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Bank Loan Announcement Effects: Evidence from a Comprehensive 8-K Sample

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Abstract

We investigate whether bank loan financing from 1994 to 2018 conveys valuable private information using a sample of over 10,000 bank loan announcements identified from 8-K filings. We show that the positive announcement effect is persistent and closely related to the information revealed in loan characteristics: The effect is stronger when deals have higher materiality, more favorable pricing, larger lead bank shares, and higher syndicate concentration. The effect is also stronger when lenders have higher credit quality and when credit market conditions are worse. The insignificant wealth effect documented in several early studies is potentially driven by small sample size.

I. Introduction

Theories of financial intermediation suggest that banks and other intermediaries have a cost advantage over outsiders in producing and transferring information (e.g., Leland and Pyle (1977), Diamond (1984), (1991)). Bank loans are different

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from public debt because banks have private information about a borrower's prospects and banks can better monitor borrower behavior than other outside monitors can. A direct implication of the theories is that bank loan financing should elicit positive wealth effects because it conveys valuable private information to the market.

Early studies support this view and provide evidence that the market reacts positively to bank loan announcements (e.g., James (1987), (1990), Billett, Flannery, and Garfinkel (1995)), emphasizing the unique valuation effects associated with bank loan financing. However, a few subsequent studies challenge the previous conclusions and argue that the positive market responses to loan announcements disappear as the financial system changes and the information environment improves (Fields, Fraser, Berry, and Byers (2006)) or when the announcement sample better represents the loan population (Maskara and Mullineaux (2011)).

A resolution of the debate on bank loan announcement effects is important because it is closely related to an important question in the financial intermediation literature: Do banks generate significant value in the lending process as information producers and delegated monitors or do they just provide transactions services and act as passive portfolio managers (e.g., Fama (1980))? Answers to this question have important implications for corporate financial policy and bank regulatory policy due to the following reasons (e.g., James and Smith (2000), Hadlock and James (2002), Duffie (2018)). On the one hand, an understanding of the costs and benefits associated with private debt financing is useful for lowering firms' overall cost of capital. Firms can optimally choose between private debt and public financing to achieve better financial outcomes. On the other hand, an understanding of the unique role played by bank financing for businesses is important for effectively regulating the banking sector and maintaining financial stability. If bank loans are truly special and cannot be easily replaced by other types of financing, any disruption or disfunction of the banking sector can significantly reduce corporate investment and macroeconomic activities.

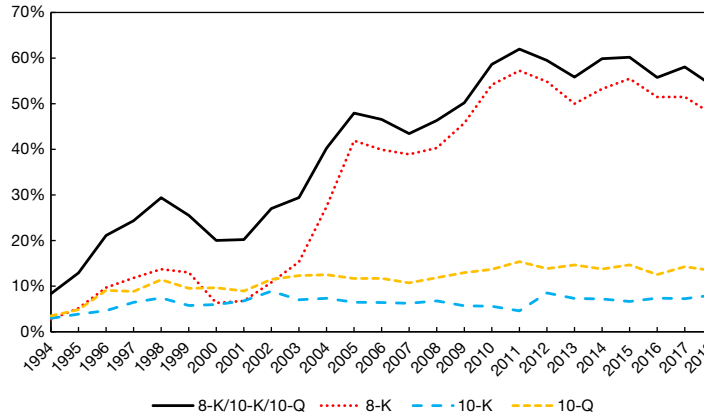
Prior studies largely rely on hand-collected data that contain a limited number of observations, which reduces the statistical power of tests and raises concerns about sample misrepresentation of the loan population. Moreover, most previous research ends the sample period before 2004. As we show in Figure 1, due to regulation changes, the percentage of loans announced through Securities and Exchange Commission (SEC) 8-K filings has dramatically increased since 2004. Before 2004, less than 10% of the loans in the DealScan database were announced through 8-K filings, but this number substantially increased to more than 50% after 2004.

In this article, we take an alternative approach to construct our sample by employing a matching algorithm based on big data techniques. We assemble a large and comprehensive sample of over 10,000 bank loan announcements that match all loan facilities from the DealScan database with 3.2 million SEC 8-K filings from 1994 to 2018. Our sample has several distinct advantages not present in previous studies. First, our sample is orders of magnitude larger than the sample size of the existing studies, which significantly increases the statistical power of our analysis. Second, our sample covers the entire universe of DealScan loans, which effectively alleviates the sample misrepresentation concern raised in previous studies. Third,

FIGURE 1

Percentage of Announced Loans Over 1994–2018

Figure 1 plots the percentage of bank loans in the DealScan database that are announced in SEC 8-K filings (dotted line), 10-K filings (long dashed line), 10-Q filings (short dashed line), and any SEC 8-K/10-K/10-Q filings (solid line) over 1994–2018.



our sample captures the period after 2004, when the SEC's new rule on 8-K filings becomes effective and firms significantly increase their loan disclosures. Our sample also extends into the post-Dodd–Frank period and thus provides a more updated view on the valuation effects of bank financing as the financial system experiences a major regulatory transformation.

Our comprehensive sample enables us to shed new light on several important questions that remain unresolved in the previous literature. First, does bank loan financing continue to generate positive announcement effects for borrowing firms as the regulatory and information environment changes over time? Second, how do our results, based on a large and comprehensive 8-K announcement sample, differ from previous results based on a small sample of news announcements ending before 2004? Third, what factors drive firms' decision to announce a loan? Fourth, how are the wealth effects of bank loan announcements related to the materiality, pricing, and syndicate structure of the loan? Fifth, do lender credit quality and credit market conditions continue to play important roles for the bank loan announcement effects as suggested by previous studies?

Using our sample of 11,595 bank loan announcements identified from Form 8-K filings during 1994–2018, we show that the market reacts positively to bank loan announcements. The average 7-day cumulative abnormal return around loan announcements is 0.48% with a *t*-statistic of 6.99. Importantly, the positive wealth effect of bank financing persisted in recent years after the SEC imposed new 8-K disclosure rules in Aug. 2004, which led to a substantial increase in loan announcements through 8-K filings.

We then investigate how our results based on the 8-K announcements differ from the previous study in Maskara and Mullineaux (2011), which conducted the analysis by randomly choosing 800 loans from the DealScan database from 1987 to 2004. They argue that their sample better represents the loan population and fails to generate significant abnormal loan announcement returns. We repeat their approach

and find that their insignificant results are potentially driven by the small sample size and high volatility of stock market reactions in the early sample period.

Our large announcement sample, covering the entire DealScan database, further enables us to perform a comprehensive analysis of the differences between all announced and unannounced loans. We reveal several important determinants of borrowers' decision to announce a loan: Firms are more likely to announce a loan when the loan has higher materiality and more favorable pricing, and when credit market conditions are tight. Furthermore, we address the sample misrepresentation concern by showing that the market reactions after loan announcements remain significantly positive after we adjust the difference in borrower size distributions between the 8-K announcement sample and the full DealScan loan sample.

Next, we explore how the wealth effect of loan announcements varies with the private information of banks revealed by loan characteristics, lender quality, and credit market conditions. On the one hand, we provide new evidence that the wealth effect is stronger when a loan is more material to the borrower (e.g., with a higher loan-to-asset ratio), when a loan reveals positive news about the borrowers' financial conditions (e.g., with a lower abnormal spread), and when a loan has a syndicate structure that better prevents the moral hazard problem (e.g., with higher lead bank shares and high syndicate concentration). On the other hand, we confirm and extend previous findings in our large and long-spanned sample. We show that lender credit quality remains crucial and the positive abnormal announcement returns are stronger for lenders with high credit ratings (e.g., James (1987), (1990), Billett et al. (1995)). The market reactions to loan announcements, in general, become stronger when credit market conditions deteriorate (e.g., Demiroglu, James, and Velioglu (2022)).

Our paper contributes to the literature in two important aspects. First, we provide new insights on the valuation effects of bank loan announcements. The limited sample coverage in previous studies hinders the ability to resolve the debate between early findings (e.g., James (1987), (1990), Lummer and McConnell (1989), Billett et al. (1995)) and subsequent controversial evidence (Fields et al. (2006), Maskara and Mullineaux (2011)). By leveraging the power of big data techniques and assembling a comprehensive sample of bank loan announcements, our study demonstrates a robust positive market reaction after loan announcements as the regulatory and information environment changes over time and addresses the concerns over sample misrepresentation of the loan population in previous studies.

Second, we also add to the broad literature that emphasizes the distinct role of banks as information producers and delegated monitors during the lending process (Diamond (1984), (1991), Ramakrishnan and Thakor (1984), Fama (1985)). It has been shown that by mitigating information asymmetry, the private lending relationship provides various benefits to the borrowing firms. The banks' private information about borrowers' prospects is reflected in loan terms such as loan spreads, syndicate structure, and financial covenants (e.g., Sufi (2007), Demiroglu and James (2010), Demiroglu et al. (2022), Badoer, Emin, and James (2024)). We contribute to this line of literature by providing new evidence and extending previous studies on the important factors that convey lenders' private information around loan announcements and determine firms' decisions to announce bank loans.

II. Literature Review and Hypothesis Development

A. Literature Review

Our paper is closely related to two strands of the literature. First, it adds to the extensive yet debated studies in loan announcement research. Early studies discovered that the borrowers' stock prices react positively to announcements of bank loans but react negatively or neutrally to announcements of public securities (Mikkelson and Partch (1986), James (1987)). Subsequent studies identify several loan and borrower characteristics that may affect the stock market reaction to loan announcements. For example, the positive bank loan announcement effects have been shown to be stronger for loan renewals (Lummer and McConnell (1989)), smaller borrowers (Slovin, Johnson, and Glascock (1992)), and firms with negative recent earnings trend or greater analyst forecast dispersions (Best and Zhang (1993)). Billett et al. (1995) find that the borrower's abnormal returns increase with the lender's credit quality in the 1980s, signaling valuable information about firm value to the market. Ross (2010) shows that borrower stock prices respond more favorably to loan announcements when the lender is among the dominant banks. Moreover, Dahiya, Puri, and Saunders (2003) discovered that borrowers experience significant negative stock returns on loan sale announcements. Gande and Saunders (2012) suggest that banks provide additional benefits to the borrower by creating an active secondary market for bank loans in more recent years. De Marco and Petriconi (2024) find that bank competition affects bank information production.

However, several recent studies cast doubt on whether bank loans convey valuable private information to the market. Fields et al. (2006) argue that, due to changes in financial systems and improved availability of information, the advantages associated with bank lending relationships have largely disappeared. Using a sample of 1,111 loan announcements during 1980–2003, they conclude that the positive abnormal return associated with bank loan announcements only existed in the 1980s but vanished after 2000. Maskara and Mullineaux (2011) claim that prior studies of loan announcements fail to represent the loan universe and the significant abnormal announcement returns are driven by the smallest firms. Our sample addresses the debate by providing a better representation of the entire loan universe in the DealScan database and alleviating the concerns over inference biases due to sample limitations.

Second, our paper is linked to the broad literature that focuses on the role of banks in information production. It has long been recognized that banks alleviate information asymmetries in the lending process (Diamond (1984), (1991), Ramakrishnan and Thakor (1984), Fama (1985)). Several studies further show that banks' private information is reflected in loan terms. For example, Demiroglu and James (2010) show that the selection of tight financial covenants conveys information about the borrower's prospects. Demiroglu et al. (2022) suggest that the stickiness of the loan spread reflects the time-varying intensity of bank screening. Our paper provides new insights into the information production of banks using a better-constructed and more comprehensive sample of loan announcements through 8-K filings.

B. Hypothesis Development

Theories of financial intermediation suggest that banks play important screening, monitoring, and certifying roles in the private lending relationships with borrowing companies (e.g., Diamond (1984), (1991), Ramakrishnan and Thakor (1984), Fama (1985), Pennacchi (1988), Puri (1996)). As a form of inside debt, bank loans can alleviate information asymmetry and agency problems that outside debt (e.g., public bonds) cannot. As long as banks continue to provide private information and actively monitor borrowers, bank financing should remain valuable and generate positive wealth effects. Therefore, we propose the following hypotheses:

Hypothesis 1. Bank loan announcements elicit positive announcement returns and such effects persist over time if banks play a unique role as information producers and active monitors.

Given that we only observe the wealth effect of bank loan announcements when loans are announced, it is important to understand the determinants of borrowers' decision to announce a loan. Firms tend to announce loans that help them comply with regulations or enhance firm value. First, the SEC requires public firms to timely disclose information about their financial and managerial conditions considered to be material in Form 8-K and such a rule will become more stringent after Aug. 23, 2004. Thus, the materiality of a loan is an important consideration for firms to comply with government regulations. Second, the pricing of a loan reflects important information about a firm's financial position and growth prospects. An abnormally low credit spread reflects more positive private information possessed by the lender (e.g., James and Smith (2000)) and firms are more likely to disclose the loan to enhance firm value. Third, previous studies suggest that the intensity of bank screening inversely varies with credit market conditions (e.g., Demiroglu et al. (2022)). Firms are more likely to announce bank loans when the credit market condition deteriorates because bank financing is more valuable and generates more positive wealth effects. We summarize this in our second hypothesis.

Hypothesis 2. Borrowers are more likely to announce a loan when the loan is more material, when the loan has more favorable pricing, and when the credit market condition is worse.

The wealth effect of bank loan announcements should be closely related to loan terms that determine the materiality and information content of the loan. The wealth effect should also be stronger when the loan is more material to the firm (e.g., when the loan-to-asset ratio is higher) and when a loan reflects more positive information (e.g., when the loan spread is abnormally low). In addition, prominent models with agency and moral hazard in monitoring (e.g., Holmstrom (1979), Holmstrom and Tirole (1997)) suggest that since the informed lenders' monitoring efforts are costly and unobservable, to ensure due diligence, the informed lenders

must retain a large stake in the loan and form a more concentrated syndicate (e.g., Sufi (2007)). We formulate our third hypothesis as follows:

Hypothesis 3a. The wealth effect of bank loan announcements is stronger for loans with higher materiality and more favorable pricing.

Hypothesis 3b. The wealth effect of bank loan announcements is stronger for loans with a larger share of lead banks and more concentrated syndicate.

In addition to information conveyed at the loan level, early studies suggest that the wealth effect of bank loan announcements should also vary with lenders' credit quality and credit market conditions. According to Billett et al. (1995), a lender's quality may convey unique information to outside equity investors. On the one hand, lenders may have different risk preferences when they make lending decisions, which will in turn reveal the borrower's true risk. On the other hand, lenders may have different monitoring abilities, which is important to ensure that the borrower makes its corporate decisions appropriately and retains the ability to repay the loan.

Credit market conditions are another important determinant of the bank loan announcement effect. From one point of view, when credit market conditions deteriorate, economic uncertainty increases and the information asymmetry between insiders and outside investors becomes more severe. Information conveyed by bank loan financing becomes more valuable to market investors. From a different perspective, however, bank screening and monitoring become more intensive when credit market conditions are tight (Demiroglu et al. (2022)). The private lending relationship between banks and borrowing firms becomes more valuable. Both situations predict that the positive loan announcement effects should be stronger when the aggregate credit spread is higher. We develop our last hypotheses based on these predictions.

Hypothesis 4a. The wealth effect of bank loan announcements is stronger when the lender credit quality is higher.

Hypothesis 4b. The wealth effect of bank loan announcements is stronger when the credit market condition is worse.

III. Institutional Background

A. SEC Regulations on Form 8-K Disclosure

According to the Securities Exchange Act of 1934, the SEC requires public firms to timely disclose information about their financial and managerial conditions considered to be material in Form 8-K. On Aug. 23, 2004, the SEC mandated a new rule, "Additional Form 8-K Disclosure Requirements and Acceleration of Filing Date," which made three main amendments to prior guidance.[1] It expands the scope

[1]See https://www.sec.gov/rules/final/33-8400.htm#seciic for the details of the SEC's new rule on Form 8-K disclosure.

of events that may trigger Form 8-K disclosure, creates a new topical format, and shortens the delay in 8-K filings.

Specifically, the number of reportable events has increased to 22 and the new set of events has been reorganized into topical categories (Lerman and Livnat (2010)). There are 8 new mandatory items added to Form 8-K, among which two are particularly relevant: "Entry into a Material Definitive Agreement (Item 1.01)" and "Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant (Item 2.03)." When a firm enters into a material loan agreement (or revolving credit facilities), the firm should disclose the material terms of the agreement under Item 1.01 and satisfy the additional disclosure requirements of Item 2.03.

Another important change is the shortened filing deadline for Form 8-K. All mandatory items must be filed within 4 business days, compared to the prior deadlines of between 5 and 15 days depending on the item. EDGAR ensures that the reports are generally available to the public within, at most, 1 business day of the filing. As a result, the new Form 8-K rule enables the public to receive information about material events within 5 business days of their occurrences.

B. The Dodd–Frank Wall Street Reform and Consumer Protection Act

In response to the 2007–2009 financial crisis, the Dodd–Frank Act, officially called the Dodd–Frank Wall Street Reform and Consumer Protection Act, was signed into law on July 21, 2010.[2] The law places strict regulations on banks and lenders in an effort to protect consumers, prevent systemic risk, and maintain financial stability. It also created several new agencies to oversee the regulatory process and implemented several key changes to address the perceived problems of the financial industry. The Dodd–Frank Act includes a prohibition known as the Volcker Rule, which broadly restricts banks from engaging in proprietary trading and sponsoring hedge funds and private equity funds.

IV. Data

A. Construction of the Loan Announcement Sample from 8-K filings

We start with all DealScan loan facilities issued to U.S. borrowers from 1994 to 2018. The DealScan database is the most commonly utilized database for the U.S. loan market and provides detailed information associated with the loan contract terms and conditions. However, DealScan does not provide information on whether and when the existence of the loan is publicly announced to the market.[3]

We next proceed to search the DealScan loan universe within 8-K filings to identify loan announcements. We download all 3.2 million 8-K filings from the EDGAR website from 1994 to 2018, in their entirety. We then search the [−30,+30] day window around the loan active date for the DealScan loan universe and locate

[2]See https://www.congress.gov/bill/111th-congress/house-bill/4173, for the details of the Dodd–Frank Act.

[3]For example, Carey and Hrycray (1999) state, "DealScan reports a contract date for each loan but no information about when the existence of the loan became public knowledge."

350,492 SEC 8-K filings in total. In this sample of 8-K filings, we proceed to specifically identify the filings associated with loans by using the following criteria: i) the reporting entity of the 8-K filing is consistent with the borrower of the loan as recorded in the DealScan database; ii) at least 1 of the 14 keywords, including line of credit, credit line, credit facility, credit agreement, credit extension, new loan, loan agreement, loan renewal, loan revision, loan extension, finance company loan, term loan, commercial loan or bank loan, can be found in the 8-K filing; iii) loan size, and at least 1 lender company can be matched with the loan record in the DealScan database. We manually check 1,000 identified 8-K filings and find that our matching algorithm reaches an accuracy rate of more than 95%. If a loan is matched with multiple 8-K filings, we keep the one with the earliest SEC acceptance date and time. Given the SEC's new rule on 8-K disclosure, we require the number of business days between loan active date and SEC acceptance date to be within 5 business days. After this step, we are left with 15,990 unique loan facilities.

The announcement date of a loan is deemed to be the same as the SEC acceptance date if the SEC acceptance time is before 4PM EST (the market closing time) on a business day. Otherwise, the announcement date is defined as the next business date following the SEC acceptance date. If there are multiple loans announced on the same day for a borrower firm, we combine these loans together as a loan portfolio. In the end, we obtain 11,595 loan announcements between Jan. 1, 1994, and Dec. 31, 2018.

We obtain stock return data from CRSP and accounting information from Compustat. In addition, we obtain analyst forecast data from IBES; credit rating information for borrowers and lenders from Capital IQ S&P Credit Ratings database; and Moody's Seasoned Aaa and Baa Corporate Bond Yield from the Federal Reserve Bank at St. Louis.

B. Construction of the Full Announced and Unannounced Loan Samples

To investigate the determinants of loan announcement decisions, we need to construct the full announced and unannounced loan samples. Loans are not only announced in Form 8-K but may also be announced in periodical reports such as Form 10-K and 10-Q when the loan is signed close to the 10-K or 10-Q release date.[4] We start with all DealScan loan facilities issued to U.S. borrowers from 1994 to 2018 that can be linked to the CRSP-Compustat merged database. We require the borrower to have valid market capitalization data in the month before the loan announcement. We then conduct the same matching algorithm described in Section IV.A for all 8-K/10-K/10-Q filings except that we no longer impose the condition that the number of business days between the loan active date and the SEC acceptance date be within 5 business days. Our final sample contains 51,494 loans, among which 22,458 are announced in 8-K/10-K/10-Q filings and 29,036 remain unannounced.[5]

[4]In our event study of loan announcement effects, we focus on 8-K filings and avoid the contemporaneous earning announcements associated with 10-K and 10-Q filings.

[5]Some loans are announced in more than one type of SEC filings.

C. Abnormal Spread

Abnormal spread of a loan facility is defined as the difference between its all-in-drawn spread and predicted spread. We estimate the predicted spread for a loan based on all DealScan loans. Specifically, we conduct the following regression from 1994 to 2018:

$$(1) \qquad Loan\ Spread_{i,j,q,t} = \alpha_{j\_rating} + \alpha_{q\_rating} + \alpha_j + \alpha_t + \beta X_i + \gamma Y_j + \epsilon_{i,j,q,t},$$

where i, j, q, and t represent loan, borrower, lender, and year-quarter, respectively. The dependent variable, $Loan\ Spread_{i,j,q,t}$, is the all-in-drawn spread obtained from DealScan, which describes the amount the borrower pays in percentage points over LIBOR for each dollar drawn down from the loan, including the fees. In terms of independent variables, we follow the existing literature and include a vector of loan-specific (X_i) and borrower-specific (Y_j) characteristics (e.g., Lin, Officer, Wang, and Zou (2013), Schwert (2018), Santos and Winton (2019)). For loan characteristics, we consider loan size, maturity, and dummy variables indicating whether a loan is secured or senior, whether a loan has covenants, a prime base rate, performance pricing contracts, or guaranty, whether the lead lender of the loan is the sole lender, and whether the lead lender is a relationship lender.[6] For borrower characteristics, we include firm size, tangibility, profitability, and leverage. When merging borrower characteristics with loan observations, we require the latest fiscal year to end at least 4 months before the loan's active date. In addition, we also control the regression for borrower rating (α_{j_rating}), lender rating (α_{q_rating}), borrower (α_j), and year-quarter (α_t) fixed effects.

In the online Supplementary Material (Table OS.1), we report the predictive regression of loan spreads. According to Ivashina and Sun (2011), loan-specific time-on-the-market (*TOM-loan*) is positively associated with loan spread. We confirm their results in Table OS.1. However, because the data of *TOM-loan* in DealScan is missing for nearly 90% of the sample, we do not include it in our predictive regression.

V. Cumulative Abnormal Returns Around Loan Announcements in 8-K Filings

A. Summary Statistics of the 8-K Loan Announcement Sample

Table 1 provides summary statistics on loan and borrower characteristics for our 11,595 loan announcement events identified from 8-K filings. When there are multiple loan facilities announced on the same event date for a borrower firm, *Loan Size* and *(ln)Loan-to-Asset Ratio* are measured based on aggregated loan size; *Maturity*, *All-in-Drawn Spread*, *Abnormal Spread*, and *Number of Lenders* are measured as loan-size-weighted average; and the syndication dummy (*Syndicate*) is measured for the loan of the largest size. For variables with significant skewness,

[6]We apply the definition of lead lenders from Berg, Saunders, and Steffen (2016), in which a lead lender is identified if at least one of the following conditions are met: i) LeadArrangerCredit = "Yes"; ii) LenderRole = "Agent," "Admin Agent," "Arranger," or "Lead Bank"; iii) the lender is the sole lender.

TABLE 1

Summary Statistics

Table 1 reports the summary statistics of loan and borrower characteristics for the 11,595 bank loans announced in SEC 8-K filings from Jan. 1, 1994 to Dec. 31, 2018. *Loan Size* represents the loan amount in million USD, which is in constant dollars of 2018. *(ln)Loan-to-Asset Ratio* is defined as the natural logarithm of (1 + *Loan Size*/*Total Assets*). *Maturity* represents loan maturity in number of months. *All-in-Drawn Spread* is the amount the borrower pays in percentage points over LIBOR for each dollar drawn down. *Abnormal Spread* is the residual spread from the regression of all-in-drawn spread on various loan, firm, and bank characteristics. *Syndicate* is a dummy variable that equals 1 if a loan is funded by at least two lenders, and 0 if the loan is funded by a sole lender. *Number of Lenders* represents the number of lenders participating in the loan. *(ln)Market Equity* is the natural logarithm of the borrower's market capitalization at the month-end prior to the announcement date. Market capitalization is in constant dollars of 2018. *(ln)Total Assets* is the natural logarithm of borrower's total assets. Total asset is measured in constant dollars of 2018. *OIBD* is the borrower's operating income before depreciation divided by total assets. *TobinQ* represents the ratio of borrower's book value of debt plus market value of equity scaled by total assets. *Leverage* is the book value of borrower's long-term debt plus debt in current liability divided by the sum of the book value of debt and the market value of equity. *Beta* is the market beta and *IVol* is the idiosyncratic volatility defined as the annualized standard deviation of the residuals estimated from the Fama–French 3-factor model using daily returns during the 3-month window that ends a week preceding the announcement date with at least 30 non-missing observations. *Runup* is the cumulative 10-day abnormal returns on the borrower's stock preceding the event window, computed using the Fama–French 5-factor model or the DGTW benchmark model. All continuous variables are winsorized at the 1% and 99% levels. Detailed variable definitions are reported in the Appendix.

Variables	Mean	Std. Dev.	P25	Median	P75
Loan Characteristics					
Loan Size ($ million)	807.10	1,142.54	166.35	406.96	956.20
(ln)Loan-to-Asset Ratio	0.23	0.19	0.09	0.18	0.32
Maturity (# of Months)	50.95	18.19	36.00	60.00	60.00
All-in-Drawn Spread (%)	2.00	1.24	1.25	1.75	2.50
Abnormal Spread (%)	−0.10	0.69	−0.48	−0.10	0.23
Syndicate	0.89	0.31	1.00	1.00	1.00
Number of Lenders	8.59	6.70	4.00	7.00	12.00
Borrower Characteristics					
(ln)Market Equity	21.27	1.71	20.16	21.30	22.40
(ln)Total Assets	21.52	1.61	20.41	21.48	22.61
OIBD	0.12	0.09	0.08	0.12	0.16
TobinQ	1.66	0.90	1.09	1.38	1.88
Leverage	0.22	0.17	0.08	0.19	0.33
Beta	0.99	0.59	0.66	0.98	1.32
IVol	0.33	0.22	0.19	0.27	0.40
$Runup_{FF5}$ (%)	0.22	7.26	−3.20	0.06	3.40
$Runup_{DGTW}$ (%)	0.21	6.80	−3.11	0.06	3.21

such as *Loan-to-Asset Ratio* and *Market Equity*, we perform the natural logarithm transformation to alleviate the effect of skewness in the regression analysis. Loan size, market capitalization, and total assets are measured in constant dollars of 2018. Detailed variable definitions are provided in the Appendix.

B. Cumulative Abnormal Returns Around Loan Announcements

To identify the market reaction to loan announcements, we adopt the event study methodology by calculating the CARs based on the Fama and French 5-factor model (henceforth FF5) and the Daniel, Grinblatt, Titman, and Wermers (1997) characteristics-based benchmark model (henceforth DGTW).[7] We winsorize CARs at 1% and 99% levels in our analysis to alleviate the impact of extreme outliers.

Panel A in Table 2 reports the average CARs during the [−2,+2], [−3,+3], and [−5,+5] event windows surrounding loan announcements for the full sample period and three subperiods: before Aug. 23, 2004, from Aug. 23, 2004 to July 21, 2010, and after July 21, 2010. We partition our sample into subperiods to investigate how the loan announcement effects change with the regulatory environment.

[7]Our results remain qualitatively similar if we use other models such as the market model and the Fama–French 3-factor model.

TABLE 2

Cumulative Abnormal Returns Around Bank Loan Announcements

Panel A of Table 2 reports the cumulative abnormal returns based on the Fama–French 5-factor model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−2,+2], [−3,+3], and [−5,+5] trading day window around the 8-K loan announcement date. Panels B and C report the abnormal returns (AR_{FF5} and AR_{DGTW}) from −5 to +5 days around loan announcement date. CARs and ARs are reported for the full sample period from Jan. 1, 1994 to Dec. 31, 2018 and three subperiods: before Aug. 23, 2004, from Aug. 23, 2004 to July 21, 2010, and after July 21, 2010. The number of events for the full sample and three subsamples are 11,595, 849, 4374, and 6372, respectively. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above. *p*-value for Wilcoxon signed rank test and the percentage of positive CARs are also reported.

Panel A. Cumulative Abnormal Returns Around Bank Loan Announcements

Sample Period	# Obs.		CAR_{FF5} [−2,+2]	CAR_{DGTW} [−2,+2]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−5,+5]	CAR_{DGTW} [−5,+5]
Full Sample	11,595	Avg.	**0.39*****	**0.35*****	**0.48*****	**0.44*****	**0.50*****	**0.44*****
		t-stat.	**(6.69)**	**(6.11)**	**(6.99)**	**(6.57)**	**(6.07)**	**(5.44)**
		Wilcoxon p	0.00	0.00	0.00	0.00	0.00	0.00
		%Pos	52.2%	52.6%	52.8%	52.5%	52.3%	51.8%
Before Aug. 23, 2004	849	Avg.	**0.78*****	**0.64****	**0.72****	**0.63***	**0.80****	0.50
		t-stat.	**(2.77)**	**(2.26)**	**(2.17)**	**(1.85)**	**(2.00)**	(1.24)
		Wilcoxon p	0.02	0.13	0.10	0.12	0.08	0.21
		%Pos	53.8%	52.2%	52.0%	50.9%	51.8%	52.5%
Aug. 23, 2004–Jul. 21, 2010	4,374	Avg.	**0.49*****	**0.43*****	**0.64*****	**0.51*****	**0.82*****	**0.64*****
		t-stat.	**(4.78)**	**(4.32)**	**(5.37)**	**(4.38)**	**(5.70)**	**(4.53)**
		Wilcoxon p	0.00	0.00	0.00	0.00	0.00	0.00
		%Pos	52.0%	52.6%	53.5%	51.8%	52.7%	52.5%
After Jul. 21, 2010	6,372	Avg.	**0.27*****	**0.26*****	**0.33*****	**0.37*****	**0.22****	**0.29*****
		t-stat.	**(3.81)**	**(3.70)**	**(4.03)**	**(4.60)**	**(2.31)**	**(3.00)**
		Wilcoxon p	0.00	0.00	0.00	0.00	0.01	0.00
		%Pos	52.2%	52.6%	52.4%	53.1%	52.0%	51.3%

Panel B. Abnormal Returns Based on the Fama–French 5-Factor Model Around Bank Loan Announcements

Sample Period	# Obs.		AR_{FF5} [−5]	AR_{FF5} [−4]	AR_{FF5} [−3]	AR_{FF5} [−2]	AR_{FF5} [−1]	AR_{FF5} [0]	AR_{FF5} [1]	AR_{FF5} [2]	AR_{FF5} [3]	AR_{FF5} [4]	AR_{FF5} [5]
Full Sample	11,595	Avg.	0.02	0.01	**0.06****	**0.07*****	**0.09*****	**0.14*****	−0.01	0.03	−0.03	**−0.05****	0.00
		t-stat.	(0.87)	(0.42)	**(2.37)**	**(3.03)**	**(3.60)**	**(4.81)**	(−0.26)	(1.48)	(−1.20)	**(−2.43)**	(−0.10)
Before Aug. 23, 2004	849	Avg.	**0.39*****	**0.35*****	**0.48*****	**0.44*****	**0.50*****	**0.44*****	−0.09	0.10	**−0.27****	−0.11	−0.13
		t-stat.	**(6.69)**	**(6.11)**	**(6.99)**	**(6.57)**	**(6.07)**	**(5.44)**	(−0.76)	(0.88)	**(−2.47)**	(−1.02)	(−1.17)

(continued on next page)

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TABLE 2 (continued)

Cumulative Abnormal Returns Around Bank Loan Announcements

Panel B. Abnormal Returns Based on the Fama–French 5-Factor Model Around Bank Loan Announcements (continued)

Sample Period	# Obs.		AR_{FF5} [−5]	AR_{FF5} [−4]	AR_{FF5} [−3]	AR_{FF5} [−2]	AR_{FF5} [−1]	AR_{FF5} [0]	AR_{FF5} [1]	AR_{FF5} [2]	AR_{FF5} [3]	AR_{FF5} [4]	AR_{FF5} [5]
Aug. 23, 2004–Jul. 21, 2010	4,374	Avg.	**0.09****	−0.01	**0.10****	**0.13*****	0.07	**0.16*****	−0.01	0.01	−0.02	−0.06	0.05
		t-stat.	**(2.49)**	(−0.14)	**(2.34)**	**(3.06)**	(1.64)	**(3.42)**	(−0.30)	(0.31)	(−0.50)	(−1.49)	(1.23)
After Jul. 21, 2010	6,372	Avg.	**−0.05***	0.01	0.02	0.01	**0.07*****	**0.13*****	0.01	0.04	0.00	**−0.04***	−0.02
		t-stat.	**(−1.93)**	(0.33)	(0.84)	(0.34)	**(2.63)**	**(3.48)**	(0.37)	(1.50)	(0.13)	**(−1.65)**	(−0.79)

Panel C. Abnormal Returns Based on the DGTW Benchmark Model Around Bank Loan Announcements

Sample Period	# Obs.		AR_{DGTW} [−5]	AR_{DGTW} [−4]	AR_{DGTW} [−3]	AR_{DGTW} [−2]	AR_{DGTW} [−1]	AR_{DGTW} [0]	AR_{DGTW} [1]	AR_{DGTW} [2]	AR_{DGTW} [3]	AR_{DGTW} [4]	AR_{DGTW} [5]
Full Sample	11,595	Avg.	0.01	0.00	**0.06****	**0.05***	**0.05****	**0.12*****	0.02	**0.05****	−0.01	**−0.05****	−0.01
		t-stat.	(0.26)	(−0.02)	**(2.46)**	**(1.90)**	**(2.27)**	**(4.04)**	(0.91)	**(2.00)**	(−0.53)	**(−2.08)**	(−0.52)
Before Aug. 23, 2004	849	Avg.	0.04	0.06	0.15	0.09	**0.24****	0.06	−0.01	0.06	**−0.22****	−0.08	**−0.21***
		t-stat.	(0.37)	(0.44)	(1.18)	(0.68)	**(1.98)**	(0.45)	(−0.07)	(0.59)	**(−1.99)**	(−0.73)	**(−1.88)**
Aug. 23, 2004–Jul. 21, 2010	4,374	Avg.	0.06	0.00	0.07	**0.09****	0.02	**0.15*****	0.02	0.02	−0.05	−0.05	0.02
		t-stat.	(1.56)	(−0.05)	(1.63)	**(2.19)**	(0.44)	**(3.03)**	(0.46)	(0.53)	(−1.40)	(−1.30)	(0.59)
After Jul. 21, 2010	6,372	Avg.	−0.04	−0.01	0.04	0.01	**0.05***	**0.11*****	0.03	**0.06****	**0.05***	−0.04	−0.01
		t-stat.	(−1.54)	(−0.27)	(1.43)	(0.23)	**(1.91)**	**(2.87)**	(0.98)	**(2.27)**	**(1.86)**	(−1.46)	(−0.35)

We find significant and positive CARs for all three event windows in the full sample period. The average $CAR_{FF5}[-3,3]$ is 0.48% with a t-statistic of 6.99. Furthermore, the average CARs remain significantly positive over time. The average $CAR_{FF5}[-3,3]$ is 0.72% (t-stat = 2.17), 0.64% (t-stat = 5.37), and 0.33% (t-stat = 4.03) for the three subperiods, respectively. We also conduct nonparametric Wilcoxon signed rank tests for the median of CARs. The results are significant at the 1% level for CARs in the full sample and two later subperiods. The results are slightly weaker in the first subperiod, potentially due to the small sample size in the early years. The economic magnitude of the average CARs decreases over time potentially due to the following reasons. First, the increasingly strict regulatory requirements for the disclosure of material events compel firms to announce smaller and less material loan agreements, which may convey less information about firm value. Second, the deterioration of lender credit quality after the financial crisis may also reduce the market response to bank loan announcements as we discuss later in Section VIII.C. At the bottom line, the positive market reaction to loan announcements continues to be significant in recent years, suggesting that lender's private information remains important to market investors as the regulatory environment changes over time. The results support our Hypothesis 1.

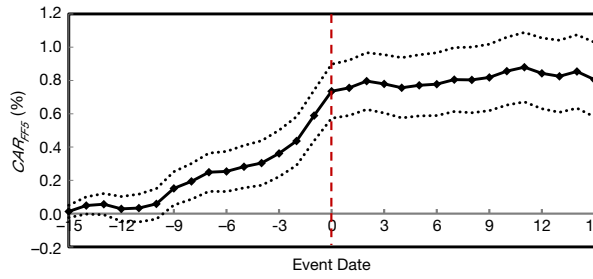
To see more precisely the wealth effects around 8-K filings, we report the abnormal returns (AR_{FF5} and AR_{DGTW}) from −5 to +5 days around the loan announcement date in Panels B and C of Table 2. It is evident that the positive abnormal return is the most significant economically and statistically on the event date (day 0). We also observe that the market starts to react 3 days before the event date. The presence of preannouncement price runup alludes to information leakage prior to the announcement date, which will be investigated in Section IX.C.

In Figure 2, we further plot the cumulative abnormal returns based on the FF5 model (CAR_{FF5}, in %) during the [−15,+15] event window around bank loan announcements. The CARs are plotted in a solid line with corresponding 90% confidence intervals plotted in dotted lines. This graph clearly shows a positive and significant market reaction to loan announcements.

FIGURE 2

Average Cumulative Abnormal Return Around 8-K Loan Announcements

Figure 2 plots the average cumulative abnormal returns based on the Fama–French 5-factor model (CAR_{FF5}, in %) during the [−15,15] trading day window around the event date of 8-K loan announcements. The sample period is from Jan. 1, 1994 to Dec. 31, 2018 and includes 11,595 8-K loan announcement events. The cumulative abnormal returns are plotted in a solid line with the corresponding 90% confidence intervals plotted in dotted lines. A vertical red dashed line is placed at the 8-K loan announcement date (day 0). CARs are cumulated starting from 15 days before the loan announcement date.



Loan announcements in 8-K generally do not coincide with earnings announcements in 10-K or 10-Q. Nonetheless, to minimize the influence of confounding events, we conduct a robustness check by excluding i) loan announcements accompanied by other major corporate events, such as announcements of earnings, dividends, repurchases, stock issues, other debt issues, and mergers and acquisitions, and ii) the later loan announcements if a firm announces two loans within 15 days. In total, we dropped 683 events, and our results remain qualitatively similar. The results are reported in the online Supplementary Material (Table OS.2).

VI. Comparing the Wealth Effects of Loan Announcements in the News and 8-K Filings

Maskara and Mullineaux (2011) randomly choose 800 loans from the DealScan database from 1987 to 2004 and identify 232 loan announcements from the Factiva news database. They argue that their sample better represents the loan population and generates insignificant abnormal loan announcement returns. To reconcile our findings based on the full sample of 8-K loan announcements with findings in Maskara and Mullineaux (2011) based on a random sample of news announcements, we perform the following tests to compare the wealth effects of loan announcements in the news and 8-K filings.

In the first set of tests, we exactly follow Maskara and Mullineaux (2011) and generate random loan samples from the full DealScan database. Specifically, we randomly choose 800 loans out of 24,711 loans from the DealScan database during 1987–2004.[8] In the online Supplementary Material (Table OS.3), we confirm that the average loan and firm characteristics of the 800 loans are statistically and economically indistinguishable from the rest of the population. We then search the Factiva database for announcements in a window of ±15 days surrounding the loan active date. We identified 202 loans announced in the news.[9] After merging with stock return data, we finally have 170 news announcements with valid returns. We also merged the 800 loans with our 8-K announcement sample, and we found that only 30 loans are announced in 8-K, among which 28 loans have valid return data. The small sample size of 8-K announcements is due to the fact that only a small fraction of loans were announced in 8-K before 2004.

We then repeat the above procedure for the later period during 2005–2018. We randomly draw 800 loans from 14,703 loans in the DealScan database from 2005 to 2018. We then searched the Factiva database and identified 439 loans announced in the news. After merging with stock return data, we have 377 news announcements with valid returns. For the 800 loans, we identified 456 loans announced in 8-K, among which 419 loans have valid return data.

[8]Following Maskara and Mullineaux (2011), we delete borrowers that are government entities, financial companies, or utilities and firms without a ticker symbol. The final sample contains 24,711 loans from 1987 to 2004, the number of which is slightly larger than that of Maskara and Mullineaux (2011), potentially due to data set update in recent years.

[9]In the online Supplementary Material (Figure OS.1), we present the distribution of the number of business days between the loan active date and news announcement date. Similar to Maskara and Mullineaux (2011), news announcements typically occur within 7 days of the loan active date with the highest number on the day after the loan active date.

In Table 3, we report the cumulative abnormal returns based on the FF5 model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−2,+2], [−3,+3], and [−5,+5] trading day windows around the news and 8-K announcement dates, respectively. Panel A reports the results during 1987–2004 and Panel B during 2005–2018. We find that the average *CAR* is insignificant for both the news and 8-K announcement samples during 1987–2004. The insignificant wealth effects of loan announcements in the news during 1987–2004 seem to be consistent with the findings in Maskara and Mullineaux (2011). However, the average *CAR* becomes significantly positive for both the news and 8-K announcement samples during 2005–2018.

The results in the two subperiods, 1987–2004 and 2005–2018, are different potentially due to two reasons. First, the size of the news and 8-K announcement samples is much smaller, and the standard deviation of the *CAR* is much larger during 1987–2004 than during 2005–2018.[10] In the early sample period, only a quarter of the loans are announced in the news and only 5% are announced in 8-K during 1987–2004. The percentage increases significantly to more than 50% for both news and 8-K announcements during the later period from 2005 to 2018. The lack of statistical power, due to the small sample size and high CAR volatility, could lead to insignificant results during 1987–2004. This is particularly true for the 8-K announcement sample. Given the fact that the average *CAR* of the full 8-K announcement sample during 1987–2004 is significantly positive, the only explanation for the insignificant results of 8-K announcements from the randomly drawn sample of 800 loans is the lack of statistical power. Second, the insignificant *CAR* of the news announcement sample may also be caused by the changes in loan and firm characteristics of the news sample before and after 2004. However, given that the full 8-K loan announcements sample generated significant positive wealth effects in both pre- and post-2004 periods, a direct comparison between the news and 8-K announcements based on a large enough sample is needed to shed more light on their differences.

Due to the small size of the announcement sample, analysis based on only a randomly selected sample of 800 loans limits our ability to draw a statistically significant inference on the wealth effects of loan announcements, especially in the early years before 2004. However, we do have a large 8-K announcement sample that covers all DealScan loans. As a result, we perform a second set of tests that utilize the full 8-K announcement sample to better understand the difference between the news and 8-K announcements according to the procedures described below.

During 1987–2004, we start with the full 8-K announcement sample, which includes 1,699 loans (1,480 with valid stock return), and search the Factiva database to identify how many of these loans also have a news announcement. Among the 1,699 loans announced in 8-K, we identify 1,191 loans that are also announced in the news, among which 1,058 have valid return data. By comparing the timing of the news and 8-K announcement for the same loan, we find that the news

[10]For example, the standard deviation of CAR_{FF5}[−3,+3] for the news announcement sample is 10.28% during 1987–2004, but only 6.78% during 2005–2018.

TABLE 3

Comparing the Wealth Effects of Bank Loan Announcements in the News and 8-K Samples

Table 3 compares the wealth effects of bank loan announcements in the news and 8-K samples. In Panel A, we follow Maskara and Mullineaux (2011) and randomly choose 800 loans from the DealScan database during 1987–2004. We then search the Factiva database and identify loan announcements in the news. We also identify 8-K announcements for the 800 loans. In Panel B, we repeat the procedure for the sample period during 2005–2018. In Panel C, we start with all the 1,699 loans announced in 8-K during 1987–2004. We then search the Factiva database for the 1,699 loans and identify news announcements. In Panel D, we randomly choose 800 loans announced in the 8-K during 2005–2018. We then search the Factiva database for the 800 loans and identify news announcements. We report the cumulative abnormal returns based on the Fama–French 5-factor model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−2,+2], [−3,+3] and [−5,+5] trading day window around the news and 8-K announcement dates, respectively. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

	News Announcements						8-K Announcements					
	CAR_{FF5} [−2,+2]	CAR_{FF5} [−3,+3]	CAR_{FF5} [−5,+5]	CAR_{DGTW} [−2,+2]	CAR_{DGTW} [−3,+3]	CAR_{DGTW} [−5,+5]	CAR_{FF5} [−2,+2]	CAR_{FF5} [−3,+3]	CAR_{FF5} [−5,+5]	CAR_{DGTW} [−2,+2]	CAR_{DGTW} [−3,+3]	CAR_{DGTW} [−5,+5]
Panel A. Random Draw of 800 Loans in the Full DealScan Sample During 1987–2004												
Avg.	0.3	0.69	1	−0.04	0.55	0.41	1.03	0.99	0.74	0.98	0.85	0.95
t-stat.	(0.39)	(0.87)	(0.95)	(−0.06)	(0.74)	(0.41)	(0.82)	(0.66)	(0.50)	(0.80)	(0.55)	(0.60)
# obs.	170	170	170	141	141	141	28	28	28	27	27	27
Panel B. Random Draw of 800 Loans in the Full DealScan Sample During 2005–2018												
Avg.	**1.10*****	**1.22*****	**1.09*****	**1.17*****	**1.25*****	**1.10*****	**0.52****	**0.77****	**0.81****	**0.58****	**0.80*****	**0.82****
t-stat.	**(3.64)**	**(3.48)**	**(2.62)**	**(3.61)**	**(3.50)**	**(2.76)**	**(2.09)**	**(2.49)**	**(2.22)**	**(2.33)**	**(2.68)**	**(2.32)**
# obs.	377	377	377	350	350	350	419	419	419	395	395	395
Panel C. All 1,699 Loans Announced in 8-K During 1987–2004												
Avg.	**1.12*****	**1.42*****	**1.93*****	**0.91*****	**1.00*****	**1.25*****	**0.84*****	**1.03*****	**1.30*****	**0.58*****	**0.73*****	**0.75*****
t-stat.	**(4.24)**	**(4.62)**	**(5.62)**	**(3.39)**	**(3.39)**	**(3.77)**	**(4.06)**	**(4.19)**	**(4.63)**	**(2.79)**	**(3.00)**	**(2.70)**
# obs.	1,058	1,058	1,058	947	949	949	1,479	1,479	1,480	1,322	1,322	1,323
Panel D. Random Draw of 800 Loans Announced in 8-K During 2005–2018												
Avg.	**0.52****	**0.69****	**0.74****	0.39	**0.55***	**0.76****	**0.50****	**0.58****	**0.62****	**0.58*****	**0.64****	**0.65****
t-stat.	**(2.03)**	**(2.37)**	**(2.11)**	**(1.52)**	**(1.91)**	**(2.18)**	**(2.29)**	**(2.30)**	**(2.11)**	**(2.67)**	**(2.51)**	**(2.20)**
# obs.	483	483	483	442	442	442	641	641	642	582	582	583

announcement date is on average 1.3 days earlier than the 8-K announcement date, and 65.3% of 8-K loan announcements are preceded by a public announcement in the news.

During the later period from 2005 to 2018, since the full 8-K sample has more than 10,000 loans and is too large for us to conduct the news search, we randomly draw 800 loans from all the loans announced in 8-K (642 with valid CARs). Then we searched the Factiva database for these 800 loans and identified 581 with a news announcement, among which 483 loans have valid CARs. On average, the news announcement date is 1.0 day earlier than the 8-K announcement date, and 57.7% of 8-K loan announcements are preceded by a public announcement in the news.

We report the average CARs for the news and 8-K announcement samples in Panels C and D of Table 3. Panel C presents the results for 1987–2004 and Panel D for 2005–2018. We find that the average *CAR* is significantly positive for both the news and 8-K announcement samples during both subperiods. The results during 1987–2004 directly contrast the insignificant results reported in Panel A of Table 3.

The difference can arise due to two possible reasons. First, the size of the news announcement sample in Panel C of Table 3 is nearly 3 times larger than that in Panel A of Table 3. This is because, conditional on a loan announced in 8-K, the probability of the loan being announced in the news is as high as 70% (1191/1699 = 0.701). Starting from the full 8-K sample significantly enlarges the size of the news announcement sample.

To illustrate the importance of using a large sample to identify the wealth effects of bank loan announcements, in the online Supplementary Material (Figure OS.2), we perform simulation analysis by randomly drawing a certain number of loans from our full 8-K announcement sample, 1,000 times over. We then present the distribution of the average CAR and *t*-statistics for the 1,000 simulated samples. We show that sample size is crucial for identifying a significant wealth effect. If we randomly draw 200 loans with valid CARs from the 8-K announcement sample, there is only 16.0% probability to detect a positive wealth effect at the 5% significance level.[11] If we increase the sample size to 800, the probability increases to 46.7%. Further increasing the sample size to 3200, the probability approaches 98.3%. Our simulation analysis suggests that the inference from a random draw methodology in this research context can be problematic when the sample size is small.

Second, loans announced in 8-K may convey more private information than those only announced in news, especially during the early sample period. However, we do not find significant differences in major loan and borrower characteristics such as loan size, loan-to-asset ratio, or abnormal spreads between the news and 8-K announcement samples, suggesting that sample difference is not the main driving force.

In summary, we repeat the exercise in Maskara and Mullineaux (2011) and also find an insignificant wealth effect of bank loan announcements in the news during the early period from 1987 to 2004. However, this result is potentially driven by the small sample size and high volatility of stock market reactions during the

[11]It is worth noting that this is the sample size used by Maskara and Mullineaux (2011) to study the wealth effect of bank loan announcements.

early sample period. The market reactions to news announcements of bank loans become significantly positive if we extend the sample to the later period from 2005 to 2018 or if we conduct the analysis based on all loans announced in 8-K.

VII. The Decision to Announce a Loan: Analysis of All Announced and Unannounced Loans

In this section, by identifying all announced and unannounced loans in the full DealScan universe, we are able to compare the differences between announced and unannounced loans and understand the determinants of the borrowers' decision to announce a loan. Moreover, we are uniquely well-positioned to better address the sample misrepresentation issue raised by previous studies on bank loan announcement effects.

A. Borrower and Loan Characteristics for All Announced and Unannounced Loans

To examine the determinants of announcement decisions, we need information on all announced and unannounced loans. As described in Section IV.B, we start with the entire DealScan loan universe and identify all announced loans that are filed in any 8-K, 10-K, and 10-Q Forms. The remaining loans are classified as unannounced loans. Our final sample contains 51,494 loans, among which 22,458 are announced and 29,036 remain unannounced.

Figure 1 plots the percentage of loans that are announced in 8-K/10-K/10-Q, respectively, from 1994 to 2018. It is evident that loan announcements through 8-K filings have significantly increased since 2004 as the SEC imposed new rules on Form 8-K filings for public companies.

Table 4 reports the differences in the average loan and borrower characteristics between the two samples.[12] Announced and unannounced loans differ in several loan characteristics. In particular, announced loans, on average, have a significantly higher loan-to-asset ratio and lower abnormal spreads than unannounced loans. However, we do not find significant differences in most of the borrower characteristics, except the information asymmetry index (*IA Index*), between announced and unannounced loans. Following Maskara and Mullineaux (2011), we construct the *IA Index* as the average quintile rank values of the borrower based on six measures, including analyst forecast error, dispersion of analyst forecasts, residual volatility of stock returns, standard deviation of abnormal returns around earnings announcement, firm age, and bid–ask spread. A higher value of *IA Index* means that the borrower faces a higher degree of information asymmetry.

B. The Determinants of Loan Announcements

Next, we run regressions to identify the determinants of a borrower's decision to announce a loan. We use the Logit model to facilitate a direct comparison with Maskara and Mullineaux (2011). We further run OLS regression to mitigate

[12]The detailed summary statistics of loan and borrower characteristics for the announced sample and the unannounced sample are reported in the online Supplementary Material (Table OS.4).

TABLE 4

Differences in Average Loan and Borrower Characteristics Between Announced and Unannounced Loan Samples

Table 4 tests the differences in average loan and borrower characteristics for all announced and unannounced loans in the DealScan database from Jan. 1, 1994 to Dec. 31, 2018. The announced bank loan sample includes all loans that are announced in 8-K, 10-K, or 10-Q filings and has 22,458 observations. The unannounced bank loan sample includes all loans that are not announced in any 8-K, 10-K, or 10-Q filings and has 29,036 observations. We require the borrowing firms to have valid market capitalization data to be included in the samples. *IA Index* is the information asymmetry index, which is calculated as the average quintile rank values of the borrower based on six measures, including analyst forecast errors, dispersion of analyst forecasts, residual volatility of stock returns, standard deviation of abnormal returns around earnings announcement, firm age, and bid–ask spread. All continuous variables are winsorized at the 1% and 99% levels. Detailed variable definitions are described in the Appendix. *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

Variables	Announced	Unannounced	Difference	*t*-Stat. (difference)
Loan Characteristics				
Loan Size ($ million)	543.19	431.14	**112.01*****	**4.30**
(ln)Loan-to-Asset Ratio	0.19	0.15	**0.03*****	**5.12**
Maturity (# of Months)	50.42	46.81	**3.61*****	**3.31**
All-in-Drawn Spread (%)	2.11	1.99	0.12	1.24
Abnormal Spread (%)	−0.05	0.02	**−0.07****	**−2.02**
Syndicate	0.84	0.70	**0.14*****	**5.69**
Number of Lenders	8.33	6.14	**2.19*****	**9.29**
Borrower Characteristics				
(ln)Market Equity	20.95	21.06	−0.11	−0.85
(ln)Total Assets	21.22	21.38	−0.16	−1.10
OIBD	0.12	0.12	0.00	0.16
TobinQ	1.67	1.67	0.00	−0.14
Leverage	0.22	0.23	−0.01	−1.20
Beta	0.97	0.94	0.03	1.31
IVol	0.39	0.41	−0.02	−1.42
EBIT	0.12	0.12	0.00	0.16
Negative EBIT	0.05	0.06	0.00	−0.46
IA Index	3.17	2.98	**0.19*****	**4.99**

the small sample bias due to the potential incidental parameters problem in Logit regressions with fixed effects (e.g., Greene (2004)). The dependent variable is the loan announcement decision, which is a dummy variable equal to 1 if a loan is announced in 8-K, 10-K, or 10-Q filings, and 0 otherwise. We report the regression of loan announcement decisions on loan and borrower characteristics in Panel A of Table 5. In our baseline specification, our explanatory variables include the *IA Index*, *(ln)Loan-to-asset Ratio*, *Negative EBIT*, and *(ln)Market equity* following Maskara and Mullineaux (2011). We have several observations. First, we show that the coefficient on *IA Index* is significantly positive in column 1, similar to the finding in Maskara and Mullineaux (2011). However, after controlling year and industry fixed effects, the coefficient on *IA Index* becomes insignificant and the magnitude of the coefficient diminishes in both Logit (column 2) and OLS regressions (column 3). Second, the coefficient on *(ln)Loan-to-Asset Ratio* is significantly positive in all three specifications, suggesting that there is a robust positive relationship between the materiality of a loan and the borrower's decision to announce the loan. The coefficient is 1.16 with a *t*-statistic of 6.00 in column 2, which means that a 1-standard-deviation (0.19) increase in *(ln)Loan-to-Asset Ratio* increases the odds of announcing a loan by 25% ($=e^{1.16\times0.19}-1$).

We further include *Abnormal Spread* in the regression and the results are reported in columns 4–6. The coefficients on *Abnormal Spread* are significantly negative in all specifications. The coefficient is −0.14 with a *t*-statistic of −2.20 in column 5, which means that a 1-standard-deviation (0.69) increase in *Abnormal*

Spread decreases the odds of announcing a loan by 9.2% (=1 − $e^{-0.14\times0.69}$). We perform regression analysis before and after Aug. 23, 2004, in columns 7–9 and 10–12, respectively. It is shown that the negative coefficient on *Abnormal Spread* only exists after Aug. 23, 2004, which is −0.33 with a *t*-statistic of −5.42 in column 11. The coefficient on *Abnormal Spread* is positive before this date but with a much smaller magnitude of 0.13 in column 8. The results suggest that after the SEC imposes stricter requirements on 8-K filings, firms start to selectively disclose loans with favorable pricing terms.

We further explore how the loan announcement decisions change with credit market conditions and report the results in Panel B of Table 5. Columns 1–3 report the results for Logit regressions. In column 1, we add in the regression 4-year dummies representing years 2002, 2003, 2008, and 2009, which are the crisis years with the highest credit spreads. The average credit spread for the 4 crisis years is 1.55% but only 0.84% for all the other years between 1994 and 2018. *Credit Spread* is measured as the difference between Aaa and Baa-rated bonds. We also add a dummy variable (*Post2004*), which equals 1 if the loan is announced after Aug. 23, 2004, and 0 otherwise, to allow for the effect of the SEC's new rule on loan announcement decisions. We find that the coefficients are significantly positive on all year dummies except for the year 2008. As we will show in Section VIII.D, these results echo our later findings that the market reactions around loan announcements are significantly more positive during the crisis years with the highest credit spread (2002, 2003, and 2009) except 2008. The loss of confidence in the banking system at the onset of the financial crisis in 2008 not only depressed the market reactions to loan announcements but also suppressed firms' willingness to announce loans. The results suggest that firms are more likely to announce bank loans when the credit market condition deteriorates, given that the stock market also reacts more positively to these loans.

We then replace those year dummies with the aggregate credit spread, which is a continuous variable that captures the credit market tightness. Columns 2 and 3 report the regression results in the full sample and the sample excluding the year 2008, respectively. The coefficients on *Credit Spread* are significantly positive in both samples but the magnitude is larger in the sample excluding the year 2008. The coefficient is 0.60 with a *t*-statistic of 2.68 in column 3, suggesting that a 1-standard-deviation (0.42) increase in *Credit Spread* increases the odds of announcing a loan by 29% (=$e^{0.60\times0.42}$–1). The results suggest that firms are more likely to announce loans when the credit market condition is tight, especially for years other than 2008. Results for OLS regressions are reported in columns 4–6 and remain qualitatively similar.

Taken together, in contrast to Maskara and Mullineaux (2011), we find that after controlling for year and industry-fixed effects, firm-level IA index is no longer a significant determinant of loan announcement decisions. Firms are more likely to announce loans when the loan-to-asset ratio is higher, abnormal loan spread is lower, and when credit market condition deteriorates. The results provide supporting evidence for our Hypothesis 2.

TABLE 5

The Determinants of Loan Announcements

Table 5 reports the logistic and OLS regressions of the loan announcement dummy on loan and borrower characteristics. The dependent variable is the loan announcement decision, which is a dummy variable that equals 1 if the loan is announced in 8-K, 10-K, or 10-Q filings, and 0 otherwise. Panel A investigates the effect of *IA Index*, *(ln)Loan-to-Asset Ratio*, and *Abnormal Spread* on loan announcement decisions. Columns 1–3 include *IA Index*, *(ln)Loan-to-Asset Ratio*, *Negative EBIT*, and *(ln)Market Equity* as explanatory variables. Columns 4–6 further include *Abnormal Spread* as an additional explanatory variable. Columns 7–9 and 10–12 report the regression analysis before and after Aug. 23, 2004, respectively. Year and industry fixed effects are included in columns 2–3, 5–6, 8–9, and 11–12. Industry is defined as the 2-digit SIC industry. Panel B further investigates the effect of credit market conditions on loan announcement decisions by performing logistic (columns 1–3) and OLS (columns 4–6) regressions. Columns 1 and 4 include 4-year dummies during high credit risk periods. Columns 2–3 and 5–6 include the aggregate credit spread as an additional explanatory variable and report the results for the full sample and the sample excluding the year 2008, respectively. Aggregate credit spread, *Credit Spread*, is measured as the difference between Aaa and Baa rated bonds during the month of loan announcement. All regressions in Panel B include a dummy variable (*Post2004*), which equals 1 if the loan is announced after Aug. 23, 2004 and 0 otherwise, and industry fixed effects. Detailed variable definitions are described in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. The standard errors are clustered at the industry and year levels. The sample period is from Jan. 1, 1994 to Dec. 31, 2018 and contains 51,494 loans, among which 22,458 are announced and 29,036 are unannounced. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

Panel A. IA Index, Loan-to-Asset Ratio, and Abnormal Spread

	Full Sample			Full Sample			Before Aug. 23, 2004			After Aug. 23, 2004		
	Logit	Logit	OLS	Logit	Logit	OLS	Logit	Logit	OLS	Logit	Logit	OLS
	1	2	3	4	5	6	7	8	9	10	11	12
IA Index	**0.34*****	0.03	0.01	**0.34*****	0.04	0.01	**0.12***	0.09	0.02	−0.02	−0.01	0
t-stats.	**(9.51)**	(0.97)	(0.85)	**(8.36)**	(1.11)	(1.01)	**(1.75)**	(1.56)	(1.37)	(−0.49)	(−0.29)	(−0.36)
(ln)Loan-to-Asset Ratio	**0.98*****	**1.16*****	**0.23*****	**0.99*****	**1.18*****	**0.24*****	**0.94*****	**1.14*****	**0.24*****	**1.26*****	**1.26*****	**0.24*****
t-stat.	**(4.52)**	**(6.00)**	**(5.76)**	**(4.32)**	**(6.17)**	**(6.00)**	**(3.12)**	**(4.60)**	**(4.16)**	**(4.69)**	**(4.72)**	**(5.12)**
Abnormal Spread				**−0.12****	**−0.14****	**−0.03****	**0.13*****	**0.13*****	**0.03*****	**−0.32*****	**−0.33*****	**−0.07*****
t-stats.				**(−2.13)**	**(−2.20)**	**(−2.18)**	**(3.55)**	**(3.49)**	**(3.40)**	**(−5.31)**	**(−5.42)**	**(−5.27)**
Negative EBIT	**−0.26****	−0.07	−0.02	−0.19	0	0	0.12	0.03	0.01	−0.03	−0.1	−0.03
t-stats.	**(−2.16)**	(−0.92)	(−0.97)	(−1.45)	(0.03)	(0.04)	(0.90)	(0.27)	(0.42)	(−0.22)	(−0.61)	(−0.90)
(ln)Market Equity	**0.10*****	**−0.12*****	**−0.02*****	**0.11*****	**−0.11*****	**−0.02*****	**−0.05****	**−0.08*****	**−0.01*****	**−0.14*****	**−0.14*****	**−0.03*****
t-stats.	**(2.94)**	**(−7.43)**	**(−6.90)**	**(3.47)**	**(−6.97)**	**(−6.82)**	**(−2.04)**	**(−4.53)**	**(−4.15)**	**(−5.45)**	**(−5.23)**	**(−5.54)**
Pseudo R^2	0.015	0.152	0.192	0.016	0.152	0.195	0.018	0.062	0.072	0.032	0.052	0.064
# obs.	51,088	51,076	51,085	37,690	37,678	37,687	18,643	18,626	18,641	19,047	19,028	19,046
Fixed Effects	No	Y,I	Y,I	No	Y,I	Y,I	No	Y,I	Y,I	No	Y,I	Y,I

(continued on next page)

TABLE 5 (continued)

The Determinants of Loan Announcements

Panel B. Credit Market Condition

	Full Sample	Full Sample	Excluding 2008	Full Sample	Full Sample	Excluding 2008
	Logit	Logit	Logit	OLS	OLS	OLS
	1	2	3	4	5	6
Year2002	**0.49*****			**0.10*****		
t-stats.	**(3.66)**			**(3.82)**		
Year2003	**0.75*****			**0.16*****		
t-stats.	**(5.44)**			**(5.90)**		
Year2008	−0.05			−0.01		
t-stats.	(−0.72)			(−0.59)		
Year2009	**0.16****			**0.03***		
t-stats.	**(2.45)**			**(1.68)**		
Credit Spread		**0.44****	**0.60*****		**0.08****	**0.11*****
t-stats.		**(2.21)**	**(2.68)**		**(2.30)**	**(2.66)**
Post2004	**1.93*****	**1.72*****	**1.72*****	**0.43*****	**0.39*****	**0.39*****
t-stats.	**(11.87)**	**(12.57)**	**(12.93)**	**(13.86)**	**(14.26)**	**(14.61)**
IA Index	0.05	0.06	0.07	0.01	0.01	0.01
t-stats.	(1.16)	(1.52)	(1.60)	(1.15)	(1.53)	(1.62)
(ln)Loan-to-asset Ratio	**1.08*****	**1.04*****	**1.06*****	**0.22*****	**0.21*****	**0.22*****
t-stats.	**(5.42)**	**(5.13)**	**(5.21)**	**(5.44)**	**(5.17)**	**(5.24)**
Abnormal Spread	**−0.14****	**−0.14****	**−0.14****	**−0.03****	**−0.03****	**−0.03****
t-stats.	**(−2.15)**	**(−2.16)**	**(−2.07)**	**(−2.12)**	**(−2.16)**	**(−2.07)**
Negative EBIT	0.04	0.05	0.07	0.01	0.01	0.01
t-stats.	(0.51)	(0.51)	(0.71)	(0.48)	(0.45)	(0.67)
Market Equity	**−0.09*****	**−0.09*****	**−0.08*****	**−0.02*****	**−0.02*****	**−0.02*****
t-stats.	**(−4.98)**	**(−5.06)**	**(−5.21)**	**(−4.90)**	**(−5.11)**	**(−5.27)**
Pseudo R^2	0.138	0.135	0.136	0.181	0.178	0.179
# obs.	37,678	37,678	36,796	37,687	37,687	36,805
Fixed Effects	Ind	Ind	Ind	Ind	Ind	Ind

C. CARs Around Loan Announcements Adjusted for Borrower Size Distribution

A few studies question whether the positive loan announcement effects on firm value are driven by the smallest firms and argue that such effects disappear in later years or when announcing firms properly represent the universe of borrowers (Fields et al. (2006), Maskara and Mullineaux (2011)). However, most of the studies still rely on small samples when the sample period ends before 2004. As we have shown, loan announcements through 8-K filings substantially increased after 2004. A more comprehensive sample of loan announcements that covers the entire loan universe and extends to recent years can better address the sample misrepresentation concern and provide new evidence up to date.

We sort all firms in the 8-K announcement sample and the full sample, which include all announced and unannounced loans in the DealScan database, into deciles by market capitalization of the borrower, respectively, using the size breakpoints from Kenneth French's website. Panel A of Table 6 reports the average *(ln) Market Equity* of the borrower and the portfolio weight (in %) of loans in each decile for the 8-K announcement sample and the full sample, respectively. Portfolio weight is defined as the number of observations in a size decile scaled by the total number of observations in the corresponding sample. It is observed that the weights of the smallest and largest deciles in the 8-K sample are both smaller than those in the full sample, which means that the 8-K sample underweights the smallest and largest firms.

To adjust the difference in the borrower size distribution between the 8-K announcement sample and the full sample, we calculate the weighted average abnormal return from the 8-K sample using the decile weights from the full sample. For example, we assign a higher adjusted weight of 20.51%/16.18% = 1.27 for loans in the smallest size decile, where 20.51% is the weight in the full sample and 16.18% is the weight in the 8-K sample. In Panel B of Table 6, we report the average CARs for each decile and the unadjusted and adjusted CARs for all loans in the 8-K announcement sample. It is evident that the adjusted CARs remain positive and significant, which is 0.53% with a t-statistic of 7.30 for $CAR_{FF5}[-3,3]$ and 0.48% with a t-statistic of 6.67 for $CAR_{DGTW}[-3,3]$. The adjusted CARs are slightly larger than the unadjusted, because the announced sample gives less weight to the smallest firms, which tend to have the largest CARs.

We would like to emphasize that a stronger wealth effect of bank loan announcements in smaller firms does not go against the uniqueness of bank loans. In fact, theories of financial intermediation predict that the information advantage of banks should be more pronounced when the screening and monitoring benefits are larger among smaller and more opaque firms. However, the wealth effect of bank loan announcements should be determined by the importance of the private information rather than firm size per se. Based on all announced and unannounced loans in the full DealScan universe, we show that, different from the results documented in Maskara and Mullineaux (2011), firm size is not the only determinant of the bank loan announcement effect and the positive market reaction remains robust when the sample better represents the borrower size distribution.

TABLE 6

Portfolio Weights and Cumulative Abnormal Returns Across Borrower Size Deciles for the 8-K Announcement Sample and the Full Sample

Table 6 reports the portfolio weights (in %) and average cumulative abnormal returns across borrower size deciles for the 11,595 bank loans announced in SEC 8-K filings from Jan. 1, 1994 to Dec. 31, 2018. Firm size decile is classified based on the Fama–French size breakpoints for all borrowing firms at the month-end prior to the announcement date. Portfolio weight is defined as the number of observations in a size decile scaled by the total number of observations in the corresponding sample. Panel A reports the average *(ln)Market Equity* and portfolio weights of borrower size deciles for the 8-K announcement sample and the full sample that includes all announced and unannounced loans in the DealScan database. *(ln)Market Equity* is the natural logarithm of borrower's market capitalization at the month-end prior to the announcement date. Panel B reports the CARs across borrower size deciles, the average *CAR*, and the portfolio weight-adjusted average *CAR* for the 8-K sample. Detailed variable definitions are reported in the Appendix. *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

Panel A. Portfolio Weights Across Borrower Size Deciles for the 8-K Sample and the Full Sample

	8-K Sample		Full Sample	
Firm Decile	*(ln)Market Equity*	Weight (%)	*(ln)Market Equity*	Weight (%)
1-Smallest	18.66	16.18	18.1	20.51
2	19.96	11.66	19.59	11.25
3	20.55	10.73	20.23	8.96
4	21.01	9.86	20.72	8.09
5	21.45	9.38	21.15	7.57
6	21.83	9.13	21.57	7.52
7	22.21	9.11	22	8.03
8	22.73	9.07	22.51	8.08
9	23.42	8.36	23.21	8.75
10-Largest	24.51	6.52	24.6	11.24
All	21.27	100	21.01	100

Panel B. Cumulative Abnormal Returns Across Borrower Size Deciles for the 8-K Sample

	8-K Sample		Full Sample	
Firm Decile	$CAR_{FF5}[-3,+3]$	*t*-Stats.	$CAR_{DGTW}[-3,+3]$	*t*-Stats.
1-Smallest	**1.48*****	**5.74**	**1.27*****	**4.86**
2	**0.82*****	**3.58**	**0.79*****	**3.37**
3	0.24	1.19	0.23	1.09
4	0.25	1.21	0.17	0.81
5	0.25	1.27	**0.40****	**2.06**
6	0.19	1.01	0.14	0.81
7	**0.61*****	**3.63**	**0.61*****	**3.76**
8	−0.23	−1.61	−0.15	−1.02
9	0.14	0.84	0.27	1.61
10-Largest	0.17	1.17	0.07	0.46
All	**0.48*****	**6.99**	**0.45*****	**6.57**
All-adjusted	**0.53*****	**7.30**	**0.48*****	**6.67**

VIII. Determinants of the Wealth Effects Around Loan Announcements in 8-K

In this section, we provide new evidence on how loan terms, including loan-to-asset ratio, abnormal spreads, and syndicate structures, reveal banks' private information about the loan, and thus significantly influence the wealth effects of loan announcements as stated in our Hypotheses 3a and 3b. We further extend previous findings in our large and long-spanned sample that lender credit quality and credit market condition are important determinants for the bank loan announcement effects as stated in our Hypotheses 4a and 4b.

A. Loan-to-Asset Ratio and Abnormal Spreads

If the announcement of a loan conveys lenders' private information to the market, such information should be more valuable when the loan is more material to

the firm, for instance, when the loan significantly impacts the financial position or the valuation of the firm. We measure the materiality of a loan using the loan-to-asset ratio, which is the loan size scaled by total assets. A higher loan-to-asset ratio means that the loan comprises a more substantial portion of the firm's assets, which in turn exerts a more important impact on the firm's capital structure and market value.

A bank not only sends its private information to the market through the decision to lend to a borrower but also conveys valuable information through the pricing of a loan. An abnormally low spread would indicate that the borrower obtains financing at more favorable terms than its peers on an equal footing, potentially indicating that the lenders have favorable information about the borrower's financial conditions and growth prospects. We construct a measure of abnormal spread for a loan facility as the difference between its all-in-drawn spread and predicted spread. We estimate the predicted spread for a loan based on all DealScan loans as described in Section IV.C.

We first investigate the effect of loan-to-asset ratio and abnormal spreads on loan announcement returns in a univariate analysis. We sort all loan announcement events into quintiles by loan-to-asset ratio and report the average CARs for each quintile and the difference between the highest and lowest quintiles in Panel A of Table 7. The results show that CARs are larger in magnitude and more significant for loans in the highest quintile than those in the lowest quintile. The average $CAR_{FF5}[-3,3]$ is 1.19% with a t-statistic of 7.01 in the highest quintile but only 0.25% with a t-statistic of 1.84 in the lowest quintile, and the difference between the two quintiles is 0.94% with a t-statistic of 4.37. Our findings confirm that when the loan is more material to the borrower, it conveys more valuable information and elicits more positive market reactions.

Similarly, we sort all loan announcements into quintiles by abnormal spreads and then report the average CARs for each quintile and the difference between the highest and lowest quintiles in Panel B of Table 7. The results show that CARs are larger in magnitude and more significant for loans with lower abnormal spreads. The average $CAR_{FF5}[-3,3]$ is 0.65% with a t-statistic of 2.56 in the lowest quintile but is only 0.03% with a t-statistic of 0.12 in the highest quintile, and the difference between the two quintiles is −0.62% with a t-statistic of −1.78. Our results suggest that when the lender provides financing to a firm with favorable pricing terms, the market views it as positive news about the firm's financial conditions and reacts more positively to the announcements of such loans.[13]

We next perform the multivariate regression analysis of market reactions to loan announcements. In Panel C of Table 7, we regress CARs on *(ln)Loan-to-Asset Ratio* and *Abnormal Spread* while controlling for various borrower characteristics. Following previous studies (e.g., Billett et al. (1995)), control variables include borrower size (*(ln)Market Equity*), operating profitability (*OIBD*), Tobin's Q (*TobinQ*), market leverage (*Leverage*), market beta (*Beta*), idiosyncratic volatility (*IVol*), and stock price runup before loan announcements (*Runup*). We also control for year and industry fixed effects.

[13]In the online Supplementary Material (Table OS.5), we show that the results remain qualitatively the same after we control for borrower size.

TABLE 7

CARs Around Bank Loan Announcements: The Effect of Loan-to-Asset Ratio and Abnormal Spread

Table 7 reports the effect of loan-to-asset ratio and abnormal spread on cumulative abnormal returns around bank loan announcements. The cumulative abnormal returns are based on the Fama–French 5-factor model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−3,+3] window around the 8-K loan announcement dates. *Loan-to-Asset Ratio* is measured as loan size/borrower's total assets. *Abnormal spread* is measured as the residual spread from the regression of all-in-drawn spreads on various loan, borrower, and lender characteristics. Panels A and B displays the CARs across quintiles sorted by loan-to-asset ratio and abnormal spread, respectively. Panel C reports the regression of cumulative abnormal returns on *(ln)Loan-to-Asset Ratio* and *Abnormal Spread*. Control variables include *(ln)Market Equity*, *OIBD*, *TobinQ*, *Leverage*, *Beta*, *IVol*, and *Runup*. Year and industry fixed effects are included in all regressions. Industry is defined as the 2-digit SIC industry. Results are reported for the full sample period from Jan. 1, 1994 to Dec. 31, 2018 and three subperiods: before Aug. 23, 2004, from Aug. 23, 2004 to July 21, 2010, and after July 21, 2010. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

Sample Period		1 = Low	2	3	4	5 = High	High−Low
Panel A. CARs Around Bank Loan Announcements in Loan-to-Asset Ratio Quintiles							
Full Sample	CAR_{FF5}[−3,+3]	**0.25***	**0.25***	**0.29***	**0.29***	**1.19*****	**0.94*****
t-stats.		**(1.84)**	**(1.75)**	**(1.95)**	**(1.81)**	**(7.01)**	**(4.37)**
	CAR_{DGTW}[−3,+3]	**0.26****	**0.35****	**0.25***	**0.33****	**1.02*****	**0.76*****
t-stats.		**(1.97)**	**(2.41)**	**(1.77)**	**(2.10)**	**(5.87)**	**(3.50)**
Before Aug. 23, 2004	CAR_{FF5}[−3,+3]	0.45	−0.87	1.07	0.59	**2.17*****	1.72
t-stats.		(0.57)	(−1.28)	(1.54)	(0.73)	**(2.86)**	(1.56)
	CAR_{DGTW}[−3,+3]	0.15	−0.90	1.08	0.88	**1.88****	1.73
t-stats.		(0.19)	(−1.31)	(1.64)	(1.05)	**(2.48)**	(1.54)
Aug. 23, 2004–Jul. 21, 2010	CAR_{FF5}[−3,+3]	**0.58****	**0.64*****	0.29	0.23	**1.28*****	**0.70***
t-stats.		**(2.56)**	**(2.59)**	(1.16)	(0.83)	**(4.05)**	**(1.80)**
	CAR_{DGTW}[−3,+3]	**0.48****	**0.57****	0.39	0.11	**1.00*****	0.53
t-stats.		**(2.13)**	**(2.37)**	(1.58)	(0.43)	**(3.05)**	(1.33)
After Jul. 21, 2010	CAR_{FF5}[−3,+3]	−0.02	0.13	0.17	0.30	**0.99*****	**1.01*****
t-stats.		(−0.15)	(0.76)	(0.92)	(1.53)	**(5.12)**	**(4.14)**
	CAR_{DGTW}[−3,+3]	0.12	**0.36****	0.04	**0.42****	**0.92*****	**0.80*****
t-stats.		(0.80)	**(2.04)**	(0.21)	**(2.20)**	**(4.63)**	**(3.27)**
Panel B. CARs Around Bank Loan Announcements in Abnormal Spread Quintiles							
Full Sample	CAR_{FF5}[−3,+3]	**0.65****	**0.57*****	0.39	0.15	0.03	**−0.62***
t-stats.		**(2.56)**	**(3.47)**	(1.35)	(0.78)	(0.12)	**(−1.78)**
	CAR_{DGTW}[−3,+3]	**0.56*****	**0.51*****	**0.33****	0.22	−0.06	**−0.62****
t-stats.		**(2.81)**	**(3.28)**	**(2.20)**	(1.22)	(−0.24)	**(−1.96)**
Before Aug. 23, 2004	CAR_{FF5}[−3,+3]	**3.62***	**1.79****	0.29	−1.25	1.27	−2.36
t-stats.		**(1.65)**	**(2.09)**	(0.31)	(−1.21)	(1.03)	(−0.94)
	CAR_{DGTW}[−3,+3]	1.66	**1.44***	0.80	−0.90	−0.11	−1.77
t-stats.		(1.50)	**(1.66)**	(0.93)	(−0.79)	(−0.09)	(−1.09)
Aug. 23, 2004–Jul. 21, 2010	CAR_{FF5}[−3,+3]	**0.74****	**0.71****	0.27	0.22	0.17	−0.57
t-stats.		**(2.04)**	**(2.29)**	(0.77)	(0.67)	(0.46)	(−1.10)
	CAR_{DGTW}[−3,+3]	0.43	**0.60****	**0.57****	0.07	0.18	−0.25
t-stats.		(1.13)	**(2.03)**	**(2.10)**	(0.21)	(0.48)	(−0.46)
After Jul. 21, 2010	CAR_{FF5}[−3,+3]	0.22	**0.33***	0.49	0.27	−0.22	−0.44
t-stats.		(0.81)	**(1.85)**	(1.07)	(1.17)	(−0.70)	(−1.06)
	CAR_{DGTW}[−3,+3]	**0.52****	**0.35****	0.10	**0.45*****	−0.23	**−0.74***
t-stats.		**(2.38)**	**(2.08)**	(0.61)	**(2.59)**	(−0.68)	**(−1.87)**

Panel C. Regression Analysis: Loan-to-Asset Ratio and Abnormal Spread

	Full Sample		Before Aug. 23, 2004		From Aug. 23, 2004 to Jul. 21, 2010		After Jul. 21, 2010	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6	7	8
(ln)Loan-to-Asset Ratio	**1.76*****	**1.55*****	6.05	1.78	**1.10*****	**0.85***	**2.51*****	**2.56*****
t-stats.	**(6.37)**	**(4.48)**	(1.26)	(0.80)	**(3.05)**	**(1.91)**	**(5.97)**	**(8.49)**
Abnormal Spread	**−0.44*****	**−0.26****	**−2.43****	−0.89	−0.21	−0.18	**−0.36***	**−0.29*****
t-stats.	**(−2.90)**	**(−2.38)**	**(−1.96)**	(−0.72)	(−0.68)	(−0.71)	**(−1.84)**	**(−2.63)**
(ln)Market Equity	−0.09	−0.13	0.01	0.15	**−0.30****	**−0.33****	0.00	−0.01
t-stats.	(−1.00)	(−1.43)	(0.02)	(0.27)	**(−2.52)**	**(−2.53)**	(−0.03)	(−0.06)
OIBD	−2.11	−1.60	−9.70	−2.77	−2.88	−3.36	1.15	0.95
t-stats.	(−1.31)	(−0.89)	(−1.09)	(−0.47)	(−0.82)	(−0.86)	(0.35)	(0.29)

(continued on next page)

TABLE 7 (continued)

CARs Around Bank Loan Announcements:
The Effect of Loan-to-Asset Ratio and Abnormal Spread

Panel C. Regression Analysis: Loan-to-Asset Ratio and Abnormal Spread (continued)

	Full Sample		Before Aug. 23, 2004		From Aug. 23, 2004 to Jul. 21, 2010		After Jul. 21, 2010	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6	7	8
TobinQ	0.05	−0.03	0.89	0.39	−0.14	−0.16	0.00	−0.08
t-stats.	(0.39)	(−0.23)	(0.92)	(0.32)	(−0.77)	(−0.96)	(0.01)	(−0.36)
Leverage	−0.44	−0.64	0.40	−0.80	−1.00	−1.17	0.03	−0.18
t-stats.	(−1.04)	(−1.38)	(0.11)	(−0.25)	(−0.67)	(−0.74)	(0.12)	(−0.53)
Beta	0.21	0.12	0.16	−0.71	0.50	0.53	0.01	0.13
t-stats.	(0.67)	(0.49)	(0.17)	(−0.78)	(1.39)	(1.54)	(0.04)	(0.43)
IVol	0.47	−0.97	**11.66****	4.36	−0.69	−1.07	−2.66	−2.89
t-stats.	(0.30)	(−0.85)	**(2.21)**	(1.40)	(−0.30)	(−0.59)	(−1.56)	(−1.55)
Runup	**−0.05***	−0.02	−0.22	−0.01	**−0.05****	**−0.06****	−0.01	0.01
t-stats.	**(−1.91)**	(−1.01)	(−1.44)	(−0.08)	**(−2.01)**	**(−2.33)**	(−0.40)	(0.30)
Adjusted R^2	0.010	0.005	0.011	−0.035	0.016	0.018	0.006	0.005
# obs.	7,774	7,506	488	457	3,004	2,891	4,269	4,147
Fixed Effects	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind

The coefficient on *(ln)Loan-to-Asset Ratio* is significantly positive in the full sample. The coefficient is 1.76 with a *t*-statistic of 6.37 in the regression of $CAR_{FF5}[-3,3]$, suggesting that a 1-standard-deviation (0.19) increase in *(ln)Loan-to-Asset Ratio* leads to a 0.33% increase in the $CAR_{FF5}[-3,3]$ around loan announcements. The coefficient on *Abnormal Spread* is significantly negative in the full sample. The coefficient is −0.44 with a *t*-statistic of −2.90 in the regression of $CAR_{FF5}[-3,3]$, suggesting that a 1-standard-deviation (0.69) increase in *Abnormal Spread* leads to a 0.30% decrease in the $CAR_{FF5}[-3,3]$ around loan announcements. The regression analysis confirms the predictions in Hypothesis 3a that the positive market reaction to loan announcements is stronger when the loan is more material to the firm and when the lender provides financing to the borrower with more favorable pricing terms.

B. Syndicate Structure

The traditional bank loan features a bilateral relationship between the bank and the firm. In recent years, the development of the syndicated loan market has enabled a bank to originate a loan but retain only a fraction of it (e.g., Ivashina and Scharfstein (2010)). The remaining shares are sold to a syndicate of investors, which may include other banks and nonbank institutional investors such as insurance companies, pension funds, mutual funds, hedge funds, and sponsors of structured products. In our sample, nearly 90% are syndicated loans with more than one lender.

The extant literature suggests that syndicated loans are positioned between two extremes, namely the traditional sole-lender bank loans, and public debt (e.g., Holmstrom (1979), Holmstrom and Tirole (1997), Diamond (1991), Sufi (2007)).

Borrowers that require intensive due diligence and monitoring obtain syndicated loans similar to sole-lender bank loans: Lead arrangers retain a larger share of the loan, and the syndicate is highly concentrated. Borrowers with a solid credit reputation and less need for monitoring obtain syndicated loans that are similar to public debt: Lead arrangers retain smaller shares of the loan, and the syndicate is more dispersed. A direct implication of the above theoretical framework is that the wealth effects of bank loan announcements should be stronger when the lead banks retain larger shares and when the loan syndicate is more concentrated.

We test these predictions by including lead bank shares and syndicate concentration in the regression of market reactions to bank loan announcements and report the results in Table 8. Following Sufi (2007), we define lead bank shares as the percentage of loan shares kept by lead banks. Syndicate concentration is measured by the Herfindahl index of each syndicate member's share in the loan, which is the sum of the squared individual shares. The results are reported in columns 1–2 for lead bank shares and columns 3–4 for syndicate concentration.

TABLE 8

CARs Around Bank Loan Announcements: The Effect of Syndicate Structure

Table 8 reports the effect of syndicate structure, including lead bank shares and syndicate concentration, on cumulative abnormal returns around bank loan announcements. The cumulative abnormal returns are based on the Fama–French 5-factor model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−3,+3] window around the 8-K loan announcement dates. *Lead Bank Shares* is defined as the percentage share of loans held by bank lead arrangers. *Syndicate concentration* is measured by the Herfindahl index of each syndicate member's share in the loan, which is the sum of the squared individual shares. Control variables include *(ln)Market Equity*, *OIBD*, *TobinQ*, *Leverage*, *Beta*, *IVol*, and *Runup*. Year and industry fixed effects are included in all regressions. Industry is defined as the 2-digit SIC industry. The sample period is from Jan. 1, 1994 to Dec. 31, 2018. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4
Lead Bank Shares	**1.51****	**1.71*****		
t-stats.	**(2.25)**	**(2.82)**		
Syndicate Concentration			**2.38*****	**1.96****
			(2.95)	**(2.56)**
(ln)Loan-to-Asset Ratio	1.24	0.16	1.55	0.38
t-stats.	(0.90)	(0.12)	(1.02)	(0.23)
Abnormal Spread	0.13	0.16	0.21	0.20
t-stats.	(0.48)	(0.59)	(0.89)	(0.78)
(ln)Market Equity	−0.15	−0.14	0.03	0.00
t-stats.	(−0.82)	(−0.85)	(0.16)	(0.01)
OIBD	**−6.73***	−4.07	−4.37	−2.05
t-stats.	**(−1.95)**	(−1.18)	(−1.22)	(−0.56)
TobinQ	−0.14	−0.23	−0.25	−0.34
t-stats.	(−0.59)	(−0.97)	(−1.12)	(−1.40)
Leverage	−2.22	**−2.50***	**−2.03***	**−2.63***
t-stats.	(−1.53)	**(−1.65)**	**(−1.72)**	**(−1.77)**
Beta	−0.32	−0.33	−0.29	−0.24
t-stats.	(−0.85)	(−0.81)	(−0.74)	(−0.60)
IVol	1.28	0.42	2.61	2.03
t-stats.	(0.67)	(0.23)	(1.35)	(1.11)
Runup	**−0.05****	−0.02	−0.04	−0.01
t-stats.	**(−2.57)**	(−0.88)	(−1.33)	(−0.33)
Adjusted R^2	0.025	0.013	0.028	0.014
# obs.	2,715	2,633	2,450	2,385
Fixed Effects	Year, Ind	Year, Ind	Year, Ind	Year, Ind

The coefficient is significantly positive for both lead bank shares and syndicate concentration. The coefficient on *Lead Bank Shares* is 1.51 with a *t*-statistic of 2.25 in the regression of $CAR_{FF5}[-3,3]$, suggesting that a 1-standard-deviation (0.27) increase in *Lead Bank Shares* is associated with a 0.41% increase in the $CAR_{FF5}[-3,3]$ around loan announcements. The coefficient on *Syndicate Concentration* is 2.38 with a *t*-statistic of 2.95 in the regression of $CAR_{FF5}[-3,3]$, suggesting that a 1-standard-deviation (0.24) increase in *Syndicate Concentration* is associated with a 0.57% increase in the $CAR_{FF5}[-3,3]$ around loan announcements. Our results confirm Hypothesis 3b; the wealth effects of bank loan announcements are more pronounced when firms need more intensive monitoring so that lead banks retain a larger share and form a more concentrated syndicate.

C. Lender Credit Quality

In addition to conveying private information to the market through loan terms, previous studies suggest that lenders can also influence the market reaction to loan announcements through their own quality. In other words, a lender's quality may convey unique information to outside equity investors. Following Billett et al. (1995), we use lender credit rating as a measure of lender quality and investigate whether lender quality continues to make a significant impact on loan announcement returns in our large and long-spanned sample.

We obtain the S&P long-term issuer credit rating for each lender.[14] For each loan announcement, we use the lender's most recent credit rating from the past 5 years. Panel A of Table 9 reports the distribution of lender credit ratings for the 8981 loan announcements with valid rating data. It is evident that the lender credit rating significantly deteriorates in the post-July 21, 2010, period, with most lenders (37%) rated only A grade by S&P.

Panel B of Table 9 reports the average CARs across three subsamples split by lender credit ratings. High, medium, and low rating groups are defined as AA- or above, between A+ and A-, and BBB+ or below, respectively. Loans with high lender credit ratings have significantly higher average CARs than those with low lender credit ratings. The average $CAR_{FF5}[-3,3]$ is 0.46% with a *t*-statistic of 2.92 in the high credit rating subsample but is −0.64% with a *t*-statistic of −1.19 in the low credit rating subsample, and the difference is 1.10% with a *t*-statistic of 1.96.

In Panel C of Table 9, we perform regression analysis to test the effect of lender quality by including two dummy variables that indicate the level of lender credit ratings. *Rating_Lender_High* is a dummy variable that equals 1 if the lender credit rating is AA- or above, and 0 otherwise. *Rating_Lender_Medium* is a dummy variable that equals 1 if the lender credit rating is between A- and A+, and 0 otherwise. In the regression of $CAR_{FF5}[-3,3]$, the coefficient on *Rating_Lender_High* is 1.38 with a *t*-statistic of 2.82, suggesting that the average $CAR_{FF5}[-3,3]$ is 1.38% higher for loans with high lender credit ratings than those with low credit ratings. The coefficient on *Rating_Lender_Medium* is 1.05 with a *t*-statistic of 2.15, suggesting that the average $CAR_{FF5}[-3,3]$ is 1.05% higher for

[14]We also use the S&P senior unsecured debt rating for each lender and the conclusion remains qualitatively similar. The results are available from the authors.

TABLE 9

Cumulative Abnormal Returns Around Bank Loan Announcements: The Effect of Lender Credit Quality

Table 9 reports the effect of lender credit ratings on cumulative abnormal returns around bank loan announcements. The cumulative abnormal returns are based on the Fama–French 5-factor model (CAR_{FF5}) and the DGTW benchmark model (CAR_{DGTW}) during the [−3,+3] window around the 8-K loan announcement dates. Lender credit ratings are the S&P Long-Term Issuer Credit Rating. Panel A displays the distribution of lender credit ratings. Panel B displays the CARs across the three subsamples split by lender credit ratings. High, medium, and low lender credit ratings are defined as AA- or above, between A- and A+, and BBB+ or below, respectively. Panel C reports the regressions of cumulative abnormal returns by including two dummy variables indicating the level of lender credit ratings. *Rating_Lender_High* is a dummy variable that equals 1 if lender credit rating is AA- or above, and 0 otherwise. *Rating_Lender_Medium* is a dummy variable that equals 1 if lender credit rating is between A- and A+, and 0 otherwise. Control variables include *(ln)Market Equity*, *OIBD*, *TobinQ*, *Leverage*, *Beta*, *IVol*, and *Runup*. Year and industry fixed effects are included in all regressions. Industry is defined as the 2-digit SIC industry. Detailed variable definitions are described in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. The standard errors are clustered at the industry and year levels. The full sample period is from Jan. 1, 1994 to Dec. 31, 2018. Results are also reported for three subperiods: before Aug. 23, 2004, from Aug. 23, 2004 to July 21, 2010, and after July 21, 2010, respectively. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

Panel A. Distribution of Lender Credit Ratings

S&P Long-Term Issuer Credit Rating	Full sample		Before Aug. 23, 2004		From Aug. 23, 2004 to Jul. 21, 2010		After Jul. 21, 2010	
	# Obs.	%	# Obs.	%	# Obs.	%	# Obs.	%
AA+	131	1.46%	9	2.41%	122	3.97%	0	0.00%
AA	666	7.42%	22	5.90%	574	18.70%	70	1.26%
AA-	1,800	20.04%	69	18.50%	1186	38.63%	545	9.84%
A+	2,534	28.22%	164	43.97%	829	27.00%	1541	27.83%
A	2,404	26.77%	94	25.20%	273	8.89%	2037	36.78%
A-	1,000	11.13%	7	1.88%	15	0.49%	978	17.66%
BBB+	365	4.06%	4	1.07%	27	0.88%	334	6.03%
BBB	59	0.66%	1	0.27%	27	0.88%	31	0.56%
BBB-	14	0.16%	3	0.80%	11	0.36%	0	0.00%
BB+	7	0.08%	0	0.00%	6	0.20%	1	0.02%
BB	0	0.00%	0	0.00%	0	0.00%	0	0.00%
BB-	1	0.01%	0	0.00%	0	0.00%	1	0.02%
Total	8,981	100.00%	373	100.00%	3070	100.00%	5538	100.00%

Panel B. CAR Around Bank Loan Announcements in Lender Credit Rating Subsamples

		1 = Low	2	3 = High	High−Low
Full Sample	CAR_{FF5}[−3,+3]	−0.64	**0.36*****	**0.46*****	**1.10****
t-stats.		(−1.19)	**(3.24)**	**(2.92)**	**(1.96)**
	CAR_{DGTW}[−3,+3]	−0.32	**0.33*****	**0.53*****	**0.85****
t-stats.		(−0.93)	**(3.46)**	**(3.20)**	**(2.24)**
Before Aug. 23, 2004	CAR_{FF5}[−3,+3]	−5.08	0.24	1.03	**6.11***
t-stats.		(−1.55)	(0.47)	(0.91)	**(1.87)**
	CAR_{DGTW}[−3,+3]	**−5.32***	0.27	1.12	**6.43****
t-stats.		**(−1.75)**	(0.64)	(1.25)	**(2.18)**
Aug. 23, 2004–Jul. 21, 2010	CAR_{FF5}[−3,+3]	0.31	**0.62***	**0.42****	0.11
t-stats.		(0.68)	**(1.72)**	**(2.21)**	(0.19)
	CAR_{DGTW}[−3,+3]	0.71	0.43	**0.49****	−0.22
t-stats.		(1.06)	(1.20)	**(2.21)**	(−0.33)
After Jul. 21, 2010	CAR_{FF5}[−3,+3]	−0.73	**0.30*****	**0.48***	**1.21***
t-stats.		(−1.14)	**(2.71)**	**(1.73)**	**(1.87)**
	CAR_{DGTW}[−3,+3]	−0.39	**0.31*****	**0.55*****	**0.93****
t-stats.		(−0.98)	**(3.39)**	**(2.77)**	**(2.31)**

Panel C. Regression Analysis

	Full Sample		Before Aug. 23, 2004		From Aug. 23, 2004 to Jul. 21, 2010		After Jul. 21, 2010	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6	7	8
Rating_Lender_High	**1.38*****	**1.23*****	**7.97*****	**6.79*****	**1.59***	1.36	**0.89***	**0.90*****
t-stats.	**(2.82)**	**(2.87)**	**(3.12)**	**(4.16)**	**(1.75)**	(1.29)	**(1.86)**	**(2.74)**

(continued on next page)

TABLE 9 (continued)

Cumulative Abnormal Returns Around Bank Loan Announcements: The Effect of Lender Credit Quality

Panel C. Regression Analysis (continued)

	Full Sample		Before Aug. 23, 2004		From Aug. 23, 2004 to Jul. 21, 2010		After Jul. 21, 2010	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6	7	8
Rating_Lender_Medium	**1.05****	**0.71***	**7.13****	**5.09****	1.01	0.65	0.95	0.66
t-stats.	**(2.15)**	**(1.94)**	**(2.51)**	**(2.11)**	(1.08)	(0.68)	(1.64)	(1.64)
(ln)Loan-to-Asset Ratio	**1.65*****	**1.83*****	0.54	1.31	**1.17***	**1.34***	**2.63*****	**2.63*****
t-stats.	**(4.02)**	**(4.09)**	(0.12)	(0.40)	**(1.79)**	**(1.89)**	**(5.16)**	**(8.97)**
Abnormal Spread	**−0.37****	**−0.29****	−1.00	−1.19	−0.36	−0.25	**−0.42***	**−0.32****
t-stats.	**(−2.50)**	**(−2.36)**	(−0.63)	(−0.84)	(−1.20)	(−0.90)	**(−1.93)**	**(−2.24)**
(ln)Market Equity	−0.12	−0.13	**−0.98***	−0.45	−0.28	**−0.33***	0.01	0.01
t-stats.	(−1.41)	(−1.48)	**(−1.76)**	(−0.59)	(−1.27)	**(−1.70)**	(0.16)	(0.15)
OIBD	−1.85	−2.25	−17.44	−10.95	−2.11	−2.92	−0.19	−0.65
t-stats.	(−0.94)	(−1.18)	(−0.95)	(−0.76)	(−0.41)	(−0.56)	(−0.05)	(−0.20)
TobinQ	0.04	0.03	2.61	1.62	−0.33	−0.27	0.11	0.05
t-stats.	(0.26)	(0.25)	(1.31)	(0.83)	(−1.13)	(−0.92)	(0.55)	(0.23)
Leverage	**−0.61****	−0.72	−3.76	−3.36	−1.11	−0.99	**0.50****	0.08
t-stats.	**(−2.26)**	(−1.59)	(−0.76)	(−0.77)	(−0.72)	(−0.71)	**(2.28)**	(0.16)
Beta	0.00	0.16	−0.64	−0.82	0.28	0.40	0.10	0.26
t-stats.	(−0.02)	(0.67)	(−0.78)	(−0.95)	(0.71)	(0.98)	(0.36)	(0.80)
IVol	−0.23	−0.73	3.09	4.71	0.63	−0.39	**−3.23****	**−3.27***
t-stats.	(−0.17)	(−0.57)	(0.64)	(1.01)	(0.31)	(−0.19)	**(−1.99)**	**(−1.90)**
Runup	−0.03	−0.02	−0.10	−0.04	**−0.04***	**−0.05****	−0.02	0.00
t-stats.	(−1.39)	(−0.45)	(−0.58)	(−0.25)	**(−1.88)**	**(−2.36)**	(−0.40)	(0.02)
Adjusted R^2	0.007	0.004	−0.033	−0.050	0.016	0.019	0.010	0.008
# obs.	6,410	6,211	256	246	2,273	2,196	3,869	3,759
Fixed Effects	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind	Year, Ind

loans with medium lender credit ratings than those with low credit ratings. The regression analysis confirms that loans made by higher-quality lenders receive more positive market reactions when they are announced.

Our results confirm that lender credit quality is important when the market interprets the information from loan announcements as stated in our Hypothesis 4a. Such results not only existed in the 1980s, as documented by Billett et al. (1995) but continue to hold true in the most recent years. Our findings again highlight the important role of financial institutions' reputation in alleviating the IA between insiders and outside market investors.

D. Credit Market Conditions

Prior studies suggest that the importance of banks' private information increases when credit market conditions deteriorate because increased economic uncertainty makes the IA between insider and outside investors more severe and bank screening and monitoring become more intensive (e.g., Stein (2002), Dell'Ariccia and Marquez (2004), Demiroglu et al. (2022)). As a result, the private lending relationship between banks and borrowing firms becomes more valuable and the positive loan announcement effect becomes stronger.

We perform the regression analysis of market reactions to loan announcements by including 4-year dummies representing crisis years, namely 2002, 2003, 2008, and 2009. The results are reported in columns 1 and 2 in Table 10. The coefficients are significantly positive on all year dummies except for the year 2008. The positive coefficients of the 3 crisis years with the highest credit spreads suggest that, in general, the market reacts more positively to loan announcements when credit market conditions deteriorate. The exception of the year 2008 could potentially be explained by the loss of confidence in the banking system at the onset of the financial crisis due to, for instance, the solvency uncertainty (Flannery, Kwan, and Nimalendran (2013)).

TABLE 10

Cumulative Abnormal Returns Around Bank Loan Announcements: The Effect of Credit Market Condition

Table 10 reports the regressions of cumulative abnormal returns by including 4-year dummies during high credit risk periods and the aggregate credit spread as additional explanatory variables. The dependent variables are cumulative abnormal returns based on the Fama–French 5-factor model (CAR_{FF5}) and DGTW benchmark model (CAR_{DGTW}) during the [−3,+3] window around the 8-K loan announcement dates. Aggregate credit spread (*Credit Spread*) is measured as the difference between Aaa and Baa rated bonds during the month of loan announcement. Control variables include *(ln)Market Equity*, *OIBD*, *TobinQ*, *Leverage*, *Beta*, *IVol*, and *Runup*. Year and industry fixed effects are included in all regressions. Industry is defined as the 2-digit SIC industry. Detailed variable definitions are described in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. The standard errors are clustered at the industry and year levels. The full sample period is from Jan. 1, 1994 to Dec. 31, 2018. Results are also reported for three subperiods: before Aug. 23, 2004, from Aug. 23, 2004 to July 21, 2010, and after July 21, 2010, respectively. Corresponding *t*-statistics are reported in parentheses and *, **, and *** indicate significance at the 10%, 5%, and 1% 2-tailed levels, respectively. Bold is used for numbers that are statistically significant at the 10% level or above.

	Full Sample		Full Sample		Excluding Year 2008	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6
Year 2002	**2.04*****	**2.19*****				
t-stats.	**(2.95)**	**(3.35)**				
Year 2003	**2.16*****	**0.74****				
t-stats.	**(3.31)**	**(2.08)**				
Year 2008	**−1.05*****	**−0.59****				
t-stats.	**(−3.21)**	**(−2.35)**				
Year 2009	**1.37****	**1.40*****				
t-stats.	**(2.48)**	**(2.83)**				
Credit Spread			0.22	0.51	**0.85*****	**0.99*****
			(0.48)	(1.37)	**(3.24)**	**(3.49)**
(ln)Loan-to-Asset Ratio	**1.57*****	**1.34*****	**1.47*****	**1.33*****	**1.43*****	**1.41*****
t-stats.	**(3.88)**	**(3.63)**	**(5.81)**	**(4.13)**	**(6.88)**	**(4.59)**
Abnormal Spread	**−0.44*****	**−0.27***	**−0.42*****	**−0.24****	**−0.37****	**−0.22***
t-stats.	**(−2.62)**	**(−1.76)**	**(−3.34)**	**(−2.43)**	**(−1.96)**	**(−1.68)**
(ln)Market Equity	−0.12	**−0.15***	−0.14	**−0.16***	−0.11	−0.12
t-stats.	(−1.21)	**(−1.65)**	(−1.49)	**(−1.78)**	(−1.12)	(−1.20)
OIBD	−1.88	−1.28	−1.70	−1.36	−1.95	−1.57
t-stats.	(−1.17)	(−0.72)	(−1.06)	(−0.76)	(−1.02)	(−0.74)
TobinQ	0.03	−0.04	0.01	−0.04	0.08	0.00
t-stats.	(0.24)	(−0.33)	(0.11)	(−0.37)	(0.62)	(0.00)
Leverage	−0.57	−0.71	−0.23	−0.47	−0.33	−0.47
t-stats.	(−1.13)	(−1.48)	(−0.58)	(−1.33)	(−1.02)	(−1.35)
Beta	0.21	0.13	0.23	0.14	0.17	0.11
t-stats.	(0.67)	(0.50)	(0.73)	(0.58)	(0.55)	(0.42)
IVol	0.67	−0.84	0.80	−0.86	1.14	−0.53
t-stats.	(0.44)	(−0.74)	(0.52)	(−0.78)	(0.69)	(−0.43)
Runup	**−0.05***	−0.02	**−0.05***	−0.02	−0.05	−0.01
t-stats.	**(−1.66)**	(−0.91)	**(−1.72)**	(−0.77)	(−1.47)	(−0.29)
Adjusted R^2	0.009	0.003	0.005	0.002	0.007	0.003

(continued on next page)

	Full Sample		Full Sample		Excluding Year 2008	
	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]	CAR_{FF5} [−3,+3]	CAR_{DGTW} [−3,+3]
	1	2	3	4	5	6
# obs.	7,774	7,506	7,774	7,506	7,405	7,149
Fixed Effects	Ind	Ind	Ind	Ind	Ind	Ind

We then add the aggregate credit spread measure directly in the regression. Columns 3 and 4 in Table 10 report the regression results in the full sample from 1994 to 2018, and columns 5 and 6 in the sample excluding the year 2008. While the coefficient on *Credit Spread* is insignificant for the full sample, it becomes significantly positive in the sample excluding 2008. The coefficient is 0.85 with a *t*-statistic of 3.24 in column 5, suggesting that a 1-standard-deviation (0.42) increase in *Credit Spread* leads to a 0.36% increase in the $CAR_{FF5}[-3,3]$ around loan announcements. Our results suggest that, except for 2008, a higher aggregate credit spread is associated with higher loan announcement returns.

Taken together, we confirm previous findings that the wealth effect of bank loan announcements increases with lender credit quality. We also extend previous studies by showing that bank financing becomes more valuable when credit market conditions are worse. The results provide supporting evidence for our Hypothesis 4b.

IX. Additional Analysis

A. Wealth Effects Around Loan Announcements in 8-K: Covenant-Lite Leveraged Loans

Since the 1990s, an important development in the syndicated loan market has been the marketing of bank-originated term loans to nonbank institutional investors. Another closely related development is the growing popularity of covenant-lite loans, which contain no traditional maintenance financial covenants. The participation of institutional investors and the wide use of covenant-lite loans have been concentrated in the leveraged loan market, broadly defined as loans to borrowers with a high leverage and low credit quality.

It remains an unanswered question: How do the decrease of bank shares and removal of financial covenants in covenant-lite leveraged loans affect the screening and monitoring roles of banks and impact the wealth effects of bank loan announcements? In the online Supplementary Material (Section OS.1 and Table OS.6), we discuss the theoretical predictions for this question and present empirical analysis. We show that while the effect of leveraged loan is insignificant, covenant-lite loans have a significant positive effect on the bank loan announcement effects. The results are more consistent with the recent findings in the literature that covenant-lite loans may signal better credit quality of the borrower and avoid excessive coordination costs (e.g., Demiroglu and James (2010), Badoer et al. (2024)), but less consistent with the arguments of loosened monitoring.

B. The Effect of Loan Origination and Renegotiation on CARs Around Loan Announcements

Several prior studies investigate whether the market reaction to bank loan announcements differs for new loan agreements and loan renewals, but the evidence is mixed (e.g., Lummer and McConnell (1989), Best and Zhang (1993), Billett et al. (1995)). We revisit this issue by utilizing the rich information in SEC 8-K and periodic filings and identifying the path of a loan following the methodology in Roberts (2015). We extend this analysis to our 11,595 loan announcements of 3,662 firms and classify 3,794 loans as originations and 7801 loans as renegotiations. In the online Supplementary Material (Section OS.2 and Table OS.7), we describe the details of the classification procedure and show that the average CARs around bank loan announcements are stronger for loan originations than for loan renegotiations.

C. Information Leakage Around Loan Announcements and Impact of the Dodd–Frank Act

The price runup prior to the loan announcements suggests a potential sign of information leakage.[15] To better understand how the wealth effects of bank loan announcements are incorporated into stock prices, we quantify the information leakage as regulations change over time and investigate its underlying sources. In the online Supplementary Material (Section OS.3), we show that before the Dodd–Frank Act, the information leakage is salient, present for loans funded by both banks and institutional investors, and stronger for loans with more lead lenders. However, the information leakage diminished after the Dodd–Frank Act, suggesting that the Dodd–Frank Act is effective in curbing the proprietary trading of banks and institutional participants.

D. The Timing of Loan Announcements in 8-K

We present the histogram of the announcement gap between the loan active date and the announcement date of 8-K filings in the online Supplementary Material (Section OS.4 and Figure OS.4). The fraction of the loans announced more than 7 business days after the loan active date is 53% before Aug. 23, 2004, but decreases to 2%–3% afterward, suggesting that the SEC's new rule on 8-K disclosure requirements enacted has effectively prevented the delay of loan announcements.

X. Conclusion

Early studies discovered that the market responds positively to bank loan announcements, emphasizing the importance of private information generated as part of the lending process. However, several later studies question whether bank loan relationships are still valuable in recent years as the financial system changes and the information environment improves and whether the inferences drawn from the small sample in early studies are representative and credible.

By constructing a comprehensive sample of loan announcements that matches the entire loan universe from the DealScan database with SEC 8-K filings from

[15]Similarly, Ho et al. (2019) document the presence of information leakage prior to EDGAR filings in high-frequency data.

1994 to 2018, we show that bank loan announcements elicit positive market reactions, and the positive effect has persisted in recent years. We demonstrate that the insignificant wealth effect of bank loan announcements documented in Maskara and Mullineaux (2011) is potentially driven by the small sample size and high volatility of stock market reactions in the early sample period.

We extend our analysis to all announced and unannounced loans of the entire loan universe, which sheds new light on the determinants of loan announcement decisions and addresses the potential concerns over small sample misrepresentation problems. We provide evidence that the borrower's decision to announce a loan is closely related to the materiality and pricing of the loan and varies with credit market conditions. We further confirm that the positive market reactions to loan announcements remain robust after adjusting the difference in borrower size distributions between the 8-K announcement sample and the full DealScan loan sample.

We provide new evidence on how the wealth effect of loan announcements is related to private information of banks conveyed through loan terms. The positive announcement effect is stronger for deals with higher materiality, more favorable pricing, larger lead bank shares, and higher syndicate concentration. We also confirm previous findings that the positive announcement effect is stronger when lenders have higher credit quality and when credit market conditions are worse. Our results emphasize that banks continue to play a special role in the lending process as information producers and delegated monitors, and bank financing is particularly valuable when private information is more important.

Appendix. Definition of Variables

Loan Characteristics

Loan Size: Loan amount in million USD, which is measured in constant dollars of 2018.

Loan-to-Asset Ratio: Loan size scaled by the borrower's total assets (item AT). *(ln) Loan-to-Asset Ratio* is defined as the natural logarithm of (1 + *Loan Size*/*Total Assets*). Total assets is obtained from the most recent fiscal year end before the event.

Maturity: Loan maturity in number of months.

All-in-Drawn Spread: The amount the borrower pays in percentage points over LIBOR for each dollar drawn down.

Abnormal Spread: The residual spread (in %) from the regression of all-in-drawn spread on loan, borrower, and lender characteristics. The regression is estimated using all DealScan loans.

Syndicate: A dummy variable that equals 1 if a loan is funded by at least two lenders, and 0 if the loan is funded by a sole lender.

Number of Lenders: The number of lenders participating in the loan.

Borrower Characteristics

CAR_{FF5}: Cumulative abnormal returns based on the Fama–French 5-factor model following Fama and French (2015). A 250-day pre-event window is used to

estimate the coefficient in the Fama–French 5-factor model and at least 30 days of available return data is required. A 30-day gap between the pre-event estimation period and the event window is used to avoid any microstructure effects and mechanical results.

CAR_{DGTW}: Cumulative abnormal returns based on the DGTW benchmark model.

(ln)Market Equity: The natural logarithm of the borrower's market capitalization (in unit dollar) in the month prior to the event date. Market capitalization is measured in constant dollars of 2018.

(ln)Total Assets: The natural logarithm of the borrower's total assets (in unit dollar) in the most recent fiscal year end before the event. Total asset is measured in constant dollars of 2018.

OIBD: The borrower's operating income before depreciation (item OIBDP) divided by total assets in the most recent fiscal year end before the event.

TobinQ: The ratio of the borrower's book value of debt (defined as total assets – book value of equity) plus market value of equity scaled by total assets in the most recent fiscal year end before the event.

Leverage: The book value of borrower's long-term debt (item DLTT) plus debt in current liability (item DLC) divided by the sum of the book value of debt and the market value of equity in the most recent fiscal year end before the event.

Beta: Market beta estimated from Fama–French 3-factor model using daily returns during the 3-month window ending a week preceding the event date with at least 30 non-missing observations.

IVol: Idiosyncratic volatility, defined as (annualized) standard deviation of the daily return residuals from the Fama–French 3-factor model during the 3-month window ending a week preceding the event date with at least 30 non-missing observations.

Runup: Cumulative 10-day abnormal returns on the borrower's stock preceding the event window, computed using the Fama–French 5-factor model or the DGTW benchmark model.

EBIT: EBITDA-to-asset ratio, which is defined as earnings before interest, taxes, depreciation, and amortization (item EBITDA) divided by total assets.

Negative EBIT: A dummy variable that equals 1 when the borrower has zero or negative EBITDA, and 0 otherwise.

IA Index: Information asymmetry index, which is calculated as the average quintile rank values of the borrower based on six measures, including analyst forecast error, dispersion of analyst forecast, residual volatility of stock returns, standard deviation of abnormal returns around earnings announcement, firm age, and bid–ask spread following Maskara and Mullineaux (2011).

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109024000395.

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