Australian National University

Two Essays on Debt Market, Corporate Bankruptcy and the Financial Reporting of Borrowers

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Declaration of Originality

I, Ziqi Gao, hereby certify that this thesis, entitled ‘Debt Market, Corporate Bankruptcy and the Financial Reporting of Borrowers’, is the result of my own original work. To the best of my knowledge, it contains no material previously published or written by another person, except where reference is made to the work of others, and acknowledgment is duly given.

Ziqi Gao, November 2021

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Abstract of Essay 1

Essay 1: Spillover Effects of Bankruptcy on Voluntary Disclosure

This study examines the spillover effects of bankruptcy on the voluntary disclosure of firms that share common lenders with bankrupt firms. I argue that after firms in a bank's loan portfolio file for bankruptcy, the monitoring ability of the bank will be perceived to be lower, leading other investors to rely less on bank monitoring and demand more public information disclosure from the non-bankrupt borrowers of the bank (the monitoring channel). Furthermore, following large bankruptcies, the lending ability of a bank will decrease, reducing the credit availability to its non-bankrupt borrowers, which in turn leads the non-bankrupt borrowers to increase voluntary disclosure to obtain other sources of financing (the financing channel). Consistent with my expectation, I find that after firms in a bank's loan portfolio file for bankruptcy, the non-bankrupt borrowers of the bank issue more voluntary 8-K filings, include more exhibits in voluntary 8-K filings and increase the length of their 8-K filings. A series of analyses suggest that this effect is stronger when shareholders of the non-bankrupt borrowers delegate more monitoring to banks, and when bankruptcies lead to a greater increase in the non-bankrupt borrowers' incentive to access alternative financing sources. My findings suggest that corporate bankruptcy has broader implications for information production in capital markets and extends beyond the bankrupt firm to other firms sharing the same lender.

Keywords: bankruptcy, spillovers, voluntary disclosure, monitoring, syndicated loans

Abstract of Essay 2

Essay 2: Effects of Bank Reputation on Investors' Perceptions of Borrowers' Reporting Credibility

This study examines whether bank reputation affects the perceived credibility of borrowers' financial reporting. I argue that equity investors expect banks to monitor the credibility of their borrowers' financial reporting. After a bank's reputation is damaged, investors will update their beliefs regarding the bank's monitoring ability and perceive the financial reporting of its borrowers as less credible. Consistent with this view, I find that reputation damage of a bank leads to a significant decline in the earnings response coefficients (ERCs) of its borrowers in the subsequent six months. The effect of bank reputation damage on ERCs is weaker when there are alternative mechanisms to monitor borrowers and when investors have lower reliance on bank monitoring. Overall, my findings suggest that damage to banks' reputations leads investors to question the credibility of borrowers' financial reporting, which in turn results in a lower level of market responsiveness to borrowers' earnings announcements.

Keywords: bankruptcy, earnings response coefficient, reputation, syndicated loans

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List of Abbreviations

BHC	Bank Holding Company
CAR	Cumulative Abnormal Return
CDS	Credit Default Swaps
CRSP	Center for Research in Security Prices
EPS	Earnings per Share
ERC	Earnings Response Coefficient
GFC	Global Financial Crisis
IPO	Initial Public Offering
M&A	Mergers and Acquisitions
MD&A	Management's Discussion and Analysis
PPE	Plant, Property and Equipment
R&D	Research and Development
SIC	Standard Industrial Classification
UCLA	University of California, Los Angeles
US	United States

Chapter 1: Overview of Debt Market and its Implications for Accounting and Finance Research

1.1 Debt Market in the United States

1.1.1 Private and Public Debt Market

Debt is an important source of corporate finance. In 2017, United States (US) firms obtained US$2.41 trillion from the syndicated loan market (Colonnello et al. 2019). In comparison, the total amount of equity issuance was only US$220.3 billion in 2017 (Kolchin et al. 2020, p. 13). The debt market can be classified into two categories: private and public debt markets. In the public debt market, firms issue corporate bonds to dispersed arm's-length bondholders, who have no access to bond issuers' private information. In contrast, borrowers and lenders tend to have a closer relationship in the private market (Denis and Mihov 2003; Bharath et al. 2008). Private debts typically have a concentrated ownership structure and are usually financed by banks. Banks are considered sophisticated investors who have superior access to borrowers' private information and often play an active role in monitoring borrows (e.g. Diamond 1984; Fama 1985; Boyd and Prescott 1986; Diamond 1991). Prior studies find that firms with a higher level of information asymmetry tend to rely more heavily on private debts, while larger firms that have established a credit history have greater access to the public debt market (e.g. Bharath et al. 2008).

This thesis primarily focuses on the private market for two primary reasons. First, the size of the private debt market is much larger than that of the public market (Arena 2011).[1] Second, this thesis investigates how perceived lender monitoring intensity affects borrowers' disclosure behaviour (Study 1) and the capital market perception of borrowers' financial reporting credibility (Study 2). Given that bondholders rarely assume the role of monitoring borrowers, it is more appropriate to focus my analysis on lenders in the private debt market. In this thesis, I use the terms 'banks' and 'lenders' interchangeably. Unless otherwise specified, both terms refer to lenders in the private debt market that are able to monitor borrowers.

[1] For example, private debts accounted for approximately 70% of the total amount of corporate debt issued in 2003 (Arena 2011).

1.1.2 Syndicated Loan Market

Commercial loans in the US are usually financed by syndicated loans. As previously discussed, the syndicated loans market is the largest source of funding for US firms (e.g. Dennis and Mullineaux 2000; Sufi 2007; Colonnello et al. 2019). A 'syndicated loan' is a loan with more than one lender. Lenders of syndicated loans can be broadly classified into two groups: 'lead arrangers' and 'participant lenders'. Lead arrangers act as a managing agent for the lender group. More specifically, they draft the credit agreement, negotiate with borrowers and coordinate the documentation process. After the loan origination, lead arrangers must collect repayments and monitor borrowers on an ongoing basis. Participant lenders rarely engage in any monitoring activities. They fund part of the loan and pay a service fee to lead arrangers (Gadanecz 2004).

Syndicated loans benefit lead arrangers, participant lenders and borrowers in several ways. First, instead of acting as a sole lender, serving as a lead arranger in a syndicated loan allows banks to limit their credit risk exposure in a few very large loans. Earnings service fees also help lead arrangers to diversify their income. Second, it is very difficult for small banks to find borrowers by themselves. To solve this problem, small banks can rely on lead arrangers to seek borrowers and screen loan applications. Thus, by serving as participant lenders, small banks have more investment opportunities. Third, syndicated loans increase credit availability for borrowers, especially when a project requires a loan that is too large for any single lender (Dennis and Mullineaux 2000).

In syndicated loans, lead arrangers usually hold a large proportion of loans that they originate, monitor borrowers closely, and often develop a long-term relationship with borrowers. Therefore, syndicated loans are generally viewed as private debts. However, syndicated loans also have features that are similar to public debts. Like bondholders in the public debt market, participant lenders are arm's-length lenders. Therefore, syndicated loans can be perceived as a hybrid of private and public debt (Gadanecz 2004). As the number of participant lenders in a syndicated loan increases, the syndicated loan becomes more similar to a public debt with dispersed arm's-length lenders.

1.2 Debt Covenants

An important feature of debt financing is that borrowers must operate within certain rules that are specified in the debt covenants. Nearly all credit agreements have a section of debt covenants. Debt covenants are legally binding clauses. Upon covenant violations, a lender can call back the loan immediately from the borrower or initiate a renegotiation (Wight et al. 2009). Debt covenants can be classified into three categories: affirmative, negative and financial covenants. Affirmative covenants require borrowers to take certain actions to remain in compliance with the credit agreement. Important affirmative covenants include disclosure covenants and inspection rights covenants. Disclosure covenants require borrowers to provide periodic financial information, so that lenders can know whether borrowers have sufficient repayment ability. Inspection rights covenants grant lenders the right to visit the premises of borrowers, examine the physical conditions of borrowers' inventory and collateral, and check borrowers' operating and financial records (Wight et al. 2009; Tan 2013; Nikolaev 2017).

Negative covenants prevent borrowers from taking certain actions. For example, negative covenants often include lien limitations. The lien limitations covenant is used to protect the existing secured lenders by restricting borrowers from incurring any liens during the term of the loan. Other examples of negative covenants include indebtedness limitations, sale of asset limitations and capital expenditure limitations. These covenants prohibit borrowers from incurring an excessive amount of debt, selling important assets and making too many capital expenditures during the term of the loan (Wight et al. 2009). Financial covenants test the financial position and financial performance of borrowers. These covenants are typically based on accounting numbers. For example, a financial covenant may set a minimum threshold of a borrower's interest coverage ratio (the ratio of the borrower's earnings to its interest expense). Once the interest coverage ratio of the borrower drops below the threshold, it triggers a technical default that allows the lender to call back the loan immediately. These kinds of financial covenants help lenders discover borrowers' financial difficulties in a timely manner. The most common accounting numbers and ratios used in financial covenants include interest coverage ratio, tangible net worth and leverage ratio.

Although covenant violations trigger technical default, the consequences of covenant violations are usually not severe. The reason for establishing a debt covenant is not to

punish borrowers, but mainly to protect lenders and give them more bargaining power in the following renegotiations. For example, Dichev and Skinner (2002) find that lenders usually set debt covenants very tightly, using them as 'trip wires'. Dichev and Skinner (2002) show that even financially sound borrowers frequently violate debt covenants and that nearly 30% of loans experience at least one covenant violation during the term of the loan. Following covenant violations, lenders rarely accelerate loan repayments. Violating debt covenants often results in an increase in collateral, an increase in interest rates or simply a waiver of violations. The monitoring intensity from lenders tends to increase dramatically following covenant violations. After a borrower violates any debt covenant, lenders often collect more information from the borrower; exercise their inspection right by visiting the borrower's premises; and begin to intervene in the borrower's operating, investing and financing activities (Nini et al. 2009; Roberts and Sufi 2009; Nini et al. 2012; Vashishtha 2014; Gu et al. 2017).

1.3 Theories Explaining the Role of Accounting Information in Debt Contracting

In a review of the literature, Christensen et al. (2016) suggest that there are two important theories that explain how accounting information benefits debt contracting: agency theory and incomplete contracting theory.

1.3.1 Agency Theory

In debt contracting, agency costs arise because borrowers may act opportunistically at the expense of lenders. Smith and Warner (1979) identify four sources of lender-borrower agency conflicts, as follows: (1) borrowers increase dividend payments during the term of a loan and thus decrease the resources available to lenders; (2) borrowers issue additional debts, increasing the credit risks for existing lenders and diluting their claim (claim dilution); (3) borrowers invest in overly risky projects (asset substitution); and (4) borrowers with a high leverage ratio refuse projects with a positive net present value.

Based on agency theory, the role of accounting information is to reduce the agency costs of debt contracting (Jensen and Meckling 1976). More specifically, lenders can use covenants to prohibit borrowers from engaging in certain actions that are contingent

on accounting information. For example, lenders can use accounting-based covenants to set a maximum threshold on dividend payout ratio, capital expenditures, debt ratio and so forth (Christensen et al. 2016). In summary, based on the agency perspective, accounting information is used to align the interests of borrowers and lenders. Accounting-based debt covenants help lenders to constrain borrowers' opportunistic behaviour and thus decrease agency costs (Christensen et al. 2016).

1.3.2 Incomplete Contract Theory

Based on the seminal papers of Grossman and Hart (1986) and Hart and Moore (1990), contracting parties cannot expect every possible contingency when they first enter into a contract; thus, the contract they design is inherently 'incomplete'. Instead of specifying a long list of appropriate actions to be taken for all possible future scenarios, contracting parties can specify which party has the right to make decisions when the future unfolds (i.e. allocation of control rights *ex ante*). Aghion and Bolton (1992) apply the incomplete contract theory in debt contracting. They suggest that lenders and entrepreneurs have a conflict of interest. Specifically, an entrepreneur has an incentive to continue a risky project even if the optimal decision is to liquidate the project. In contrast, even if the entrepreneur is doing well and it is efficient to continue a lucrative project, a risk-averse lender may wish to liquidate the project immediately. To solve this problem, the control rights of a firm should be allocated to the party who has incentive to take more efficient actions: the entrepreneur should retain the control rights when the firm is doing well, while the control rights should be transferred to the lender when the firm performs poorly.

As suggested by Aghion and Bolton (1992), the control rights of a firm should be allocated between the entrepreneur and the lender based on a contractible signal that indicates the performance of the firm. Accounting performance measures are suitable candidates to serve this purpose. Therefore, debt contracts can include accounting performance-based covenants to allocate a firm's control rights. In other words, debt covenants serve as 'trip wires'. When a firm's accounting performance measure drops below the covenant threshold, lenders will have the right to decide whether to liquidate the firm or waive the covenant violation (Christensen et al. 2016). In summary, based on incomplete contract theory, accounting-based covenants increase contracting efficiency by serving as 'trip wires' that transfer firms' control rights to lenders upon

covenant violation. High-quality accounting information is important because it better reflects a firm's performance, and thus makes control rights allocation more efficient.

1.4 Thesis Introduction

As discussed previously, compared with the equity market, the debt market is a far more important source of financing for firms. However, the vast majority of capital market accounting studies focus on the equity market, while research on how the debt market affects corporate disclosure is relatively sparse. In this thesis, I investigate how important events in the debt market affect firms' disclosure behaviour, and whether debt financing providers influence the perceived financing reporting quality of borrowers. More specifically, the first study examines whether corporate bankruptcy—an important event in the debt market—affects the voluntary disclosure of borrowers who do not file for bankruptcy. The second study investigates whether bank reputation affects the market perception of borrowers' financial reporting credibility. In the second study, I use corporate bankruptcy as an exogenous shock to bank reputation, and examine whether, after a bank's reputation is damaged, the financial reporting of the bank's borrowers is perceived to be less credible.

In both studies, I follow Gopalan et al. (2011) to use corporate bankruptcy in a bank's loan portfolio (i.e. large-scale bankruptcies) as a proxy for the reputation damage of the bank. Gopalan et al. (2011) suggest that, if a lead arranger originates a significant proportion of loans to borrowers that subsequently file for bankruptcy, the reputation of the lead arranger as a competent monitor will be damaged in the syndicated loan market. As a result, it will be more difficult for the reputation-damaged lead arranger to attract participant lenders in the syndicated loan market in the future. In my thesis, I argue that the effects of reputation damage due to such large-scale bankruptcies will affect investors in the equity market.

The first study investigates whether corporate bankruptcies affect the voluntary disclosure of non-bankrupt firms that share a common lender with the bankrupt firms. I argue that equity investors adjust their reliance on bank monitoring based on banks' monitoring quality (Vashishtha 2014; Chen and Vashishtha 2017; Kim et al. 2018). After a bank experiences large-scale bankruptcies, the monitoring quality of the bank will be perceived as lower, and investors will rely less on bank monitoring, and instead

demand more public information to facilitate their own monitoring. In response to the increased information demand, the bank's non-bankrupt borrowers will increase voluntary disclosure. Moreover, large-scale bankruptcies negatively affect banks' financial health, diminishing their lending ability to their relationship borrowers (Chava and Purnanandam 2011). Following a large decline in bank financial health, borrowers tend to increase voluntary disclosure to obtain other sources of financing (Lo 2014). Consistent with my expectation, I find that, after a bank experiences large-scale bankruptcies, the non-bankrupt borrowers of the bank increase voluntary disclosure.

The second study investigates whether bank reputation affects the perceived credibility of borrowers' financial reporting. I argue that banks demand credible financial reporting (e.g. Treacy and Carey 1998) and are able to influence borrowers' reporting behaviour (Wight et al. 2009; Tan 2013; Nikolaev 2017). As a result, equity investors believe banks play a role in monitoring borrowers' financial reporting credibility. After a bank experiences large-scale bankruptcies, the monitoring ability of the bank will be perceived as lower, and the financial reporting of the bank's non-bankrupt borrowers will be perceived as less credible. I find that, following the reputation damage of a bank, the earnings response coefficients (ERCs) of its borrowers decrease significantly in the subsequent six months. Overall, my thesis suggests that banks, as the provider of debt financing, as well as an important monitor, have a significant effect on the financial reporting of borrowers. Banks not only affect borrowers' real disclosure behaviour (voluntary disclosure), but also influence the market perception of borrowers' financial reporting credibility.

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Chapter 2: Spillover Effects of Bankruptcy on Voluntary Disclosure

2.1 Introduction

Corporate bankruptcies not only affect firms that file for bankruptcy, but also impose significant spillover effects on other firms. For example, the literature has long recognised that bankruptcies tend to adversely affect the industry peers of the bankrupt firms because the bankruptcy of a firm reveals industry-wide negative information (e.g. Lang and Stulz 1992; Ferris et al. 1997). Recent studies, such as those by Benmelech et al. (2019) and Bernstein et al. (2019), suggest that corporate bankruptcies impose negative spillover effects on the neighbouring firms by hurting the local economy. This study investigates the spillover effects of bankruptcy on corporate disclosure through the lending network in the syndicated loan market. More specifically, focusing on firms operating in different industries and geographic areas from the bankrupt firm, I examine whether corporate bankruptcies affect the voluntary disclosure of non-bankrupt firms that share a common lender with the bankrupt firm.

Syndicated loans are the largest source of funding for US firms (e.g. Dennis and Mullineaux 2000; Sufi 2007; Colonnello et al. 2019).[2] The volume of the syndicated loan market in the US was US$2.41 trillion in 2017 (Colonnello et al. 2019). In comparison, the total amount of equity issuance was only US$220.3 billion in 2017 (Kolchin et al. 2020, p. 13). An important feature of the syndicated loan market is that the market is highly concentrated. Specifically, Ross (2010) and Gopalan et al. (2011) find that a few very large lead arrangers manage approximately half of the loans in the syndicated loan market. As a result of the highly concentrated structure of this market, a large lead arranger may arrange loans for many seemingly unrelated borrowers at the same time. Although such a common lending network is prevalent, it is unclear whether and how the bankruptcy of one borrower affects a large number of other borrowers' behaviour through their common lead arrangers. This study fills this gap by examining the effect on non-bankrupt borrowers' corporate disclosure.

[2] A 'syndicated loan' is a loan with more than one lender. A 'lead arranger' is the lender who originates, manages and monitors a syndicated loan, while 'participant lenders' fund part of the loan, but usually do not engage in monitoring activities (Fight 2004; Gadanecz 2004). In this study, I use the terms 'lead arranger' and 'lender' interchangeably.

I posit that bankruptcies impose spillover effects on the corporate disclosure of non-bankrupt borrowers in two ways. First, banks serve an important role as delegated monitors because of their ability to produce private information (e.g. Leland and Pyle 1977; Diamond 1984). Rather than duplicating costly monitoring activities, less-informed investors, such as shareholders, often delegate part of the monitoring role to banks, and the extent of this delegation depends on the perceived monitoring quality of banks (e.g. Vashishtha 2014; Chen and Vashishtha 2017; Kim et al. 2018). A problem with such delegation is that shareholders are uncertain about banks' monitoring quality (e.g. Lee and Mullineaux 2004; Sufi 2007). To overcome this problem, shareholders assess banks' monitoring quality based on their reputation (e.g. Billett et al. 1995; Ross 2010; Gopalan et al. 2011; Bushman and Wittenberg-Moerman 2012). Given that borrower bankruptcies damage banks' reputation as competent monitors (Gopalan et al. 2011), I expect that, following large bankruptcies, shareholders will rely less on the monitoring of the bankrupt firms' bank, and will demand more public information to perform their own monitoring. In response to the increased information demand, the non-bankrupt firms who share the same lender as the bankrupt firm will voluntarily disclose more information. I refer to this as the monitoring channel.

Second, prior research finds that a sharp decline in banks' financial health induces borrowers to voluntarily disclose more information to the public (Lo 2014). More specifically, banks often serve as relationship lenders that rely on private communications to overcome the problem of information asymmetries. When banks' financial health deteriorates, they tend to decrease the lending volume and thus reduce the credit availability of their relationship borrowers (Chava and Purnanandam 2011; Lo 2014). To offset the lost bank credit, borrowers have an incentive to be more transparent to signal their type to other investors for alternative sources of financing (Ruland et al. 1990; Marquardt and Wiedman 1998; Lang and Lundholm 2000).[3] Given that a bank's financial health and lending ability could be significantly impaired after one of its borrowers becomes bankrupt, its non-bankrupt borrowers are likely to increase voluntary disclosure to facilitate access to alternative sources of financing. I refer to this as the financing channel.

[3] Examples of alternative sources of financing are: the corporate bond market, the equity market, and banks that do not have previous lending relationship with a borrower (hereafter, non-relationship banks). Bond investors, equity investors, and non-relationship banks have limited access to firms' private information, so they rely heavily on public information.

Empirically, I examine the spillover effect of bankruptcy on voluntary disclosure based on the banks that are exposed to large bankruptcies (hereafter 'exposed banks') over the period from 1999 to 2018. Following Gopalan et al. (2011), a bank is classified as an exposed bank if it arranges a significant proportion of syndicated loans to borrowers that file for Chapter 11 bankruptcy.[4] When there are multiple lenders in a loan, I only examine lead arrangers. As discussed earlier, I focus on the disclosure behaviour of non-bankrupt firms (i.e. firms that have not filed for any bankruptcy during the sample period). Among this group of non-bankrupt firms, I refer to those with any outstanding loans from the bankruptcy-exposed banks as 'exposed borrowers', meaning that these borrowers are exposed to the spillover effects of bankruptcy by sharing common banks with bankrupt borrowers. In addition, to mitigate macroeconomic factors that affect the financial conditions and disclosure behaviour of firms in the same industry or geographic area, I consider only the exposed borrowers who operate in industries and geographic areas that are different from those of the bankrupt firms (Murfin 2012; Gao et al. 2016). More specifically, I exclude the firm-year observations during the period when exposed borrowers hold outstanding loans from an exposed bank and operate in the same industry or are headquartered in the same state with bankrupt firms. I find that, after banks become exposed to large bankruptcies, their non-bankrupt borrowers issue more voluntary 8-K filings, include more exhibits in the voluntary 8-K filings, and increase the length of their 8-K filings.

To further my understanding of the underlying channels through which the spillover effect works, I conduct a series of cross-sectional analyses. The monitoring channel predicts a larger increase in voluntary disclosure when banks' monitoring is intensive and shareholders have greater reliance on banks' monitoring prior to the bankruptcy event. I investigate two settings in which the delegation of monitoring tasks to banks is high. First, prior studies suggest that financial covenants are banks' primary monitoring tool (e.g. Rajan and Winton 1995; Dichev and Skinner 2002; Nini et al. 2009; Christensen et al. 2016) and banks tend to perform a stronger monitoring role when their debt contracts contain a larger number of financial covenants (Chen and Vashishtha 2017) and when the financial covenants are stricter (Murfin 2012). Second, Frankel and Li (2004) suggest that poor information environments aggravate the

[4] Specifically, consistent with Gopalan et al. (2011), a bank is deemed to be exposed to large-scale bankruptcies if its outstanding loan amount lent to bankrupt borrowers in a year is larger than 10% of the average loan amount it syndicated in the previous two years.

information asymmetry between insiders and outsiders. I argue that the benefits of delegating monitoring are larger for borrowers with a less transparent information environment than other borrowers. Consistent with my predictions, I find the spillover effects are larger when debt contracts between the exposed banks and exposed borrowers contain a greater number of financial covenants, when these financial covenants are stricter, and when the exposed borrowers have higher analyst forecast dispersion and smaller analyst coverage. In contrast, the financing channel predicts a stronger spillover effect when the bankruptcy leads to a greater decline in the bank's financial health and when borrowers have more urgent financing needs. Consistent with my prediction, I show that the increase in voluntary disclosure is more pronounced when the exposed banks have a larger decline in capital ratio following the bankruptcy event, and when the exposed borrowers have a larger portion of long-term debt maturing within one year.

I conduct four sets of additional analyses to reinforce my main findings. First, the trend analyses show that such a change in disclosure behaviour does not occur prior to the bankruptcy events. Second, I find that the increase in disclosure does not occur for mandatory 8-K filings. Third, my main inferences continue to hold when I employ three additional measures as proxies for corporate disclosure, including the frequency of earnings forecasts, the length of management's discussion and analysis (MD&A) and the number of conference calls.

This study contributes to the literature in the following ways. First, extant literature focuses on how a firm affects its industry peers and geographically proximate firms (e.g. Lang and Stulz 1992; Ferris et al. 1997; Benmelech et al. 2019; Bernstein et al. 2019). By excluding industry peers and geographically proximate firms, this study shows that large bankruptcies have significant spillover effects on the voluntary disclosure of non-bankrupt firms during the period when bankrupt firms and non-bankrupt firms share the same banks. Consistent with a recent strand of studies, such as those by Murfin (2012), Gao et al. (2016) and Christensen et al. (2019), my study suggests that, in addition to common industries and local economic agglomeration, the

lending network in the syndicated loan market is an important channel through which bankruptcy imposes spillover effects on corporate disclosure decisions.[5]

Second, this study is related to the literature that examines the effect of the debt market on corporate disclosure. Prior studies find that banks' financial health, mergers and acquisitions, credit default swaps (CDS) trading, foreign bank entry and covenant violations affect borrowers' disclosure behaviour (Gormley et al. 2012; Lo 2014; Vashishtha 2014; Martin and Roychowdhury 2015; Chen and Vashishtha 2017; Kim et al. 2018). My study extends this literature by showing that bankruptcy—an important event in the debt market—has significant effects on corporate disclosure behaviour. Third, this study adds to the literature that investigates the effects of bank reputation. Prior studies show that banks' reputation plays an important role in signalling banks' ability and certifying borrowers' future prospects (e.g. Chemmanur and Fulghieri 1994; Billett et al. 1995; Fang 2005; Ross 2010; Gopalan et al. 2011; Lin and Paravisini 2011; Bushman and Wittenberg-Moerman 2012). These studies find that banks' reputation conveys information about the quality of banks' screening and monitoring standards, which in turn certifies borrower quality. My study suggests that, by damaging banks' reputations in performing monitoring activities, bankruptcy imposes significant effects on the disclosure behaviour of non-bankrupt firms.

2.2 Literature Review and Hypothesis Development

2.2.1 Spillover Effects of Bankruptcy

Corporate bankruptcy is the process by which financially distressed firms resolve their debt (White 2005). It plays an important role in the economy, as the process of bankruptcy not only has significant effects on the firms that file for bankruptcy, but also imposes externalities on a wide range of stakeholders. Extant research finds a spillover effect of corporate bankruptcy on firms in the same industry. For example, an early study by Lang and Stulz (1992) shows that, on average, the industry peers of bankrupt firms experience negative stock market reactions following bankruptcy announcements, indicating that the bankruptcy announcements generally reveal negative information

[5] Note that other studies on the spillover effect of bankruptcy filings by a group of firms on their peer firms also focus on the relationship based on industry peers or geographic proximity (e.g. Lang and Stulz 1992; Ferris et al. 1997; Jorion and Zhang 2007; Hertzel and Officer 2012; Garcia-Appendini 2018; Shoag and Veuger 2018; Benmelech et al. 2019). In addition, those studies do not speak to the effect on corporate disclosure.

about firms in the same industry. Hertzel and Officer (2012) examine how bankruptcy affects the bank loans of firms that operate in the same industry. They find that, within two years of a bankruptcy filing, the spreads of new loans issued by the industry peers of the filing firm tend to increase. Garcia-Appendini (2018) finds a decrease in investment expenditures of industry peers following bankruptcy announcements. They argue that the bankruptcy of a firm increases the costs of external financing for its industry peers, which in turn leads to a decrease in investment expenditures.

In addition to industry peers, prior studies find that the spillover effects of bankruptcy extend to geographically proximate firms (Shoag and Veuger 2018; Benmelech et al. 2019; Bernstein et al. 2019). For example, Benmelech et al. (2019) show that, following the liquidation of a retail chain, its nearby stores are more likely to go out of business. They argue that the closure of a retail chain reduces the customer traffic to nearby stores, and therefore increases their financial distress. The current study examines whether the spillover effects of bankruptcy extend through the lending network by affecting the voluntary disclosure of non-bankrupt firms that share a common bank with the bankrupt firms.

2.2.2 Financial Intermediaries as Delegated Monitors

The seminal work by Diamond (1984) shows that financial intermediaries serve an important role as delegated monitors. More specifically, financial intermediaries raise money from depositors, lend it to borrowers and engage in costly monitoring on behalf of the depositors. Doing so resolves the free-rider problem (in which case, no one monitors), as well as the duplicative monitoring problem (in which case, multiple investors perform the same monitoring activities). In addition, Leland and Pyle (1977) suggest that financial intermediaries can attenuate the problem of information asymmetry because they have economies of scale in producing private information. Financial intermediaries can serve as delegated monitors not only for their depositors, but also for other stakeholders—particularly shareholders. Triantis and Daniels (1995) argue that, because banks and shareholders share a common goal of constraining opportunistic managerial behaviour, such as shirking, empire-building and excessive managerial compensation, when banks' monitoring deters such behaviour, it produces positive externalities that benefit shareholders. Thus, it is beneficial for shareholders to delegate part of the costly monitoring activities to banks.

Recent empirical studies suggest that shareholders adjust their reliance on delegated monitoring based on the level of monitoring performed by banks. For example, Vashishtha (2014) finds that firms decrease public information disclosure after violating debt covenants. He argues that, after financial covenant violations, banks tend to monitor borrowers more closely to facilitate the subsequent intervention. To avoid duplicating the costly monitoring activities, shareholders will decrease their own monitoring efforts and demand less public information. In response to the decreased information demand, firms disclose public information less frequently following covenant violations. Chen and Vashishtha (2017) find that firms' public information disclosure increases after bank mergers and acquisitions (M&As). They argue that, compared with large banks, small banks with limited hierarchical structures are more likely to monitor borrowers by producing private and 'soft' information (information that is non-standardised and difficult to be credibly communicated). After M&As, banks become larger and more hierarchical; thus, they produce less private information. Given that banks' comparative advantage in monitoring mainly stems from the private and soft information processing ability, after M&As, other investors rely less on bank monitoring and demand more public information. In response to the increased information demand, borrowers disclose more public information.

Martin and Roychowdhury (2015) find that CDS-referenced firms exhibit lower reporting conservatism after the initiation of CDS contracts. They argue that, since CDS-protected lenders are reimbursed when their borrowers default, they have lower incentives to protect their claims by performing continuous monitoring, and have lower demand on conservative accounting information. Moreover, CDS-protected lenders have stronger bargaining power in renegotiations; thus, their borrowers tend to be unwilling to report conservatively to trigger renegotiations. As a result, the reporting conservatism tends to decrease after CDS trade initiation. Kim et al. (2018) find that, after the initiation of CDS contracts, CDS-referenced firms tend to increase information disclosure. They suggest that a bank's monitoring incentives tend to decrease after it hedges its credit risk exposure by entering into a CDS contract. Given that shareholders rely less on CDS-protected banks to perform monitoring duties, they must collect additional public information to facilitate their own monitoring. Consequently, the public information disclosure of CDS-referenced borrowers will increase. In summary, prior studies argue that shareholders delegate part of the monitoring activities to banks,

and the extent of such delegation depends on the level of bank monitoring. My study examines whether shareholders adjust their reliance on bank monitoring and demand more public disclosure from non-bankrupt firms when large corporate bankruptcies potentially reveal inadequate monitoring practices of banks.

2.2.3 Reputation and Perceived Monitoring Quality of Financial Intermediaries

A problem with delegated monitoring is that the monitoring activities of financial intermediaries are unobservable to outsiders (e.g. Lee and Mullineaux 2004; Sufi 2007; Gopalan et al. 2011); thus, shareholders are uncertain about the quality of delegated monitoring. Prior studies suggest that investors evaluate the screening and monitoring quality of a financial intermediary based on its reputation. More specifically, Chemmanur and Fulghieri (1994) show that investment banks with better reputations tend to employ more rigorous screening standards. They argue that, because the amount of resources that investment banks spend in screening equity issuers is unobservable, investors must evaluate investment banks' screening quality based on their past performance. Although setting rigorous screening standards is costly in the short term, it increases the chance of denying issuers with poor prospects and thus helps investment banks build a strong reputation in the long term. In equilibrium, investment banks that employ more rigorous screening standards enjoy a better reputation and are more likely to engage with high-quality issuers. Therefore, the reputation of investment banks signals the quality of their screening standards, as well as the quality of their issuers.

Bushman and Wittenberg-Moerman (2012) find that, in the syndicated loan market, borrowers whose loans are syndicated by more reputable lead arrangers tend to realise higher future profitability. They suggest that, because reputable lead arrangers employ more rigorous screening and monitoring standards, they can better guarantee that their borrowers have higher quality at the loan inception and better performance during the terms of the loan. Given that the reputation of a bank indicates its screening and monitoring quality, when the reputation of a bank is damaged, less informed investors will question the bank's screening and monitoring ability. Consistent with this view, Gopalan et al. (2011) find that, after experiencing reputation loss, a lead arranger must retain larger fractions of the loan it syndicates and is less likely to attract participant banks in the future. They argue that participant banks tend to perceive the screening and monitoring quality of a reputation-damaged lead arranger to be lower, and are less

willing to delegate the screening and monitoring activities to it. Similarly, Lin and Paravisini (2011) find that lead arrangers retain larger fractions of the loans they syndicate after the discovery of fraud by their borrowers. They argue that the failure to report their borrowers' frauds indicates poor monitoring quality of lead arrangers. Therefore, the reputation-damaged lead arrangers must retain larger fractions of loans they syndicate to attract participant banks in the future. These studies suggest that investors evaluate the screening and monitoring quality of banks based on their reputation. It is unclear whether borrowers take action to respond to such reputation damage of their banks by varying their disclosure behaviour to the public.

2.2.4 Channels through Which Bankruptcy Affects Disclosure Behaviour

2.2.4.1 Monitoring Channel

As previously discussed, since banks serve an important role as delegated monitoring in the financial market, less informed investors, such as shareholders, can delegate at least part of the monitoring activities to banks (Leland and Pyle 1977; Diamond 1984; Triantis and Daniels 1995). However, because banks' monitoring activities are unobservable (e.g. Lee and Mullineaux 2004; Sufi 2007), shareholders are uncertain about the monitoring quality of banks. To overcome this problem, investors often evaluate banks' monitoring quality based on their reputation (e.g. Gopalan et al. 2011; Bushman and Wittenberg-Moerman 2012). Prior studies suggest that shareholders adjust their reliance on delegated monitoring and public information-based monitoring according to the perceived monitoring quality of banks (Vashishtha 2014; Chen and Vashishtha 2017; Kim et al. 2018). Specifically, when the monitoring quality of a bank is perceived to be low, shareholders rely less on the bank's monitoring and will demand more public information to perform their own monitoring. In response to the increased information demand, borrowers will increase voluntary disclosure. Given that large bankruptcies indicate poor bank performance and inadequate monitoring practices, the reputation of a bank is damaged when a large proportion of the loans from its loan portfolio are lent to bankrupt firms (Gopalan et al. 2011). Therefore, after a bank experiences large bankruptcies, shareholders will rely less on the bank's monitoring, which in turn leads the non-bankrupt firms of the bank to increase voluntary disclosure.

2.2.4.2 Financing Channel

Prior studies suggest that relationship lending is an important way for banks and borrowers to resolve the problem of information asymmetry (e.g. Boot 2000; Elyasiani and Goldberg 2004). More specifically, a long-term lending relationship gives banks more opportunities to gather borrower-specific private information (Boot 2000). Moreover, repeated interactions with the same borrower increase the information reusability over time, making private information production more worthwhile, and thus increasing banks' incentives to produce private information (Petersen and Rajan 1995). Prior studies show that relationship lending increases credit availability to borrowers. For example, Petersen and Rajan (1994) find that the length of lending relationships is positively associated with borrowers' credit availability. Cole (1998) finds that banks are more likely to extend credit to borrowers that have previous relationships. When the financial health of banks deteriorates, their lending ability tends to decrease, forcing their relationship borrowers to seek other sources of financing. Chava and Purnanandam (2011) use the Russian crisis in 1998 as an exogenous shock to the capital of US banks, and find that the performance of the bank-dependent borrowers decreases following the capital shocks of their main banks. They argue that an adverse capital shock to banks limits their borrowers' ability to raise external funds, and therefore negatively affects borrowers' performance. Becker and Ivashina (2014) show that borrowers tend to switch from bank loans to the public bond market when banks decrease credit supply because of tight lending standards and high levels of nonperforming loans.

Prior studies have long shown that firms tend to increase information disclosure to decrease information asymmetry before issuing new capital (e.g. Ruland et al. 1990; Marquardt and Wiedman 1998; Lang and Lundholm 2000). Therefore, when borrowers turn to other sources of financing after their lending relationships are disrupted, they will disclose more information. Consistent with this view, Lo (2014) finds that, following large declines in bank financial health due to emerging-market financial crises, borrowers tend to disclose more public information. He argues that banks are relationship banks that rely on private information to reduce information asymmetries. When declines in financial health limit banks' lending ability, their relationship borrowers must increase public disclosures to obtain other sources of financing. Given that bankruptcies mechanically lead to a decline in banks' financial health, the ability of a bank to provide credit tends to decrease after it experiences large bankruptcies. To offset the lost credit, the non-bankrupt borrowers of the bank will seek alternative

sources of financing. Compared with borrowers' relationship banks, it is more difficult for the alternative financiers to obtain private information from borrowers. To facilitate access to alternative financing sources, I expect borrowers to increase voluntary disclosure following large bankruptcies. Taken together, both the monitoring and the financing channel predict an increase in the voluntary disclosure of non-bankrupt borrowers after their banks experience large bankruptcies. Therefore, I formally state the study hypothesis as follows:

> **Hypothesis**: Large bankruptcies lead to an increase in the voluntary disclosures of non-bankrupt firms that share common banks with bankrupt firms.

2.3 Research Design

2.3.1 Identifying Firms Exposed to Spillover Effects of Bankruptcy

I first identify banks that are exposed to large-scale bankruptcies following Gopalan et al. (2011). More specifically, for each borrower that files for Chapter 11 bankruptcy, I identify all its outstanding loans at the bankrupt filing date based on the loan starting and maturity dates in DealScan. Next, I identify the lead arranger of each syndicated loan based on the variable *LeadArrangerCredit* in the 'Lendershares' dataset from DealScan. A lead arranger is deemed to be an 'exposed bank' in a given year if the amount of the outstanding loans it lent to bankrupt borrowers in the year is larger than 10% of the average annual loan amount it arranged over the previous two years, where annual loan amount is the aggregated amount of all outstanding loans of a lead arranger in a year. Consistent with Gopalan et al. (2011), I use 10% as the threshold because banks are expected to experience some bankruptcy cases as their normal business practices, which are less likely to have significant effects on banks' reputation or lending ability.

I next define the treatment and control groups in my study. Specifically, among all non-bankrupt firms (firms that have not filed for any bankruptcy), I classify those with outstanding loans borrowed from the exposed banks as the treatment group, and others as the control group. For example, if bank X is exposed to large-scale bankruptcies in the year 2003, and non-bankrupt firm A holds an outstanding loan borrowed from bank X, which starts in the year 2000 and matures in 2005, then firm A belongs to the

treatment group from 2003 to 2005, and belongs to the control group before 2003 or after 2005. If non-bankrupt firm B never holds any outstanding loan from exposed banks, it constantly belongs to the control group. I construct the variable of interest in my baseline analysis, *Bankruptcy*, as an indicator variable that equals one for the treatment group, and zero for the control group. The non-bankrupt firms that have ever (never) been included in the treatment group are referred to as 'exposed borrowers' ('non-exposed borrowers'). In addition, to remove macroeconomic factors that simultaneously affect corporate financial distress and voluntary disclosure, during the period when an exposed borrower holds outstanding loans from an exposed bank, I exclude the firm-year observations when the exposed borrower and bankrupt borrowers operate in the same two-digit Standard Industrial Classification (SIC) industry or are headquartered in the same state.[6]

2.3.2 Measurement of Voluntary Disclosure

I use three proxies for voluntary disclosures: number of voluntary items (*NumItemsVol*), number of voluntary exhibits (*NumExhibitsVol*) and word counts (*WordCount*) in 8-K filings. The variable *NumItemsVol* is calculated as the natural logarithm of one plus the number of voluntary items in 8-K filings disclosed in a year. Based on the definitions provided by the Securities and Exchange Commission, in the post-2004 period, item numbers 2.02, 7.01 and 8.01 in 8-K filings can be classified as voluntary, while other items can be classified as mandatory (He and Plumlee 2020). In the pre-2004 period, item numbers 5, 9 and 12 are classified as voluntary, while other items are mandatory (Bourveau et al. 2018). The variable *NumExhibitsVol* is the natural logarithm of one plus the number of voluntary exhibits in 8-K filings disclosed in a year. To classify exhibits into voluntary and mandatory, I match the exhibits to their corresponding items, and classify the exhibits based on their corresponding items following He and Plumlee (2020). First, when an 8-K filing contains only voluntary or mandatory items, all exhibits are classified based on their corresponding items. When an 8-K filing contains both voluntary and mandatory items, exhibit 99s are classified as voluntary as long as the filing contains any voluntary items. Next, I classify the remaining exhibits 20 and 25 as voluntary regardless of their corresponding items. All other exhibits are classified as

[6] When an exposed borrower is associated with multiple exposed banks or bankrupt borrowers in a single year, I exclude the firm-year observation as long as there is one bankrupt borrower operating in the same industry or state with the exposed borrower.

mandatory. Finally, the variable *WordCount* is calculated as the natural logarithm of one plus the number of words in 8-K filings disclosed in a year. I do not distinguish whether an 8-K filing is voluntary or mandatory to calculate *WordCount* as a proxy for voluntary disclosure because, although this variable may capture mandatory items, managers have discretion regarding the length and detail in both voluntary and mandatory items.

2.3.3 Model Specification

Consistent with Bertrand and Mullainathan (2003), I employ the following model. Specifically, I use the following regression to examine the spillover effects of large-scale bankruptcies:

$$Disclosure_{i,t} = \beta_0 + \beta_1 Bankruptcy_{i,t} + \beta_2 Loss_{i,t} + \beta_3 Cov_{i,t} + \beta_4 Issue_{i,t} + \beta_6 Size_{i,t} + \beta_7 MB_{i,t} + \beta_8 ROA_{i,t} + \beta_9 Ret_{i,t} + \beta_{11} VolEPS_{i,t} + \beta_{12} RD_{i,t} + \beta_{14} Inst_{i,t} + \alpha_i + \gamma_t + \varepsilon_{i,t} \quad (1)$$

where i indexes non-bankrupt firms, t indexes year, *Disclosure* represents the three variables of voluntary disclosure, and the test variable *Bankruptcy* is an indicator variable equal to one for the treatment group and zero for the control group. In my baseline specification of Equation (1), I include firm fixed effects (α_i) and year fixed effects (γ_t). Firm fixed effects account for time-invariant or slow-moving firm characteristics (e.g. normal disclosure practices and policy), while year fixed effects control for unobserved heterogeneity that varies across time (e.g. economic conditions). The coefficient on *Bankruptcy*, β_1, captures the average spillover effect of bankrupt borrowers for the treatment group relative to the control group.

To further ensure the results are not driven by omitted time-varying factors, I also include a set of control variables. Specifically, I control for firm size (*Size*) because prior studies find that large firms tend to disclose more information (Kasznik and Lev 1995; Lundholm and Lang 1996). I control for institutional ownership (*Inst*) because prior research finds a positive association between institutional ownership and voluntary disclosure (Ajinkya et al. 2005). I include earnings volatility (*VolEPS*) as a control variable because firms with stable earnings disclose more information (Waymire 1985). I control for research and development (R&D) expenditures (*RD*) and the market-to-book (*MB*) ratio because firms with higher growth opportunities and more proprietary information are less likely to disclose information (Bamber and Cheon 1998). I control

for equity issuance (*Issue*) because firms that attempt to obtain external financing are more likely to disclose information (Frankel et al. 1995). I control for analyst coverage (*Cov*) because firms followed by more analysts are more likely to issue voluntary disclosures (Lang and Lundholm 1993; Soffer et al. 2000; Ajinkya et al. 2005). I also include the return on assets (*ROA*), stock returns (*Ret*) and a loss indicator (*Loss*) to control for the effect of firm performance on corporate disclosure (Miller 2002; Lennox and Park 2006; Chen et al. 2011). All continuous variables are winsorised at the 1% and 99% levels. I cluster standard errors at the firm level. Detailed variable definitions are provided in Appendix A.

2.4 Sample Selection and Descriptive Statistics

2.4.1 Sample Selection

I obtain data of debt contracts from Reuters Loan Pricing Corporation's DealScan database; bankruptcy filings data from the University of California, Los Angeles (UCLA) LoPucki Bankruptcy Research Database;[7] financial data from Standard and Poor's Compustat database; stock price and return data from the Center for Research in Security Prices (CRSP); and institutional ownership data from the 13-F filings by Thomson Financial. The sample period of this study is 1999 to 2018. More specifically, I examine the disclosure behaviour of firms from 1999 to 2018. However, because loans and bankruptcy filings in earlier years may affect the identification of banks and borrowers exposed to bankruptcy, I use all the loan information from DealScan and bankruptcy information from LoPucki to identify the exposed banks and exposed borrowers.

I include all the loan packages from DealScan with at least one lender. For loans with multiple lenders (i.e. syndicated loans), I focus on the lead arrangers because they contribute the most to the monitoring activities. For loan packages with multiple lead arrangers, following prior studies (e.g. Nini et al. 2009; Gopalan et al. 2011), I keep multiple observations for a loan package. Each observation corresponds to a specific package–lead arranger pair, which yields 482,902 package–lead arranger observations. I then match DealScan and Compustat using the linking table provided by Chava and

[7] The LoPucki database contains bankruptcies information for large public companies with reported assets of US$100 million or more in 1980 dollars.

Roberts (2008), which yields 239,637 observations. Next, I merge the bankruptcy data from LoPucki with the DealScan-Compustat matched sample. For borrowers with more than one bankruptcy filing, I keep multiple bankruptcy filings for a borrower, which leads to a slight increase in my sample and yields 6,109 unique lenders and 240,907 package–lender observations.

I then begin my sample selection procedure with all firm-year observations from Compustat for 1999 to 2018 (261,580 firm-year observations). First, to ensure that my sampling firms are not fundamentally different from each other, I exclude firms without any loan covered by DealScan. Second, I exclude firms that ever filed bankruptcies from 1999 to 2018. Third, I exclude firm-year observations from the treatment group if the exposed borrowers and bankrupt borrowers are in the same two-digit SIC industry or headquarters state (Murfin 2012; Gao et al. 2016). Fourth, I exclude firms in the finance or utility industry, and delete potentially erroneous observations with plant, property and equipment (PPE) ratio or leverage ratio larger than one. My final sample includes 23,726 firm-year observations of 3,215 unique firms, covering the period 1999 to 2018. Details of my sample selection procedure are presented in Table 2.1.

Table 2.1: Sample Selection Procedure

Firm-year observations from Compustat, from 1996 to 2018	223,956
Less: Firm-year observations with total assets that are missing	38,736
Less: Firm-year observations without any loan covered by DealScan	86,932
Less: Firms that ever experienced any bankruptcy during the sample period	1,848
Less: Firm-year observations where the treated firms and bankrupt firms are in the same state or industry	4,886
Less: Firm-year observations where leverage ratio or PPE ratio is larger than one	3,467
Less: Firms that operate in the finance or utility industry	19,543
Less: Firm-year observations without 8-K filings information	20,174
Less: Firm-year observations without control variable information	24,644
Final sample	23,726

Note. This table describes the sample selection procedure. The final sample includes 23,726 firm-year observations

2.4.2 Descriptive Statistics

Panel A of Table 2.2 presents a summary of the number of bankruptcy filings, number of banks that experienced large-scale bankruptcies, and number of exposed borrowers in each year during my sample period. Column (1) reports the number of Chapter 11

bankruptcy filings. The UCLA LoPucki Database includes information of 764 Chapter 11 bankruptcy filings from 1999 to 2018. After merging the bankruptcy data from the UCLA LoPucki Database to the DealScan-Compustat matched sample, I identify the 'exposed banks' and report the number of the exposed banks in column (2). Column (3) reports the number of exposed borrowers in each year over the sample period. In Table 2.2, Panel B, I present the number of borrowers exposed to large-scale bankruptcies by industry. The industry classification follows the Fama-French 30 industries. Panel C of Table 2.2 presents the descriptive statistics for all variables employed in my main tests. All non-logarithmic continuous variables are winsorised at the 1st and 99th percentiles. The distribution of the raw values of 8-K items, exhibits and word counts is generally consistent with that of He and Plumlee (2020), while the distribution control variables are generally consistent with those of prior studies, such as those by Aobdia (2018), Bourveau et al. (2018) and Kim et al. (2018). [8]

Table 2.2: Descriptive Statistics

Panel A: Distribution of Chapter 11 bankruptcy filings, large-scale bankruptcy-experienced lenders and exposed borrowers by year

	(1)	(2)	(3)
Year	Number of Chapter 11 bankruptcy filings	Number of exposed banks	Number of exposed borrowers
1999	40	16	69
2000	72	17	65
2001	92	33	135
2002	77	25	82
2003	60	23	150
2004	29	9	45
2005	26	15	26
2006	13	3	8
2007	13	1	10
2008	35	7	93
2009	84	31	316
2010	27	14	45
2011	23	10	35

[8] A potential explanation is that lead arrangers might be particularly busy in some years to originate loans. Untabulated statistics show that the total number of loans and the average number of loans a lead arranger syndicate increase gradually from the year 1999 to 2018. Therefore, it seems that banks are not particularly busy in originating loans in any specific years. Nevertheless, I acknowledge that the number of bankruptcy filings are very large in the year 2001 and 2009. In these years, banks might be distracted by bankruptcy cases, which in turn decreases bank monitoring quality. This is an alternative explanation.

2012	23	3	17
2013	23	10	22
2014	16	7	140
2015	25	2	15
2016	41	16	51
2017	27	11	42
2018	18	3	14
Total	764	256	1,380

Panel B: Distribution of exposed borrowers by industry

Industry	Frequency	Percentage
Food products	49	3.55
Beer and liquor	8	0.58
Tobacco products	5	0.36
Recreation	49	3.55
Printing and publishing	19	1.38
Consumer goods	25	1.81
Apparel	30	2.17
Healthcare and medical equipment	109	7.9
Chemicals	43	3.12
Textiles	9	0.65
Construction and construction materials	59	4.28
Steel works, etc.	32	2.32
Fabricated products and machinery	71	5.14
Electrical equipment	16	1.16
Automobiles and trucks	21	1.52
Aircraft, ships and railroad equipment	20	1.45
Precious metals, non-metallic	15	1.09
Coal	6	0.43
Petroleum and natural gas	50	3.62
Communication	48	3.48
Personal and business services	162	11.74
Business equipment	139	10.07
Business supplies and shipping container	47	3.41
Transportation	42	3.04
Wholesale	86	6.23
Retail	153	11.09
Restaurants, hotels, motels	39	2.83
Everything else	28	2.03
Total	1,380	100

Panel C: Summary statistics						
	N	Mean	SD	p25	p50	p75
NumItemsVol	23,726	2.461	0.755	2.197	2.565	2.890
NumItemsMan	23,726	1.739	0.974	1.099	1.946	2.485
NumExhibitsVol	23,022	2.006	0.661	1.609	1.946	2.398
NumExhibitsMan	23,022	1.287	0.915	0.693	1.386	1.946
WordCount	23,467	8.649	1.306	7.950	8.620	9.288
Bankruptcy	23,726	0.161	0.368	0.000	0.000	0.000
Loss	23,726	0.256	0.437	0.000	0.000	1.000
Cov	23,726	2.202	0.790	1.609	2.197	2.833
Issue	23,726	0.858	0.349	1.000	1.000	1.000
Size	23,726	6.820	1.836	5.572	6.733	7.950
MB	23,726	1.726	1.362	0.880	1.305	2.061
ROA	23,726	0.012	0.151	-0.002	0.044	0.082
Ret	23,726	0.001	0.002	0.000	0.001	0.002
VolEPS	23,726	0.299	0.263	0.114	0.212	0.396
Inst	23,726	0.686	0.248	0.533	0.741	0.883
RD	23,726	0.042	0.076	0.000	0.003	0.052

Note. Panel A presents the number of Chapter 11 bankruptcy filings, number of large-scale bankruptcy-experienced lenders and number of exposed borrowers in each year during my sample period. Panel B presents the number of exposed borrowers in each industry. The industry classification follows Fama-French 30 industries. Panel C provides the summary statistics for the key variables in my main test. The sample period is 1999 to 2018. All continuous variables are winsorised at the 1st and 99th percentiles. See Appendix A for detailed variable definitions.

2.5 Empirical Results

2.5.1 Main Tests

Table 2.3 presents the results based on Eq. (1). Given that including control variables may undermine the ability to draw causal inferences (Gormley and Matsa 2014), I only control for firm and year fixed effects in the first three columns. In columns (1), (2) and (3), I use *NumItemsVol*, *NumExhibitsVol* and *WordCount* as dependent variables, respectively. Consistent with my expectation, the coefficients of *Bankruptcy* are significant and positive in columns (1), (2) and (3), indicating that, following large-scale bankruptcies, treatment firms issue more voluntary disclosure relative to control firms. Specifically, the coefficients on *Bankruptcy* are 0.044 (t = 3.45), 0.031 (t = 2.31) and 0.058 (t = 2.79) when the dependent variables are *NumItemsVol*, *NumExhibitsVol* and *WordCount*, respectively. In columns (4), (5) and (6), I add a set of time-variant control variables, and find that the coefficients of *NumItemsVol*, *NumExhibitsVol* and

WordCount remain positive and significant. The coefficients on *Bankruptcy* are 0.041 (t = 3.24), 0.029 (t = 2.14) and 0.053 (t = 2.54) when the dependent variables are *NumItemsVol*, *NumExhibitsVol* and *WordCount*, respectively. The coefficient estimates of the financial control variables are generally consistent with prior studies (e.g. Bourveau et al. 2018). In terms of the economic significance of our results, our estimation reveals that following large-scale bankruptcies, the number of voluntary 8K items, exhibits, and word counts increase by 4.58%, 3.4%, and 5.44%, respectively. Indicating that our documented effects are economically meaningful. Overall, the main results suggest that large-scale bankruptcies lead treatment firms to increase voluntary disclosure.

Table 2.3: Spillover Effects of Large-scale Bankruptcy on Voluntary Disclosure

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	NumItemsVol	*NumExhibitsVol*	*WordCount*	*NumItems Vol*	*NumExhibits Vol*	*WordCount*
Bankruptcy	0.044***	0.031**	0.058***	0.041***	0.029**	0.053**
	(3.45)	(2.31)	(2.79)	(3.24)	(2.14)	(2.54)
Loss				0.024*	0.009	0.073***
				(1.90)	(0.71)	(3.47)
Cov				0.042***	0.026*	0.036
				(2.84)	(1.69)	(1.59)
Issue				0.035**	0.030*	0.035
				(2.27)	(1.87)	(1.40)
Size				0.030***	0.043***	0.048***
				(2.67)	(3.76)	(2.74)
MB				-0.016**	-0.025***	-0.043***
				(-2.53)	(-3.75)	(-4.33)
ROA				-0.198***	-0.217***	-0.366***
				(-4.11)	(-4.55)	(-4.82)
Ret				-4.179*	1.695	2.378
				(-1.86)	(0.73)	(0.63)
VolEPS				0.063***	0.033	0.055
				(2.64)	(1.43)	(1.53)
Inst				0.248***	0.136***	0.172**
				(5.25)	(2.92)	(2.53)
RD				-0.044	-0.107	-0.574**
				(-0.27)	(-0.66)	(-2.31)

Firm fixed effects	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Observations	23,726	23,022	23,467	23,726	23,022	23,467
R-squared	0.676	0.569	0.673	0.680	0.573	0.676

Note. This table reports the effects of large-scale bankruptcies on the disclosure behaviour of non-bankrupt firms that share common lenders with bankrupt firms. All continuous variables are winsorised at the 1st and 99th percentiles. Robust *t*-statistics are reported in parentheses, calculated based on standard errors obtained by clustering at the firm level. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

2.5.2 Partition Tests

Next, I investigate how the spillover effects of bankruptcy on voluntary disclosure vary cross-sectionally. Specifically, I examine whether the effects of large-scale bankruptcies on the voluntary disclosure of treatment firms are stronger when shareholders have greater reliance on delegated monitoring prior to bankruptcies, and when bankruptcies cause a larger decline in lender capital.

2.5.2.1 Lender Monitoring Channel

The lender monitoring channel predicts a larger spillover effect of bankruptcy on voluntary disclosure when lenders' monitoring is perceived as intensive, and shareholders have greater reliance on delegated monitoring prior to bankruptcies. Financial covenants are an important tool for lenders to monitor borrowers (Rajan and Winton 1995; Dichev and Skinner 2002; Nini et al. 2009; Christensen et al. 2016). Prior studies suggest that financial covenants are used as 'trip wires' that give lenders the option to recall loans or renegotiate with borrowers (Rajan and Winton 1995; Dichev and Skinner 2002; Christensen and Nikolaev 2012). Rajan and Winton (1995) argue that the use of financial covenants motivates lenders to perform intensive monitoring. They suggest that, without intensive monitoring and information collection, lenders cannot know whether the covenants are violated and which actions they should take after covenant violations. Consistent with this view, Chen and Vashishtha (2017) use the number of financial covenants as a proxy for shareholders' reliance on lenders' monitoring activities. Demiroglu and James (2010) and Murfin (2012) suggest that stricter financial covenants are associated with more intensive lender monitoring. Therefore, I argue that shareholders have greater reliance on lenders' monitoring when debt contracts contain more financial covenants and when financial covenants are stricter.

I obtain the number of financial covenants from DealScan. Following Irani and Oesch (2016), I construct two indicator variables, *High_Covnum (Low_Covnum*), which equals one when the number of financial covenants (*Covnum*) is above (below) the median of treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether the number of covenants is above or below the median, and estimate the differential treatment effects between the two groups by interacting the two indicator variables with *Bankruptcy*. Consistent with my expectation, the results in Panel A of Table 2.4 show that the coefficients of *Bankruptcy* × *High_Covnum* are positive and significant for all three dependent variables, while the coefficients of *Bankruptcy* × *Low_Covnum* are less significant. The coefficients of *Bankruptcy* × *High_Covnum* are significantly larger than those of *Bankruptcy* × *Low_Covnum*.

I use the measure of covenant strictness (*Pviol*) developed by Demerjian and Owens (2016).[9] This measure is based on the simulated probability of covenant violation of a loan package at the loan inception. A higher probability of violation indicates that the covenants in a loan package are set stricter. I construct two indicator variables, *Bankruptcy* × *High_Pviol* (*Bankruptcy* × *Low_Pviol*), which equals one when the level of covenant strictness is above (below) its median among treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether the covenant strictness is above or below its median, and interact the two indicator variables with the variable *Bankruptcy*. In Panel B of Table 2.4, for all three dependent variables, the coefficients of *Bankruptcy* × *High_Pviol* are positive and significant, while those of *Bankruptcy* × *Low_Pviol* are insignificant. The coefficients of *Bankruptcy* × *High_Pviol* are significantly larger than those of *Bankruptcy* × *Low_Pviol*.

Prior research suggests that a better information environment of a firm alleviates the information asymmetry between insiders and outsiders (e.g. Frankel and Li 2004). Given that lenders are able to access private information from borrowers, they are deemed as insiders relative to less informed public capital providers. Therefore, it is reasonable to expect that shareholders are more reliant on lenders' monitoring when borrowers have a poorer information environment. I construct two indicator variables,

[9] I thank Associate Professor Owens for sharing this measure on his website.

Bankruptcy × *High_Cov* (*Bankruptcy* × *Low_Cov*), which equals one when the level of financial analyst coverage (*Cov*) is above (below) its median among treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether analyst coverage is above or below its median, and interact the two indicator variables with the variable *Bankruptcy*. In Panel C of Table 2.4, the coefficients of *Bankruptcy* × *Low_Cov* are positive and significant, while those of *Bankruptcy* × *High_Cov* are insignificant. The coefficients of *Bankruptcy* × *Low_Cov* are significantly larger than those of *Bankruptcy* × *High_Cov*.

I next compute two indicator variables, *Bankruptcy* × *High_Disp* (*Bankruptcy* × *Low_Disp*), which equals one when analysts' earnings forecast dispersion (*Disp*) is above (below) its median among treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether analyst forecast dispersion is above or below its median, and interact the two indicator variables with the variable *Bankruptcy*. In Panel D of Table 2.4, for all three dependent variables, the coefficients of *Bankruptcy* × *High_Disp* are positive and significant, while those of *Bankruptcy* × *Low_Disp* are insignificant. The coefficients of *Bankruptcy* × *High_Disp* are significantly larger than those of *Bankruptcy* × *Low_Disp*. Overall, these results suggest that the spillover effects of bankruptcies on voluntary disclosure are larger when lenders are perceived to have greater monitoring intensity and when borrowers have a poorer information environment.

2.5.2.2 Lender Financial Health Channel

Prior studies argue that an adverse capital shock on lenders' financial health decreases their lending ability. To obtain alternative sources of financing, the relationship borrowers of the lenders that experience a deterioration in financial health will increase voluntary disclosure (Lo 2014). Consistent with this argument, I predict that the spillover effects of large-scale bankruptcies should be greater for lenders that experience a larger capital decline. I collect lender-related variables at the bank holding company (BHC) level from the Federal Reserve's Y-9C reports, and calculate lender capital ratio as lenders' total equity divided by total assets. I then calculate the change in lender capital ratio, which is the median of capital ratios for the three years after large-scale bankruptcies minus the median of capital ratios three years before the bankruptcy.

I construct two indicator variables, *Bankruptcy* × *High_Δcap* (*Bankruptcy* × *Low_Δcap*), which equals one when the change in lender capital ratio is above (below) its median among treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether the change in lender capital ratio is above or below its median, and interact the two indicator variables with the variable *Bankruptcy*. In Panel E of Table 2.4, for both dependent variables, the coefficients of *Bankruptcy* × *Low_Δcap* are positive and significant, while the coefficients of *Bankruptcy* × *High_Δcap* are insignificant. The coefficients of *Bankruptcy* × *Low_Δcap* are significantly larger than those of *Bankruptcy* × *High_Δcap*. This result indicates that bankruptcy affects voluntary disclosure through a decline of the financial health of lenders.

Prior studies suggest that, when the credit availability to borrowers is under threat, borrowers with more urgent financing need stronger incentives to increase voluntary disclosure (e.g. Chen and Vashishtha 2017; Sethuraman 2019). Therefore, I expect borrowers with more urgent financing needs to be more likely to increase voluntary disclosure after their lenders experience large-scale bankruptcies. Following Sethuraman (2019), I measure the urgency of a borrower's financing needs (*urgent*) by calculating the lagged ratio of its long-term debt due in one year to its total long-term debt. A higher value of *urgent* indicates more immediate financing needs of borrowers. I construct two indicator variables, *Bankruptcy* × *High_urgent* (*Bankruptcy* × *Low_urgent*), which equals one when the value of *urgent* is above (below) its median among treatment firms, and zero otherwise. I partition the treatment sample into two groups based on whether the value of *urgent* is above or below its median, and interact the two indicator variables with the variable *Bankruptcy*. In Panel F of Table 2.4, the coefficients of *Bankruptcy* × *Low_urgent* are positive and significant for all three dependent variables, while the coefficients of *Bankruptcy* × *High_urgent* are insignificant. The coefficients of *Bankruptcy* × *Low_urgent* are significantly larger than those of *Bankruptcy* × *High_urgent*. This result suggests that the spillover effects of bankruptcy are larger for firms with more urgent financing needs.

Table 2.4: Cross-sectional Tests

Panel A: Number of financial covenants			
	(1)	(2)	(3)

	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_Covnum*	0.073***	0.065***	0.064**
	(3.83)	(3.27)	(2.01)
Bankruptcy × *Low_Covnum*	0.024*	0.009	0.047**
	(1.69)	(0.61)	(1.96)
Diff. in coef.	0.010	0.006	0.320
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676
Panel B: Strictness of financial covenants			
	(1)	(2)	(3)
	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_Pviol*	0.086***	0.062***	0.097***
	(4.38)	(2.95)	(3.17)
Bankruptcy × *Low_Pviol*	0.011	0.013	-0.023
	(0.61)	(0.74)	(-0.71)
Diff. in coef.	0.001	0.029	0.002
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676
Panel C: Analyst coverage			
	(1)	(2)	(3)
	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_Cov*	0.020	0.008	0.047
	(1.20)	(0.43)	(1.60)
Bankruptcy × *Low_Cov*	0.060***	0.045***	0.058**
	(3.70)	(2.89)	(2.23)
Diff. in coef.	0.031	0.045	0.379
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676
Panel D: Analysts' earnings forecast dispersion			
	(1)	(2)	(3)

	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_Disp*	0.063***	0.043**	0.101***
	(3.87)	(2.56)	(4.10)
Bankruptcy × *Low_Disp*	0.016	0.008	-0.008
	(1.04)	(0.47)	(-0.30)
Diff. in coef.	0.006	0.036	0.000
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676
Panel E: Change in lender capital ratio			
	(1)	(2)	(3)
	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_Δcap*	0.020	0.013	0.015
	(1.21)	(0.72)	(0.56)
Bankruptcy × *Low_Δcap*	0.065***	0.058***	0.129***
	(3.32)	(2.95)	(4.13)
Diff. in coef.	0.026	0.026	0.001
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676
Panel F: Urgent financing needs			
	(1)	(2)	(3)
	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy × *High_urgent*	0.054***	0.059***	0.084***
	(3.45)	(3.50)	(3.06)
Bankruptcy × *Low_urgent*	0.015	-0.002	-0.006
	(0.98)	(-0.14)	(-0.23)
Diff. in coef.	0.016	0.001	0.001
Control variables	YES	YES	YES
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.679	0.573	0.677

Note. This table presents the cross-sectional variation in the effects of large-scale bankruptcies on the number of voluntary items, voluntary exhibits and length of 8-K filings of non-bankrupt firms that share common lenders with bankrupt firms. Panel A presents the effect of large-scale bankruptcies on voluntary

disclosure, conditional on the number of financial covenants. Panel B presents the effect of large-scale bankruptcies on voluntary disclosure, conditional on the strictness of financial covenants. Panel C presents the effect of large-scale bankruptcies on voluntary disclosure, conditional on the financial analyst coverage. Panel D presents the effect of large-scale bankruptcies on voluntary disclosure, conditional on the analysts' earnings forecast dispersion. Panel E presents the effect of large-scale bankruptcies on voluntary disclosure, conditional on the change in capital ratios of lenders around bankruptcies. Panel F presents the effect of large-scale bankruptcies on voluntary disclosure, conditional on the urgency of exposed borrowers' financing needs. *Diff. in coef.* reports the one-tailed *p*-values of the differences in the coefficients between *Bankruptcy* × *High* and *Bankruptcy* × *Low*. All continuous variables are winsorised at the 1st and 99th percentiles. Robust *t*-statistics are reported in parentheses, calculated based on standard errors obtained by clustering at the firm level. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

2.6 Additional Tests

2.6.1 Trend Analyses

A potential concern with our research design is that the increase in voluntary disclosure may occur before large-scale bankruptcies. To mitigate this concern, following Bertrand and Mullainathan (2003), I replace the variable *Bankruptcy* with five indicator variables. For example, *Bankruptcy (t = -1)* is an indicator variable that equals one for the year immediately before large-scale bankruptcies, and zero otherwise. The other four indicator variables are defined analogously. Table 2.5, Panel A, presents the results of the trend test. The coefficients of *Bankruptcy (t = 0)* and *Bankruptcy (t = +1)* are positive and significant, while the coefficients of *Bankruptcy (t = -2)*, *Bankruptcy (t = -1) and Bankruptcy (t = +2)* are statistically insignificant. This result indicates that the increase in voluntary disclosure does not occur before large-scale bankruptcies, and the increase in disclosure is temporary.

2.6.2 Mandatory 8-K Filings

Given that 8-K filings contain both voluntary and mandatory components, I am able to perform a placebo test. I argue that corporate bankruptcies only impose spillover effects on voluntary disclosure, yet do not affect mandatory disclosure. Consistent with Bourveau et al. (2018), I calculate variables *NumItemsMan* (the natural logarithm of one plus the number of mandatory items) and *NumExhibitsMan* (the natural logarithm of one plus the number of mandatory exhibits). In Panel B of Table 2.5, the coefficients of both dependent variables are statistically insignificant. The results of this placebo test show that large-scale bankruptcies do not have significant effects on mandatory disclosure.

2.6.3 Additional Dependent Variables

To triangulate the results of this study, I use the management earnings forecast frequency (*FreqMF*), length of MD&A section in 10-K filings (*LengthMDA*) and number of conference calls (*Con_call*) as additional proxies for voluntary disclosure. In Panel C of Table 2.5, the coefficients of all three dependent variables are positive and significant, which supports the results of my baseline analysis.

Table 2.5: Additional Tests

Panel A: Trend analyses of spillover effects of large-scale bankruptcy on voluntary disclosure			
	(1)	(2)	(3)
	NumItemsVol	*NumExhibitsVol*	*WordCount*
Bankruptcy (t = -2)	0.024	0.017	-0.010
	(1.17)	(0.82)	(-0.31)
Bankruptcy (t = -1)	0.006	0.011	-0.002
	(0.31)	(0.54)	(-0.06)
Bankruptcy (t = 0)	0.060***	0.062***	0.051
	(3.14)	(3.16)	(1.64)
Bankruptcy (t = +1)	0.074***	0.047**	0.088***
	(4.11)	(2.46)	(2.76)
Bankruptcy (t = +2)	0.040**	0.024	0.055*
	(2.39)	(1.39)	(1.84)
Loss	0.024*	0.009	0.073***
	(1.89)	(0.69)	(3.47)
Cov	0.042***	0.026*	0.035
	(2.85)	(1.70)	(1.58)
Issue	0.035**	0.029*	0.035
	(2.28)	(1.86)	(1.41)
Size	0.030***	0.043***	0.048***
	(2.66)	(3.76)	(2.76)
MB	-0.016**	-0.024***	-0.043***
	(-2.49)	(-3.72)	(-4.33)
ROA	-0.197***	-0.217***	-0.365***
	(-4.09)	(-4.55)	(-4.81)
Ret	-4.205*	1.630	2.440
	(-1.87)	(0.70)	(0.64)
VolEPS	0.063***	0.033	0.056
	(2.63)	(1.42)	(1.54)

Inst	0.248***	0.135***	0.173**
	(5.22)	(2.89)	(2.54)
RD	-0.041	-0.104	-0.572**
	(-0.26)	(-0.65)	(-2.30)
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	23,726	23,022	23,467
R-squared	0.680	0.573	0.676

Panel B: Spillover effects of large-scale bankruptcy on mandatory 8-K filings

	(1)	(2)
	NumItemsMan	*NumExhibitsMan*
Bankruptcy	-0.014	-0.023
	(-0.95)	(-1.28)
Loss	0.068***	0.082***
	(4.11)	(4.14)
Cov	0.017	0.009
	(1.01)	(0.45)
Issue	0.014	0.032
	(0.79)	(1.44)
Size	0.012	0.053***
	(0.97)	(3.44)
MB	-0.034***	-0.044***
	(-4.61)	(-5.12)
ROA	-0.274***	-0.362***
	(-4.98)	(-5.00)
Ret	2.347	6.631**
	(0.84)	(2.08)
VolEPS	0.052*	0.033
	(1.95)	(1.02)
Inst	0.108**	0.025
	(2.21)	(0.43)
RD	-0.483**	-0.921***
	(-2.55)	(-4.27)
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
Observations	23,726	23,022
R-squared	0.658	0.459

Panel C: Spillover effects of large-scale bankruptcy on management forecasts, length of MD&A and length of conference calls

	(1)	(2)	(3)
	FreqMF	*LengthMDA*	*Con_Call*
Bankruptcy	0.038**	0.062**	0.022**
	(2.14)	(2.39)	(2.56)
Loss	-0.080***	0.105***	-0.033***
	(-5.18)	(4.31)	(-3.63)
Cov	0.159***	0.030	0.165***
	(7.92)	(1.13)	(15.41)
Issue	0.031	0.002	-0.007
	(1.49)	(0.06)	(-0.62)
Size	0.120***	-0.008	0.043***
	(7.47)	(-0.34)	(4.95)
MB	-0.065***	0.003	-0.027***
	(-7.92)	(0.23)	(-5.09)
ROA	0.102*	-0.082	0.009
	(1.71)	(-0.83)	(0.26)
Ret	-14.583***	5.734	-3.331**
	(-6.22)	(1.43)	(-2.09)
VolEPS	-0.097***	0.231***	-0.035**
	(-3.22)	(4.84)	(-2.18)
Inst	0.148**	-0.025	0.113***
	(2.49)	(-0.32)	(3.31)
RD	0.285	-0.276	0.084
	(1.21)	(-0.99)	(0.69)
Firm fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Observations	25,918	21,896	21,137
R-squared	0.670	0.564	0.817

Note. This table reports the results of additional analyses that examine the spillover effects of large-scale bankruptcy on voluntary disclosure. Panel A presents the results of my trend analyses. *Bankruptcy (t = -2)* is an indicator variable that equals one two years before large-scale bankruptcies. *Bankruptcy (t = -1)* is an indicator variable that equals one for the year immediately before large-scale bankruptcies. *Bankruptcy (t = 0)* is an indicator variable that equals one for the year lenders experience large-scale bankruptcies. *Bankruptcy (t = +1)* is an indicator variable that equals one for the year immediately after large-scale bankruptcies. *Bankruptcy (t + 2)* is an indicator variable that equals one two years after large-scale bankruptcies. Panel B presents the results of placebo tests. *NumItemsMan* and *NumExhibitsMan* are the natural logarithm of one plus the number of mandatory items and mandatory exhibits in 8-K filings, respectively. Panel C presents the results of the spillover effects of large-scale bankruptcy on voluntary disclosure using the frequency of management forecasts, length of MD&A and length of conference calls. All continuous variables are winsorised at the 1st and 99th percentiles. Robust *t*-statistics are reported in parentheses, calculated based on standard errors obtained by clustering at the firm level. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

2.7 Conclusion

This study finds that borrowers tend to increase voluntary disclosure after their lenders experience large-scale bankruptcies. It suggests that bankruptcy has significant spillover effects on voluntary disclosure. Moreover, the spillover effects are larger when lenders have stronger monitoring intensity and when lenders experience a large capital decline. My study contributes to the literature examining the spillover effects of bankruptcy. Prior studies find that bankruptcy imposes externalities on industry peers and surrounding firms of borrowers that file for bankruptcy. This study shows that bankruptcy affects the corporate behaviour of firms through a common lending network in the syndicated loan market. This study also relates to the literature that investigates how the debt market affects corporate disclosure. Prior studies find that corporate disclosure is influenced by changes in lender capital level, bank M&As, CDS trading and covenant violations. In this study, I find that large-scale bankruptcies have a strong influence on voluntary disclosure. This study also contributes to the literature on lender reputation. Prior studies show that lender reputation plays an important role in certifying borrower quality, while this study finds that damage in lenders' monitoring reputation has strong effects on delegated monitoring and thus voluntary disclosure.

Nevertheless, this study has several limitations. First, I use large-scale bankruptcy as a proxy for bank reputation loss. A potential problem with this measure is that bankruptcy is mainly associated with banks' ability to manage credit risk, and may not reflect the ability to monitor financial statements. Second, bankruptcy cases often take a long time to resolve. Before filing a bankruptcy case, the market may have already received the information that a firm is near bankruptcy. Therefore, the results of this study need to be interpreted with caution.

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Appendix A: Variable Definitions

Variables	Definitions
NumItemsVol	Natural logarithm of one plus the number voluntary items in 8-K filings in a year.
NumItemsMan	Natural logarithm of one plus the number of mandatory items in 8-K filings in a year.
NumExhibitsVol	Natural logarithm of one plus the number voluntary exhibits in 8-K filings in a year.
NumExhibitsMan	Natural logarithm of one plus the number of mandatory exhibits in 8-K filings in a year.
WordCount	Natural logarithm of one plus the number of words in 8-K filings in a year.
FreqMF	Natural logarithm of one plus the number of management earnings forecasts made in a year.
LengthMDA	Natural logarithm of one plus the number of words in the MD&A section in a year.
Con_Call	Natural logarithm of one plus the number of conference calls in a year.
Bankruptcy	Indicator variable that equals one when a firm has outstanding loans borrowed from bankruptcy-experienced lenders, and zero otherwise. A lender is classified as bankruptcy-experienced when the amount of outstanding loans it lent to bankrupt borrowers in the year is larger than 10% of the average loan amount it syndicated in the previous two years.
Loss	Indicator variable that equals one if income before extraordinary items (*IB*) in the previous year is negative, and zero otherwise.
Cov	Natural logarithm of one plus the average of 12 monthly numbers of earnings forecasts in I/B/E/S.
Issue	Indicator variable that equals one if the sale of common and preferred stock (*SSTK*) of a firm is positive, and zero otherwise.
Size	Logarithm of market equity value (*PRCC_F*CSHO*).
MB	Beginning of year market value of equity (*PRCC_F*CSHO*) divided by beginning of year book value of equity (*CEQ*).
ROA	Return on assets, which is pre-tax income (*PI*) divided by lagged total assets (*AT*).
Ret	Average daily return over the fiscal year.
VolEPS	Standard deviation of the quarterly earnings per share (EPS) of the previous 12 quarters.
Inst	Percentage of stock held by institutional investors in a year.
RD	R&D expenditures (*XRD*) scaled by lagged assets (*AT*).
Pviol	Aggregate probability of covenant violation for all covenants in a loan package at the loan inception.
Covnum	Number of covenants in the loan packages between borrowers and the bankruptcy-experienced lenders.
Disp	Standard deviation of analyst EPS forecasts for the year divided by the closing share price.
Δcap	Mean value of capital ratios for the three years after large-scale bankruptcies minus the mean value of capital ratios three years before the bankruptcy, where lender capital ratio is calculated at the BHC level, as lenders' total equity divided by total assets.

Chapter 3: Effects of Bank Reputation on Investors' Perceptions of Borrowers' Reporting Credibility

3.1 Introduction

Assessing corporate financial reporting credibility is a crucial yet challenging task for equity investors (Dichev et al. 2013). Extant studies suggest that intermediaries specializing in assuring the quality of financial statements can signal their client firms' financial reporting credibility through their reputation (e.g., Teoh and Wong 1993; Moreland 1995; Lee and Masulis 2011). For example, investors typically infer audit quality and subsequently the credibility of the audited financial statements from auditors' reputation due to the auditor's role as a financial statement certifier and their ability to amass evidence and exercise professional judgment to challenge accounting estimates and assumptions (Teoh and Wong 1993). However, the incentives and expertise in monitoring financial statements are not limited to specialized financial statement certifiers. Extant studies suggest that, while not being directly responsible for the quality of financial statements, intermediaries such as underwriters, analysts, and banks, engage in extensive financial statement analyses and private information collection, which help curb managerial opportunism such as opportunistic reporting (e.g., Agrawal and Cooper 2010; Jo et al. 2007; Lee and Masulis 2011; Yu 2008). Thus, one natural question arises: Does the reputation of non-financial statement certifying intermediaries matter to investors' assessment of a firm's financial statement credibility? In this paper, I aim to answer this question by examining whether and how the reputation of commercial banks affects borrowers' financial reporting credibility.

Commercial banks are a powerful financial intermediary in the capital market.[10] As a significant capital provider to firms, banks enjoy privileged access to the firms (e.g., Nini et al. 2009; Roberts and Sufi 2009; Aier et al. 2014). Specifically, as part of their monitoring of a firm's credit risk, banks have special access to borrowers' financial records and rely on these records for target selection and to evaluate borrowers' ability to service debt. However, extant studies primarily focus on banks' role in managing

[10] In 2017, the total commercial and industrial (C&I) loans issued by commercial banks is $2.09 trillion (Board of Governors of the Federal Reserve System 2022) in the US, compared with only $220.3 billion for the total equity issuance (Kolchin et al. 2020, p13).

credit risk and examine the impact of their reputation on investors' assessment of the quality of loan monitoring (Ross 2010; Gopalan et al. 2011; Bushman and Wittenberg-Moerman 2012). Less is known about whether their reputations affect borrowers' financial reporting credibility perceived by investors.

Ex ante, it is unclear whether investors' assessment of borrowers' financial reporting credibility is affected by bank reputation. On the one hand, banks rely on financial statement indicators (e.g., earnings, operating cash flow, interest coverage, etc.) to screen prospective borrowers and evaluate their ability to service their debts (Treacy and Carey 1998; Donelson et al. 2017). The lending agreements often specify accounting-based covenants to facilitate the timely transfer of control rights if the borrowers' creditworthiness deteriorates after the loan inception. Therefore, banks interests are aligned to ensure their borrowers' accounting information is credible (Sridhar and Magee 1996; Ball 2008; Graham et al. 2011; Donelson et al. 2017; Aghion and Bolton 1992; Christensen and Nikolaev 2012; Christensen et al. 2016; Dyreng et al. 2017). Furthermore, as banks can access a wide range of private information (e.g., Carrizosa and Ryan 2017; Minnis and Sutherland 2017; Kim et al. 2018; Chakraborty et al. 2021), they can verify the accounting information provided by borrowers. For example, corporate loan agreements often include the inspection rights that enable banks to visit borrowers' properties, examine operating records, discuss with related personnel, and conduct independent audits (Wight et al. 2009; Tan 2013; Nikolaev 2017). When the quality of accounting information is found to be unsatisfying, the banks also have the right to intervene (Tan 2013).[11] In total, as banks have both incentive and ability to ensure financial reporting credibility, investors may implicitly rely on the bank to perform part of the financial statement monitoring role (Kim et al. 2018; Vashishtha 2014). As the bank's actual monitoring efforts is unobservable to public market participants, equity investors may infer its monitoring quality from observable characteristics of the bank. To the extent that the reputation of a bank reflects its ability to monitor borrowers' financial reporting, I expect that investors may assess the financial reporting as more credible if the firm engages a more reputable bank.

[11] See Section 2.3 of Tan (2013) for more details. Specifically, "[a]necdotal cases from the interviews also suggest lenders can directly ask firms to restate their financial reports. Some of these cases involve asking the borrowers to recognize more losses and increase their allowance accounts for inventory or account receivables after the inspections or special audits." (Tan 2013, p. 6).

On the other hand, it is possible that bank reputation has limited effects on investors' perceived credibility of borrower financial reporting for two reasons. First, unlike auditors, banks are not charged with the duties of ensuring financial statement quality. While they do recognize the value of high-quality financial statements in constraining opportunistic behavior of firms, facing deteriorating financial statement quality, banks could protect their interests using contract devices that do not depend on accounting numbers, including loan spreads, collateral requirements, and general covenants that limit borrowers' financing and investment activities. Moreover, while banks have the power to influence a range of corporate policies, they are unlikely to intervene with borrowers except when they face severe downside risks. For example, prior studies find that bank monitoring only intensify following covenant violations (e.g., Aghion and Bolton 1992; Christensen et al. 2016; Chava and Roberts 2008; Nini et al. 2009; Roberts and Sufi 2009a; Dass and Massa 2011; Nini et al. 2012; Tan 2013; Gu et al. 2017). These arguments suggest that banks may not regularly interfere with a firm's financial reporting, decoupling investors' perceived relation between bank reputation and monitoring quality, which leave their assessment of financial reporting credibility insensitive to the bank's reputation. Taken together, whether bank's reputation affects investors' perception of the borrower's financial reporting credibility is an empirical question.

As the matching between banks and borrowers is not random,[12] to examine the effect of bank's reputation on financial statement credibility, I take a novel approach by exploiting plausibly exogenous damages in bank reputation based on large bankruptcies in banks' corporate loan portfolios, while holding the focal bank-borrower matching constant. The maintained assumption is that large bankruptcies of borrowers damage the lending banks' reputation (Gopalan et al. 2011), leading investors to question the banks' ability to monitor their borrowers' accounting information. Specifically, I use large-scale bankruptcies in a bank's corporate loan portfolio as a proxy for bank reputation damage. I focus on the banks that are lead arrangers in the syndicated loan market, because they are the lenders that perform monitoring activities.[13] A lead arranger is

[12] For example, reputable banks could be more likely to select borrowers with more credible financial reporting ex ante, making it difficult to disentangle whether investors' perceived reporting credibility is attributed to bank reputation, or simply a manifestation of borrowers' pre-determined characteristics.

[13] A "syndicated loan" is a loan that has more than one lender. A "lead arranger" is the lender who originates, manages, and monitors a syndicated loan, while "participant lenders" fund part of the

reputationally damaged if a significant proportion of loans are lent to borrowers who have recently filed for bankruptcy (Gopalan et al. 2011). Next, I identify the non-bankrupt borrowers in the reputationally damaged lead arranger's loan portfolio, who are thus potentially 'exposed' to the bank's reputation loss (i.e., exposed borrowers). Because the market's responsiveness to earnings announcements depends on the perceived credibility of the reported earnings (e.g., Holthausen and Verrecchia 1988; Collins and DeAngelo 1990; Anderson and Yohn 2002; Wilson 2008; Wu 2012; Chen et al. 2014), I use the earnings response coefficient (ERC) to measure perceived credibility of the firms' accounting information. I find that after a lead arranger experiences a reputation damage, the magnitude of ERCs of the exposed borrowers decreases significantly in the following six months. My results are robust to using alternative measures of bank reputation damage, excluding observations during the financial crisis, using restricted samples, and adopting fully interacted specifications with firm and year-quarter fixed effects.

I further investigate the settings under which I expect the relationship between bank reputation loss and borrower ERC to vary cross-sectionally. First, institutional investors have superior information processing ability (Bartov et al. 2000; Bonner et al. 2003) and significant influence over management (Admati et al. 1994; Smith 1996; Maug 1998; Chung et al. 2002; Opler and Sokobin 2005). They are able to detect and constrain earnings manipulation in their portfolio firms, and therefore provide an alternative monitoring mechanism other than banks (e.g. Chung et al. 2002), reducing other investors' reliance on bank monitoring. Consistent with this view, I find that the effect of bank reputation loss on borrower ERC is smaller for borrowers with a higher level of institutional ownership. Second, similar to banks, financial analysts are important external monitors (e.g. Knyazeva 2007; Yu 2008; Dyck et al. 2010; Lui et al. 2012; Irani and Oesch 2016; Kim et al. 2019). Prior studies find that analysts decrease earnings management in the firms they follow (Yu 2008; Irani and Oesch 2016). Thus, investors are more certain about the reporting credibility of firms under more intensive analyst monitoring, and tend to have lower reliance on the monitoring by banks. I find that the relation between bank reputation loss and the exposed borrower's ERC is decreasing in the number and quality of the analysts following the firm.

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syndicated loan but rarely perform any monitoring activities (Fight 2004; Gadanecz 2004). In this study, we use the terms "lead arranger" and "bank" interchangeably.

Third, financial covenants are an important tool for bank monitoring (Rajan and Winton 1995; Dichev and Skinner 2002; Nini et al. 2009; Christensen et al. 2016), and the use of financial covenants motivates banks to make greater monitoring efforts (Rajan and Winton 1995). Moreover, financial covenants are typically based on accounting numbers (Christensen et al. 2016), and the inclusion of accounting numbers in debt contracts signals the credibility of accounting information to investors. Therefore, investors are more willing to rely on bank monitoring when debt contracts contain a larger number of financial covenants. I find that the effect of bank reputation loss on borrower ERC is larger when there is a higher level of financial covenant intensity. Fourth, prior studies suggest that, because it is difficult for outsiders to appraise the value of intangible assets, investors have greater reliance on bank monitoring when borrowers have a higher level of intangible assets (Lo 2014; Chen and Vashishtha 2017). I find that the effect of lender reputation loss on borrower ERCs is larger for borrowers with a higher level of intangible assets. In summary, I document that the effect of bank reputation loss on ERCs is weaker when there are alternative mechanisms to monitor borrowers and stronger when investors are more reliant on bank monitoring.

In my additional tests, I rule out an alternative explanation that a decline in banks' financial health leads to a deterioration of borrowers' earnings persistence and thus a lower level of ERC. I do not find any evidence that borrowers' realised and expected earnings persistence declines following a bank reputation loss. Therefore, my main results are unlikely to be driven by a decrease in earnings persistence. This study contributes to the literature in the following ways. First, I contribute to the mosaic of studies examining how the reputations of various capital market participants shape investors' confidence in corporate financial reporting credibility. Wilson (2008) shows that damages to the firm's own reputation due to recent past restatements result in significantly weaker market responses to earnings news. Various studies show that the reputation of auditors can positively influence the perceived credibility of corporate earnings (e.g. Teoh and Wong 1993; Francis and Ke 2006; Gipper et al. 2019; Marshall et al. 2019). Unlike corporate managers and auditors, banks do not explicitly certify firms' financial reporting quality, yet produce a coarse signal about reporting credibility implicitly through their contracting decisions. My results suggest that banks are indeed viewed as an important group of delegated monitors and impose an important externality on investors through their reputational capital.

Second, this study contributes to the stream of literature that investigates the reputation of banks. Chemmanur and Fulghieri (1994) show that more reputable intermediaries tend to transact with more reputable corporate clients. Billett et al. (1995) and Ross (2010) find that higher-reputation lenders can better signal the quality of their borrowers to the capital market. Gopalan et al. (2011) and Lin and Paravisini (2011) find that reputation-damaged lead arrangers are less likely to find participant lenders in the syndicated loan market. My study highlights an externality effect of bank reputation on other market participants, and suggests that banks' reputation not only affects their own welfare, but also shapes the efficiency of the capital market through other market participants' processing of public information. Third, my study supports and extends the findings of Bushman and Wittenberg-Moerman (2012), who show that borrowers of high reputation banks tend to have higher reporting quality. My study provides empirical evidence that bank reputation does affect how investors perceive borrowers' reporting credibility. Moreover, in my study, I examine whether the perceived reporting credibility changes after a bank experiences reputation loss, holding the identity of banks and borrowers constant. Therefore, my study can establish a *causal* relationship between the reputation of banks and the perceived reporting credibility of borrowers.

3.2 Literature Review

3.2.1 Reputation of Intermediaries and Financial Reporting Credibility

The problem of information asymmetry is a critical barrier that hinders capital market efficiency. While corporate insiders have an incentive to misreport financial information, outside investors cannot easily verify the credibility of information disclosed by insiders. Countries with sophisticated capital markets have developed a set of supporting institutions to mitigate this problem. Among the most important institutions are financial and information intermediaries, such as investment banks and auditors (e.g. Gilson and Kraakman 1984; Black 2000; Healy and Palepu 2001; Bushman and Smith 2003). These intermediaries develop reputational capital through repeated transactions in the capital market, and receive a stream of rents from the reputational capital. When intermediaries are discovered to engage in opportunistic behaviour, such as shirking, they may suffer from a loss of reputational capital. Given that intermediaries with strong reputation concerns are expected to behave honestly, they are able to certify the credibility of insiders' information to outside investors (e.g.

DeAngelo 1981; Beatty and Ritter 1986; Booth and Smith 1986; Titman and Trueman 1986; Chemmanur and Fulghieri 1994).

Prior theoretical studies show that intermediaries' reputations can serve as a bonding device that discourages opportunistic behaviour. For example, Booth and Smith (1986) argue that, by employing an investment bank to underwrite equity or debt issues, issuing firms effectively 'lease' the investment bank's reputation. When the value of an investment bank's reputation exceeds the gain from 'cheating' on the price of the security it underwrites, the investment bank can credibly certify that the security price incorporates available inside information. Chemmanur and Fulghieri (1994) model the reputation acquisition of investment banks. They suggest that, while setting strict evaluation standards is costly in the short term, it increases the likelihood of rejecting poor issuing firms and helps investment banks build a reputation in the long term. In equilibrium, investment banks with stricter evaluation standards have a better reputation and tend to transact with issuing firms with superior prospects. DeAngelo (1981) shows that auditors with a greater number of clients or an established reputation have 'more to lose' if they fail to discover accounting irregularities. Therefore, larger and more reputable auditors have lower incentives to behave opportunistically and provide better audit quality.

Consistent with the view that intermediary reputation promotes honest behaviour and mitigates information asymmetries, prior empirical studies provide ample evidence that reputable intermediary improves financial reporting credibility. For example, Lee and Masulis (2011) find that high reputation investment banks and venture capitalists are associated with low issuer earnings management in the initial public offering (IPO) process. Similarly, Agrawal and Cooper (2010) find that issuers backed by high reputation venture capitalists are less likely to have financial restatements in the three years following IPOs. Jo et al. (2007) show that firms with more reputable underwriters engage in less earnings management when making seasoned equity offerings. Teoh and Wong (1993) find that the ERCs of high reputation auditors' clients tend to be higher. They argue that investors expect reputable auditors to provide higher audit quality; therefore, they perceive the earnings of firms with reputable auditors to be more credible, and react more strongly to earnings news. Yu (2008) finds that firms followed by more financial analysts are less likely to engage in earnings management. Cross-sectional analyses show that high reputation analysts (ranked as an *All-American*

research team) can better constrain earnings management. Sethuraman (2019) finds that reputation loss of credit rating agencies leads to an increase in voluntary disclosure of bond issuers. He suggests that the reputation loss of credit rating agencies increases the perceived information asymmetry in the bond market, and, in response to this increased information asymmetry, bond issuers increase voluntary disclosure.

3.2.2 Bank Reputation and Borrowers' Financial Reporting Credibility

3.2.2.1 Banks as Delegated Monitors

The literature has long recognised that banks serve an important role as delegated monitors for less informed investors, such as depositors and shareholders. Diamond (1984) argues that, instead of monitoring borrowers directly, it is optimal for depositors to delegate the task of monitoring to banks. Specifically, direct monitoring by depositors gives rise to duplicated monitoring and free-rider problems. To solve these problems, banks can conduct monitoring on behalf of the depositors. Fama (1985) suggests that, because banks have a comparative advantage in monitoring, after a borrower receives a bank loan, other investors do not need to undertake similar monitoring. He argues that some borrowers are willing to obtain lines of credit without drawing down any funds, as their sole purpose is to purchase the service of bank monitoring to signal their quality. Triantis and Daniels (1995) argue that, although the interests of banks and shareholders are not perfectly aligned, they share a common goal of constraining managerial opportunism. Therefore, if bank monitoring deters managerial opportunism, it will benefit shareholders.

Recent empirical studies suggest that shareholders indeed rely on bank monitoring and adjust the extent of this reliance based on banks' monitoring quality. For example, Vashishtha (2014) argues that, when bank monitoring intensity is high, shareholders tend to decrease their own monitoring and thus reduce public information demand. He finds that, when banks increase monitoring following debt covenant violations, their borrowers tend to decrease public information disclosure. Kim et al. (2018) suggest that, because banks protected by CDS have lower monitoring incentives, after a bank enters into a CDS contract, shareholders will rely less on bank monitoring. Instead, shareholders need to collect more public information to conduct their own monitoring.

Kim et al. (2018) find that CDS-referenced borrowers increase information disclosure after their banks become CDS-protected.

3.2.2.2 Bank Reputation and Certification Role of Banks

A problem with delegating monitoring activities to banks is that outside investors do not know banks' true monitoring ability (e.g. Lee and Mullineaux 2004; Sufi 2007; Gopalan et al. 2011). To mitigate this problem, investors may evaluate the monitoring ability of banks based on their reputations. Prior studies find that a higher bank reputation indicates higher monitoring ability and better borrower quality. For example, Ross (2010) finds that the share price response to loan announcements is more favourable when borrowers obtain loans from the most reputable banks. He argues that reputable banks can better screen and monitor borrowers; therefore, they provide a higher level of certification about their borrowers' quality to the capital market. Gopalan et al. (2011) find that, in the syndicated loan market, after a lead arranger's reputation is damaged, it must retain larger fractions of the loan it syndicates in the future. They suggest that participant lenders tend to perceive the monitoring quality of a reputation-damaged lead arranger to be lower, and are less willing to delegate monitoring activities to it in the future. Similarly, Lin and Paravisini (2011) find that lead arrangers retain larger fractions of the loans they syndicate after their borrowers commit fraud. Bushman and Wittenberg-Moerman (2012) show that borrowers of high reputation banks tend to realise higher future profitability, have higher future credit ratings and tend to report high-quality accounting numbers. The findings of Bushman and Wittenberg-Moerman (2012) indicate that the certification provided by reputable banks may extend to the quality of borrowers' accounting numbers.

3.2.2.3 Banks' Willingness to Monitor Financial Reporting

Although private lenders have access to borrowers' private information, accounting information that is publicly available is very important in debt contracting. Prior studies find that the quality of borrowers' financial reporting has a significant effect on debt contracts. For example, Biddle and Hilary (2006) show that higher accounting quality leads to higher investment efficiency and greater access to the debt market. They suggest that high accounting information quality reduces the information asymmetry

between firms and capital providers, and therefore the investment of firms with better accounting quality relies less on internally generated cash flows.

Bharath et al. (2008) find that accounting information quality affects the choice of the debt market. More specifically, they find that firms with lower accounting quality have a greater reliance on the private debt market. They argue that, because bondholders in the public debt market have no access to borrowers' private information, they are more sensitive to borrowers' accounting information quality. Meanwhile, in the private debt market, the loans of higher accounting quality borrowers tend to have lower interest rates, longer maturity and lower collateral requirements. The study of Bharath et al. (2008) suggests that, although accounting information is more important in the public debt market, it is also very useful for private lenders, as private lenders are willing to offer better loan terms to firms with better accounting information quality. Francis et al. (2005) use accrual quality as a proxy for accounting quality, and find that poor accrual quality is associated with a lower cost of debt. Similarly, Wittenberg-Moerman (2008) investigates which kinds of loans are traded at lower bid-ask spreads in the secondary loan market. They use timely loss recognition as a proxy for accounting quality, and find that timely loss recognition significantly decreases bid-ask spreads.

In this study, I argue that banks are willing to monitor the credibility of their borrowers' financial reporting because credible accounting information facilitates banks' lending decision making and efficient control rights allocation. Berger and Udell (2006) suggest that commercial banks can apply different lending technologies to make lending decisions. One of the most important lending technologies is 'financial statement lending', which means making lending decisions based on borrowers' financial statements.[14] Under financial statement lending, banks need high-quality financial statements to estimate borrowers' future cash flows. A survey study by Donelson et al. (2017) finds that almost all bank employees interviewed consider financial reporting quality 'very important' when making lending decisions. They believe that high-quality financial reporting is important because it facilitates the use of financial covenants and predicting future repayments. Another survey study by Treacy and Carey (1998) finds that financial statement analysis is an integral part of credit risk assessment for large

[14] The framework of Berger and Udell (2006) includes eight lending technologies: financial statement lending, credit scoring, asset-based lending, factoring, fixed-asset lending, leasing, relationship lending and trade credit.

banks in the US, and that large banks tend to evaluate the quality of borrowers' financial statements before assessing their credit risk.

Bharath et al. (2011) suggest that, when a borrower cannot provide credible information, banks must engage in costly information production or establish a close relationship with the borrower to resolve information asymmetry. Graham et al. (2008) find that, after financial restatements, banks tend to charge higher loan spreads and impose more restrictive loan terms. This study indicates that banks must spend more resources and face higher uncertainties when they engage with borrowers who cannot provide credible accounting information. Gallimberti (2021) finds that, after improvements in borrowers' financial reporting, the quality of their banks' loan portfolio improves. Taken together, these studies suggest that credible financial reporting is important for banks to make suitable lending decisions, and banks face negative consequences in the form of higher information production costs, greater uncertainty and lower loan quality when their borrowers lack credible financial reporting. Therefore, banks are likely to have a strong incentive to monitor their borrowers' financial reporting.

In addition to facilitating banks to make lending decisions, credible accounting helps efficient control rights allocation (e.g. Zender 1991; Aghion and Bolton 1992; Dewatripont and Tirole 1994; Hart and Moore 1998; Hart 2001; Christensen and Nikolaev 2012; Christensen et al. 2016). Specifically, optimal debt contracts allocate firms' control rights between borrowers and lenders based on an accounting signal specified in financial covenants (Aghion and Bolton 1992; Christensen et al. 2016). When the performance of a firm falls below the accounting signal (i.e. covenant violation), the firm's control right is allocated to its lenders (e.g. Dichev and Skinner 2002; Nini et al. 2009). When lenders have the decision rights, they can choose whether they need to recall the loan immediately, amend the debt contract or simply waive the covenant violation. The efficiency of control right allocation depends crucially on whether the accounting signals used in financial covenants reflect a firm's underlying creditworthiness (Li 2010; Christensen et al. 2016; Dyreng et al. 2017; Beatty et al. 2019). Financial covenants that are not based on credible accounting numbers are less likely to trigger timely covenant violations when borrowers' creditworthiness deteriorates (Christensen and Nikolaev 2012; Christensen et al. 2016; Dyreng et al. 2017). Consistent with this view, Costello and Wittenberg-Moerman (2011) find that,

after a firm is discovered to have an internal control weakness, lenders decrease the use of accounting-based financial covenants, suggesting that credible financial reporting is important for the effective use of financial covenants.

3.2.2.4 Banks' Ability to Monitor Financial Reporting

I argue that banks are not only willing to monitor financial reporting credibility, but are also able to do so. Prior studies find that banks frequently collect a wide range of information that complements borrowers' financial reporting, such as financial projections, tax returns and covenant compliance reports (Carrizosa and Ryan 2017; Minnis and Sutherland 2017; Kim et al. 2018). Such complementary information helps banks to verify borrowers' financial statements and enables banks to monitor financial reporting credibility. An important way through which banks affect borrowers' financial reporting is 'inspection rights'. Inspection rights are specified in debt contracts as affirmative covenants, which allow banks to visit borrowers' properties, check their financial and operational records, and discuss with borrowers' officers and accountants. Tan (2013) suggests that inspection rights give banks significant influence over borrowers' disclosure behaviour. When banks exercise these rights, they can verify borrowers' accounting information, hire public accountants to perform special audits and even ask borrowers to restate their financial statements. Tan (2013) finds that borrowers' accounting information becomes more conservative after covenant violations, as the inspection rights are typically strengthened after covenant violations.

As a result of the complementary information and inspection rights, banks are able to verify the credibility of their borrowers' financial reporting. Further, as an important source of financing, banks have strong bargaining power over borrowers, allowing them to affect various policies of their borrowers, including reporting policies. Prior studies find that banks have a significant effect on their borrowers' investment policy, capital structure, corporate governance and accounting conservatism. For example, Chava and Roberts (2008) find that borrowers' capital expenditures decrease sharply following covenant violations. They argue that, after a firm experiences a covenant violation, the control right of the firm is transferred to the lenders. More specifically, following covenant violations, lenders can decide whether they should demand an immediate loan repayment, amend the credit agreement or waive the violation. As a result, following covenant violations, lenders' ability to intervene in their borrowers' investment

decisions will increase, which in turn leads to a decrease in borrowers' capital expenditures.

Similarly, Nini et al. (2009) find that, following a deterioration of a borrower's credit quality, the capital expenditure of the borrower decreases. They argue that lenders regularly impose a limit on borrowers' capital expenditures. When a borrower's credit rating is downgraded, it indicates an increase in the credit risk exposure to its lenders. In response to the increase in credit risk exposure, lenders are likely to strengthen their control over the borrowers' investment activities, thus resulting in a decrease in capital expenditure. Nini et al. (2009) also find that, following the deterioration of borrowers' credit rating, the revised credit agreements are more likely to include a covenant that restricts future capital expenditures. Moreover, the performance of borrowers tends to improve following the inclusion of a capital expenditure restriction.

Roberts and Sufi (2009) find that lenders have a strong influence on borrowers' financing policy. They show that borrowers' debt issuance decreases dramatically following debt covenant violations. They suggest that lenders have an incentive to prevent their borrowers from taking an excessive amount of debt. Following covenant violations, because lenders can use the threat of recalling the loan to intervene in management, the level of debt issuance of a borrower will decrease after it breaches its debt covenant. Dass and Massa (2011) show that banks are able to affect the corporate governance practices of their borrowers. They use the geographical proximity between borrowers and lenders, size of the loan and banks' equity ownership in the borrowing firms as proxies for the strength of the bank–borrower relationship. They find that a stronger bank–borrower relationship tends to improve borrowers' corporate governance.

Nini et al. (2012) find that, following covenant violations, borrowers tend to experience a decrease in M&A, capital expenditures, leverage ratio, dividend payout and share repurchases, while the chief executive officer turnover of the borrowers tends to increase. They argue that lenders can not only affect borrowers' policies directly by replacing top executives, but can also influence borrowers via 'behind-the-scenes advice'. Gu et al. (2017) find that bank interventions have a strong negative effect on the quantity of borrowers' R&D activities, but no effect on the quality of these activities. They suggest that banks can force borrowers to terminate risky and long-term R&D activities, and ask them to focus on innovations that provide more predictable

cash flows. Aier et al. (2014) find that, after Delaware ruled that directors of near insolvent firms owe a fiduciary duty to their lenders, the affected firms tended to increase accounting conservatism. The ruling of the Delaware court increased lenders' ability to intervene in borrowers' reporting policies. The findings of this study indicate that lenders indeed prefer more conservative accounting.

Tan (2013) finds that, following covenant violations, borrowers' financial reporting becomes more conservative. He argues that this occurs because lenders demand accounting conservatism, and lenders' ability to influence reporting policy increases after their borrowers violate debt covenants. Martin and Roychowdhury (2015) show that a firm's accounting conservatism tends to decrease after its lender enters into a CDS contract. They argue that, because CDS contracts hedge lenders' credit risk, following CDS trade initiation, a lender tends to have lower monitoring incentives and lower willingness to affect borrowers' reporting policy. Moreover, lenders that are protected by CDS contracts are more intransigent in renegotiations, which leads their borrowers to be reluctant to report bad news.

In summary, the aforementioned studies suggest that banks are able to use the complementary information and inspection rights to verify borrowers' financial reporting credibility. Once banks discover that their borrowers' financial reporting is not credible, their significant bargaining power allows them to step in and change the borrowers' reporting policy. Consistent with the view that banks are willing and able to enhance borrowers' financial reporting credibility, Ahn and Choi (2009) find that strong bank monitoring leads to a lower level of earnings management of their borrowers. Frankel et al. (2020) find that, when banks are provided with account receivable ageing reports, they significantly improve their borrowers' account receivable reporting quality.

3.3 Hypothesis Development

As previously discussed, to protect reputational capital, financial and information intermediaries, such as investment banks and auditors, have an incentive to enhance the financial reporting credibility of their clients (e.g. DeAngelo 1981; Beatty and Ritter 1986; Booth and Smith 1986; Titman and Trueman 1986; Teoh and Wong 1993; Chemmanur and Fulghieri 1994; Jo et al. 2007; Agrawal and Cooper 2010; Lee and

Masulis 2011). Similar to these intermediaries, banks are repeat players in the capital market and have an incentive to protect their reputation. Banks have access to borrowers' private information (e.g. Carrizosa and Ryan 2017; Minnis and Sutherland 2017) and serve an important role as delegated monitors for less informed investors (Diamond 1984; Fama 1985; Triantis and Daniels 1995). Prior studies suggest that shareholders often delegate part of the monitoring activities to banks, and adjust the extent of this delegation based on bank monitoring intensity (Vashishtha 2014; Kim et al. 2018).

As a result of banks' demand for credible financial reporting and ability to influence borrowers' reporting credibility (e.g. Treacy and Carey 1998; Tan 2013; Aier et al. 2014; Minnis and Sutherland 2017), it is reasonable to expect that equity investors will delegate part of the tasks of monitoring financial reporting credibility to banks. Given that banks' monitoring activities are unobservable, investors will infer the monitoring ability of a bank based on its reputation. Therefore, when a bank's reputation is damaged, investors will reassess the bank's monitoring ability and perceive the accounting information disclosed by its borrowers as less credible. I formally state this hypothesis as follows:

> **Hypothesis:** The loss of a bank's reputation results in a decrease in the perceived financial reporting credibility of the bank's borrowers.

It is possible that banks do not play any important role in monitoring borrowers' financial reporting. Banks have a wide range of options to manage credit risks, such as employing a more restrictive covenant, increasing collateral requirements, limiting borrowers' financial and investment activities, and increasing loan spreads (e.g. Sridhar and Magee 1996; Bharath et al. 2008; Graham et al. 2008; Donelson et al. 2017). For example, a survey study from Donelson et al. (2017) suggests that banks tend to demand more collateral and use more restrictive covenants when their borrowers have poor accounting quality. Given the multiple options available to banks, enhancing financial reporting credibility may not always be the most preferred method. Hence, investors may not rely on banks to certify borrowers' reporting credibility. Further, the loss of banks' reputation may not lead investors to reassess their monitoring ability. A recent study by Berglund (2020) finds that auditors who fail to issue a going-concern opinion to subsequently bankrupt clients indeed have poorer audit quality. However, neither

auditors' clients nor the capital market react negatively to this type of error. Thus, it is possible that investors do not respond to bank reputation damage, which will support the null of my hypothesis.

3.4 Sample and Research Design

3.4.1 Sample

I first obtain the data of all the debt contracts from Reuters Loan Pricing Corporation's (LPC's) DealScan database from 1993 to 2017.[15] For loans financed by multiple lenders (i.e. syndicated loans), I only focus on the lead arrangers, as they are the lenders who perform screening and monitoring activities (Gopalan et al. 2011). I identify the lead arranger based on the variable *LeadArrangerCredit* in the 'Lendershares' dataset in DealScan. For loans with multiple lead arrangers, following prior studies (e.g. Nini et al. 2009; Gopalan et al. 2011), I keep one observation for each corresponding lead arranger. This procedure yields 746,873 initial borrower-loan-lender observations. I then match DealScan with Compustat GVKEY using the link table provided by Chava and Roberts (2008),[16] which reduces the sample to 353,730 observations. I denote this file as the DealScan dataset. Following Gopalan et al. (2011), I use large-scale Chapter 11 bankruptcy filings by borrowers as a proxy for bank reputation loss. I obtain bankruptcy filings data from the UCLA LoPucki Bankruptcy Research Database, which has 888 bankruptcy cases during my sample period.[17] I denote this file as the bankruptcy dataset.

Finally, I collect all firm-quarter observations from Compustat from 1993 to 2017, after dropping observations with missing total assets, observations for firms that ever experienced any bankruptcy during the sample period, and firms not covered by DealScan during the sample period. I also obtain stock price and return data from CRSP and analyst forecast data from I/B/E/S. I require non-missing data on all the variables in my regression model (specified in the next section). I further require that, for each firm-quarter, the firm must have at least one loan contract outstanding over the six months before the earnings announcement date, according to the DealScan dataset. This

[15] My sample period starts from 1997 because the coverage of DealScan increases significantly after 1993. More specifically, the number of loans originated in 1992 is only 3,263. In the year 1993, the number of loans originated is 4,980 (increased by more than 50%).
[16] Available at http://finance.wharton.upenn.edu/~mrrobert/styled-9/styled-12/index.html.
[17] For borrowers with more than one bankruptcy filing, I keep all bankruptcy filings for a borrower.

criterion is imposed to mitigate the concern that there is a fundamental difference in earnings attributes between firms with and without outstanding debt contracts. My final sample includes 174,594 firm-year observations of 2,438 unique firms. The details of my sample selection procedure are presented in Table 3.1.

Table 3.1: Sample Selection Procedure

	# Observations
Quarterly earnings announcements from Compustat from 1993 to 2017	415,899
Less: Observations without total assets that are missing	74,021
Less: No loan contract data ever recorded in DealScan with lead arranger identified	77,529
Less: Firms that ever experienced any bankruptcy during the sample period	2,462
Less: Missing analyst earnings forecasts or stock price information from CRSP	61,536
Less: Missing loan contracts outstanding in DealScan over the six months before the earnings announcements	25,757
Baseline sample	174,594

Note. This table reports the sample selection procedure of the study.

3.4.2 Measure of Bank Reputation Loss

I define 'exposed borrowers' (i.e. borrowers exposed to banks' reputation loss) as those whose banks have a significant proportion of loans lent to other borrowers that recently filed for bankruptcies. To identify these firms, I first calculate a measure of a firm's bank bankruptcy exposure, $B\_Exposure_{it}$, as the weighted average of firm *i*'s bank's proportions of loans of bankrupt borrowers, where the weight is the loan amount between firm *i* and the bank at the earnings announcement date of fiscal quarter *t*. A bank's proportions of loans of bankrupt borrowers are computed as the amount of loans a bank lent to bankrupt borrowers during the six-month period before the firm's earnings announcement of quarter *t*, divided by the total amount of the bank's outstanding loan portfolio.

See Figure 3.1 for an example of calculating *B_Exposure*. Specifically, focal firm A, at the end of a fiscal quarter (say, 31 September 2015, which is Q3 of the fiscal year 2015), has debt contracts with two lenders, B_1 and B_2, each of \$1 million. Firm A announces its 2015 Q3 earnings on 30 October 2015. B_1 has two other borrowers: firm B, with loans of \$2 million from L_1, and firm C, with loans of \$1 million from B_1. Firm C went bankrupt during the six months before the earnings announcement date (May to October 2015). B_2 has three other borrowers: firm D, with loans of \$4 million from B_2; firm E, with loans of \$2 million from B_2; and firm F, with loans of \$3 million from B_2.

Firm E went bankrupt during the six months before the earnings announcement date (May to October 2015). In this case, B_1's proportions of loans lent to bankrupt borrowers are 1 ÷ (1 + 2 + 1) = 25%, and B_2's proportions of loans lent to bankrupt borrowers are 2 ÷ (1 + 4 + 3 + 2) = 20%. Thus, $B\_Exposure_{A,2015Q3}$ is 0.5 × 25% + 0.5 × 20% = 22.5%.

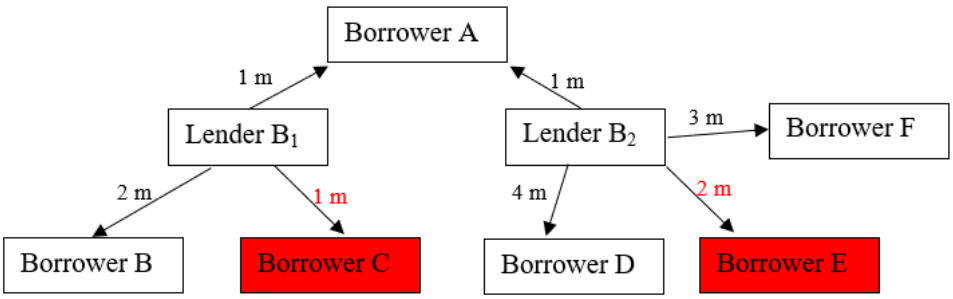

Figure 3.1: Illustration of Calculation Process of *B_Exposure* and *Shock*

My variable of interest, $Shock_{it}$, is an indicator variable that identifies the exposed borrowers. Specifically, $Shock_{it}$ equals one when $B\_Exposure_{it}$ is larger than 3%, and zero otherwise. The threshold of 3% is chosen because Gopalan et al. (2011) suggest that the market may expect that a low level of bankruptcy rate is acceptable and will not affect the bank's reputation. In robustness tests, I find that my inferences are unchanged if I vary the thresholds from 2% to 5%.

3.4.3 Empirical Model

To test my hypothesis, consistent with Bertrand and Mullainathan (2003), I employ the following model. Specifically, I use the following regression to examine the effect of bank reputation loss on its borrower firms' ERC:

$$CAR[-1,+1]_{it} = \alpha_i + \alpha_t + \beta_1 ES_{it} + \beta_2 Shock_{it} + \beta_3 Shock_{it} \times ES_{it} + \beta_4 BM_{it} + \beta_5 BM_{it} \times ES_{it} + \beta_6 SIZE_{it} + \beta_7 SIZE_{it} \times ES_{it} + \beta_8 LEV_{it} + \beta_9 LEV_{it} \times ES_{it} + \beta_{10} COV_{it} + \beta_{11} COV_{it} \times ES_{it} + \varepsilon_{i,t} \quad (1)$$

where *i* indexes firms, *t* indexes fiscal year-quarter, α_i is firm fixed effects, and α_t is year-quarter fixed effects.[18] The dependent variable $CAR[-1,+1]_{it}$ is the cumulative abnormal return (CAR) of firm *i*'s stock during the three days around its earnings announcement date of fiscal quarter *t*, using one of the following four models[19]: (1) daily stock returns in excess of the returns on value-weighted CRSP portfolio (*Mkt-adj CAR*); (2) CAPM (*CAPM-adj CAR*); (3) Fama and French's (1993) three-factor model (*FF3-adj CAR*); and (4) Carhart's (1997) Fama-French-Carhart four-factor model (*FFC4-adj CAR*). A positive coefficient of *Shock* × *ES* (β_3) supports my hypothesis that the loss of a bank's reputation leads to a decrease in the perceived financial reporting credibility of its borrowers.

I also control for four variables found to be the major determinants of ERC: book-to-market ratio (*BM*), log of the market value of equity (*SIZE*), leverage ratio (*LEV*) and the number of analysts following (*COV*), as well as their interactions with *ES*. Throughout this paper, I adjust robust standard errors for two-dimensional (firm and year-quarter) clustering (Petersen 2009; Gow et al. 2010; Thompson 2011).

3.5 Descriptive Statistics

Table 3.2 presents the descriptive statistics for all variables employed in my main tests. All non-logarithmic continuous variables are winsorised at the 1st and 99th percentiles. The average *CAR[-1,+1]* in my sample is 0.2%, with a 25th (75th) percentile of -3.4% (3.9%). My sample firms have a mean (median) market value of US$24.462 million (US$0.808 million) and a mean (median) *BM* ratio of 0.645 (0.511).

Figure 3.2 plots the fitted linear regression of *CAPM-adj CAR* on *ES*. The solid line plots the relation for shocked firm-quarters (whose earnings announcements are preceded by banks' reputation loss within six months), and the dashed line plots the relation for the control sample. Although only suggestive of the underlying association, Figure 3.2 shows that the slope of the solid line is smaller than the dashed line, suggesting that the ERC of exposed borrowers is lower than the other control firms, which is consistent with my prediction.

[18] In my robustness tests in Panel F, Table 3.4, I also control for the interactions of firm and year-quarter fixed effects with *ES* and find consistent results.

[19] My results are robust to using CAR during the five days around the earnings announcement date (*CAR[-2,+2]*) or during the two days on and after the earnings announcement date (*CAR[0,+1]*).

Table 3.2: Descriptive Statistics

Variable	Mean	SD	P5	P25	Median	P75	P95
Mkt-adj CAR	0.003	0.079	-0.127	-0.034	0.002	0.039	0.133
CAPM-adj CAR	0.003	0.079	-0.128	-0.034	0.002	0.038	0.132
FF3-adj CAR	0.002	0.079	-0.128	-0.034	0.001	0.038	0.131
FFC4-adj CAR	0.002	0.078	-0.128	-0.034	0.001	0.038	0.131
ES	0.000	0.017	-0.019	-0.0015	0.0002	0.002	0.010
BM	0.645	0.532	0.124	0.313	0.511	0.796	1.630
SIZE	0.240	1.289	-0.324	-0.296	-0.214	0.078	2.623
LEV	0.236	0.185	0	0.077	0.214	0.358	0.585
COV	7.598	6.396	1	3	6	11	21

Note. This table reports the summary statistics of key variables employed in this study. The final sample consists of 174,594 firm-quarter observations for the period between 1993 and 2017. See the appendix for detailed variable definitions.

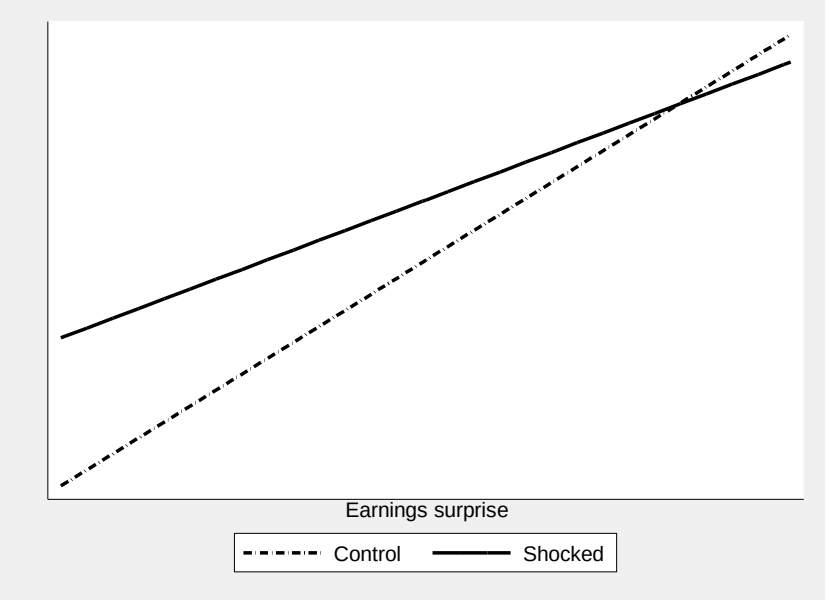

Figure 3.2: Market Response to Exposed Borrowers versus Control Firms' Earnings Announcements

Note. This graph plots the fitted linear regression of *CAPM-adj CAR* on *ES*. The solid line plots the relation for earnings announcements preceded by bank reputation loss within six months, and the dashed line plots the relation for the control sample.

3.6 Empirical Results

3.6.1 Test of Hypothesis

Table 3.3 reports the results of estimating Eq. (1). The four columns use the four CAR measures defined previously (*Mkt-adj CAR* in column [1], *CAPM-adj CAR* in column [2], *FF3-adj CAR* in column [3] and *FFC4-adj CAR* in column [4]) as dependent variables. Across all four specifications, the coefficients on the interaction variable of interest, *Shock* × *ES*, are negative and significant ($p < 0.01$).

Comparing the coefficients on *ES* and *Shock* × *ES*, shocked firms on average experience ERCs over 32% lower than those of other control firms (32.87% in column [1], 34.92% in column [2], 37.46% in column [3] and 37.80% in column [4]). These results support my hypothesis.

Table 3.3: Effect of Bank Reputation Loss on Market Responsiveness to Earnings Announcements

	(1)	**(2)**	**(3)**	**(4)**
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.867***	0.839***	0.841***	0.844***
	(21.41)	(21.15)	(21.46)	(21.59)
Shock	0.003	0.003	0.002	0.002
	(1.52)	(1.46)	(0.98)	(1.05)
Shock × *ES*	-0.285***	-0.293***	-0.315***	-0.319***
	(-3.94)	(-3.95)	(-4.63)	(-5.02)
BM × *ES*	-0.000	-0.000	-0.000	-0.000
	(-0.51)	(-0.62)	(-0.86)	(-1.07)
SIZE × *ES*	-0.000	-0.000	-0.000	-0.000
	(-0.84)	(-1.30)	(-1.36)	(-1.45)
LEV × *ES*	-0.033**	-0.030**	-0.030**	-0.031**
	(-2.12)	(-2.00)	(-1.99)	(-2.15)
COV × *ES*	0.001	0.001	0.001	0.001
	(1.45)	(1.29)	(1.24)	(1.42)
BM	0.009***	0.012***	0.011***	0.011***
	(14.50)	(22.90)	(22.35)	(25.01)
SIZE	-0.001***	-0.002***	-0.002***	-0.001***
	(-3.08)	(-4.25)	(-3.98)	(-3.74)
LEV	0.001	0.001**	0.001**	0.001*
	(1.33)	(2.20)	(1.99)	(1.72)
COV	-0.005***	-0.003***	-0.003***	-0.003***
	(-9.03)	(-6.13)	(-6.76)	(-6.82)

Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.052	0.050	0.049	0.048
n	174,594	174,594	174,594	174,594

Note. This table reports the results of estimating the effect of bank reputation loss on borrowers' ERCs. The sample contains all firm-quarter observations with outstanding loan contracts within the six months prior to the earnings announcements. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Continuous variables are winsorised at the 1st and 99th percentiles of the sample distributions. All regression specifications include firm and year-quarter fixed effects. The *t*-statistics presented in parentheses below the coefficients are corrected for two-way clustering at the firm and year-quarter level. See the appendix for detailed variable definitions.

3.6.2 Robustness Tests

Next, I test the robustness of the results documented above by implementing a different algorithm to define shocked firms, using alternative samples and controlling for additional fixed effects in ERCs.

3.6.2.1 Alternative Measure of Shock

In my main test, I define $Shock_{it}$ as one when $B\_Exposure_{it}$ is larger than 3%. Given that the threshold of 3% is quite discretionary, I vary the thresholds from 2% to 5% for defining exposed borrowers. Untabulated results show that my inferences are unchanged. In addition, I define another alternative indicator for exposed borrowers, $Shock^{alt}$, which equals one if *any* lender's proportions of loans lent to bankrupt borrowers are greater than 3%, and zero otherwise. Similar to the measure of Gopalan et al. (2011), the definition of $Shock^{alt}$ assumes that investors focus on the magnitude of each single bankruptcy event, while ignoring the relative importance of the monitoring role of each bank. Panel A of Table 3.4 shows that my results are robust to using this alternative definition of exposed borrowers across all specifications.

3.6.2.2 Alternative Samples

It is possible that the bankruptcy of another borrower may cause macroeconomic shocks and change the ERCs of the focal firm, especially when the two firms are in the same industry or geographically close. To remove macroeconomic shocks caused by the bankruptcy firm and affecting all firms in the same industry or geographic location, following Murfin (2012) and Gao et al. (2016), I exclude firm-year observations if the exposed borrower and bankrupt borrower are in the same two-digit SIC industry or

headquartered in the same state. Panel B of Table 3.4 shows that my results are robust to using this reduced sample.

Panel C of Table 4 shows that our results are also insensitive to excluding borrowers without lenders that ever experienced a borrower bankruptcy. This result mitigates the concern that there is fundamental difference in monitoring ability between the lenders that have experienced a borrower bankruptcy and lenders that have not experienced any borrower bankruptcy in our sample period. We find the coefficients on *L_RepLoss*×*ES* continue to be negative and significant across all the specifications ($p < 0.05$). Following the same rationale, we also exclude borrowers that never experienced a lender's reputation loss during our sample period. The sample used in Panel D of Table 3.4 further excludes borrowers never exposed to bank reputation loss during my sample period. The results show that the ERCs are indeed lower in quarters when the borrowers are exposed to bank reputation loss, compared with other unexposed periods. I also find that my results are robust to excluding the Global Financial Crisis (GFC) period (2008 to 2010, as shown in Panel E of Table 3.4), and excluding financially distressed firms, defined as firms with Altman's (1968) *Z*-scores below sample median each year (untabulated). Panel F shows that my results are also robust to excluding the financing and utility industries (SIC codes in the 6000–6999 and 4900–4999 range).

3.6.2.3 Controlling for Firm and Quarter Fixed Effects in Earnings Response Coefficients

If banks are randomly assigned to borrowers, the differential ERC estimated from the model is unbiased. However, if banks select borrowers based on certain characteristics, my estimates are potentially biased. For example, if banks who recently experienced large-scale bankruptcy also tend to tilt their loan portfolio towards borrowers with characteristics that are negatively related to the informativeness of earnings, then my estimates are biased in favour of my hypothesis. While I control for borrowers' firm-level determinants of ERCs in my model and replicate my regressions in the various subsamples, the bias remains if the borrowers' unobservable characteristics correlate with banks' recent default experience.

To further guard against this omitted variable problem, I include borrower fixed effects and their interactions with the earnings surprise. Effectively, I remove the firm fixed

effects not only in the dependent variable (*CAR[-1,+1]*), but also the fixed effects in the ERCs (i.e. the slope coefficients). Focusing on within-borrower variations, this approach allows me to compare the ERCs in the exposed period with the average ERC of the same borrower. Hence, I eliminate the concern that banks' recent large-scale bankruptcy experience is correlated with unobservable characteristics that are fixed over time. In the same spirit, I also add fiscal quarter fixed effects to remove the average variation in ERCs across different fiscal quarters. Panel G of Table 3.4 shows the regression results after controlling for both *Firm FE* × *ES* and *Qtr FE* × *ES* in Eq. (1). Across all columns, the coefficients on *Shock* × *ES* remain negative and significant ($p < 0.01$), yet of lower magnitude.[20]

Table 3.4: Robustness Tests

Panel A: Alternative measure of *Shock*				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.864***	0.836***	0.838***	0.841***
	(21.43)	(21.14)	(21.46)	(21.56)
Shockalt	0.001	0.001	0.001	0.001
	(0.64)	(0.62)	(0.4)	(0.4)
Shockalt × ES	-0.176**	-0.170*	-0.200**	-0.204**
	(-2.12)	(-1.91)	(-2.38)	(-2.44)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.052	0.05	0.048	0.048
n	174,594	174,594	174,594	174,594
Panel B: Excluding bankruptcy in the same state or industry				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.921***	0.887***	0.889***	0.893***
	(18.65)	(17.55)	(17.54)	(17.65)
Shock	0.004**	0.003*	0.003	0.003
	(2.37)	(1.93)	(1.46)	(1.62)
Shock × ES	-0.195**	-0.219**	-0.231**	-0.231**
	(-2.01)	(-2.13)	(-2.42)	(-2.40)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes

[20] I also find that controlling for the largest-lender fixed effects and their interaction with *ES* in Eq. (1) does not change my inferences (untabulated).

Adj. R2	0.032	0.031	0.03	0.03
n	81,927	81,927	81,927	81,927
Panel C: Excluding borrowers without banks that experienced large-scale bankruptcies				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.952***	0.926***	0.929***	0.938***
	(17.55)	(17.56)	(17.54)	(18.04)
Shock	0.003	0.003	0.002	0.003
	(1.49)	(1.44)	(1.06)	(1.23)
Shock × ES	-0.216**	-0.233***	-0.247***	-0.273***
	(-2.51)	(-2.68)	(-2.84)	(-3.23)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.058	0.056	0.056	0.055
n	92,655	92,655	92,655	92,655
Panel D: Excluding borrowers that never experienced any bank reputation loss				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	1.023***	0.994***	0.997***	0.999***
	(16.92)	(16.39)	(16.44)	(16.73)
Shock	0.002	0.002	0.001	0.001
	(1.05)	(0.92)	(0.5)	(0.64)
Shock × ES	-0.422***	-0.422***	-0.441***	-0.446***
	(-5.20)	(-4.92)	(-5.47)	(-5.84)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.049	0.049	0.048	0.047
n	52,773	52,773	52,773	52,773
Panel E: Excluding the GFC period (2008–2010)				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.871***	0.833***	0.832***	0.832***
	(19.99)	(19.17)	(19.61)	(19.54)
Shock	0.003	0.003	0.002	0.002
	(1.31)	(1.24)	(0.85)	(0.84)
Shock × ES	-0.328***	-0.334***	-0.353***	-0.350***
	(-3.21)	(-3.29)	(-3.78)	(-3.85)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.051	0.049	0.047	0.047

n	151,082	151,082	151,082	151,082
Panel F: Excluding financial and unitality industries				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
ES	0.866***	0.815***	0.828***	0.828***
	(31.42)	(19.27)	(21.64)	(21.64)
Shock	0.118	-0.147	-0.015	0.002
	(0.24)	(1.2)	(0.1)	(1.09)
Shock × ES	-0.311***	-0.350***	-0.383***	-0.328***
	(-2.80)	(-3.85)	(-3.81)	(-3.09)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.053	0.047	0.045	0.045
n	144,920	144,920	144,920	144,920
Panel G: Controlling for firm and quarter fixed effects in ERCs				
	(1)	(2)	(3)	(4)
Dep. =	*Mkt-adj CAR*	*CAPM-adj CAR*	*FF3-adj CAR*	*FFC4-adj CAR*
Shock × ES	-0.114***	-0.121***	-0.118***	-0.135***
	(-3.78)	(-4.03)	(-3.95)	(-4.51)
BM × ES	0	0	0	0
	(0.98)	(1.08)	(1.12)	(0.72)
SIZE × ES	0.000***	0.000**	0	0
	(2.77)	(2.21)	(1.57)	(1.14)
LEV × ES	-0.021*	-0.019	-0.016	-0.020*
	(-1.78)	(-1.64)	(-1.41)	(-1.69)
COV × ES	-0.000	-0.000	-0.001	-0.001
	(-0.18)	(-0.66)	(-1.11)	(-0.72)
BM	0.007***	0.010***	0.009***	0.009***
	(18.3)	(26.95)	(25.26)	(24.61)
SIZE	-0.001***	-0.002***	-0.001***	-0.001***
	(-2.80)	(-3.97)	(-3.34)	(-2.96)
LEV	0	0.001*	0.001	0
	(0.89)	(1.68)	(1.46)	(1.19)
COV	-0.002***	-0.001**	-0.001***	-0.001***
	(-6.20)	(-2.08)	(-2.88)	(-2.84)
Firm FE × ES	Yes	Yes	Yes	Yes
Qtr FE × ES	Yes	Yes	Yes	Yes
Firm FE × Qtr FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.208	0.208	0.208	0.208
n	174,594	174,594	174,594	174,594

Note. This table reports the robust test results of estimating the effect of bank reputation loss on borrowers' ERCs. Panel A presents the results based on the alternative definition of *Shock*. Panels B to F provide the results estimated from restricted samples. Panel G presents the results based on alternative specifications controlling for fixed effects in ERCs. For brevity, the coefficient estimates for control variables and their interactions with ES_t are omitted. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Continuous variables are winsorised at the 1st and 99th percentiles of the sample distributions. All regression specifications include firm and year-quarter fixed effects. The *t*-statistics presented in parentheses below the coefficients are corrected for two-way clustering at the firm and year-quarter level. See the appendix for detailed variable definitions.

3.6.2.4 Other Robustness Tests

In untabulated results, I also find that my results are unchanged if I add the following additional control variables in Eq. (1): an indicator of busy announcement day (number of earnings announcements on the same day; Hirshleifer et al. 2009), an indicator of after-hours earnings announcements, an indicator of Friday, lagged earnings persistence (Kormendi and Lipe 1987) and CAPM beta (Easton and Zmijewski 1989), as well as their interactions with *ES*.

3.7 Additional Analyses

In this section, to add more credence to my argument that bank reputation loss reduces the perceived credibility of exposed borrowers' earnings, I further examine whether the cross-sectional relation observed between bank reputation loss and ERC varies, depending on: (1) investors' other monitoring mechanisms and (2) investors' reliance on banks' monitoring. I then strive to rule out an alternative explanation that the loss of bank reputation affects the persistence of borrowers' earnings surprises.

3.7.1 Alternative Monitoring Mechanisms

3.7.1.1 Institutional Investors

Prior studies suggest that institutional investors have higher information processing ability and stronger incentives to monitor managers than do individual investors (e.g. Dobrzynski 1993; Bartov et al. 2000; Chung et al. 2002). Given that institutional investors provide an alternative monitoring mechanism other than banks, when a firm has a higher level of institutional ownership, the value of certification provided by its banks to the market should be lower. Thus, I expect that the effect of banks' reputation loss on borrowers' ERCs is more (less) pronounced for borrower firms with lower (higher) institutional shareholders. I define the variable *INST* as the number of shares

owned by 13F filing institutions before the earnings announcement date, divided by the number of shares outstanding. Columns (1) and (2) of Panel A, Table 3.5, present the results of estimating Eq. (1) for samples with *INST* above and below the annual cross-sectional median, respectively. Consistent with my prediction, the coefficient of *Shock* × *ES* is sufficiently lower for firms with more institutional shareholding than that for firms with lower institutional shareholding.

3.7.1.2 Analysts

Prior studies find that financial analysts are able to disclose information about firm risk that is not otherwise available to the market (e.g. Lui et al. 2007; Lui et al. 2012). Analysts also serve an important role as external monitors that constrain opportunistic managerial behaviour, such as earnings management (Knyazeva 2007; Yu 2008) and bad news hoarding (Kim et al. 2019). When a firm is followed by a larger number of analysts or analysts with higher expertise, the market will be more certain about the firm's riskiness and earnings quality. Therefore, I expect that the market should be less reliant on the monitoring provided by banks in this case. I measure analysts' expertise by *ANA_EXP*, which is a composite score computed as the average total decile ranks of six aggregate characteristics of all the analysts following the firm.[21] Panel B (Panel C) of Table 3.5 reports the results of estimating the effect of banks' reputation loss on borrowers' ERCs for samples with high and low levels of analyst following (analyst expertise). Consistent with my expectation, I find that, for borrowers with higher analyst coverage or borrowers followed by analysts with higher expertise, the association between bank reputation loss and borrower ERC is lower.

Table 3.5: Partition Tests—Alternative Monitoring Mechanisms

Panel A: Institutional ownership		
	Dependent variable = *Mkt-adj CAR*	
	(1)	(2)
	High *INST*	Low *INST*
ES	1.042***	0.679***
	(15.20)	(36.21)
Shock	0.003	0.004

[21] These characteristics include average experience as an analyst, average experience covering the firm, proportion of All-Star analysts, average brokerage size, average number of firms covered by the analysts and average number of firms covered by the analysts within the two-digit SIC industry.

	(1.17)	(1.28)
Shock × ES	-0.158	-0.386***
	(-1.00)	(-3.89)
Difference	0.228**	
	(2.04)	
Controls	Yes	Yes
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Adj. R2	0.090	0.130
n	87,047	86,971
Panel B: Analyst coverage		
	Dependent variable = *Mkt-adj CAR*	
	(1)	(2)
	High *COV*	Low *COV*
ES	1.101***	0.825***
	(15.12)	(26.26)
Shock	-0.000	0.003
	(-0.09)	(0.69)
Shock × ES	0.039	-0.364**
	(0.24)	(-2.37)
Difference	0.403**	
	(1.97)	
Controls	Yes	Yes
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Adj. R2	0.050	0.063
n	78,915	95,338
Panel C: Analysts' expertise		
	Dependent variable = *Mkt-adj CAR*	
	(1)	(2)
	High *ANA_EXP*	Low *ANA_EXP*
ES	1.011***	0.935***
	(14.90)	(11.22)
Shock	0.000	0.001
	(0.08)	(0.12)
Shock × ES	-0.134	-0.745**
	(-0.82)	(-2.35)
Difference	0.611**	
	(2.01)	

Controls	Yes	Yes
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Adj. R2	0.054	0.047
n	59,015	59,172

Note. This table reports the results of estimating the effect of bank reputation loss on borrowers' ERCs for samples with high and low (above and below the annual cross-sectional median) levels of alternative monitoring proxies. Panel A presents the results for samples with high and low levels of analyst following, where analyst following is the natural logarithm of one plus the average number of analysts whose recommendations are included in I/B/E/S summary file over the previous 12 months. Panel B presents the results for samples with high and low levels of analyst expertise, where analyst expertise is a composite score computed from six characteristics of analysts following the firm. Panel C presents the results for samples with high and low levels of institutional ownership, where institutional ownership is measured as the number of shares owned by 13F filing institutions as per the latest filing before the earnings announcement date, divided by the number of shares outstanding. For brevity, the coefficient estimates for control variables and their interactions with ES_t are omitted. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Continuous variables are winsorised at the 1st and 99th percentiles of the sample distributions. All regression specifications include firm and year-quarter fixed effects. The *t*-statistics presented in parentheses below the coefficients are corrected for two-way clustering at the firm and year-quarter level. See the appendix for detailed variable definitions.

3.7.2 Market Reliance on Bank Monitoring

3.7.2.1 Financial Covenant

Financial covenants are an important tool for banks to monitor borrowers (Rajan and Winton 1995; Dichev and Skinner 2002; Nini et al. 2009; Christensen et al. 2016). Prior studies suggest that using a larger number of covenants indicates a strong incentive to monitor (e.g. Martin and Roychowdhury 2015; Chen and Vashishtha 2017; Kim et al. 2018). Thus, I expect investors to rely more on the monitoring of banks when loan packages contain more financial covenants, in which case, bank reputation loss should have more pronounced effects on ERCs. Panel A of Table 3.6 presents the results for samples with high and low levels of financial covenant intensity that banks impose (*N_EarnCov*), which is defined as the average number of financial covenants in all outstanding loan packages at the earnings announcement date. I find that the effect of bank reputation loss on borrower ERCs is higher when borrowers' debt covenants contain a larger number of financial covenants.

3.7.2.2 Asset Intangibility

Prior studies suggest that, because it is difficult for outsiders to appraise the value of intangible assets with public information, investors have greater reliance on banks' monitoring when borrowers have a higher level of intangible assets (Lo 2014; Chen and

Vashishtha 2017). Thus, I expect investors to rely more on bank monitoring when the borrowers have a higher level of intangible assets, in which case, bank reputation loss should have more pronounced effects on ERCs. Panel B of Table 3.6 presents the results for samples with high and low levels of asset intangibility (*AssetItan*), which is measured as the principal component of the borrowers' R&D expense and intangible assets. I find that ERCs decrease to a greater extent following bank reputation loss for borrowers with a higher level of intangible assets.

Table 3.6: Partition Tests—Market Reliance on Bank Monitoring

Panel A: Earnings covenant intensity		
	Dependent variable = *Mkt-adj CAR*	
	(1)	(2)
	High *N_EarnCov*	Low *N_EarnCov*
ES	0.842***	0.763***
	(20.26)	(49.45)
Shock	0.001	-0.000
	(1.62)	(-0.43)
Shock × *ES*	-0.164***	-0.089***
	(-3.99)	(-4.69)
Difference	-0.075**	
	(2.91)	
Controls	Yes	Yes
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Adj. R2	0.046	0.047
n	60,477	54,675
Panel B: Asset intangibility		
	Dependent variable = *Mkt-adj CAR*	
	(1)	(2)
	High *AssetItan*	Low *AssetItan*
ES	0.832***	0. 790***
	(21.96)	(59.93)
Shock	0.002**	0.001
	(2.42)	(1.14)
Shock × *ES*	-0.142***	-0.083***
	(-3.25)	(-2.44)
Difference	-0.039**	

	(2.21)	
Controls	Yes	Yes
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Adj. R2	0.052	0.054
n	81,056	81,112

Note. This table reports the results of estimating the effect of bank reputation loss on borrowers' ERCs for samples with high and low (above and below the annual cross-sectional median) levels of alternative monitoring proxies. Panel A presents the results for samples with high and low levels of earnings covenant intensity that banks impose on the firm, where earnings covenant intensity is the average number of earnings covenants in all outstanding private loan packages at the earnings announcement date. Panel B presents the results for samples with high and low levels of asset intangibility, where asset intangibility is measured as the principal component of the firm's R&D expense and intangible assets. For brevity, the coefficient estimates for control variables and their interactions with ES_t are omitted. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Continuous variables are winsorised at the 1st and 99th percentiles of the sample distributions. All regression specifications include firm and year-quarter fixed effects. The *t*-statistics presented in parentheses below the coefficients are corrected for two-way clustering at the firm and year-quarter level. See the appendix for detailed variable definitions.

3.7.3 Effect of Bank Reputation Loss on Persistence of Borrowers' Earnings Surprises

An alternative explanation for a reduction in borrowers' ERC after large-scale bankruptcies in their banks' loan portfolio is the potential disruption in the borrowers' real operating activities. Specifically, if bankruptcies lead to a change in banks' credit policies (perhaps due to a depletion of bank capital), then the persistence of the non-bankrupt borrowers' current performance is expected to deteriorate. This may in turn reduce the actual information content of earnings surprises and thus the market response to it. Although my subsample results in Panel B of Table 3.4 partially address this concern, I further test the empirical existence of this effect by regressing future realised and expected earnings on current analyst forecasts, earnings surprises and its interaction with $Shock_{it}$. The regression model is specified as follows:

$$AF_{i,t+n}/E_{i,t+n} = \alpha_i + \alpha_t + \beta_1 AF_{it} + \beta_2 ES_{it} + \beta_3 Shock_{it} + \beta_4 Shock_{it} \times ES_{it} + Controls_{it} + Controls_{it} \times ES_{it} + \varepsilon_{i,t} \quad (2)$$

where AF_{it} is the median analyst EPS forecast for firm *i* issued within 30 days prior to the earnings announcement of quarter *t*, scaled by the stock price at the date of the forecast. $E_{i,tn}$ is the realised earnings of firm *i* in quarter *t*, scaled by the stock price at the date of the corresponding analyst forecast used to calculate AF_{it}. I focus on the realised and expected earnings one quarter and one year ahead (n = 1 or 4). The control

variables include *BM*, *SIZE*, *LEV* and *COV*, as in Eq. (1). The results shown in Table 3.7 are inconsistent with this line of prediction, as the coefficients on $Shock \times ES_t$ are indistinguishable from zero in all four columns.

Table 3.7: Effect of Bank Reputation Loss on Persistence of Borrowers' Earnings Surprises

	(1)	(2)	(3)	(4)
Dep. =	E_{t+1}	E_{t+4}	AF_{t+1}	AF_{t+4}
AF	0.602***	0.561***	0.596***	0.896***
	(32.64)	(19.01)	(28.69)	(61.05)
ES	0.637***	0.386***	0.258***	0.200***
	(23.23)	(7.14)	(14.70)	(10.21)
Shock	0.005	0.020	-0.007	-0.000
	(0.76)	(1.84)	(-1.15)	(-0.12)
Shock × ES	-0.011	0.023	-0.061	0.032
	(-0.17)	(0.33)	(-0.93)	(0.57)
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Adj. R2	0.69	0.67	0.717	0.911
n	161,347	159,077	142,673	142,900

Note. This table reports the results of estimating the effect of bank reputation loss on the persistence of earnings surprises of the borrowers. The dependent variables are one-, two-, three- and four-quarter-ahead reported earnings. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively. Continuous variables are winsorised at the 1st and 99th percentiles of the sample distributions. All regression specifications include firm and year-quarter fixed effects. The *t*-statistics presented in parentheses below the coefficients are corrected for two-way clustering at the firm and year-quarter level. See the appendix for detailed variable definitions.

3.8 Conclusion

In this study, I examine the effect of banks' loss on the perceived financial reporting credibility of their borrowers. The main results show that a bank's reputation loss leads to a significant temporary decrease in its borrowers' ERCs. The cross-sectional analyses find that the effect of bank reputation loss on ERCs is larger for borrowers with smaller institutional ownership, lower analyst coverage and higher intangible asset intensity, and when credit agreements include more financial covenants.

My study contributes to the ERC literature in a number of ways. Prior studies find that, by enhancing the perceived credibility of financial reports, intermediaries such as auditors have a significant effect on ERC (e.g. Teoh and Wong 1993; Becker et al. 1998; Francis and Ke 2006; Gipper et al. 2019; Marshall et al. 2019). This study finds that banks are important monitors of borrowers' financial reporting credibility. This study relates to research on intermediary reputation. Prior studies find that the

reputations of financial and information intermediaries certify the quality of their issuers or clients (e.g. Chemmanur and Fulghieri 1994; Billett et al. 1995; Fang 2005; Ross 2010; Bushman and Wittenberg-Moerman 2012). My study suggests that bank reputation signals borrowers' reporting credibility. More specifically, the loss of a bank's reputation leads investors to change their assessment of its borrowers' financial reporting credibility. My study also extends the findings of Bushman and Wittenberg-Moerman (2012), who find that the reporting quality of borrowers with high reputation banks tends to be higher. My study finds that an exogenous shock to bank reputation reduces the perceived reporting credibility of borrowers.

Nevertheless, this study has several limitations. First, this study uses ERC to measure financial reporting credibility. This measure is usually considered as the informativeness of earnings news, which is a different conceptual construct compared to credibility. Second, I use large-scale bankruptcy as a proxy for bank reputation loss. A potential problem with this measure is that bankruptcy is mainly associated with banks' ability to manage credit risk, and may not reflect the ability to monitor financial statements. Third, bankruptcy cases often take a long time to resolve. Before filing a bankruptcy case, the market may have already received the information that a firm is near bankruptcy. Fourth, a possible alternative explanation is that, after large-scale bankruptcies, non-bankrupt borrowers may increase information disclosure, improving its information environment and making it to predict their future earnings. As a result, the earnings surprise of the non-bankrupt borrowers may decrease, which in turn reduce earnings response coefficient. The first study of this thesis finds that non-bankrupt borrowers tend to increase voluntary disclosure following large-scale bankruptcies. Untabulated results show that the earnings surprise of non-bankrupt firms do not increase significantly following large-scale bankruptcies. However, I am not able to completely rule out this alternative explanation. Therefore, the results of this study need to be interpreted with caution.

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Appendix B: Variable Definitions

Variables	Definitions
Mkt-adj CAR	CAR from day -1 to +1 relative to the earnings announcement date, where abnormal return is defined as daily stock returns in excess of the returns on value-weighted CRSP portfolio.
CAPM-adj CAR	CAR from day -1 to +1 relative to the earnings announcement date, where abnormal return is defined as daily stock returns in excess of the CAPM-predicted daily returns.
FF3-adj CAR	CAR from day -1 to +1 relative to the earnings announcement date, where abnormal return is defined as daily stock returns in excess of the Fama-French three-factor model-predicted daily returns (Fama and French 1993).
FFC4-adj CAR	CAR from day -1 to +1 relative to the earnings announcement date, where abnormal return is defined as daily stock returns in excess of the Fama-French-Carhart four-factor model-predicted daily returns (Carhart 1997).
AF	Median analyst EPS forecast issued within 30 days prior to the earnings announcement, scaled by the stock price at the date of the forecast.
E	Realised earnings announced scaled by the stock price at the date of corresponding analyst forecast used to calculate *AF*.
ES	Earnings surprise, calculated as the difference between E_t and AF_t.
B_Exposure	Bank bankruptcy exposure, calculated as the weighted average of banks' proportions of loans defaulted by the borrower, where the weight is the loan amount between the firm and the bank. Banks' proportions of loans defaulted by the borrower are computed as the amount of loans defaulted by the borrower within six months of the firm's earnings announcement, divided by the total amount of the bank's outstanding loan portfolio.
Shock	An indicator variable that takes the value of one if $B\_Exposure_t > 0.03$, and zero otherwise.
$Shock^{alt}$	An indicator variable that takes the value of one if any lender's proportions of loans defaulted by the borrower are greater than 0.03, and zero otherwise.
BM	Book-to-market ratio, calculated as the book value of equity divided by the market value of equity observed at the end of the previous quarter.
SIZE	Log of the market value of equity, observed as at the end of the previous quarter.
LEV	Sum of long-term and short-term debts divided by book value of equity.
COV	Natural logarithm of one plus the average monthly number of analysts with active earnings forecasts or recommendations for the firm within 12 months prior to the earnings announcement date.
INST	Latest reported percentage of institutional equity ownership of firm prior to the earnings announcement.
ANA_EXP	Composite score computed as the average total decile ranks of the following aggregate characteristics of analysts following the firm: average experience as an analyst, average experience covering the firm, proportion of All-Star analysts, average brokerage size, average number of firms covered by analysts and average number of firms covered by analysts within the two-digit SIC industry.
N_EarnCov	Average number of earnings covenants in all loan contracts outstanding at the earnings announcement.
AssetItan	Principal component of the firm's R&D expense and total intangible assets.

SL_Dominance	Shocked lenders' dominance, calculated as the proportion of dominant lenders in all lenders that experienced borrower bankruptcy over the past six months. Dominant lenders are lenders whose syndication volume over the past two years exceeds the 90th percentile of all lenders.
SL_AmountLed	Average dollar amount of syndicated loans led by the lenders that experienced borrower bankruptcy over the past six months.
SL_Numberled	Average number of instances of syndicated loans led by the lenders that experienced borrower bankruptcy over the past six months.