antitrust agencies.

[28]SIC-based industries may be poor measures of product-market conditions (Ali et al., 2008) and Census-based measures only cover manufacturing industries.

Panel D of Table 4.1 shows average statistics for the competitive-environment variables. The acquirer and target sales-based HHI indices of 0.247 and 0.226 are very close to the average HHI of 0.22 reported in Hoberg et al. (2014). The expected and realized changes in HHI are also very small. Acquirer and target average market shares are 16% and 7%, respectively, confirming that target firms are, not surprisingly, smaller market players. The median values are, however, much smaller and the expected change in market share is very small even at the 75^{th} percentile.

The average acquirer and target TNIC3 similarity is 4.3 and 5.7, respectively showing that target firms are more similar to their peers than acquirers. Fluidity of 7.6 and 8.3 measuring product changes for acquirer and target peers, respectively, is slightly higher than the average of 6.9 in Hoberg et al. (2014). This positive difference may indicate that merging firms are operating in a changing and dynamic environment. Acquirer average change in fluidity and similarity from before to after the merger is small and statistically insignificant suggesting that the average merger in our sample does not have a large effect on the acquirer industry. However, differences between quartiles suggest meaningful variation in the sample.

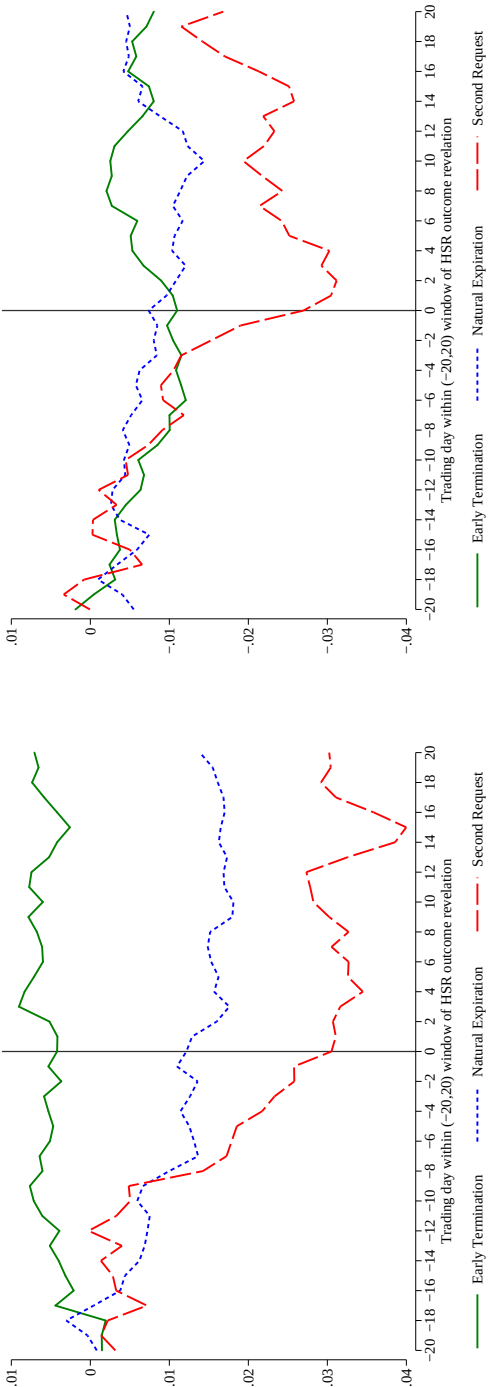
4.4 Results

4.4.1 Antitrust Review Costs and Risks

In this section, we explore acquirer costs and risks associated with the antitrust review process. As a first step, we apply the event-study methodology around the review outcome dates to detect the markets' evaluation of the antitrust review costs and risks. In this part of the analysis, we focus on the three first-stage review outcomes as shown in Figure 4.1: Early Termination, Natural Expiration, and Second Request. We do so because of the following three reasons. First, these review outcomes are clearly communicated and, therefore, easily observed and interpreted by market participants. This also means that we are able to collect reliable data for all deals. Second, these three review outcomes all materialize within the same fixed time frame. Firms usually file their HSR premerger documents shortly after the deal public announcement and normally receive the outcome by the end of the 30-day waiting

Figure 4.3. Abnormal returns around review-outcome dates

This figure shows the acquirer, target and combined cumulative abnormal returns around the antitrust-review outcomes for the three groups of Early Termination, Natural Expiration and Second Request. The abnormal returns are adjusted based on the market model. The combined abnormal returns are calculated as a weighted average of the target and acquirer abnormal returns using the respective market capitalization 8 weeks before the deal announcement. The green solid line represent Early Terminations, the blue interrupted line represents Natural Expirations and the red dashed line represents Second Requests.



period. Finally, as shown in Section 4.3.1, a Second Request represents an adverse review outcome that is equally severe to a Challenge. And, at the time of the Second Request, the merging firms are not aware whether they will be Challenged or not. Therefore, we argue, the revelation of first-stage review outcomes provides a good setting to compare the stock-market reactions and imply differences in regulatory costs.

We conjecture that the antitrust review process adds to the interim uncertainty of announced but not yet completed deals, especially when it concerns Second Requests. This is because of all the extra documentation the companies are requested to provide to the antitrust agencies and the time it takes to do so. Moreover, extended time to completion may be associated with other related costs, such as costs of keeping financing for the deal in place, keeping anxious employees and customers on board (Bhagwat et al., 2016). To confirm our conjecture, we should see the higher cost and risk to be reflected in negative abnormal returns for Second Request relatively to the other two favorable review outcomes, conditional on the outcome revelation not to be expected by the market at the deal announcement.

We calculate acquirer, target and combined abnormal returns for 41 trading days around the review outcome revelation dates using the Fama-French 3-factor benchmark.[29] For some deals, this $(-20, +20)$ review outcome event window may overlap with the deal announcement and bias our abnormal returns. In order to mitigate this deal-announcement effect, we exclude all observations for which the $(-20, +20)$ review outcome event window overlaps with the $(-5, +5)$ deal-announcement event window. The results are robust to using the market-model benchmark.

Figure 4.3 shows the development of abnormal returns in the window of $(-20, +20)$ around the review outcome dates. We see that stock prices evolve differently across the three antitrust review outcomes. Uncertainty is resolved the fastest for Early Terminations, which is reflected in stable abnormal returns especially for acquirers and combined firms. Natural Expirations and Second Requests first drop somewhat together, but then Natural Expirations stabilize, while Second Requests drop signif-

[29] We use a 254-day estimation window that ends 8 weeks prior to the deal public announcement and require at least 100 observations in the estimation window.

icantly further. This suggests that the market is reassured about a positive outcome in the days before HSR outcome revelation, while it remains skeptical for eventual Second Requests until the HSR outcome revelation.[30] We also see that the negative review outcome effect for Second Requests is not reversed within 20 days after the outcome date.

Table 4.2 confirms these conclusions. It reports the acquirer, target, and combined average abnormal returns across the main three antitrust review outcomes for three different event windows around the review outcome date: $(-1, +1)$, $(-5, +1)$ and $(-10, +1)$. We do not see any significant stock price movement for Early Terminations and Natural Expirations. In contrast, abnormal returns for Second Requests are all negative and in line with Figure 4.3 decrease with larger event windows. Over the 12 days before the Second Request outcome date, abnormal returns for both acquirer and target companies drop by at least 2.6%. The drop is statistically significant and also reflected in a significant drop in return for the combined entity. This drop is also economically significant given the 0.5% and 4.2% deal-announcement acquirer and combined abnormal returns, respectively. The last three columns in Table 4.2 show that the drop in abnormal returns for Second Request is statistically significantly different from the change for the other two favorable outcomes combined.

As a next step of the regulatory-cost analysis, in Table 4.3 we proxy for the regulatory cost and increased risk using the number of days to complete and the probability to withdraw a takeover offer, respectively. We conjecture that an adverse review outcome should be associated with more days in the merging process that lead to higher cost and higher risks of withdrawal from the merger. In Panel A, we regress the log of days to complete on review-process dummy variables and a set of control variables. In all specifications, we control for time and industry dummies. Specifications 1 and 2 show that Second Requests suffer longer time in the public merger process than the favorable outcomes of Early Termination and Natural Expiration. The coefficient for the Second Request dummy is positive and significant

[30] We find anecdotal evidence that merging firms issue reassuring public statements expressing their expectations that the review process will be favorable. Also, the antitrust agencies often contact third parties to resolve sticky issues, which might leak to the public domain.

Table 4.2. Abnormal returns around the review-outcome date

This table shows acquirer, target and combined abnormal returns in percentage points around the review-outcome dates separately for the three first-stage review outcomes. We have 155, 151 and 61 deals for the review outcome of Early Termination, Natural Expiration and Second Request, respectively. The abnormal returns are adjusted using the Fama-French 3-factor model where the estimation window is a 254-day period ending 8 weeks prior to the deal announcement date.Standard errors are reported in parentheses. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1) Early Termination		(2) Natural Expiration		(3) Second Request		(3) − (1)&(2) Difference	
CAR(−1, +1) (%)								
Acquirer	0.05	(0.28)	0.07	(0.20)	-0.53	(0.47)	-0.58	(0.50)
Target	0.00	(0.25)	-0.16	(0.30)	-1.52***	(0.54)	-1.44**	(0.58)
Combined	-0.04	(0.25)	0.16	(0.20)	-0.78*	(0.46)	-0.83*	(0.48)
CAR(−5, +1) (%)								
Acquirer	-0.09	(0.40)	0.02	(0.31)	-1.32*	(0.68)	-1.28*	(0.73)
Target	0.15	(0.32)	-0.30	(0.46)	-2.12**	(0.84)	-2.05**	(0.88)
Combined	-0.14	(0.31)	0.12	(0.29)	-1.48**	(0.66)	-1.47**	(0.70)
CAR(−10, +1) (%)								
Acquirer	-0.20	(0.47)	-0.52	(0.42)	-2.78**	(1.17)	-2.42*	(1.21)
Target	-0.27	(0.42)	-0.52	(0.55)	-2.57**	(1.04)	-2.18*	(1.09)
Combined	-0.27	(0.38)	-0.33	(0.39)	-2.65***	(0.96)	-2.35**	(1.00)

at the 1-percent level. The economic effect is also large. In specification 1, Second Requests take 1.4-times ($e^{0.877} - 1$) longer to complete relatively to the reference category of favorable outcomes. The effect is somewhat smaller when controlling for deal characteristics in specification 2: Second Requests take double the time of favorable outcomes.

In specifications 3 and 4, we partition all Second Requests into Challenged and Unchallenged Second Requests. We see that both of the coefficients are significant at the 1-percent level and similar in size. Taking the coefficient estimates in specification 4 with a full set of control variables, we see that Challenged Second Request take 110% and Unchallenged Second Request 100% longer than the favorable outcomes.

The last two specifications include the granular set of review outcome dummy variables with Natural Expiration as the reference category. The coefficient for Early Termination is the smallest, and the effect is not statistically or economically significant. It indicates that Early Terminations take as long to complete as Natural Expirations ($e^{0.019} = 1.02$). Pull & Refiles, Unchallenged and Challenged deals take 29%, 107% and 117% longer, respectively, than Natural Expiration and all the effects

Table 4.3. Review outcomes and regulatory costs and risks

This table reports regression estimates that characterize the relationship between antitrust-review outcomes and regulatory costs and risks in M&As. Panel A reports regression estimates for OLS regressions with the log of number of days from the public deal announcement to completion or withdrawal of the deal as the dependent variable. Panel B reports average marginal effects for logit regressions with a dummy variable equal to one for withdrawn deals and zero for completed deals as the dependent variable. Target industry (Fama-French 5 sectors) and year fixed effects are included in all specifications. Standard errors are reported in parentheses. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: days to complete					
Second Request	0.877***	0.709***				
	(0.083)	(0.037)				
Challenged Second Request			0.904***	0.735***	0.976***	0.777***
			(0.118)	(0.096)	(0.098)	(0.116)
Unchallenged Second Request			0.859***	0.691***	0.929***	0.727***
			(0.066)	(0.025)	(0.054)	(0.033)
Pull & Refile					0.287**	0.253**
					(0.090)	(0.056)
Early Termination					0.093	0.019
					(0.055)	(0.044)
Deal value		0.076***		0.076***		0.071***
		(0.015)		(0.015)		(0.014)
Relative size		0.242***		0.240***		0.252***
		(0.025)		(0.024)		(0.023)
All cash		-0.190**		-0.193**		-0.198**
		(0.043)		(0.046)		(0.052)
Horizontal merger		0.001		-0.000		-0.002
		(0.022)		(0.020)		(0.017)
Tender offer		-0.426***		-0.426***		-0.429***
		(0.068)		(0.068)		(0.071)
Hostile		0.321*		0.328*		0.327*
		(0.147)		(0.148)		(0.138)
Bidding contest		0.011		0.012		0.002
		(0.095)		(0.095)		(0.121)
Termination fee		1.239		1.198		1.021
		(1.139)		(1.169)		(1.031)
Reverse termination fee		-0.457		-0.450		-0.180
		(1.104)		(1.045)		(0.909)
Expected Δ HHI		2.517		2.430		2.327
		(3.865)		(3.936)		(3.371)
Target HHI		-0.015		-0.011		0.013
		(0.101)		(0.094)		(0.087)
Target similarity		-0.008		-0.008		-0.007
		(0.005)		(0.005)		(0.004)
Target fluidity		0.006		0.006		0.008
		(0.011)		(0.011)		(0.011)
Constant	4.575***	4.118***	4.576***	4.120***	4.506***	4.113***
	(0.098)	(0.154)	(0.099)	(0.154)	(0.082)	(0.174)
# obs.	370	344	370	344	370	344
Adjusted R^2	0.373	0.603	0.371	0.602	0.382	0.610

continued on next page

Table 4.3. Review outcomes and regulatory costs and risks (continued)

continued from previous page

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: withdrawn					
Second Request	0.086**	0.053*				
	(0.038)	(0.028)				
Challenged Second Request			0.036	0.053	0.032	0.049
			(0.060)	(0.039)	(0.073)	(0.039)
Unchallenged Second Request			0.113***	0.052**	0.109***	0.046**
			(0.026)	(0.021)	(0.033)	(0.022)
Pull & Refile					-0.003	-0.021
					(0.037)	(0.042)
Early Termination					-0.007	-0.004
					(0.036)	(0.028)
Deal value		-0.024***		-0.024**		-0.024**
		(0.009)		(0.009)		(0.011)
Relative size		-0.009		-0.009		-0.009
		(0.046)		(0.047)		(0.048)
All cash		-0.035*		-0.035+		-0.036**
		(0.021)		(0.021)		(0.018)
Horizontal merger		0.013		0.013		0.010
		(0.025)		(0.025)		(0.020)
Tender offer		-0.057***		-0.057***		-0.054***
		(0.020)		(0.021)		(0.014)
Hostile		0.142***		0.143***		0.142***
		(0.046)		(0.050)		(0.042)
Bidding contest		0.154***		0.154***		0.153***
		(0.034)		(0.034)		(0.032)
Termination fee		0.178		0.176		0.185
		(0.278)		(0.308)		(0.292)
Reverse termination fee		-1.227		-1.228		-1.251
		(1.266)		(1.250)		(1.121)
Expected Δ HHI		2.893		2.889		2.966*
		(2.042)		(2.098)		(1.794)
Target HHI		-0.326*		-0.325*		-0.325*
		(0.171)		(0.174)		(0.176)
Target similarity		0.002		0.002		0.002
		(0.005)		(0.005)		(0.005)
Target fluidity		-0.003		-0.003		-0.003
		(0.005)		(0.005)		(0.005)
# obs.	370	344	370	344	370	344
Pseudo R^2	0.152	0.501	0.163	0.501	0.163	0.502

are statistically significant. The increase between Pull & Refile and the two types of Second Request is economically large. In summary, our results suggest that the adverse outcomes are associated with higher regulatory costs.

The control variables also reveal some interesting results. Larger, stock and hostile deals increase the length of the public merger process that includes the antitrust review. Interestingly, termination fees (direct or reverse) and expected change in industry concentration have no significant effect.

Panel B of Table 4.3 shows average marginal effects for a logistic regression with a dummy variable equal to one for all withdrawn deals and zero for all completed deals as the dependent variable. The first two specifications show that Second Requests increase the probability of a withdrawal by at least 5%, significant at the 10-percent level. This a sizable effect given the unconditional probability of withdrawal is 8%. Specifications 3 to 6 suggests that both Challenged and Unchallenged Second Requests are associated with higher probability of withdrawals, though Challenged deals suffer higher standard errors and, therefore, their marginal probabilities are not significant.[31]

The control variables show that large, cash deals, and tender-offer deals with a high concentration in the target industry are less likely to withdraw. In contrast, hostile and deals with competing bids after the public announcement are more likely to withdraw. Specification 6 suggests that deals with higher expected change in the target industry concentration are also more likely to withdraw.

4.4.2 Lobbying and Review Outcomes

In this section, we explore whether merging firms increase their lobbying expenditures to facilitate a smoother antitrust review process. On the one hand, lobbying may help firms to achieve antitrust review clearance and get more favorable review outcomes, which yields a positive correlation between lobbying and the probability of getting favorable review outcomes. On the other hand, reversed causality is also possible because acquirer expectations of less favorable review outcomes may also

[31] It is also possible that acquirers decide to withdraw before they are Challenged in their Second Request.

trigger higher lobbying expenditures. It is likely that lobbying strategies change over the merger process because the merging parties receive more and more precise information about their deals and the antitrust review process. Therefore, we differentiate the effect of lobbying expenditures before and after deal announcements. The time-varying acquirer lobbying expenditures allow us to capture the dynamics in lobbying. Figure 4.2 shows that acquirers increase their lobbying expenditures around deal announcements.

We first run multinomial logistic regressions that assess the effect of pre- and post-announcement lobbying spending by acquirers on the probability of each of the mutually-exclusive granular antitrust review outcomes: Early Termination, Natural Expiration, Pull & Refile, Unchallenged and Challenged Second Request.[32] Distinguishing Challenged Second Requests is in line with the literature (for example, Ferris et al., 2016). However, in contrast to the literature, we highlight the need to differentiate four review outcomes that are not challenged: Unchallenged Second Requests are associated with long delays in completion time (only somewhat shorter than Challenged Second Requests) but still represent a more favorable and less costly outcome than Challenged Second Requests. Pull & Refiles represent a very specific category, where the merging parties strategically play with the HSR premerger filing process and clear the antitrust review with a delay (see Panel A of Table 4.3). Finally, Early Terminations are associated with few anticompetitive concerns and achieve antitrust review clearance fast. Natural Expiration is the default outcome.

Given that we have a set of five outcomes that are not necessarily ordered, a multinomial logistic model fits the setup better than an ordered probit.[33] We estimate the model using Natural Expiration as the reference category and include the full set of control variables – target pre- and post-announcement lobbying dummies, alternative acquirer political connections, deal characteristics, product market conditions, and acquirer characteristics. Our results are robust to excluding target lobbying and

[32] Their unconditional average probabilities are reported in Panel B of Table 4.1.

[33] Given that we have five alternative outcomes, a multinomial probit model is infeasible due to its limitations and complexities of joint probability functions (see Wooldridge, 2002, p. 502). We are unable to achieve converged estimations with a full set of controls. However, multivariate probit models with fewer control variables yield similar results.

the alternative acquirer political connections. We also include Fama-French 5 sector fixed effects and year fixed effects. Table 4.4 reports the average marginal effects of the lobbying variables on the probability of all five granular review outcomes. The average marginal effects for all control variables are reported only in Panel A.

Panel A of Table 4.4 shows the average effect of the pre-announcement lobbying – it includes acquirer lobbying expenditures for the four quarters just before the deal announcement scaled by the acquirer market capitalization – on the probability of the five granular review outcomes. We see that the average effect is significantly negative for Challenged Second Requests and significantly positive for Unchallenged Second Requests, Pull & Refiles and Natural Expirations. This suggests that high pre-announcement lobbying tends to push deals away from Challenged Second Requests and towards Unchallenged Second Requests, Pull & Refiles, and Natural Expirations. Pull & Refiles and Natural Expirations are clearly more favorable review outcomes. Also, Unchallenged Second Requests represent a less costly and therefore more favorable review outcome compared to Challenged Second Requests. As Unchallenged Second Requests are nevertheless associated with higher failure rate compared to other more favorable review outcomes such as Early Terminations and Natural Expirations, we reconcile the issue by further splitting Unchallenged Second Requests into Withdrawn versus Completed Unchallenged Second Requests (see Appendix C.5. We confirm that the positive effect of pre-announcement lobbying is not driven by withdrawn Unchallenged Second Requests. In economic terms, a one-standard-deviation increase in the lobbying ratio of 3.8 basis points (as reported in Table 4.1) results in a change of +4.2%, +3.0%, and +3.8% in the probabilities of Unchallenged Second Request, Pull & Refile, and Natural Expiration, respectively. This is large relative to the unconditional probabilities of 10.3%, 8.4%, and 37.6%, respectively.

Focusing now on the target lobbying variables, we see that target lobbying helps to reduce the probability of Challenged outcomes. Croci et al. (2017) show politically connected target firms are less likely to be acquired and receive higher takeover premium. We show that target lobbying also matters for antitrust review outcomes

Table 4.4. Lobbying and the refined set of review outcomes: multinomial logistic models

This table shows estimated average marginal effects for lobbying variables on the probability of each of the five mutually-exclusive refined review outcomes using multivariate logistic regressions. All specifications include controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity), acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), Fama-French 5 sector, and year fixed effects, which are not reported. Following Ai and Norton (2003), we report the correct average marginal effects of lobbying ratio $(0, +3)$ conditional on that lobbying ratio $(-4, -1)$ is below (above) median for its interaction term with low (high) lobbying $(-4, -1)$ in Panel C. All models include 340 observations. Robust standard errors based on Delta method are reported in parentheses. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + and ^{d} indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1) Challenged Second Request	(2) Unchallenged Second Request	(3) Pull & Refile	(4) Natural Expiration	(5) Early Termination
Lobbying ratio $(-4, -1)$ (b.p.)	-0.020^c	0.011^a	0.008^a	0.010^b	-0.009
	(0.011)	(0.003)	(0.002)	(0.005)	(0.007)
Target lobbying dummy $(-4, -1)$	-0.100^a	0.010	0.005	-0.004	0.089
	(0.029)	(0.044)	(0.052)	(0.103)	(0.083)
Target lobbying dummy $(0, +3)$	0.158^a	-0.064	0.040	-0.106	-0.028
	(0.038)	(0.072)	(0.082)	(0.107)	(0.062)
Politicians' ownership dummy	-0.022	0.060^c	-0.008	0.038	-0.067
	(0.028)	(0.033)	(0.023)	(0.049)	(0.067)
PAC contribution ratio	0.022	-0.062^a	0.084^c	0.074^a	-0.118^a
	(0.033)	(0.013)	(0.046)	(0.023)	(0.045)
Pseudo R^2	0.257				

continued on next page

Table 4.4. Lobbying and the refined set of review outcomes: multinomial logistic models (continued)

	(1) Challenged Second Request	(2) Unchallenged Second Request	(3) Pull & Refile	(4) Natural Expiration	(5) Early Termination
Panel B: post-announcement lobbying					
Lobbying ratio $(0,+3)$ (b.p.)	-0.004	0.012^{b}	0.010^{a}	-0.004	-0.014^{b}
	(0.004)	(0.006)	(0.002)	(0.006)	(0.007)
Target lobbying dummy $(-4,-1)$	-0.111^{a}	0.009	-0.001	0.008	0.094
	(0.030)	(0.043)	(0.055)	(0.104)	(0.082)
Target lobbying dummy $(0,+3)$	0.162^{a}	-0.073	0.032	-0.095	-0.026
	(0.043)	(0.066)	(0.082)	(0.108)	(0.065)
Politicians' ownership dummy	-0.033	0.064^{b}	-0.017	0.049	-0.063
	(0.029)	(0.029)	(0.024)	(0.048)	(0.070)
PAC contribution ratio	0.004	-0.062^{a}	0.081^{d}	0.092^{a}	-0.115^{b}
	(0.039)	(0.014)	(0.052)	(0.026)	(0.045)
Pseudo R^2	0.261				
Panel C: conditional on pre-announcement lobbying					
High lobbying $(-4,-1)$	-0.037^{c}	0.043	-0.254^{a}	0.168^{a}	0.081^{a}
	(0.022)	(0.037)	(0.039)	(0.020)	(0.026)
Lobbying ratio $(0,+3)$ × low lobbying $(-4,-1)$	-0.010	-0.031	0.167^{b}	-0.032	-0.093
	(0.019)	(0.062)	(0.080)	(0.073)	(0.121)
Lobbying ratio $(0,+3)$ × high lobbying $(-4,-1)$	-0.006	0.015^{b}	0.008^{a}	-0.005	-0.012^{d}
	(0.004)	(0.007)	(0.001)	(0.005)	(0.008)
Target lobbying dummy $(-4,-1)$	-0.082^{a}	0.003	-0.001	-0.007	0.087
	(0.023)	(0.040)	(0.064)	(0.107)	(0.074)
Target lobbying dummy $(0,+3)$	0.138^{a}	-0.073	0.042	-0.092	-0.015
	(0.046)	(0.072)	(0.076)	(0.113)	(0.076)
Politicians' ownership dummy	-0.018	0.063^{c}	-0.013	0.040	-0.072
	(0.027)	(0.034)	(0.016)	(0.051)	(0.070)
PAC contribution ratio	0.021	-0.064^{a}	0.083^{c}	0.085^{a}	-0.126^{b}
	(0.036)	(0.015)	(0.044)	(0.027)	(0.056)
Pseudo R^2	0.280				

but only complementary to acquirer lobbying activities.

Panel B shows the effect of the post-announcement lobbying ratio, which is over four quarters including the announcement quarter. Note that this period overlaps with the antitrust review process. We observe that Early Terminations are associated with a significantly negative average post-announcement lobbying effect, while the effect is significantly positive for Pull & Refiles and Unchallenged Second Requests.[34] So, higher post-announcement lobbying tends to shift deals from Early Terminations and more towards Pull & Refiles and Unchallenged Second Requests. It implies that Early Terminations do not need any further lobbying after the deal announcement – their deals generally raise few antitrust concerns. It also suggests that acquirers increase lobbying for deals with significant antitrust concerns and perhaps with room to negotiate so as to avoid an official challenge. The post-announcement lobbying results highlight the Pull & Refile outcome as a special category compared to Natural Expiration and Early Termination, suggesting that for this category acquirers lobby most actively during the antitrust review process to achieve clearance without a Second Request.

To better understand the dynamics of lobbying around deal announcements, we explore the post-announcement lobbying conditional on low versus high pre-announcement lobbying. Accordingly, Panel C of Table 4.4 reports estimations for a specification interacting post-announcement lobbying with dummy variables indicating pre-announcement lobbying above (below) median – high (low) lobbying $(-4,-1)$. This specification imitates exploring the post-announcement lobbying effect in two separate subsamples. We estimate the average marginal effects and standard errors for the interaction terms according to Ai and Norton (2003).[35] First, we see that higher pre-announcement lobbying is associated with lower probabilities of Challenged Second Requests and Pull & Refiles and higher probabilities of Natural Expirations and Early Terminations. This is consistent with Panel A, except

[34]Panel B of Table C.5 in the Internet appendix shows that the positive effect for Unchallenged Second Requests is due to the completed deals.

[35]Since the procedure suggested in Norton et al. (2004) only applies to binomial regressions with one interaction term, we follow Berger and Bouwman (2013) and estimate the average marginal effects of lobbying ratio $(0,+3)$ conditional on the value of the dummy, high lobbying $(-4,-1)$.

for Pull & Refile. Lobbying prior to deal announcements tends to be preemptive as it increases the probability of more favorable antitrust review outcomes and decreases the probability of Challenged deals. The post-announcement lobbying for these clear-cut favorable outcomes loosens somewhat, marginally significantly for Early Terminations with high pre-announcement lobbying. Second, results for Pull & Refile are the most pronounced: the positive post-announcement lobbying effect is much stronger when pre-announcement lobbying is low (0.167) than when it is high (0.008), suggesting that firms with low pre-announcement lobbying are catching up. Together with the negative effect for high pre-announcement lobbying, this suggests that post-announcement lobbying substitutes for the lack of lobbying before the announcement.

Table 4.5 reports results for logistic models equivalent to the multinomial logit in Table 4.4 by contrasting Challenged Second Requests in specification 1-3 and Pull & Refiles in specification 4-6 to all other outcomes grouped together. We employ the same set of control variables but again do not report them to save on space. In specification 1, we see that pre-announcement lobbying exhibits a significant negative effect on the probability of Challenged Second Requests, which is in line with the multinomial logit results. The post-announcement lobbying effect in specification 2 is not significant. Specification 3 shows that Challenged Second Requests are associated with lower pre-announcement lobbying and the effect of post-announcement lobbying is positive for deals with low pre-announcement lobbying but negative for deals with high pre-announcement lobbying. The significantly positive effect for post-announcement lobbying conditional on low pre-announcement lobbying suggests that firms with official challenges catch up with their lobbying post announcement in order to manage the complicated review process and complete their deal successfully. Specification 4-6 contrast Pull & Refiles with all other review outcomes and confirms that Pull & Refiles represent a special category of favorable outcomes when acquirers lobby more after the deal announcement to avoid a costly adverse outcome.

In summary, the results in this section suggest that acquiring firms with high pre-announcement lobbying expenditures tend to achieve more favorable outcomes,

Table 4.5. Lobbying and adverse review outcomes: logistic models

This table reports average marginal effects for lobbying variables on the probability of an adverse antitrust review outcome. The dependent variable is a dummy variable indicating the antitrust review outcome is Challenged Second Request in specification 1-3, and Pull & Refile in specification 4-6. All specifications include 340 observations and also controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity), and acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), which are not reported. Following Ai and Norton (2003), we report the correct average marginal effects of lobbying ratio $(0, +3)$ conditional on that lobbying ratio $(-4, -1)$ is below (above) median for its interaction term with low (high) lobbying $(-4, -1)$ in specification 3 and 6. Fama-French 5 sectors and year fixed effects are included in all specifications. Robust standard errors are reported in parentheses and clustered at target industry levels. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Challenged Second Request			Pull & Refile		
Lobbying ratio $(-4, -1)$ (b.p.)	-0.019^{c}			0.006^{a}		
	(0.011)			(0.001)		
Lobbying ratio $(0, +3)$ (b.p.)		-0.005			0.010^{a}	
		(0.003)			(0.002)	
High lobbying $(-4, -1)$			-0.087^{a}			-0.256^{a}
			(0.030)			(0.050)
Lobbying ratio $(0, +3)$ × low lobbying $(-4, -1)$			0.011^{b}			0.167^{b}
			(0.005)			(0.066)
Lobbying ratio $(0, +3)$ × high lobbying $(-4, -1)$			-0.007^{c}			0.008^{a}
			(0.003)			(0.001)
Target lobbying dummy $(-4, -1)$	-0.092^{b}	-0.104^{b}	-0.080^{a}	0.017	0.006	0.004
	(0.040)	(0.044)	(0.030)	(0.047)	(0.049)	(0.059)
Target lobbying dummy $(0, +3)$	0.152^{b}	0.158^{b}	0.135^{b}	0.033	0.028	0.036
	(0.064)	(0.070)	(0.068)	(0.080)	(0.078)	(0.075)
Politicians' ownership dummy	-0.028	-0.045^{c}	-0.026	-0.011	-0.021	-0.016
	(0.020)	(0.024)	(0.020)	(0.016)	(0.016)	(0.011)
PAC contribution ratio	0.018	-0.001	0.016	0.085^{d}	0.081	0.082^{d}
	(0.026)	(0.035)	(0.024)	(0.054)	(0.059)	(0.053)
Pseudo R^2	0.335	0.311	0.352	0.244	0.271	0.317

which are associated with lower deal-related costs and risks (see section 4.4.1). Pull & Refile clearly stands out as a special group of firms that manage to avoid a Second Request by strategically pulling their HSR pre-merger filing and engaging in significantly high lobbying concurrently with the antitrust review process. Acquirers receiving Challenged Second Requests seem to lobby less the year before their deal announcement, but intensify their lobbying as they get drawn into the antitrust review process, especially when their pre-announcement lobbying was low. [36]

This lobbying pattern is consistent with both lobbying hypotheses – information sharing and regulatory capture – and we are not able to differentiate between them at this stage. It is possible that acquiring firms lobby to get familiar with the review process and transfer information to and from antitrust agencies and politicians and this information sharing then facilitates a favorable review outcome (information-sharing hypothesis).[37] At the same time, however, it is possible that high pre-announcement lobbying is successful with favorable outcomes because lobbying accommodates more lenient assessment of the situation as a result of intervention by an influential politician (regulatory-capture hypothesis). Similarly, once a deal is announced and merging firms file their HSR-review documents, they lobby more when they face more difficulties and costs. Again, merging firms may be after more information sharing or, alternatively, after political intervention. Even though our analysis in this section cannot discriminate between the two alternative channels of lobbying influence, section 4.4.4 attempts to take the issue further.

Table 4.6 controls for potential bias due to identification issues. When considering the relationship between lobbying expenditures and antitrust review outcomes, due

[36] Table 4.5 in the Internet appendix shows that lobbying also has a direct effect on the probability of withdrawn deals. We observe a significantly positive effect of post-announcement lobbying on the number of days to complete, which suggests more lobbying for longer and more costly outcomes. The IV results in Table 4.6 (see the discussion in the later part of this section) further suggest that the positive effect is due to an endogenous expectation of more adverse outcomes – firms lobby when expecting more adverse outcomes.

[37] Medco reflects on its lobbying activities in the merger with Express Scripts: "… the question was whether Congress would let the FTC do its job, or push them to raise unending red flags on the deal…. It was no mean feat. There were 80 legislative letters about the deal sent to federal and state regulators and 30 state attorneys general were involved in the review. And in 2011 and 2012, the companies spent more than USD 7.5m on federal lobbyists… And working with staff at the FTC helped speed the process as much as possible." (*How Medco won antitrust approval for a deal Wall Street considered doomed*, *Financial Times, April 8, 2013*).

to firms thinking and behaving in a strategic way and triggering lobbying based on expectations of review outcomes, causality may flow both ways. It is likely that acquiring firms increase their lobbying expenditures and then, as a result, receive a favorable review outcome. It is, however, equally likely that the expectation of a "rough ride" triggers higher lobbying expenditures implying causality from (expected but then also realized) outcomes to lobbying. Nevertheless, our research question does not necessarily conjecture a causal relationship between lobbying and review outcomes. It encompasses both strategic lobbying reflected in the link from lobbying to review outcomes as well as triggered lobbying with its reverse causality.[38]

Still, we would like to examine whether lobbying results in better antitrust review outcomes excluding reverse causality. Moreover, we need to consider potential biases due to omitted variables or unobserved heterogeneity that may cause correlation between our lobbying measures and the error term or represent a source of spurious correlation. For example, lobbying may be higher for firms with certain product types that are sensitive to legislation and federal actions and, at the same time, product markets for these products are associated with lower antitrust concerns. If this is the case, we would find a significant relationship between lobbying and favorable review outcomes, but in reality, such a direct link does not exist. Our multinomial logit and binary logit specifications in Table 4.4 and 4.5 include industry fixed effects to remove any time-invariant industry characteristics. To further mitigate the bias, we use the instrumental-variable approach.

The usual challenge is to find a suitable instrument that is correlated with our lobbying measures, but is correlated with review outcomes only indirectly through the pre- and post-announcement lobbying. We opt for past lobbying expenditures (scaled by market capitalization) as our instrument.[39] Lobbying expenditure is highly persistent (Kerr et al., 2014), which ensures that the relevance condition of strong

[38]Even though the two causal channels are closely linked together and hard to disentangle, it is more likely that the pre-announcement lobbying reflects the preemptive link from lobbying to review outcomes and the post-announcement lobbying reflects the reverse triggered lobbying based on expectations once the HSR filing is submitted.

[39]Igan et al. (2012) argue for the distance to Washington D.C. as a suitable instrument for lobbying in a cross-section of firms. Unfortunately, the distance to Washington D.C. is in our case very weak in correlating with acquirer lobbying ratio perhaps because we have only large firms that always lobby more.

correlation between the instrument and our main explanatory variable holds. To ensure the exclusion condition that past lobbying is not directly related to antitrust review outcomes of the current merger, we require a one-year gap between quarter -4 before the deal announcement and the past lobbying instrument. In other words, the past lobbying ratio, our instrumental variable, covers lobbying by the acquirer over quarters $(-12, -9)$ relatively to the deal announcement. It is unlikely that companies would increase their lobbying three years before a merger announcement in order to influence antitrust review outcomes of the merger. Moreover, Figure 4.2 shows that lobbying by acquirers increases significantly relatively to their peers only starting with quarter four before the deal-announcement date. Therefore, we are confident that past lobbying reflects exogenous reasons for lobbying that are not directly related to the particular merger case.

Table 4.6 reports estimates of two-stage IV probit models with Challenged Second Request and Pull & Refile as dependent variables. The first stage confirms that past lobbying is highly correlated with pre- and post-announcement lobbying. Concerning the second stage, we see that for Challenged Second Requests the average marginal effect of pre-announcement lobbying increases both in magnitude and significance . The post-announcement lobbying effect remains insignificant. These effects show that it is the preemptive lobbying that increases chances of favorable review outcomes. For Pull & Refile, the exogenous pre-announcement lobbying effect is not significant but we see a significant positive effect for post-announcement lobbying. Our interpretation of this result is that a Pull & Refile represents a coordinated action between pulling the original HSR filing and preplanned contemporaneous lobbying. It is econometrically unfeasible to apply the IV approach for the five-outcome multinomial logit model reported in Table 4.4, but we believe that the results for binomial IV probits in Table 4.6 provide enough evidence that our setup does not suffer the omitted variable bias.

Using an exogenous instrument, the results in Table 4.6 shed some extra light on possible causal links between pre- and post-announcement lobbying and review outcomes. The instrument strengthens the negative effect of pre-announcement lobbying

Table 4.6. Lobbying and review outcomes: instrumental variable approach

This table shows the average marginal effects of lobbying variables on the probability of an adverse antitrust-review outcome using the instrumental variable probit approach to control for potential endogeneity of the lobbying ratio. The dependent variable in the second stage is set to one for all Second Requests (Challenged Second Requests) and zero otherwise in specifications 1 and 2 (3 and 4). The first stage uses lobbying expenditures over four quarter, which correspond to three years prior to deal announcement scaled by the acquirer market capitalization (lobbying ratio $(-12,-9)$) as the instrument in all specifications. All specifications include 340 observations and also controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity), acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), Fama-French 5 sector fixed effects, and year fixed effects, which are not reported. Standard errors are reported in parentheses and clustered at target industry levels. Low LR $(4,1)$ and high LR $(4,1)$ are dummy variables that take value one if lobbying ratio $(4,1)$ is below or above sample median, respectively. All other variables are defined in Appendix C.1, winsorized at the 1^{st} and 99^{th} percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)
	Challenged Second Request		Pull & Refile	
Lobbying ratio $(-4,-1)$ (b.p.)	-0.031^{a}		0.003	
	(0.009)		(0.003)	
Lobbying ratio $(0,+3)$ (b.p.)		0.001		0.015^{a}
		(0.008)		(0.003)
Target lobbying dummy $(-4,-1)$	-0.101^{a}	-0.108^{a}	0.005	-0.004
	(0.036)	(0.034)	(0.052)	(0.050)
Target lobbying dummy $(0,+3)$	0.157^{a}	0.165^{a}	0.040	0.032
	(0.057)	(0.051)	(0.081)	(0.077)
Politicians' ownership dummy	-0.018	-0.032^{b}	-0.004	-0.014
	(0.015)	(0.015)	(0.016)	(0.014)
PAC contribution ratio	0.026	0.015	0.092^{b}	0.092^{b}
	(0.025)	(0.028)	(0.046)	(0.045)
	First stage			
Lobbying ratio $(-12,-9)$ (b.p.)	0.960^{a}	0.840^{a}	0.960^{a}	0.840^{a}
	(0.052)	(0.096)	(0.052)	(0.096)
Target lobbying dummy $(-4,-1)$	0.113	0.369	0.113	0.369
	(0.221)	(0.394)	(0.221)	(0.394)
Target lobbying dummy $(0,+3)$	0.251	0.860^{b}	0.251	0.860^{b}
	(0.279)	(0.347)	(0.279)	(0.347)
Politicians' ownership dummy	-0.071	0.066	-0.071	0.066
	(0.085)	(0.302)	(0.085)	(0.302)
PAC contribution ratio	0.585^{a}	0.287^{c}	0.585^{a}	0.287^{c}
	(0.131)	(0.170)	(0.131)	(0.170)
Constant	0.935	3.300^{a}	0.935	3.300^{a}
	(0.840)	(0.802)	(0.840)	(0.802)
Wald χ^2	1.295	1.883	0.122	2.588
Wald p-Value	0.255	0.170	0.727	0.108

on the probability of Challenged Second Requests, which suggests that the negative effect is not reversely triggered by acquirers' expectations of review outcomes. For post-announcement lobbying, it is more likely that acquirers increase lobbying in expectation of particular adverse review outcomes. Accordingly, we do not find a significant exogenous effect for post-announcement lobbying. Pull & Refile, however, is driven by post-announcement lobbying. The exogenous effect suggests that post-announcement lobbying indeed increases the probability of Pull & Refile.

4.4.3 Value Implications of Lobbying

So far, we have established that adverse antitrust review outcomes are associated with higher acquirer merger costs and risks and that acquirer pre-announcement lobbying increases the probability of getting a favorable outcome, while higher post-announcement lobbying is associated with higher probability of adverse review outcomes. In this section, we push the analysis a step further to show value consequences of lobbying. In particular, we conjecture that the market takes acquirer lobbying into account when assessing value consequences of announced mergers. If higher lobbying is associated with more favorable review outcomes that are in turn less costly and less risky for acquiring firms, this should also reflect in differential market evaluations of deals on their announcement.

Table 4.7 shows the effect of pre-announcement lobbying on acquirer, target and combined deal-announcement abnormal returns over the (–1,+1) event window. The last column concerns the lobbying effect on the expected completion probability, which compares the target stock price just after the public announcement with the initial offer price. Following Samuelson and Rosenthal (1986), the closer is the market's assessment of target value (conditional on all public deal-related information) to the offer price, the higher is the expected probability of the target being successfully acquired. Due to delays in reporting of lobbying expenditures, we consider only lobbying expenditure based on information available to investors at the time of the deal announcement. Therefore, we cumulate all acquirer lobbying expenditures disclosed during the 365-day window before the deal public announcement and scale it by the market capitalization as of eight weeks before the announcement. We label

Table 4.7. Lobbying and the deal-announcement market reaction

This table shows coefficient estimates when regressing deal-announcement abnormal returns (expected completion probability) on disclosed lobbying ratio in specifications 1 to 6 (7 and 8). Disclosed lobbying ratio refers to all lobbying expenditures reported over one year before the deal announcement scaled by the acquirer market capitalization. All specifications also control for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity) and acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), which are reported only in Panel A. Fama-French 5 sector fixed effects and year fixed effects are included in all specifications. Standard errors are reported in parentheses and clustered at target industry levels. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Acquirer announcement AR		Target announcement AR		Combined announcement AR		Expected completion prob.	
Panel A: lobbying activities disclosed prior to deal announcement								
Disclosed lobbying ratio	0.003***	0.003***	0.005	0.007	0.005***	0.006***	0.016**	0.017**
	(0.000)	(0.001)	(0.004)	(0.004)	(0.001)	(0.001)	(0.005)	(0.006)
Target lobbying dummy		0.017+		0.006		0.003		-0.100
		(0.009)		(0.027)		(0.007)		(0.078)
Politicians' ownership dummy		0.012+		-0.034		-0.003		0.040
		(0.006)		(0.026)		(0.004)		(0.095)
PAC contribution ratio		-0.007		-0.069*		-0.026		0.011
		(0.017)		(0.029)		(0.018)		(0.081)
Constant	0.098+	0.110+	0.407**	0.374+	0.118**	0.111*	1.355***	1.330***
	(0.053)	(0.053)	(0.145)	(0.185)	(0.042)	(0.049)	(0.181)	(0.217)
# obs.	340	340	340	340	340	340	331	331
Adjusted R^2	0.130	0.134	0.155	0.156	0.237	0.246	0.021	0.016

Table 4.7. Lobbying and the refined set of review outcomes: multinomial logistic models (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Acquirer announcement AR		Target announcement AR		Combined announcement AR		Expected completion prob.	
Panel B: entrenched acquirers								
Disclosed lobbying ratio	0.006**	0.006**	0.006	0.010	0.007**	0.008**	0.005	0.004
	(0.001)	(0.002)	(0.007)	(0.009)	(0.002)	(0.002)	(0.008)	(0.007)
Entrenched acquirer	0.001	0.002	-0.023	-0.013	-0.001	0.001	0.125	0.124
	(0.009)	(0.009)	(0.026)	(0.023)	(0.008)	(0.008)	(0.130)	(0.131)
Disclosed LR × entr. acquirer	-0.006+	-0.006+	-0.007	-0.009	-0.006+	-0.007+	-0.009	-0.009
	(0.003)	(0.003)	(0.008)	(0.008)	(0.003)	(0.003)	(0.017)	(0.016)
Target lobbying dummy		0.008		0.021		0.005		0.007
		(0.009)		(0.052)		(0.013)		(0.078)
Politicians' ownership dummy		0.010**		-0.002		0.009**		0.033
		(0.002)		(0.040)		(0.002)		(0.084)
PAC contribution ratio		-0.004		-0.101*		-0.021		0.027
		(0.022)		(0.038)		(0.017)		(0.084)
Constant	0.163+	0.173+	0.489**	0.473*	0.191*	0.194*	1.500***	1.531***
	(0.084)	(0.090)	(0.149)	(0.194)	(0.074)	(0.085)	(0.192)	(0.134)
# obs.	264	264	264	264	264	264	258	258
Adjusted R^2	0.157	0.151	0.131	0.136	0.292	0.297	0.032	0.019

it "disclosed lobbying ratio."

Panel A of Table 4.7 shows, in line with our conjecture, that higher acquirer disclosed lobbying is associated with significantly higher acquirer and combined announcement abnormal returns. The effect of lobbying on the expected completion probability is also significantly positive. The economic significance is illustrated based on a one-standard-deviation increase in the lobbying ratio (3.8 basis points as reported in Table 4.1), which results in a 1.1% and 2.3% increase in announcement abnormal returns for the acquirer and combined firm, respectively. These results confirm that acquirer lobbying spending is associated with higher acquirer valuations.[40]

Next, we attempt to reconcile a conjecture suggested in the literature that lobbying may also be associated with poor corporate governance and unethical practices (Aggarwal et al., 2012, Borisov et al., 2016). Managers in poorly-governed firms may (mis)use corporate political resources for private benefits, which in our setup may imply that lobbying facilitates empire-building mergers that destroy rather than create value for their shareholders. Therefore, we want to differentiate the value effect of lobbying in poor versus good corporate governance firms. We include a dummy variable indicating entrenched management teams and its interaction term with the lobbying ratio in Panel B of Table 4.7. Following Bebchuk et al. (2009), we identify an entrenched management team if the firms has at least four from the following anti-takeover provisions: staggered board, limits to amend bylaws, limits to amend charter, super-majority, golden parachutes and poison pill.

The results show that the positive effect of lobbying on acquirer and combined announcement abnormal returns (in well-governed firms) is slightly increased relatively to Panel A. More importantly, however, we see that the interaction term is negative and significant for both acquirer and combined abnormal returns suggesting that the effect of lobbying is significantly weaker in entrenched firms. The overall effects of lobbying in entrenched firms (lobbying ratio + lobbying ratio × entrenched acquirer) is zero – the market does not recognize lobbying in entrenched firms as a

[40] In unreported results, the results are robust to the instrumental-variable treatment.

value-increasing mechanism, which is consistent with the literature (Aggarwal et al., 2012, Borisov et al., 2016).[41]

4.4.4 Market Power Effects of Lobbying

The final but very important question is whether higher acquirer lobbying expenditures accommodate loosening of government objectives in preventing competitively harmful mergers. If the effect of lobbying on antitrust review outcomes flows through regulatory capture, merging firms lobby to influence politicians who then favor high-lobbying mergers and perhaps in the process also approve competitively harmful deals. In contrast, if lobbying accommodates information sharing, both merging firms and regulators/politicians gather important information, which allows speedier favorable outcomes shaped in line with antitrust objectives without compromising competitiveness.

Table 4.8 explores this issue by regressing measures for change in acquirer market power from before to after the merger on the lobbying ratios. If lobbying accommodates competitively harmful mergers, the coefficients for the lobbying ratio should indicate that higher lobbying is associated with increased acquirer market power. We use four measures of change in acquirer's market power, all defined based on TNIC3 industries due to Hoberg and Phillips (2010, 2016). The change in TNIC3 industry market share and change in Herfindahl index of sales-based concentration in target TNIC3 industry are intuitive and widely used measures for industry competitive environment with higher values indicating higher concentration and lower competition. The change in acquirer industry product similarity measures how the merger affects acquirers' resemblance to their close peers (Hoberg and Phillips, 2016). Increased product similarity should indicate higher competition in the product market. Higher lobbying expenditures through the regulatory-capture channel should then help with mergers that decrease acquirer's product similarity. Finally, as higher fluidity reflects more changes in peers' product markets and therefore more potential competition, a positive change in acquirer fluidity should capture an increase in potential com-

[41] The coefficients for entrenched acquirers are not significant for the expected completion rates, but this might be because of the significant drop in the number of observations.

petition (Boone et al., 2016). The regulatory-capture hypothesis would then be supported by a positive relationship between lobbying expenditures and change in acquirer fluidity.

Table 4.8 does not directly support the regulatory-capture hypothesis. We see that all coefficients for pre- and post-announcement lobbying ratio except one are insignificant suggesting that acquirer lobbying is not associated with changes in acquirer market power. In column 5, the coefficient for pre-announcement lobbying is positive and significant at the 15-percent level, but it suggests that higher pre-announcement lobbying is associated with increased acquirer similarity – that is, with more rather than less competition. Based on these results, we conclude that it is more likely that higher lobbying is associated with information sharing between merging firms and the antitrust agencies rather than regulatory capture.

4.4.5 Other Lobbying Measures

In this section, we explore other alternative measures of lobbying expenditures. First, we differentiate between lobbying that targets government agencies with versus without possible influence over the antitrust review process. The Senate, House of Representatives, Department of Justice and Federal Trade Commission are identified as agencies with possible influence. Unrelated agencies are listed in Appendix C.4. In line with our expectations, only related lobbying to agencies with potential influence affects antitrust review outcomes, while unrelated lobbying does not show significant effects. The results replicating Table 4.4 with multinomial logistic regression for the set of five antitrust review outcomes are reported in Table 4.9 in the Internet appendix.

Table 4.9 further considers (i) lobbying expenditures scaled by the total assets instead of market capitalization; (ii) lobby dummy; and (iii) lobbying expenditures only in the quarter just before the deal announcement and in the announcement quarter instead of four quarters both sides of the announcement. All these results are consistent with our conclusions in section 4.4.2. Unreported results with the alternative measures support our conclusions in sections 4.4.3 and 4.4.4 concerning value implications of lobbying and market power implications, respectively.

Table 4.8. Lobbying and the change in market power

This table shows coefficient estimates when regressing four measures of change in market power on disclosed lobbying expenditures. Standard errors are reported in parentheses and clustered at target industry levels. Fama-French 5 sector fixed effects and year fixed effects are included in all specifications. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δmarket share		ΔHHI		Δsimilarity		Δfluidity	
Lobbying ratio $(-4,-1)$ (b.p.)	-0.002		-0.001		0.061^{+}		0.040	
	(0.002)		(0.001)		(0.029)		(0.042)	
Lobbying ratio $(0,+3)$ (b.p.)		0.002		0.001		0.042		-0.032
		(0.004)		(0.001)		(0.028)		(0.077)
Politicians' ownership dummy	0.006	0.005	0.033	0.032	0.096	0.108	0.286	0.321
	(0.014)	(0.015)	(0.021)	(0.021)	(0.111)	(0.120)	(0.419)	(0.424)
PAC contribution ratio	-0.014	-0.021	-0.001	-0.004	0.102	0.143	-0.033	0.098
	(0.034)	(0.032)	(0.023)	(0.023)	(0.148)	(0.179)	(0.256)	(0.223)
Constant	-0.116	-0.131	0.029	0.022	-0.553	-0.533	2.369^{+}	2.683^{+}
	(0.131)	(0.137)	(0.115)	(0.114)	(0.385)	(0.367)	(1.298)	(1.411)
# obs.	301	301	301	301	295	295	285	285
Adjusted R^2	0.029	0.030	0.125	0.125	0.086	0.081	0.177	0.176

Table 4.9. Outcomes and alternative measures of lobbying: multinomial logistic regressions

This table shows estimated marginal effects of lobbying on the probability of five refined review outcomes using multivariate logistic regressions. All specifications include controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity), acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), and other political activities (target lobbying dummy $(-4,-1)$, target lobbying dummy $(0,+3)$, politicians' ownership dummy, PAC contribution ratio), which are not reported. Industry (Fama-French 5 sectors) and year fixed effects are included in all specifications. Following Ai and Norton (2003), we report the correct average marginal effects of lobbying ratio $(0,+3)$ conditional on that lobbying ratio $(-4,-1)$ is below (above) median for its interaction term with low (high) lobbying $(-4,-1)$ in the third specification in Panel A. Robust standard errors are reported in parentheses. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1) Challenged Second Request	(2) Unchallenged Second Request	(3) Pull & Refile	(4) Natural Expiration	(5) Early Termination
Related lobbying ratio $(-4,-1)$ (b.p.)	-0.020^{c}	0.012^{a}	0.008^{a}	0.010^{b}	-0.010
	(0.011)	(0.004)	(0.002)	(0.005)	(0.008)
Pseudo R^2	0.257				
Related lobbying ratio $(0,+3)$ (b.p.)	-0.004	0.013^{b}	0.010^{a}	-0.003	-0.015^{b}
	(0.004)	(0.006)	(0.002)	(0.007)	(0.007)
Pseudo R^2	0.261				
High related lobbying $(-4,-1)$	-0.038^{b}	0.044	-0.225^{a}	0.149^{a}	0.070^{a}
	(0.019)	(0.038)	(0.033)	(0.017)	(0.026)
Related LR $(0,+3)$ × low lobbying $(-4,-1)$	-0.011	-0.028	0.154^{b}	-0.038	-0.077
	(0.018)	(0.065)	(0.076)	(0.067)	(0.112)
Related LR $(0,+3)$ × high lobbying $(-4,-1)$	-0.006^{d}	0.015^{b}	0.009^{a}	-0.004	-0.014^{c}
	(0.004)	(0.007)	(0.001)	(0.005)	(0.008)
Pseudo R^2	0.276				

continued on next page

Table 4.9. Outcomes and alternative measures of lobbying: multinomial logistic regressions (continued)

	(1) Challenged Second Request	(2) Unchallenged Second Request	(3) Pull & Refile	(4) Natural Expiration	(5) Early Termination
Unrelated lobbying ratio $(-4,-1)$ (b.p.)	-0.352	0.092	-0.222	0.203	0.279^{c}
	(0.262)	(0.134)	(0.310)	(0.271)	(0.146)
Pseudo R^2	0.249				
Unrelated lobbying ratio $(0,+3)$ (b.p.)	-1.852	0.378	0.274	0.537	0.663
	(1.793)	(0.334)	(0.196)	(0.785)	(0.539)
Pseudo R^2	0.254				
Lobbying scaled by TA $(-4,-1)$ (b.p.)	-0.011	0.012	0.009^{c}	0.005	-0.014^{b}
	(0.009)	(0.008)	(0.005)	(0.007)	(0.005)
Pseudo R^2	0.249				
Lobbying scaled by TA $(0,+3)$ (b.p.)	-0.014^{b}	0.016^{d}	0.013^{a}	-0.005	-0.010^{b}
	(0.006)	(0.010)	(0.004)	(0.007)	(0.004)
Pseudo R^2	0.269				
Lobbying dummy $(-4,-1)$	-0.037^{d}	0.050	-0.052^{a}	0.057^{a}	-0.018
	(0.024)	(0.067)	(0.016)	(0.016)	(0.045)
Pseudo R^2	0.249				
Lobbying dummy $(0,+3)$	-0.081^{b}	0.070	-0.028	0.050	-0.011
	(0.035)	(0.051)	(0.038)	(0.068)	(0.080)
Pseudo R^2	0.252				
Lobbying ratio (-1) (b.p.)	-0.049^{b}	0.049^{c}	0.017	0.008	-0.025
	(0.025)	(0.025)	(0.014)	(0.021)	(0.023)
Pseudo R^2	0.257				
Lobbying ratio (0) (b.p.)	-0.002	0.029^{c}	0.029^{a}	-0.029^{c}	-0.027
	(0.011)	(0.017)	(0.010)	(0.017)	(0.019)
Pseudo R^2	0.256				

4.5 Conclusions

This paper investigates the role of lobbying at the time of mergers and acquisitions, one of the largest and most visible corporate investments. Mergers and acquisitions go through an elaborate regulatory review process and need to be approved by antitrust agencies. This process exposes firms to regulatory risks and costs that firms aim to mitigate via the use of political connections. Our analysis uses lobbying expenditures as its prime measure of political connection because lobbying data is available at a quarterly frequency and therefore allows for a timely analysis of the question whether and how political connections influence corporate investments under regulatory uncertainty. One reason why firms may engage in lobbying is to exert direct influence over the antitrust agencies in hopes to gain more favorable review decisions (the regulatory capture hypothesis). Another reason for lobbying is that firms can share information with antitrust agencies allowing the agencies to improve the efficiency of their decision making (the information sharing hypothesis).

We argue and show that regulatory risks and costs are economically significant. Merging firms bear direct costs (filing costs, costs of lawyers, in case of deal failure the payment of breakup fees) and indirect costs (getting stuck in lengthy review processes, interim uncertainty that makes it difficult to keep the financing for the deal in place and/or to retain anxious employees and customers). In particular, we show that in case of a Second Request, an adverse review outcome that requires a full-scale investigation into the antitrust nature of the deal, triggers a significant and negative stock price reaction of -2.7 percent for the combined merging firms. In addition, adverse review outcomes are associated with lengthy and complex regulatory review processes that are associated with higher interim risks and costs.

We show that acquiring firms with high pre-announcement lobbying expenditures are able to obtain more favorable review outcomes and thereby able to mitigate the regulatory risks and costs. Firms are more likely to step up their lobbying expenditures in the post-announcement period in case they get tangled up into more lengthy and complex anti-review processes and run more risk of getting adverse review outcomes. These lobbying patterns are consistent with both lobbying hypotheses –

information sharing and regulatory capture.

Higher acquirer disclosed lobby spending before deal announcement is associated with significantly higher acquirer and combined announcement abnormal returns. However, lobbying positively impacts acquirer returns only when it is likely to be used for the benefit of shareholders (in firms with strong corporate governance) and not to pursue empire building behavior (in firms with weak corporate governance).

Higher acquirer lobbying expenditures do not seem to influence antitrust agencies in a way that makes them more likely to approve anticompetitive mergers. Based on this finding we conclude that it is more likely that higher lobbying is associated with information sharing between merging firms and the antitrust agencies rather than regulatory capture.

Taken together, our study documents the regulatory risks in mergers and acquisitions, shows that firms actively manage these regulatory risks, adds to our understanding of merger review process, and provides further insights into the benefits and costs of corporate lobbying.

Summary

This thesis studies three scenarios related to M&A activities: (i) patterns and motivations for acquisitions performed by firms in financial distress; (ii) acquisitions of distressed/failed banks and the role of bidders' political connections; (iii) regulatory friction in general M&As and the pattern and influence of acquirers' lobbying efforts.

The first conclusion is that financial distress drives firms to make diversifying acquisitions. Acquisitions made by distressed firms in recent years are economically important. The second chapter of this thesis explores the rationale behind such acquisitions using a natural experiment. Exploiting a recent tax change which reduces debt restructuring costs for certain creditors and decreases bankruptcy risk, the study identifies the causal link between financial distress and acquisitions. In the event of an exogenous reduction in the probability of bankruptcy, distressed firms react by cutting cash spending on acquisitions by 41%. Moreover, distressed firms refocus by decreasing the transaction value of diversifying acquisitions by 63%. The evidence supports the diversification hypothesis that distressed firms acquire to diversify bankruptcy risk, rather than the growth opportunity hypothesis that distressed firms acquire to capture external growth opportunities and revive growth. These findings indicate a new effect of financial distress on investment decisions, that is, the pressure to meet debt obligations creates an incentive for firms to diversify via acquisitions.

Next, the thesis focuses on whether lobbying activities affect the resolution of distressed banks during the Great Recession. Hand-collected information from failed-bank auctions reveals that lobbying increases a bidder's probability of winning by 26.4 percentage points. The transfer to lobbying bidders is substantial and is estimated at $7.4 billion for the Deposit Insurance Fund, which is equal to 16.4% of the total resolution losses. The post-acquisition operating performance is worse for lobbying

banks than for their non-lobbying counterparts, suggesting that lobbying results in a less efficient allocation of failed banks. The results provide new insights into the bank resolution process and its political economy.

Finally, the scope of the thesis is extended to general M&A activities and how the regulatory environment affects corporate acquisition activities. Based on detailed hand-collected data on the US antitrust review process for M&As, it shows that regulatory costs and risks are significant. Mitigating these risks via lobbying by acquirers may benefit shareholders. An adverse antitrust review outcome leads to a decline of at least 2.6% in the value of both the acquirer and the target firm. Acquirers strategically adjust lobbying expenditures around the merger announcement. Pre-emptive lobbying before deal announcements increases the chances of favorable review outcomes and is valued by shareholders, especially among acquiring firms with strong corporate governance. Post-announcement lobbying, concurrent with the antitrust-review process, increases with adverse review outcomes. Nevertheless, acquirer lobbying does not seem to be used to lure the antitrust agencies into approving anticompetitive mergers but rather to share information with the agencies. The results highlight the role of political connections in corporate investments under regulatory uncertainty.

Samenvatting

Dit proefschrift bestudeert drie scenario's met betrekking tot fusies en overnames: (i) patronen in-, en motivaties voor overnames door bedrijven in financiële moeilijkheden; (ii) overnames van noodlijdende/mislukte banken en de rol van politieke connecties van de bieders; (iii) frictie in regelgeving voor fusies en overnames en patronen in-, en invloed van lobbyactiviteiten van kopers.

De eerste conclusie van deze dissertatie is dat financiële moeilijkheden bedrijven ertoe drijft om diversifiërende acquisities te doen. Acquisities door noodlijdende bedrijven zijn de afgelopen jaren van economisch belang geweest. Het tweede hoofdstuk van dit proefschrift onderzoekt de rationale achter dit type acquisities door gebruik te maken van een natuurlijk experiment. Met behulp van een recente belastingaanpassing die herfinancieringskosten voor bepaalde crediteuren vermindert en op die manier het faillissementsrisico verkleint, toont deze studie een causaal verband aan tussen financiële moeilijkheden en acquisities. Na een exogene vermindering van de kans op faillissement, reageren bedrijven in financiële moeilijkheden door hun uitgaven aan acquisities met 41 procent te verlagen. Bovendien concentreren noodlijdende bedrijven zich opnieuw door de transactiewaarde van diversifiërende acquisities met 63 procent te verminderen. Dit bewijs ondersteunt de diversifiëringshypothese dat bedrijven fusies en overnames doen om faillissementsrisico te diversifiëren, in tegenstelling tot de groeimogelijkheidhypothese dat bedrijven in financiële moeilijkheden acquisities doen om via externe groeimogelijkheden nieuwe groei te creëren. Deze bevindingen wijzen op een nieuw effect van financiële moeilijkheden op investeringsbesluiten, namelijk dat de druk om aan schuldverplichtingen te voldoen een stimulans is voor bedrijven om te diversifiëren via acquisities.

Vervolgens onderzoekt dit proefschrift of lobbyactiviteiten de afwikkeling van noodlijdende banken beïnvloed tijdens de Grote Recessie. Hand-verzamelde informatie van veilingen van noodlijdende banken laat zien dat lobbyactiviteiten van de

bieder de kans op het winnen van de veiling verhoogt met 26,4 procentpunt. De overdracht van waarde aan lobbyende bieders is aanzienlijk en wordt geschat op $7.4 miljard voor het Deposit Insurance Fund, gelijk aan 16,4 procent van de totale afwikkelingsverliezen. Na een acquisitie presteren lobbyende banken slechter dan niet-lobbyende banken, wat suggereert dat lobbyactiviteiten resulteren in minder efficiënte allocatie van mislukte banken. Deze resultaten geven nieuwe inzichten in het afwikkelingsproces van banken en de politieke economie daarachter.

Tot slot wordt het onderzoeksveld van het proefschrift uitgebreid naar algemene fusies en overnames en hoe deze worden beïnvloed door regelgeving. Middels handverzamelde gegevens over het antitrustbeoordelingsproces van fusies en overnames in de VS wordt duidelijk dat kosten en risico's van regelgeving significant zijn. Het beheersen van deze risico's door middel van lobbyactiviteiten door kopers kan aandeelhouders ten goede komen. Een negatieve antitrustbeoordeling leidt tot een daling in waarde van tenminste 2,6 procent van zowel de koper als het over te nemen bedrijf. Kopers passen hun uitgaven aan lobbyactiviteiten strategisch aan op de fusieaankondiging. Preventieve lobbyactiviteiten alvorens de aankondiging verhogen de kans op een gunstige antitrustbeoordeling en worden gewaardeerd door aandeelhouders, vooral bij acquisities van bedrijven met een sterke corporate governance. Lobbyactiviteit na aankondiging van een acquisitie en gelijktijdig met het antitrustbeoordelingsproces neemt toe bij negatieve antitrustbeoordelingen. Desondanks lijkt het erop dat lobbyactiviteiten niet worden gebruikt om de mededingingsautoriteit te verleiden om concurrentievervalsende fusies en overnames goed te keuren, maar meer om informatie te delen met de mededingingsautoriteit. Deze resultaten benadrukken de rol van politieke connecties in bedrijfsinvesteringen onder onzekerheid in regelgeving.

Appendices

Appendix A

Why Do Distressed Firms Acquire?

A.1 Variable Definitions

Table A.1. Variable Definitions and Data Sources

Variable name	Definition	Source
	Dependent variables	
Acquisition expenditures	Acquisition spending (AQC) divided by total assets (AT).	Compustat
CapEx	Capital expenditures (CAPX) divided by start-of-period total assets (AT).	Compustat
R&D	The sum of research and development expense and advertising expense (XRD+XAD) divided by start-of-period total assets (AT). Research and development expense and advertising expense are recorded as zeros when they are missing.	Compustat
Acquisition value	Total deal value for acquisitions divided by start-of-period total assets (AT). Only completed deals announced in a given period included in SDC Platinum with a positive deal value of over 1% of start-of-period total assets (AT) and shares acquired or sought over 50% are considered.	SDC, Compustat
Diversifying-acquisition value	Acquisition value ratio for diversifying acquisitions only. A diversifying acquisition is where the primary three-digit SIC codes of the acquirer and the target do not match.	SDC, Compustat
#Diversifying acquisition	The number of diversifying acquisitions announced in a given period. Only completed deals with deal value over 1% of start-of-period total assets (AT) and shares acquired or sought over 50% are considered. A diversifying acquisition is where the primary three-digit SIC codes of the acquirer and the target do not match.	SDC, Compustat
Acquisition-loan ratio	The sum of facility amount for all outstanding syndicated loans for acquisition-related purposes divided by start-of-period total assets. The sample of eligible syndicated loans includes all loans in Dealscan with non-missing maturity and facility amounts, and excludes canceled, rumored, or suspended loans. Acquisition-related purposes include "Acquis. line", "LBO", "Merger", and "Takeover" in the primary purpose field. This ratio is replaced with one if it is larger than one.	Compustat, Dealscan

Table A.1 Continued:

Variable name	Definition	Source
New-acquisition-loan ratio	The sum of facility amount for syndicated loans starting in a given period for acquisition-related purposes divided by the start-of-period total assets.	Compustat, Dealscan
New-acquisition-loan dummy	An indicator that takes the value of one if the new-acquisition-loan ratio is positive, and zero otherwise.	Compustat, Dealscan
CapEx-loan ratio	The sum of facility amount for all outstanding syndicated loans for acquisition-related purposes divided by the start-of-period total assets. The sample of eligible syndicated loans includes all loans in Dealscan with non-missing maturity and facility amount, and excludes canceled, rumored, or suspended loans. Acquisition-related purposes include "Capital expend.", "Corp. purposes", and "Proj. finance" in the primary purpose field. This ratio is replaced with one if it is larger than one.	Compustat, Dealscan
New-CapEx-loan ratio	The sum of facility amount for syndicated loans starting in a given period for acquisition-related purposes divided by start-of-period total assets.	Compustat, Dealscan
New-CapEx-loan dummy	An indicator that takes the value of one if New CapEx Loan is positive, and zero otherwise.	Compustat, Dealscan
Option-implied volatility	Option-implied volatility is calculated at each fiscal year end based on the last observations of each call or put option during the year. I require the stock options with expiration dates in at least ten days, but no more than one year, with positive open interest, with positive best bid price, and with non-missing expiration dates and non-missing implied volatilities. I delete options with bid-ask spreads more than 50% of the average of bid and ask prices. I only retain near-the-money options with absolute values of the natural log of the ratio of the stock daily close prices to the strike price less than 0.1. For measures based on last observations, I average the implied volatilities across all last annual observations for each eligible call or put options for a stock for call option-implied volatility or put option-implied volatility. For volume weighted measures, I average the implied volatilities weighted by the trading volumes across all daily observations for eligible call or put options for call option-implied volatility or put option-implied volatility. The average option-implied volatility is the arithmetic mean of the call and put option-implied volatilities.	OptionMetrics
	Independent variables	
PostDRC	An indicator of whether an observation is after the time of the debt restructuring change (DRC) on September 12, 2012.	

Table A.1 Continued:

Variable name	Definition	Source
Syndicated-loan ratio	The sum of facility amount for all outstanding syndicated loans divided by start-of-period total assets. The sample of eligible syndicated loans includes all loans in Dealscan with non-missing maturity, facility amount of over $100 million, and syndication location in the U.S., and excludes canceled, rumored, or suspended loans. This ratio is replaced with one if it is larger than one.	Compustat, Dealscan
Syndicated-loan ratio (all loans)	The sum of facility amount for all outstanding syndicated loans divided by start-of-period total assets. The sample of eligible syndicated loans includes all loans in Dealscan with non-missing maturity and excludes canceled, rumored, or suspended loans. This ratio is replaced with one if it is larger than one.	Compustat, Dealscan
HighSynd	An indicator that takes the value of one if a pre-existing syndicated-loan ratio is in the upper half, and zero otherwise.	Compustat, Dealscan
distance-to-default	The number of standard deviations of assets between the market value of total assets and the default point, following Bharath and Shumway (2008) and Vassalou and Xing (2004).	Compustat, CRSP
Estimated default probability	Normal distribution probability of −distance-to-default.	Compustat, CRSP
Assert volatility	Asset volatility estimated while calculating Merton's distance-to-default , following Bharath and Shumway (2008) and Vassalou and Xing (2004).	Compustat, CRSP
Altman's Z-score	The sum of [3.3×pretax income (NI+XINT+TXT) + 1.4×retained earnings (RE) + 1.2×working capital (ACT−LCT) + sales (SALE)]/book total assets (AT) + 0.6×market capitalization / total liabilities (LT). Market capitalization is calculated based on CRSP monthly data of prices and shares outstanding matched to the months of fiscal year ends. Each component variable is winsorized at the 1-99% level.	Compustat, CRSP
Distressed	An indicator that takes the value of one if Distance-to-Default in August 2012 is in the upper tercile, and zero if in the bottom tercile.	Compustat, CRSP
	Other variables	
Firm size	The log transformation of total assets (AT).	Compustat
Leverage	Book leverage. The ratio of the value of debt in current liabilities (DLC) and long-term debt (DLTT) over total assets (AT).	Compustat, CRSP
Liquidity	The ratio of cash holding (CHE) divided by total assets (AT)	Compustat
Market-to-book	The ratio of the sum of market capitalization plus the book value of debt (AT−CEQ) divided by total assets (AT). Market capitalization is calculated based on CRSP monthly data of prices and shares outstanding matched to the months of fiscal year ends.	Compustat, CRSP

Table A.1 Continued:

Variable name	Definition	Source
ROA	The ratio of pretax net income (NI+XINT) divided by total assets (AT)	Compustat
Cash flow	The ratio of income before extraordinary items plus depreciation and amortization (EBITDA) divided by start-of-period total assets (AT).	Compustat
Tangibility	The ratio of net property, plant, and equipment (PPE) divided by total assets (AT).	Compustat
Tobin's q	The ratio of market value of assets (AT + market capitalization − CEQ − TXDB) over replacement cost of assets (0.9 × AT + 0.1 × market value of assets).	Compustat
Term premium	The monthly difference between the yield on ten-year U.S. Treasury bonds and two-year U.S. Treasury notes matched to the months of the fiscal year ends.	Federal Reserve Bank of St. Louis
Credit rating	A categorical variable based on Standard & Poor's credit rating for the long-term debt, ranging between 23 levels from "Not Rated" to "AAA."	Compustat

Appendix B

Winning Connection? Lobbying and the Resolution of Failed Banks

B.1 Variable definitions

Table B.1. Variable definitions

Variable	Definition
	Auction Outcomes:
Win	Indicator that takes the value of 1 if the bank wins the auction of a failed bank and 0 otherwise.
Bid	Indicator that takes the value of 1 if the bank submits a bid in the auction of a failed bank and 0 otherwise.
Resolution Cost	The cost borne by the FDIC in the resolution process of each failed bank as a percentage of the total assets of the failed bank at the time of failure.
Net Discount	The asset discount of the winning bid expressed as percentage points of total assets of the failed bank subtracted by deposit premium, standardized by total assets of the failed bank.
Net Discount Differential	Net Discount of the winning bid minus Net Discount of the cover bid.
Acquirer Net Discount > Cover Bid	Indicator that takes the value of 1 if the acquisition price is lower than the price of the cover bid in terms of Net Discount, and 0 otherwise.
All Bank & All Deposits	Indicator that takes the value of 1 if the bid is a whole-bank acquisition including all deposits.
Loss-Sharing Agreement	Indicator that takes the value of 1 if the bid contains any loss-sharing agreement with the FDIC.
	Lobbying Variables:
Lobbying Regulators > 0	Indicator that takes the value of 1 if the bank lobbies any banking regulators, including the Department of Treasury, the FDIC, Fed, OTS, and OCC, during the current year of bank failure date, and 0 otherwise.
Lobbying Regulators	Log of 1 plus lobbying expenditure on banking regulators during the current year of bank failure date.
Active Lobbying	Indicator that takes the value of 1 if the bank ever lobbied in our sample period (2007-2014), and 0 otherwise.
Lobbying > 0	Indicator that takes the value of 1 if the bank overall lobbying expenditures in the current year of bank failure date is positive, and 0 otherwise.
	Bank Characteristics:

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Variable	Definition
ROA	Net income (RIAD4340) divided by the average of total assets at quarter *t* and *t-1*(RCFD3368).
Cost-to-Asset Ratio (ATC)	Total expenses of the bank (RIAD4130) divided by the total assets of the bank in each quarter (RCFD3368).
Size	Log of total assets (in thousand dollars) (RCFD2170).
Liquidity Ratio	Liquid assets (Cash (RCFD0010) + Fed Funds Sold (RCONB987 + RCFDB989 + Securities excluding MBS/ABS) (RCFD1754 + RCFD1773 – (RCFD8500 + RCFD8504 + RCFDC026 + RCFD8503 + RCFD8507 + RCFDC027) divided by total assets.
Tier 1 Capital Ratio	Tier 1 core capital divided by total risk-weighted assets.
NPL Ratio	Non-performing loans (non-accrual) and 90 days or more past due (RCFD1407 + RCFD1403) divided by total loans.
OREO Ratio	Other real estate owned (RCFD2150) divided by total assets.
CRE Loans	Percentage of Commercial and Real Estate (CRE) loans (RCFD2746) relative to total loans.
C&I Loans	Percentage of Commercial and Industrial (C&I) loans (RCFD1600) relative to total loans.
Residential Loans	Percentage of residential real estate loans (RCFD1797 + RCFD1798) relative to total loans (RCFD1400).
Core Deposits	Total core deposits (transaction accounts + savings deposits + time deposits less than $100,000) divided by total deposits.
State Bank	Indicator that takes the value of 1 if the bank is regulated by a state regulator and 0 otherwise.
Estimated CAMELS Rating	Estimated CAMELS rating provided by SNL Financial.
	Proximity to Failed Banks:
Eligible Bidder	Indicator that takes the value of 1 if a bank is an eligible bidder for a failed bank. An eligible bidder satisfies the following conditions: – The bank is a commercial bank or a savings bank operating in the United States; – Tier 1 Capital Ratio is below 10% in the quarter prior to the failure date; – Estimated CAMELS Rating is not higher than 2 in the quarter prior to the failure date; – Size is at least twice that of the failed bank if the headquarter of the bank is in the same state of the failed bank headquarter, four times if in an adjacent state, and five times if in a non-adjacent state; – The bank is not a merger target in the quarter of the failure date.
Distance	Log of average pairwise distance in kilometers between all pairs of branches of the failed bank and the bidding bank.
Distance *X* Loans	Absolute difference in *X* Loans between the bidder and the failed bank, with *X* meaning CRE, C&I, or Residential Loans.
Change in HHI	The increase in local deposit market concentration that would result from a bidding bank acquiring the failed bank, averaged across the branch network of the failed bank.

B.2 Auction Winning Likelihood, Endogenous Bidding, and Bidder Lobbying

Table B.2. Probit with Heckman Sample Selection Results

This reports the results of Heckman-probit regressions. Pr(Win) and Pr(Bid) columns show coefficient estimations and Marginal Effects columns report the average marginal effects on the likelihood of winning an auction. Control variables include financial characteristics of bidders in the quarter prior to failure dates—Size, Liquidity Ratio, Tier 1 Capital Ratio, NPL Ratio, OREO Ratio, CRE Loans (%), CRE Loans (%), and Residential Loans (%)—and proximity measures—Distance and Change in HHI. See Section B.1 for more details about variable definitions. All variables are winsorized at the 1^{st} and 99^{th} levels. Robust standard errors of marginal effects are presented in the parentheses and clustered at the level of the failed bank's state headquarters. ***, **, and * represent statistical significance at 1%, 5%, and 10% levels.

	(1)			(2)		
	Pr(Win)	Marginal Effects	Pr(Bid)	Pr(Win)	Marginal Effects	Pr(Bid)
Lobbying Regulator >0	0.7158***	0.1124**	0.1578			
	(0.2157)	(0.0489)	(0.6207)			
Lobbying Regulator				0.0536***	0.0084**	0.0019
				(0.0162)	(0.0035)	(0.0611)
Size	0.0639	0.0100	-1.4541***	0.0641	0.0101	-1.4552***
	(0.1123)	(0.0205)	(0.1931)	(0.1126)	(0.0207)	(0.1920)
Liquidity Ratio	0.0151**	0.0024	-0.0133*	0.0150**	0.0024	-0.0133*
	(0.0072)	(0.0017)	(0.0073)	(0.0073)	(0.0017)	(0.0073)
Tier 1 Capital Ratio	0.0218	0.0034	0.0199*	0.0219	0.0034	0.0198*
	(0.0150)	(0.0025)	(0.0114)	(0.0151)	(0.0025)	(0.0115)
NPL Ratio	-0.0287	-0.0045	-0.0194	-0.0284	-0.0045	-0.0195
	(0.0273)	(0.0053)	(0.0135)	(0.0274)	(0.0053)	(0.0136)
OREO Ratio	-0.0370	-0.0058	0.1023	-0.0379	-0.0060	0.1020
	(0.1734)	(0.0280)	(0.0622)	(0.1729)	(0.0280)	(0.0625)
CRE Loans (%)	0.0086	0.0014	-0.0289*	0.0087	0.0014	-0.0288*
	(0.0099)	(0.0016)	(0.0165)	(0.0099)	(0.0016)	(0.0164)
C&I Loans (%)	-0.0044	-0.0007	-0.0250	-0.0045	-0.0007	-0.0248
	(0.0083)	(0.0013)	(0.0154)	(0.0083)	(0.0013)	(0.0153)
Residential Loans (%)	0.0015	0.0002	-0.0279**	0.0015	0.0002	-0.0279**
	(0.0078)	(0.0013)	(0.0118)	(0.0078)	(0.0013)	(0.0118)
Distance	-0.2560***	-0.0402***	-1.5296***	-0.2542***	-0.0401***	-1.5299***
	(0.0908)	(0.0075)	(0.0799)	(0.0910)	(0.0075)	(0.0801)
Change in HHI	-0.0035	-0.0005	0.0148***	-0.0035	-0.0006	0.0148***
	(0.0039)	(0.0007)	(0.0039)	(0.0039)	(0.0007)	(0.0039)
Constant	-0.0853		34.1964***	-0.0919		34.2103***
	(2.0391)		(3.9736)	(2.0461)		(3.9516)
Bidder Fixed Effects	No		Yes	No		Yes
Failed Bank Fixed Effects	Yes		Yes	Yes		Yes
Wald χ^2	0.0481			0.0446		
Wald p-value	0.8263			0.8328		
ρ	0.0659			0.0638		
Auctions	415			415		
Observations	43656			43656		

Appendix C

Lobbying in Mergers & Acquisitions

C.1 Variable definitions

The table uses the following abbreviations: HPDL for Hoberg-Phillips data library; HSR for HSR annual reports;[1]; SOPR for the Senate Office of Public Records;[2] and FEC for the Federal Election Commission webpage.[3]

Table C.1. Variable definitions

Variable	Definition	Source
	Deal characteristics	
Deal value	Value of the takeover deal in $million. In regressions used in a logarithmic transformation: log(1 + deal value).	SDC
Relative size	The deal value divided by the market capitalization of the acquirer 8 weeks before the announcement date.	SDC
Takeover premium	The offer price relatively to the target stock price 8 weeks before the deal announcement minus one: $\frac{P_{\text{offer}}}{P_{-42}} - 1$.	SDC
All cash	A dummy indicating 100% of the payment consideration in cash.	SDC
Horizontal merger	A dummy indicating that the acquirer and the target are in the same TNIC3 industry. See Hoberg and Phillips (2010, 2014) for more details on the definition of TNIC industries.	HPDL
Pairwise similarity	The pairwise product similarity score between the acquirer and the target in the year prior to the announcement date.	HPDL
Tender offer	A dummy indicating the initial bid is a tender offer	SDC
Hostile	A dummy indicating target's response is hostile versus friendly or neutral	SDC
Bidding contest	A dummy indicating that the number of bidders (including the acquirer) after the deal announcement is larger than one.	SDC
Entrenched acquirer	A dummy indicating that the acquirer has at least four from the following anti-takeover provisions: staggered board, limits to amend bylaws, limits to amend charter, super-majority, golden parachutes and poison pill. Missing values are replaced with zeros.	RiskMetrics
Termination fee (target)	The fee that the target firm agrees to pay in case it is not able to merge with the acquirer scaled by the deal value. Missing values are replaced with zeros.	SDC

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[1] http://cwis.usc.edu/projects/industrydata.
[2] https://www.senate.gov/legislative/Public_Disclosure/LDA_reports.htm.
[3] http://www.fec.gov.

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Variable	Definition	Source
Reverse termination fee (acquirer)	The fee that the acquirer agrees to pay in case it is not able to merge with the target scaled by the deal value. Missing values are replaced with zeros.	SDC
Acquirer announcement AR	The three-day cumulative abnormal return (-1,+1) around the deal announcement date for the acquirer. Abnormal returns are computed using the market model.	CRSP
Target announcement AR	The three-day cumulative abnormal return (-1,+1) around the deal announcement date for the target. Abnormal returns are computed using the market model.	CRSP
Combined announcement AR	The average of the acquirer and target announcement abnormal returns (-1,+1) around the deal announcement date, weighted by the market capitalizations 8 weeks prior to the deal announcement date.	CRSP
Expected completion probability	Target stock price at the end of the deal-announcement day over takeover premium, following Samuelson and Rosenthal (1986). $\frac{P_{+1}-P_{-42}}{P_{\text{offer}}-P_{-42}}$.	SDC
	Acquirer characteristics	
Acquirer size	Market capitalization 4 weeks prior to the announcemnt dates of the acquiring company in $million; in regressions used in a logarithmic transformation: ln(market cap).	Compustat
Acquirer market-to-book ratio	Acquirer market capitalization over total assets: $\frac{PRCC \times CSHO + AT - CEQ}{AT}$.	Compustat
Acquirer leverage	Debt over market value of total assets: $\frac{DLTT+DLTT+PSTK}{DLTT+DLTT+PSTK+PRCC \times CSHO}$	Compustat
Acquirer tangibility	Book value of property, plant and equipment over the book value of total assets: $\frac{PPENT}{AT}$	Compustat
Acquirer liquidity	The book value of cash and marketable securities plus receivables over the book value of total assets: $\frac{CHE+RECT}{AT}$	Compustat
	Antitrust-review outcomes	
Early Termination	A dummy indicating that the merging firms receive an Early Termination outcome in the antitrust-review process before the 30-day waiting period expires. It represents a favorable outcome.	SEC
Natural Expiration	A dummy indicating that the merging firms clear antitrust review without receiving an Early Termination or a Second Request. It represents a favorable outcome.	SEC
Second Request	A dummy indicating that the merging firms receive a request for additional information in the antitrust-review process. It means the antitrust agencies suspect market-power issues and will take further steps investigating the merger. It represents an adverse outcome.	SEC
Challenged (Second Request)	A dummy indicating that the antitrust agencies file an official complaint against the merging parties. Remedy negotiations follow. It represents an adverse outcome.	HSR
Unchallenged (Second Request)	A dummy indicating that a deal with a Second Request gets through the antitrust review without the antitrust agencies filing an official complaint against the merging parties. It represents an adverse outcome.	HSR

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Variable	Definition	Source
Pull & Refile	A dummy indicating that the merging firms pull back and then refile their HSR premerger filings to restart the 30-day waiting period. Such an action provides more time for the antitrust agencies to review the submitted documents without issuing a Second Request.	SEC
Withdrawn	A dummy indicating that the acquirer or the target withdraw from the deal and do not complete the merger.	SDC
Days to complete	The number of calendar days to complete the merger from the deal announcement to the deal completion or withdrawal date. In regressions used in a logarithmic transformation: $\log(1 + \#\text{days})$	SDC
	Acquirer lobbying activities	
Active lobbier	A dummy indicating a positive lobbying expense between 2007 and 2015.	CRP, SOPR
No previous lobbying	A dummy indicating that the acquirer does not lobby during 12 quarters prior to the deal-announcement year (–16q,–5q).	CRP, SOPR
Lobbying dollars	Total corporate spending on lobbying during the specified 4 quarters relatively to the deal announcement in $thousand. In regressions used in a logarithmic transformation: log(1+ lobbying dollars in $million).	CRP, SOPR
Lobbying ratio	Lobbying dollars scaled by firm market capitalization in $ thousands. $\frac{\text{lobbying dollars}}{\text{market cap}}$	CRP, SOPR
Disclosed lobbying ratio (b.p.)	Disclosed lobbying dollars scaled by firm market capitalization in $ thousands. Disclosed lobbying filings are filed during the one-year period prior to deal announcement dates.	CRP, SOPR
Related (unrelated) lobbying ratio	Total corporate spending on lobbying scaled by firm market capitalization targeting at related (unrelated) government agencies during the specified 4 quarters relatively to the deal announcement in $thousand. The overall lobbying dollars of a given quarterly lobbying filing are classified as related if at least one government agency is US Senate, US House, Department of Justice, or Federal Trade Commission. The overall lobbying dollars are classified as unrelated only if none of the targeted government agencies in the quarterly filing is one of these four agencies. See Appendix C.4 for an illustration of unrelated government agencies.	CRP, SOPR
Lobbying dummy	A dummy indicating a positive lobbying expense in a given 4-quarter period	CRP, SOPR
Politicians' ownership dollars	Fractional ownership of acquirer stock by all congressmen serving in the antitrust subcommittees (of congressional judiciary committees) in the deal-announcement year.	CRP, FEC
Politicians' ownership	A dummy indicating that any congressman serving in the antitrust subcommittees (of congressional judiciary committees) in the deal-announcement year holds any acquirer stock.	CRP, FEC
PAC contribution dollars	Total campaign contributions to current antitrust subcommittee members by the acquirer company in the previous election cycle.	CRP, FEC
PAC contribution ratio	PAC contribution dollars scaled by market capitalization in $thousands. $\frac{\text{PAC contribution dollars}}{\text{market cap}}$	CRP, FEC

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Variable	Definition	Source
	Product market conditions	
Acquirer HHI	Herfindahl-Hirschman index in the acquirer TNIC3 industry one year before the merger announcement.	HPDL
Target HHI	Herfindahl-Hirschman index in the target TNIC3 industry one year before the merger announcement.	HPDL
Expected ΔHHI	Expected change in concentration in the acquirer TNIC3 industry for horizontal mergers one year prior to the deal announcement. Following Eckbo (1992): $2 \times \text{market share}_{\text{acquirer}} \times \text{market share}_{\text{target}}$. For non-horizontal mergers, the value is zero.	Compustat, HPDL
ΔHHI (acquirer)	Change in acquirer HHI in the TNIC3 industry from the year before the merger announcement to the year after the merger completion. For completed deals only.	HPDL
Acquirer market share	The ratio of acquirer total sales over the total sales of all firms in the target TNIC3 industry one year prior to the deal announcement.	Compustat, HPDL
Target market share	The ratio of target total sales over the total sales of all firms in the target TNIC3 industry one year prior to the deal announcement.	Compustat, HPDL
Δmarket share (acquirer)	Change in acquirer market share in the TNIC3 industry from the year before the merger announcement to the year after the merger completion. For completed deals only.	Compustat, HPDL
Acquirer similarity	The sum of the pairwise similarities between the acquirer and all other peers in its TNIC3 industry one year before the merger announcement.	HPDL
Target similarity	The sum of the pairwise similarities between the target and all other peers in its TNIC3 industry one year before the merger announcement.	HPDL
Δsimilarity (acquirer)	Change in acquirer product similarity score in the TNIC3 industry from the year before the merger announcement to the year after the merger completion. For completed deals only.	HPDL
Acquirer fluidity	The degree of competitive threat and competitors' product market change in the acquirer TNIC3 industry one year before the merger announcement.	HPDL
Target fluidity	The degree of competitive threat and competitors' product market change in the target TNIC3 industry one year before the merger announcement.	HPDL
Δfluidity (acquirer)	Change in acquirer fluidity in the TNIC3 industry from the year before the merger announcement to the year after the merger completion. For completed deals only.	HPDL

C.2 Example SEC filings for antitrust review

On November 23, 2009, Green Mountain Coffee Roasters Inc. (GMCR, Parent, or Purchaser) announced a friendly all-cash acquisition of Diedrich Coffee, Inc. (the Company). The deal value was around $290 million. The following quote from SEC filing Form SC TO-T filed by both GMCR and Diedrich Coffee on December 11,

2009 shows the date of the premerger filing:

> Pursuant to the requirements of the HSR Act, the Company ("Diedrich Coffee") filed a Notification and Report Form with respect to the Offer and the Merger on December 8, 2009 and Parent ("GMCR"), on behalf of itself and the Purchaser, filed a Notification and Report Form with respect to the Offer and the Merger with the FTC and the DOJ on December 9, 2009. As a result, the waiting period applicable to the purchase of Shares pursuant to the Offer is scheduled to expire at 11:59p.m., Eastern Time, on December 24, 2009.

This quote from SEC filing Form SC TO-T/A filed by both GMCR and Diedrich Coffee on Dec 24, 2009 shows the reasons for a Pull & Refile decision by the merging companies:

> Effective December 24, 2009, following consultation with the FTC staff, Parent voluntarily withdrew its HSR Act filing. On or before December 29, 2009, Parent expects to re-file its HSR Act filing. This withdrawal and re-filing is being undertaken in order to provide the FTC with additional time to review the information submitted by Parent and the Company.

The SEC filing Form SC TO-T/A filed by both GMCR and Diedrich Coffee on Jan 13, 2010 and a press release issued on the same date suggests an outcome of a Second Request:

> WATERBURY, Vt. and IRVINE, Calif. – January 13, 2010 – Green Mountain Coffee Roasters, Inc. (NASDAQ: GMCR) ("GMCR") and Diedrich Coffee, Inc. (Nasdaq: DDRX) ("Diedrich Coffee") today announced that they have each received a request for additional information ("Second Requests") from the U.S. Federal Trade Commission ("FTC") with respect to the previously announced $35.00 per share cash tender offer by Pebbles Acquisition Sub, Inc. (the "Purchaser"), a wholly owned subsidiary of GMCR, to purchase all of the outstanding shares of common stock of Diedrich Coffee. … GMCR and Diedrich Coffee expect to promptly respond to their respective Second Requests, and to continue

> to work cooperatively with the FTC as it conducts its review of the proposed transaction. The transaction is expected to be completed in early 2010. As previously announced, the tender offer is scheduled to expire at midnight, New York City time, on Friday, February 5, 2010. The Purchaser will extend the tender offer's expiration time as necessary to occur concurrently with the HSR waiting period's expiration time.

This quote from SEC filing Form SC TO-T/A filed by both GMCR and Diedrich Coffee on May 3, 2010 (and a press release issued on the same date) suggests compliance with FTC's requests for additional information and associated clearance to complete the merger:

> GMCR also noted that, on Friday, April 30, 2010, GMCR certified to the U.S. Federal Trade Commission (the "FTC") that it has substantially complied with the FTC's request for additional information under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 ("Second Request"), in connection with GMCR's offer to purchase all of the outstanding shares of Diedrich Coffee common stock. As a result, GMCR and Purchaser expect the waiting period applicable to the purchase of the outstanding shares of Diedrich Coffee common stock pursuant to the tender offer to expire at 11:59 p.m., New York City time, on Monday, May 10, 2010.

The transaction was completed and effective on *May 11, 2010*.

C.3 Sample Distributions

This table reports the distribution of the 370 deals in our sample across years by announcement dates in Panel A, target industry sectors in Panel B and acquirer industry sectors in Panel C. Each panel reports the total number of deals and frequencies across five antitrust-review outcomes and withdrawn deals within each calendar year or industry sector.

Table C.2. Distribution of merger firms across industries and calendar years

Panel A: Distribution across years

	2008	2009	2010	2011	2012	2013	2014
Withdrawn	0.167	0.089	0.081	0.119	0.019	0.000	0.085
Challenged Second Request	0.083	0.089	0.048	0.068	0.056	0.047	0.068
Unchallenged Second Request	0.062	0.067	0.129	0.085	0.111	0.116	0.136
Pull & Refile	0.062	0.178	0.048	0.119	0.093	0.023	0.068
Natural Expiration	0.354	0.489	0.452	0.390	0.278	0.419	0.271
Early Termination	0.438	0.178	0.323	0.339	0.463	0.395	0.458
# obs.	48	45	62	59	54	43	59

Panel B: Distribution across target Fama-French 5 industry sectors

	Consumer	Manuf.	HiTech	Health	Other
Withdrawn	0.106	0.098	0.072	0.027	0.185
Challenged Second Request	0.085	0.098	0.022	0.067	0.148
Unchallenged Second Request	0.128	0.134	0.094	0.027	0.222
Pull & Refile	0.106	0.073	0.101	0.080	0.000
Natural Expiration	0.234	0.220	0.424	0.533	0.407
Early Termination	0.447	0.476	0.360	0.293	0.222
# obs.	47	82	139	75	27

Panel C: Distribution across acquirer Fama-French 5 industry sectors

	Consumer	Manuf.	HiTech	Health	Other
Withdrawn	0.095	0.098	0.073	0.028	0.158
Challenged Second Request	0.119	0.073	0.022	0.070	0.132
Unchallenged Second Request	0.143	0.134	0.102	0.014	0.158
Pull & Refile	0.071	0.110	0.095	0.085	0.000
Natural Expiration	0.214	0.244	0.438	0.563	0.263
Early Termination	0.452	0.439	0.343	0.268	0.447
# obs.	42	82	137	71	38

C.4 Government agencies that are targets of corporate lobbying

Table C.3 reports frequencies and percentages of targeted government agencies in the lobbying filings between 2007 and 2015 of merging firms in the sample. For irrelevant government agencies on the right columns, only the top 15 are reported. The frequencies of unreported government agencies are all under 1%.

Table C.3. Related and unrelated government agencies regarding to antitrust review

Agencies	Frequency	%
Relevant government agencies		
US Senate	27.64	68043
US House of Representatives	27.51	67730
Dept of Justice	0.88	2173
Federal Trade Commission	0.57	1410
Irrelevant government agencies		
Dept of Defense	3.83	9440
Dept of Health & Human Services	2.73	6725
Dept of Commerce	2.71	6681
Executive Office of the President	2.25	5550
Dept of the Treasury	2.25	5550
Office of US Trade Representative	1.93	4770
Dept of State	1.76	4348
Dept of Energy	1.72	4237
White House	1.71	4228
Environmental Protection Agency	1.53	3771
Federal Communications Commission	1.44	3562
Dept of Homeland Security	1.42	3508
Centers for Medicare & Medicaid Services	1.06	2630
Dept of Transportation	1.02	2515
Office of Management & Budget	1.02	2514
(omitted)		

Table C.4. Lobbying and the refined set of review outcomes: multinomial logistic models

This table shows estimated marginal effects for lobbying variables on the probability of each of the five refined review outcomes using multivariate logistic regressions. All specifications include controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity), acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), and other political activities (target lobbying dummy $(-4,-1)$, target lobbying dummy $(0,+3)$, politicians' ownership dummy, PAC contribution ratio), which are not reported. All models include 340 observations and Fama-French 5 sector and year fixed effects. Robust standard errors are reported in parentheses. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ^{a}, ^{b}, ^{c} and ^{d} indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1) Challenged Second Request	(2) Withdrawn Unchallenged Second Request	(3) Completed Unchallenged Second Request	(4) Pull & Refile	(5) Natural Expiration	(6) Early Termination
			Panel A: pre-announcement lobbying			
Lobbying ratio $(-4,-1)$ (b.p.)	-0.020^{c}	0.000	0.009^{b}	0.008^{a}	0.011^{b}	-0.008
	(0.011)	(0.000)	(0.004)	(0.002)	(0.005)	(0.007)
Pseudo R^2	0.300					
			Panel B: post-announcement lobbying			
Lobbying ratio $(0,+3)$ (b.p.)	-0.004	-0.000	0.011^{c}	0.010^{a}	-0.003	-0.013^{c}
	(0.004)	(0.000)	(0.006)	(0.002)	(0.006)	(0.007)
Pseudo R^2	0.303					

C.5 Lobbying and the refined set of review outcomes: completed vs. withdrawn Unchallenged Second Requests

We run the multinomial logistic regression with six alternative review outcomes in Table C.4. Since the number of observations is small in the category of Withdrawn Unchallenged Second Request (nine observations), the size of the marginal effects on the probability of Withdrawn Unchallenged Second Request is very small and close to zero.

C.6 Direct link between lobbying and deal outcomes

Table 4.5 reports the effect of lobbying on deal outcome—deal withdrawn and the number of days to completion.

Table 4.5. Direct link between lobbying and deal outcomes

This table reports estimates of the marginal effect of lobbying on deal withdrawal in specifications 1 to 4 and estimates of the coefficients when regressing the log of days to completion on lobbying in specifications 5 to 6. Specification 1 and 2 corresponds to the simple logistic models. Specification 3 and 4 corresponds to the IV probit models. We do not report the first-stage estimates. Specification 5 and 6 corresponds to the OLS models. All specifications include also controls for deal characteristics (deal value, relative size, all cash, horizontal merger, tender offer, hostile, bidding contest, termination fee, reverse termination fee), product market conditions (target HHI, expected ΔHHI, target similarity, target fluidity) and acquirer characteristics (acquirer size, acquirer market-to-book, acquirer leverage, acquirer tangibility, acquirer liquidity), which are not reported. Industry (Fama-French 5 sectors) and year fixed effects are included in all specifications. Robust standard errors are reported in parentheses and clustered at target industry level. All variables are defined in Appendix C.1, winsorized at the 1st and 99th percentiles. ***, **, * and + indicate significance at the one-, five-, ten- and fifteen-percent levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	logistic		IV probit		OLS	
	Withdrawn				log days	
Lobbying ratio $(-4,-1)$ (b.p.)	-0.031^{d}		-0.047^{b}		0.001	
	(0.021)		(0.024)		(0.003)	
Lobbying ratio $(0,+3)$ (b.p.)		-0.030		-0.047^{c}		0.008^{d}
		(0.022)		(0.028)		(0.004)
Target lobbying dummy $(-4,-1)$	-0.000	-0.004	0.001	-0.004	0.006	0.003
	(0.020)	(0.017)	(0.021)	(0.018)	(0.119)	(0.119)
Target lobbying dummy $(0,+3)$	-0.008	0.001	-0.011	0.006	0.121	0.108
	(0.051)	(0.060)	(0.043)	(0.046)	(0.132)	(0.128)
Politicians' ownership dummy	0.027	0.038^{c}	0.019	0.034^{c}	0.185^{b}	0.184^{b}
	(0.020)	(0.020)	(0.016)	(0.018)	(0.056)	(0.057)
PAC contribution ratio	-0.042	-0.045	-0.035	-0.038	0.001	-0.011
	(0.064)	(0.063)	(0.054)	(0.053)	(0.046)	(0.047)
Constant					4.089^{a}	4.075^{a}
					(0.206)	(0.202)
Pseudo R^2	0.583	0.593				
Wald χ^2			1.874	2.757		
Wald p-value			0.171	0.097		
Adjusted R^2					0.464	0.466

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In 2012, Eden started her doctoral studies at Rotterdam School of Management, Erasmus University under the supervision of Professor Peter Roosenboom. Her PhD project focuses on empirical corporate finance and political economy of finance. In the third year of her PhD program, Eden went on a research visit to NYU Stern School of Business, hosted by Professor David Yermack. She presented her research work at several international conferences and research seminars.

As of July 1, 2017, Eden works as Lecturer at Monash University, Melbourne, Australia.

Portfolio

Working papers

Why do distressed firms acquire? *(single authored)*

Lobbying in mergers and acquisitions. *(joint with Peter Roosenboom and Jana Fidrmuc)*

Winning connections? Lobbying and the resolution of failed banks. *(joint with Deniz Igan, Thomas Lambert, and Wolf Wagner)*

Conference & seminar presentations (* presented by co-authors)

2017: BI Norwegian Business School; Vrije Universiteit Amsterdam; Aarhus University; University of Southern Denmark; WU Vienna University of Economics and Business; SKEMA Paris; Glasgow University; Erasmus Finance Day; Monash University; Banque de France-ACPR*; IESEG School of Management*; University of Bonn*; University of Lille 2*; University Paris-Dauphine*; Banking and Financial Intermediation Workshop (Bristol)*; Public Authority and Finance Conference (Paris)*; FMA European Conference (Lisbon)*; European Finance Association Annual Meeting (Mannheim); FIRN Annual Conference (Uluru).

2016: Australasian Finance and Banking Conference (Sydney, main conference and Ph.D. Forum); EUROFIDAI Paris December Finance Meeting; Corporate Finance Day (Antwerp); University of Lille 2; Tinbergen Institute (Ph.D. Lunch Seminar Series); Erasmus University (Ph.D. Seminars).

2015: New York University (Corporate Governance Luncheon); Erasmus University (Ph.D. Seminars).

2014: Australian National University; Erasmus University (Ph.D. Seminars).

Research visits & Ph.D. courses

Research visit at NYU Stern School of Business, New York City (2015)

Seminar Corporate Finance, Erasmus University
Seminar Asset Pricing, Erasmus University
Executive Compensation, Erasmus University
Corporate Governance, Erasmus University
Seminar on Corporate Finance Theory, EIASM's Doctoral Education Network
Empirical Banking, CEMFI
Structural Estimation in Corporate Finance, CEMFI
Corporate Restructuring, NYU
Advanced Managerial Economics, University of Texas at Dallas
Industrial Organization, University of Texas at Dallas
Theoretical Corporate Finance, University of Texas at Dallas
Empirical Corporate Finance, University of Texas at Dallas
Optimal Control Theory, University of Texas at Dallas
Theory of Finance, University of Texas at Dallas
Real Analysis, University of Texas at Dallas

Teaching activities

Mergers & Acquisitions (Bachelor Level, 2014)
Entrepreneurial Finance and Private Equity (Teaching Assistant, Master Level, 2013-2017)
Master Thesis Supervision (2013-2015, 2017)
Bachelor Thesis Supervision (2013-2014)

Investment Management (Teaching Assistant, Master Level, 2010-2011)
Financial Management & Institutions (Teaching Assistant, Master Level, 2012)

Scholarships & grant

Monash new staff grant (2017)
Australasian Finance and Banking Conference Ph.D. Forum Travel Grant (2016)
RSM Trustfund Research Visit Grant (2015)
AFA Student Travel Grant (2015)
Phi Kappa Phi (2011-2012)
Graduate Student Scholarships (2010-2012)
Chiang-Chen Scholarship (2009)
Kuang-Wah Scholarship (2006)

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This dissertation studies how financial frictions and regulatory costs affect mergers and acquisitions (M&A). The first conclusion is that financial distress drives firms to make diversifying acquisitions. Acquisitions made by distressed firms in recent years are economically important. Exploiting a natural experiment, this thesis identifies the causal link between financial distress and acquisitions. The evidence shows that distressed firms acquire to diversify bankruptcy risk, rather than to capture external growth opportunities and revive growth. The second conclusion of the dissertation is that political connections of banks affect the government auctions of distressed banks during the Great Recession. Lobbying financial regulators significantly increases a bidding bank's probability of winning. The post-acquisition operating performance is worse for lobbying acquirers than for their non-lobbying counterparts, suggesting that lobbying results in a less efficient allocation of failed banks. The results provide new insights into the bank resolution process and its political economy. Thirdly, the dissertation shows that the regulatory review process for M&As poses significant costs and risk for merging firms. An adverse antitrust review outcome reduces shareholder wealth and the probability of deal success. Mitigating such risk via lobbying may benefit shareholders. Consistently, acquirers strategically adjust lobbying expenditures around the merger announcement. The results highlight the role of political connections in corporate investments under regulatory uncertainty.

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